Complete Manual for the

RoboSHOT IW

Architectural PTZ Conferencing Camera

Document 411-0016-30 Rev B
September 2018

Contents

Overview

This guide describes installation and related information for the RoboSHOT® In-Wall architectural PTZ conferencing camera:

- RoboSHOT IW with smart glass, black – 999-9965-100 (North America); 999-9965-101 (Europe/UK)
- RoboSHOT IW with smart glass, primer coated – 999-9965-150 (North America); 999-9965-151 (Europe and UK)
- RoboSHOT IW OneLINK® HDMI System with smart glass, black – 999-9965-200 (North America); 999-9965-201 (Europe and UK)
- RoboSHOT IW OneLINK HDMI System with smart glass, primer coated – 999-9965-250 (North America); 999-9965-251 (Europe and UK)
- RoboSHOT IW OneLINK Bridge System with smart glass, black – 999-9965-300 (North America); 999-9965-301 (Europe and UK)
- RoboSHOT IW OneLINK Bridge System with smart glass, primer coated – 999-9965-350 (North America); 999-9965-351 (Europe and UK)
- RoboSHOT IW with safety glass, black – 999-9966-100 (North America); 999-9966-101 (Europe/UK)
- RoboSHOT IW with safety glass, primer coated – 999-9966-150 (North America); 999-9966-151 (Europe and UK)
- RoboSHOT IW OneLINK® HDMI System with safety glass, black – 999-9966-200 (North America); 999-9966-201 (Europe and UK)
- RoboSHOT IW OneLINK HDMI System with safety glass, primer coated – 999-9966-250 (North America); 999-9966-251 (Europe and UK)
- RoboSHOT IW OneLINK Bridge System with safety glass, black – 999-9966-300 (North America); 999-9966-301 (Europe and UK)
- RoboSHOT IW OneLINK Bridge System with safety glass, primer coated – 999-9966-350 (North America); 999-9966-351 (Europe and UK)

What's in this Guide

This guide covers:

- Unpacking
- Physical features
- Installation
- Controlling the camera using the IR remote
- Web interface: system administration and configuration
- Telnet and RS-232 API references
- Specifications
- Troubleshooting
- Warranty and compliance/conformity information

For your convenience, the information you need to install this product is also available in the smaller, stand-alone **Installation Guide for the RoboSHOT IW Architectural PTZ Conferencing Camera**, which covers unpacking, physical features, switch settings, installation, and initial power-up.

Download manuals, dimensional drawings, and other information from www.vaddio.com/support.

Features

- Attractive, ADA-compliant recessed design
- Fully enclosed with smart glass cover (frosted when the camera is not sending video) or tamper-resistant safety glass cover
- Exmor® 1/2.8 type, high-speed, low-noise image sensor for 2.38 megapixels total, full HD (native 1080p/60)
- 10x optical zoom with horizontal field of view from 67° (wide end) to 7.6° (tele end)
- Superior low-light performance (0.4 Lux)
- Web interface for remote administration and operation, integration-ready Telnet and serial RS-232 control, presenter-friendly IR remote control
- Use with a OneLINK device for power, video, and control:
  - OneLINK HDMI – uncompressed HDMI video, bidirectional RS-232 connectivity for camera control via third-party equipment, passes IP stream from the camera
  - OneLINK Bridge – OneLINK HDMI capabiliities plus uncompressed USB 3.0 streaming, HD-SDI output, and audio routed up to the camera and injected into the IP stream

Unpacking the Camera

Make sure you receive all the items you expected.

Camera Only

RoboSHOT IW with Smart Glass

999-9965-100 – RoboSHOT IW with Smart Glass, Black, North America

999-9965-150 – RoboSHOT IW with Smart Glass, Primer Coated, North America

999-9965-101 – RoboSHOT IW with Smart Glass, Black, Europe/UK

999-9965-151 – RoboSHOT IW with Smart Glass, Primer Coated, Europe/UK

RoboSHOT IW with Clear Glass

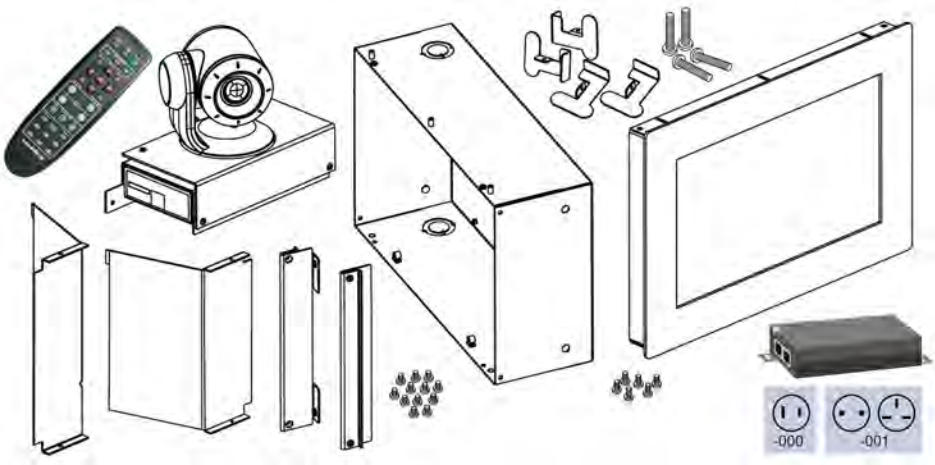
999-9966-100 – RoboSHOT IW with Clear Glass, Black, North America

999-9966-150 – RoboSHOT IW with Clear Glass, Primer Coated, North America

999-9966-101 – RoboSHOT IW with Clear Glass, Black, Europe/UK

999-9966-151 – RoboSHOT IW with Clear Glass, Primer Coated, Europe/UK

- Camera
- Enclosure assembly, black or primed
  - Back box
  - Interior side plates, right and left
  - Side brackets, qty. 2
  - Drywall clips, qty. 4
  - Screws, 6-32, 1/4 in, qty. 10
  - Screws, 6-32, 3/8 in, qty. 8
  - Screws, 10-24, 1 in, qty. 4
- Front frame, black or primed, with smart glass (opaque) or clear glass
- PoE+ mid-span power injector with AC cord set(s)
- Vaddio IR Remote Commander
- Installation Guide 411-0016-31 for RoboSHOT IW



Camera Systems with OneLINK HDMI

RoboSHOT IW OneLINK HDMI System with Smart Glass

999-9965-200 – RoboSHOT IW OneLINK HDMI System with Smart Glass, Black, North America

999-9965-250 – RoboSHOT IW OneLINK HDMI System with Smart Glass, Primer Coated, North America

999-9965-201 – RoboSHOT IW OneLINK HDMI System with Smart Glass, Black, Europe/UK

999-9965-251 – RoboSHOT IW OneLINK HDMI System with Smart Glass, Primer Coated, Europe/UK

RoboSHOT IW OneLINK HDMI System with Clear Glass

999-9966-200 – RoboSHOT IW OneLINK HDMI System with Clear Glass, Black, North America

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999-9966-251 – RoboSHOT IW OneLINK HDMI System with Clear Glass, Primer Coated, Europe/UK

- Camera
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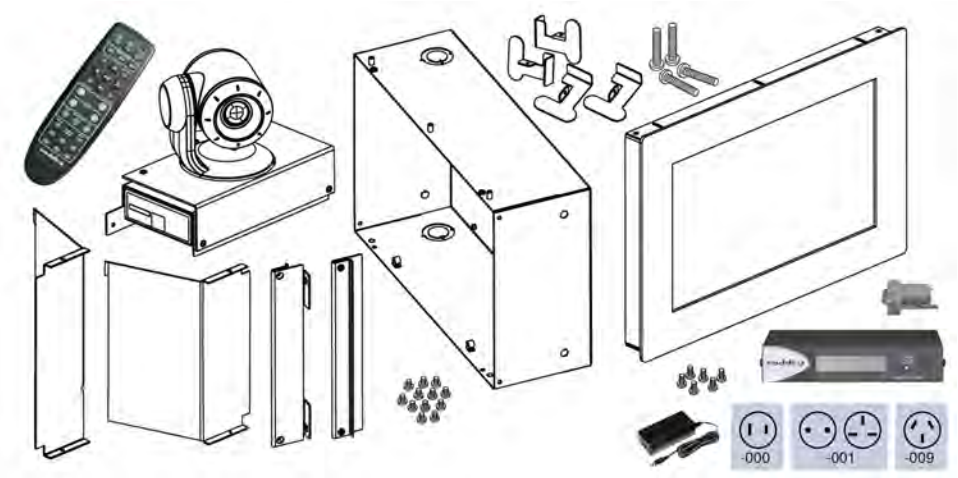
  - Back box
  - Interior side plates, right and left
  - Side brackets, qty. 2
  - Drywall clips, qty. 4
  - Screws, 6-32, 1/4 in, qty. 10
  - Screws, 6-32, 3/8 in, qty. 8
  - Screws, 10-24, 1 in, qty. 4
- Front frame, black or primed, with smart glass (opaque) or clear glass
- Vaddio IR Remote Commander
- Installation Guide 411-0016-31 for RoboSHOT IW
- OneLINK HDMI receiver
- Power supply, 48 VDC/1.36 A, with AC cord set(s)
- EZCamera RS-232 control adapter
- Quick-Start Guide 411-0019-01 for OneLINK HDMI



Camera System with OneLINK Bridge

RoboSHOT IW OneLINK Bridge System with Smart Glass

999-9965-300 – RoboSHOT IW OneLINK Bridge System with Smart Glass, Black, North America

999-9965-350 – RoboSHOT IW OneLINK Bridge System with Smart Glass, Primer Coated, North America

999-9965-301 – RoboSHOT IW OneLINK Bridge System with Smart Glass, Black, Europe/UK

999-9965-351 – RoboSHOT IW OneLINK Bridge System with Smart Glass, Primer Coated, Europe/UK

RoboSHOT IW OneLINK Bridge System with Clear Glass

999-9966-300 – RoboSHOT IW OneLINK Bridge System with Clear Glass, Black, North America

999-9966-350 – RoboSHOT IW OneLINK Bridge System with Clear Glass, Primer Coated, North America

999-9966-301 – RoboSHOT IW OneLINK Bridge System with Clear Glass, Black, Europe/UK

999-9966-351 – RoboSHOT IW OneLINK Bridge System with Clear Glass, Primer Coated, Europe/UK

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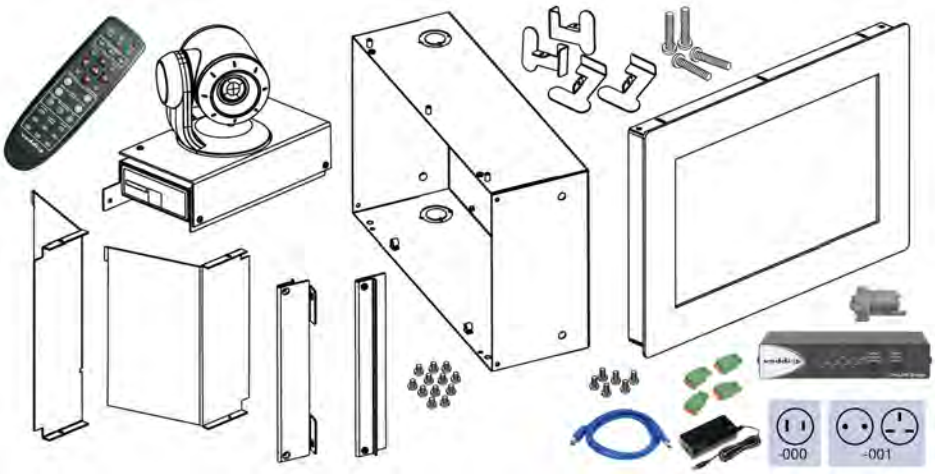
- Enclosure assembly, black or primed
  - Back box
  - Interior side plates, right and left
  - Side brackets, qty. 2
  - Drywall clips, qty. 4
  - Screws, 6-32, 1/4 in, qty. 10
  - Screws, 6-32, 3/8 in, qty. 8
  - Screws, 10-24, 1 in, qty. 4
- Front frame, black or primed, with smart glass (opaque) or clear glass
- Vaddio IR Remote Commander
- Installation Guide 411-0016-31 for RoboSHOT IW
- OneLINK Bridge AV interface
- Power supply, 48 VDC/1.36 A, with AC cord set(s)
- USB 3.0 A to B cable, 6 ft. (1.8 m)
- 3-position Phoenix connector plug, 3.5 mm, qty. 4
- EZCamera RS-232 control adapter
- Quick-Start Guide 411-0009-01 for OneLINK Bridge



A Quick Look at the Camera and Enclosure

Camera and Lens – The 10x optical zoom lens and Exmor® 1/2.8 type, high-speed, low-noise image sensor deliver crisp full-HD video.

Frame – Metal frame and glass window.

Interior side panels – No wiring is visible when the camera is installed.

Camera platform – Houses the electronics.

IR window – A sensor in the front of the camera platform receives signals from the remote. Make sure there's nothing directly in front of the camera platform, and point the remote at the camera.

Status indicator – The multicolored LED indicates the camera's current state.

- **Blue:** Normal operation (blinks once when the camera receives a command from the remote)
- **Red:** On-air tally
- **Blinking blue** or **blinking red:** Video is muted
- **Purple:** In standby mode or booting
- **Yellow:** Firmware update in progress
- **Blinking yellow:** Motor calibration fault

Note

By default, the camera's status light is active during normal operation; however, it can be configured to remain off when the camera is powered up. The camera may be sending video even if the indicator light is off.

If the camera has a smart-glass cover, the cover is frosted when the camera is in standby mode (not sending video). The glass remains clear when video is muted; however, if enabled, the status light blinks.

Installing the Camera

This section covers:

- Selecting the location for the camera
- Installing the enclosure
- Connecting the camera
- Completing the installation

Don't Void Your Warranty!

Caution

This product is for indoor use. Use an appropriate protective enclosure if installing it outdoors or in a humid environment.

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.

Use the power source included with or recommended for use with this product. Using the wrong power supply will void the warranty, and could create unsafe operating conditions or damage the product. Power supplies for different products may look nearly identical – always check the label for the output voltage.

Cabling Notes

Use Cat-5e or better cable. We recommend using high-quality connectors and a high-quality crimping tool.

Caution

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 may void your warranty.

Intact – will make reliable contact with cable connector

Damaged – Bent contact fingers will NOT make reliable contact with cable connector

We recommend shielded cabling if the cables will be coiled, run tightly with other cables, or placed close sources of electromagnetic interference such as power lines.

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.

Selecting the Installation Area

Install the camera in a location that meets the following requirements.

Note

Work must conform to local building codes and should be performed by qualified personnel.

Environment: This product is designed for indoor use only.

Structural requirements:

- The enclosure is designed to be mounted into a wood or steel stud wall 16 in. (40.6 cm) on center, or to a drywall surface at least 0.5 in (1.27 cm) thick.
- If the wall studs are on greater than 16 in. centers, you will need to mount to drywall on at least two corners.

Safety: Ensure that no obstructions of any kind are present in the area that the camera enclosure will be set into.

Warning

Before cutting the opening for the camera enclosure, ensure that no wiring and no pipes are present in or immediately adjacent to the area that the camera enclosure will be set into.

Cutting or drilling into electrical wiring can cause electrical shock or fire, resulting in death, injury, and damage to the building.

Cutting or drilling into gas pipes can cause explosion or fire, resulting in death, injury, and damage to the building.

Cutting or drilling into water or wastewater lines can result in injury and damage to the building.

Performance:

- Choose a camera mounting location that will optimize camera performance. Consider camera viewing angles, lighting conditions, and line-of-sight obstructions where the camera is to be mounted.
- If the remote control will be used, ensure that nothing blocks the IR lens in the camera enclosure.

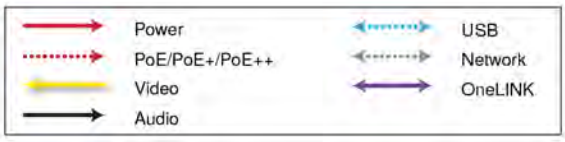
Pre-Installation Functional Check

Before you install the camera, verify that it powers up and sends video. Referring to the basic connection diagrams, connect the camera and verify that video is available on the connected display.

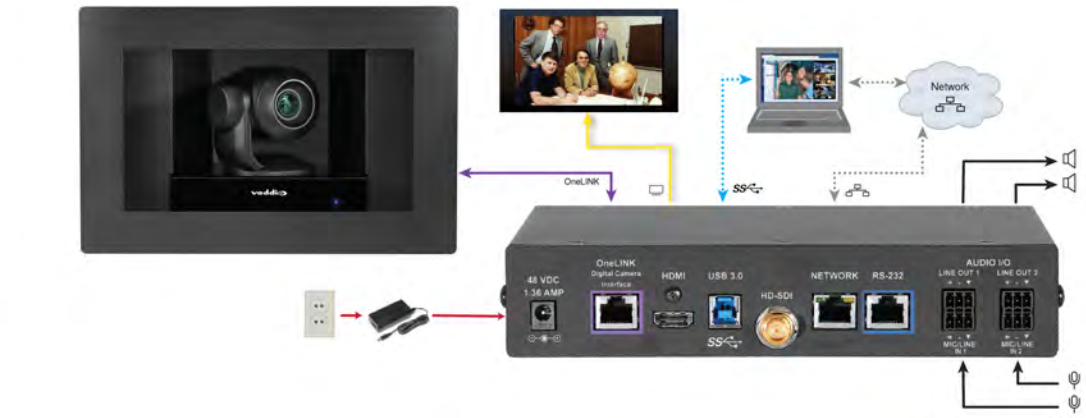
When you have verified that the camera operates properly, disconnect it and continue with the installation.

Basic Connections

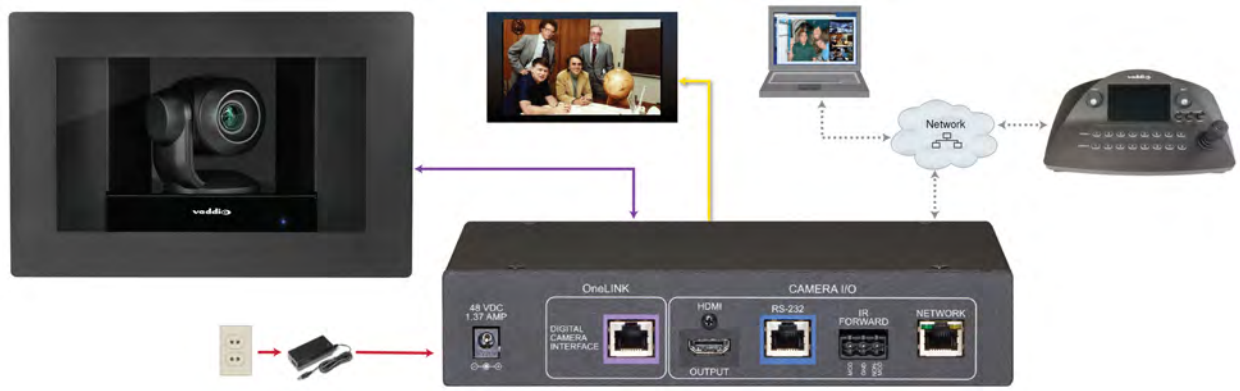
Connecting the camera is simple – just connect the cable to the OneLINK device or to the Power + Data connector of the mid-span power injector. The following diagrams show basic connections to other components of the room system.



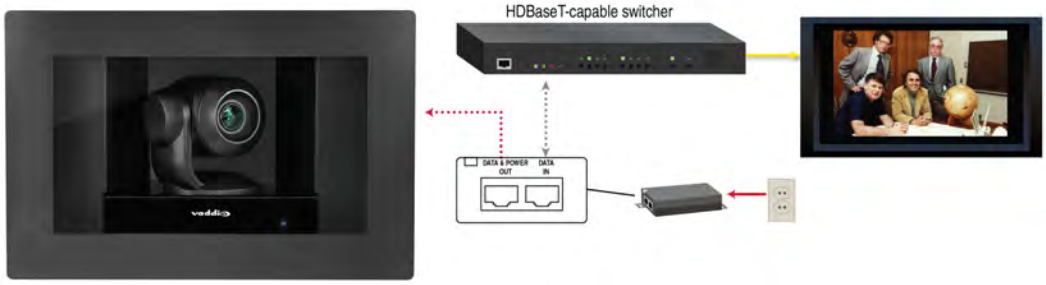
RoboSHOT IW OneLINK Bridge System



RoboSHOT IW OneLINK HDMI System



RoboSHOT IW with Third-Party Connectivity Solution



Options for Power and Other Connections

Connect the camera to a OneLINK device – A single Cat-5e (or better) cable provides power to the camera, along with HDBaseT network and video connectivity. Network, video output, and RS-232 control are connected at the OneLINK device.

Use a PoE+ power injector – Connect to the network or to an HDBaseT-capable third-party control device through a PoE+ power injector.

Things You Will Need for the Installation

Before you start, be sure you have what you need:

- Access to the area above the ceiling
- Plumb line
- Pencil
- Appropriate tools for cutting a hole in the ceiling
- #2 Phillips screwdriver
- Conduit box, if required

Installing the Power Source

You can connect the camera to the IP network using a mid-span power injector, or you can connect it to a OneLINK device. If you use a OneLINK device, it may be installed up to 328 ft (100 m) from the camera.

1. Install the power injector or OneLINK device before installing the camera enclosure.
2. Route the camera cable from the power injector or OneLINK device to the camera enclosure location.

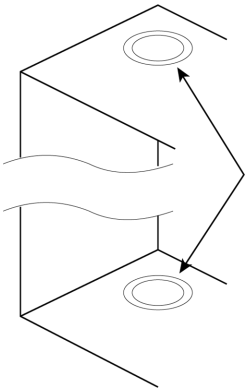
Installing the Camera Enclosure

The RoboSHOT IW camera may be installed either in an unfinished wall, before the drywall is in place, or in a finished wall. In either situation, the installation is in three steps:

- Install the enclosure using the appropriate procedure.
- Install the camera in the enclosure.
- Install the cover.

Before You Start

Consider which direction the camera cable needs to enter the enclosure, and remove the knock-out tab from either the upper or lower face of the enclosure.



Installing the Camera Enclosure in an Unfinished Wall

Follow these steps if the drywall has not yet been installed.

1. Measure, mark, and level the mounting position between two studs.
2. Holding the enclosure in place against the wall studs, mark the locations for the holes.
3. Set the camera enclosure aside and drill the holes.
4. Fasten the camera enclosure to the wall studs.
5. Route the camera cable into the enclosure.

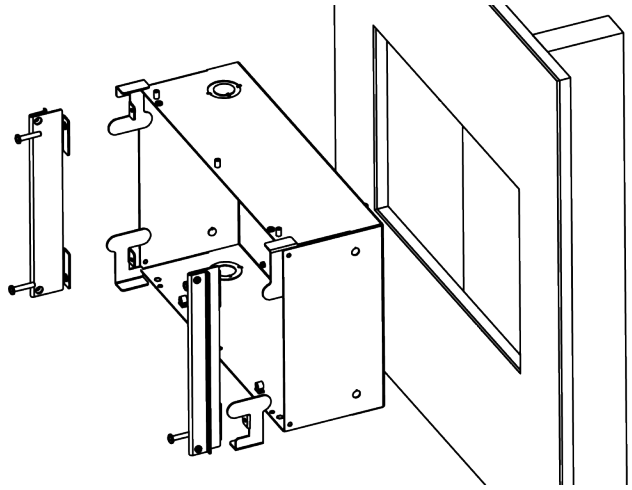
Installing the Camera Enclosure in a Finished Wall

Follow these steps if the drywall is in place.

Warning

Before cutting the opening for the camera enclosure, ensure that no wiring and no pipes are present in or immediately adjacent to the area that the camera enclosure will be set into.
Cutting or drilling into electrical wiring can cause electrical shock or fire, resulting in death, injury, and damage to the building.
Cutting or drilling into gas pipes can cause explosion or fire, resulting in death, injury, and damage to the building.
Cutting or drilling into water or wastewater lines can result in injury and damage to the building.

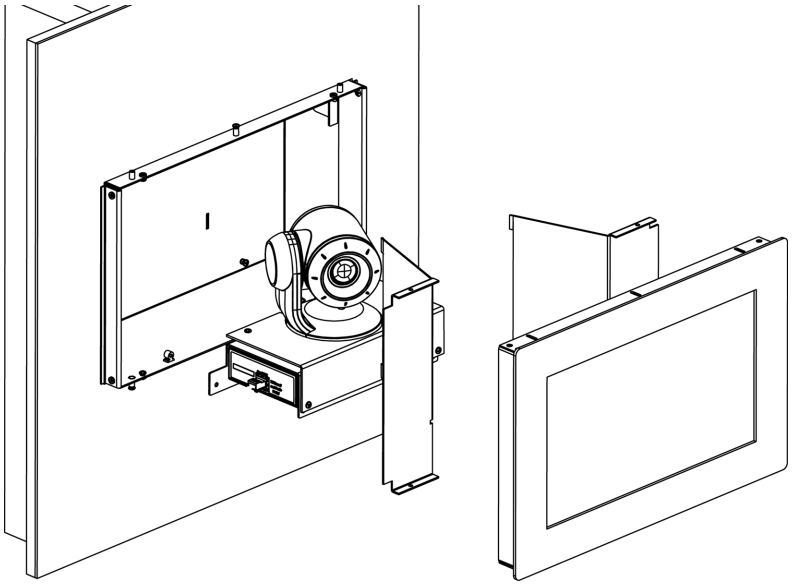
1. Verify that no pipes or wiring pass through or immediately adjacent to the part of the wall where the camera enclosure will be mounted.
2. Level, measure, and mark the cutting lines for the opening.
3. Cut the opening.
4. Slide the drywall clips into the corners of the enclosure.
   Note
   Although the drywall clips are not visually symmetrical, they can be installed with either curved surface facing forward, depending on the corner in which they are placed.
5. Install the side brackets using 1/4 in. 6-32 screws.
6. Route the camera cable into the enclosure.
7. Slide the enclosure into place.
8. Use the 10-32 screws to attach the drywall clips to the side brackets. The clips tilt outward and engage the drywall as you tighten the screws.



Installing the Camera

Do this only after verifying that the camera powers up properly. See Pre-Installation Functional Check for details.

1. Place the camera assembly in the enclosure, with the face in front of the tabs. If the enclosure has a smart glass cover, ensure that the cable for the cover panel is accessible.
2. Attach the camera to the back tabs using two 1/4 in. 6-32 screws.
3. Attach the camera to the front tabs using two 3/8 in. 6-32 screws.
4. Connect the camera cable.



Installing the Interior Side Panels

The two interior side panels are not interchangeable. The right side panel has a cut-out for the smart glass cable.

To install each interior side panel:

1. Insert the tabs into the slots in the back of the enclosure.
2. Rotate the interior side panel into place. If the enclosure has a smart glass cover, ensure that the smart glass cable passes freely through the opening in the right side panel.
3. Secure the side panel with 1/4 in. 6-32 screws.

Installing the Cover

Do this only after verifying that the camera powers up properly. See Pre-Installation Functional Check for details.

1. If the enclosure has a smart glass front frame, connect its cable.
2. Position the front frame over the front of the enclosure, being sure that the cable (if used) is not pinched.
3. Attach the cover using 3/8 in. 6-32 screws.

Powering Up the Camera

Connect camera power.

The camera will run a self-test routine and move to its home position. This will take a few seconds. When the camera is initialized and ready, video is available and the status light is blue. At this point, the camera is ready to accept control information.

Note

Wait until the camera finishes initializing before trying to operate or control it.

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
- **Blinking red:** Video is muted (UC LED color scheme only)
- **Purple:** In standby mode or booting
- **Yellow:** Firmware update in progress

Caution

Do not remove power or reset the camera while the indicator is yellow, showing a firmware update in progress. Interrupting a firmware update can make the camera unusable.

Note

By default, the camera's status light is active during normal operation; however, it can be configured to remain off when the camera is powered up. The camera may be sending video even if the indicator light is off.

Using the IR Remote

The IR remote provides basic camera control for end users.

IR Remote Cheat Sheet

What do you need to do?	Button(s)
Power on or standby	**Power** (green button at top right)
Select the camera to control (if this remote controls more than one)	**Camera Select** buttons 1 through 3 (second row of buttons)
Discover the camera's IP address	**Data Screen** button (top left) – press and hold for 3 seconds.
Move the camera	Arrow buttons and **Home** button (dark red)
Move the camera to a preset position	**Position Preset** buttons 1 through 6 (bottom two rows)
Focus the camera	**Auto Focus** button (near arrow buttons) **Manual Focus** buttons **Near** and **Far** (below Zoom Speed buttons)
Control zoom speed	**Zoom Speed** buttons - Slow **T** and **W**, Fast **T** and **W** for telephoto and wide-angle modes (light gray)
Adjust for excess light behind the camera's subject	**Back Light** button (top center)
Correct a motor calibration fault condition (blinking yellow light)	Pan-Tilt Reset button (center right, beside arrow buttons)

IR Remote Details

The Vaddio remote provides the following functions:

Power – Switch the selected camera on or off.

Power indicator – Lights momentarily when you press a button.

Back Light – Use or turn off Back Light Compensation.

Data Screen – Display the camera's IP address and MAC address. Press this button again to dismiss the display.

Camera Select – In multi-camera installations, selects the camera to be controlled. See Camera Settings for information on configuring the camera as camera 1, 2, or 3.

Pan/Tilt (arrow button) controls and Home button – Control the camera's position.

Rev. Pan and Std. Pan– Control how the camera responds to the arrow buttons. Helpful for ceiling-mounted cameras and for presenters who are controlling the camera.

Pan/Tilt Reset – Recalibrate the pan and tilt motors. If the camera gets jostled, you may need to push this button to ensure that the camera moves accurately to its home and preset positions.

Auto Focus – Switch the camera to Auto-Focus mode.

Zoom Speed – Select Slow or Fast movements for telephoto and wide-angle shots.

- **T** (slow and fast) – Telephoto
- **W** (slow and fast) – Wide-angle

Manual Focus – Switch the camera to Manual Focus mode.

Near (-) adjustment – Moves the focus nearer when in manual focus mode.

Far (+) adjustment – Moves the focus farther when in manual focus mode.

Preset – Save the camera's current position as one of the numbered presets.

Reset – Clear a saved preset.

Position Presets 1 through 6 – Move the camera to a predefined position, or specify the preset to save or clear.

The web interface offers greater control over camera movements to presets, and provides additional presets.

Storing a Preset Using the Remote

Position the camera. Then hold down the Preset button and press one of the numbered preset buttons.

Clearing a Preset Using the Remote

Press and hold the Reset button while pressing the preset number you want to clear.

Web Interface

The camera's web interface allows control via a network connection, using a browser. Password-protected pages provide administrative access to tasks such as setting passwords, changing the IP address, viewing diagnostics, and installing firmware updates. The user login (or guest access, if it is enabled) provides access to camera controls similar to those available from the IR remote.

You will need to know the camera's IP address to use its web interface. If the network has a DHCP server, the camera will get its IP address, gateway and routing information automatically and you will be able to browse to it. If not, you will need to configure the camera to use a static IP address.

The OneLINK device powering the camera has its own web interface. Refer to the appropriate OneLINK manual for information on its web interface.

Getting the Camera's IP Address

You will need to be able to view the camera's video output.

1. Press the Data Screen button on the remote. The display presents the camera's IP address and MAC address.
2. Press the Data Screen button again to dismiss the information.

If the address is 169.254.1.1, the camera is using its default IP address. This usually means one of these things:

- The network automatically assigns IP addresses, but the camera is not connected to the network.
- The network does not automatically assign IP addresses, and you need to configure the camera for the network. See Configuring the Camera with a Static IP Address.

Accessing the Web Interface

Enter the IP address or hostname in your browser's address bar. You may need to enter **`http://`** or **`https://`** as a prefix to keep the browser from treating it as a search query.
(Example: **`http://10.30.200.125`**)

Browser Support

We have tested this product with these web browsers:

- Chrome®
- Microsoft® Internet Explorer®
- Safari®
- Firefox®

We test using the browser version available from the vendor at that time. Older versions of these browsers are likely to work, and other browsers may also work.

User Access

By default, the web interface opens to the Controls page, but the camera can be configured to require a user login. The default user password is **password**, but this can be changed. Check with the system administrator if the camera's web interface requires you to log in.

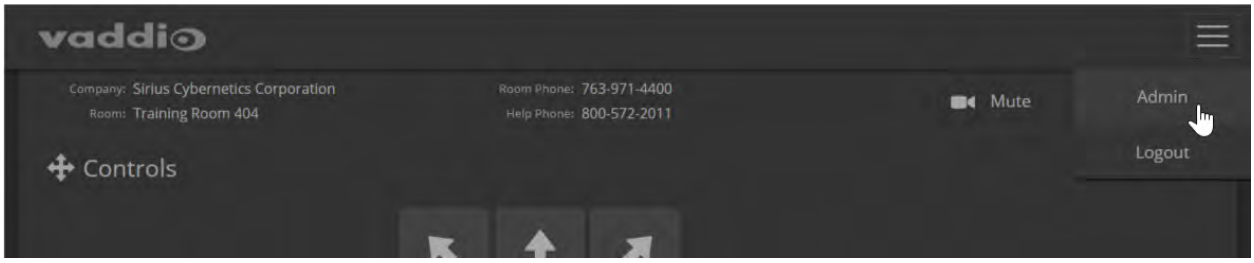
Only the Controls page is available with user-level access.

Your camera's Controls page may look somewhat different.

Administrative Access

If you are on the Controls screen, you're logged in at the user level, or guest access is enabled and you're not logged in at all.

Open the menu to log on as Admin. The default admin password is **`password`**, but this can be changed.



Your camera's web interface may look somewhat different from this image.

Note

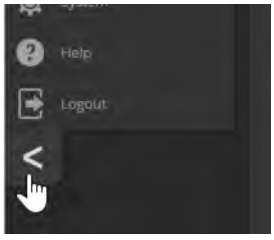
For best security, Vaddio strongly recommends changing the user and admin passwords from the default. *Using the default passwords leaves the product vulnerable to tampering.*

As Admin, you have access to the following pages:

- Camera – Additional control over camera behavior related to camera movement and color management.
- Streaming – Set up IP (H.264) streaming.
- Room Labels – Add helpful information the web interface screens, such as conference room name and the in-house number for AV assistance.
- Networking – Ethernet configuration.
- Security – Set passwords and manage guest access.
- Diagnostics – Access to logs for troubleshooting.
- System – Reboot, restore defaults, view switch settings, and run updates.
- Help – Tech support contact information.

Compact Menu View

By default, the navigation buttons in the camera's administrative interface display an icon and a text label. You can also select the compact view of the menu buttons along with the standard view. The button at the bottom of the menu toggles between the two views.



Web Interface Cheat Sheet

Where to find the camera controls you need right now.

What do you need?	Go to this screen
Camera operation ■ Stop sending video (video mute) ■ Make the glass opaque for privacy (Manual glass control must be enabled) ■ Enter or exit standby mode	(any page)
Camera operation ■ Move or zoom the camera manually ■ Move to a camera preset (Presets section, if available) ■ Select the appropriate lighting adjustments (CCU Scenes section, if available)	Controls (user or guest access) or Camera (admin access)
Camera behavior and adjustments ■ Set or clear presets ■ Set the speed for pan, tilt, or zoom motions ■ Focus the camera ■ Work with color and lighting adjustments (CCU scenes)	Camera
Advanced camera settings ■ Super-wide field of view ■ Indicator light – enable/disable; select color scheme ■ HDMI color space (YCbCr or sRGB; default is YCbCr) ■ Codec control mode ■ Glass control mode - automatic or manual ■ Video output resolution	System (DIP switches tab)
Read-outs of the camera's hardware switch settings	System (DIP switches tab)
Access management ■ Guest access ■ Account passwords ■ Idle session time-out ■ Telnet access enabled/disabled ■ Advanced security settings	Security
IP streaming settings ■ Quality, resolution, and frame rate ■ Streaming URL and path	Streaming
IP settings ■ Hostname ■ DHCP or static addressing ■ Static: IP address, subnet mask, gateway Time zone and NTP server (source for system time/date)	Networking
Information about the camera location Help desk phone number for end users	Room Labels
Vaddio Technical Support contact information	Help
Diagnostic logs	Diagnostics

System Administration

Administrative tasks are on these pages of the web interface:

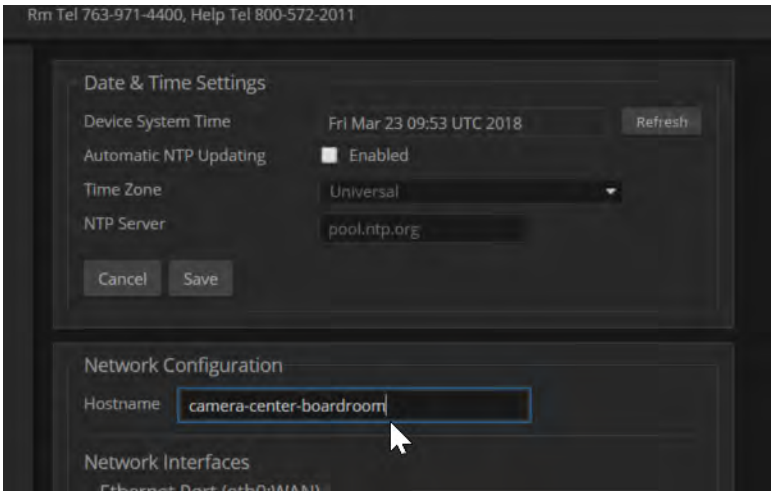
- Networking – Ethernet configuration, time zone and NTP server
- Security – Passwords, guest access, other IT security-related settings
- Room Labels – Helpful information to display in the web interface
- System – Controls to reboot, reset to factory defaults, and run firmware updates, access to soft DIP switches
- Help – Contact information for Vaddio Technical Support and a link to the documentation for this product
- Diagnostics – Logs to help Vaddio Technical Support troubleshoot issues

Changing the Camera's Hostname

NETWORKING PAGE

If your network supports hostname resolution, you may find it convenient to change the camera's hostname to something easy to remember, such as **`camera-center-boardroom`**.

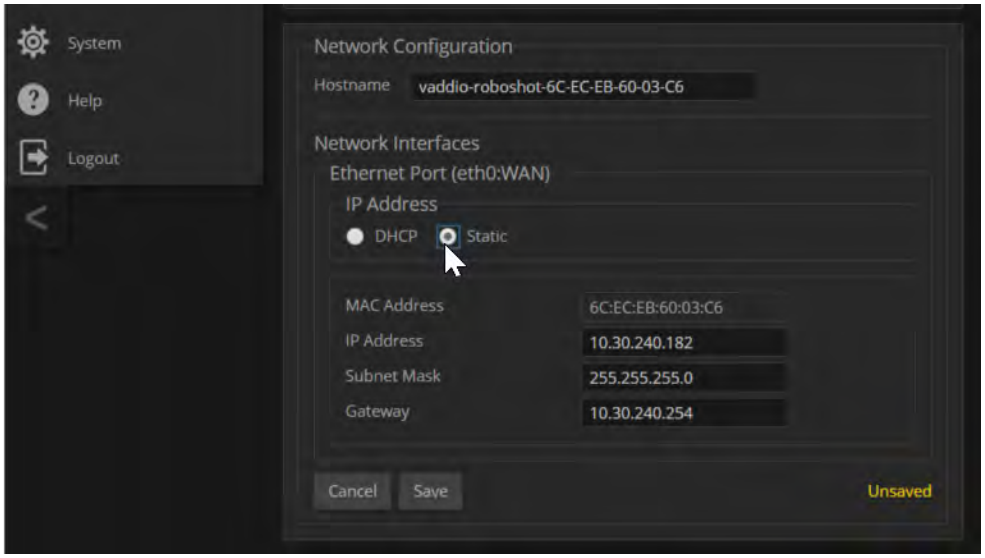
Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.



Changing to a Static IP Address in a DHCP Network

NETWORKING PAGE

In a network that assigns IP addresses automatically, the camera's IP address may change from time to time. To keep this from happening, set the IP address to Static. *Do not change the IP address, subnet mask, or gateway.*



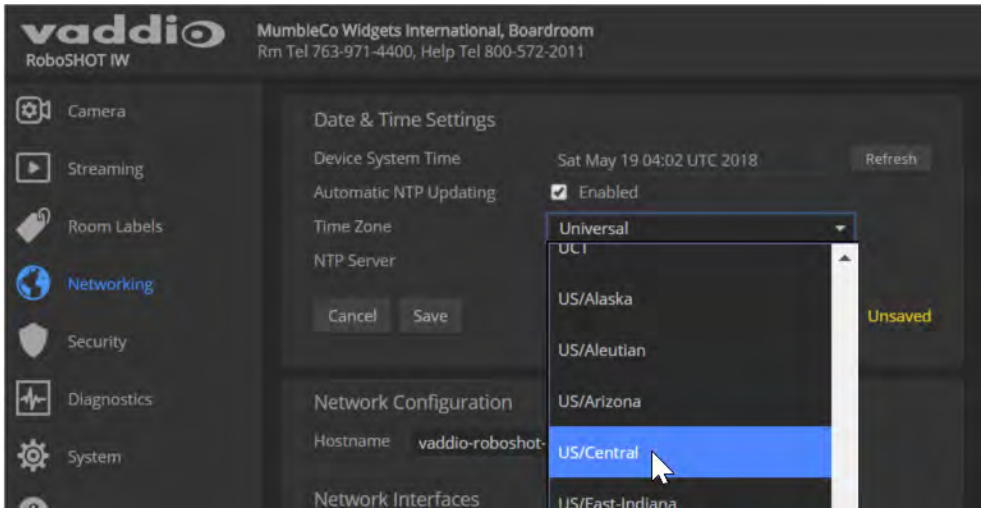
Specifying Time Zone and NTP Server

NETWORKING PAGE

Using automatic NTP updating ensures that the timestamps in the camera's diagnostic log are accurate. Specifying your time zone may make it easier to match logged events with other actions and external events.

1. To make the time zone and NTP server editable, enable Automatic NTP Updating.
2. Select the desired time zone from the list.
3. If desired, specify the NTP server to use. Otherwise, use the default.

You may need to refresh the system time display.



Managing Access and Passwords

SECURITY PAGE

Set the camera according to your organization's security policies:

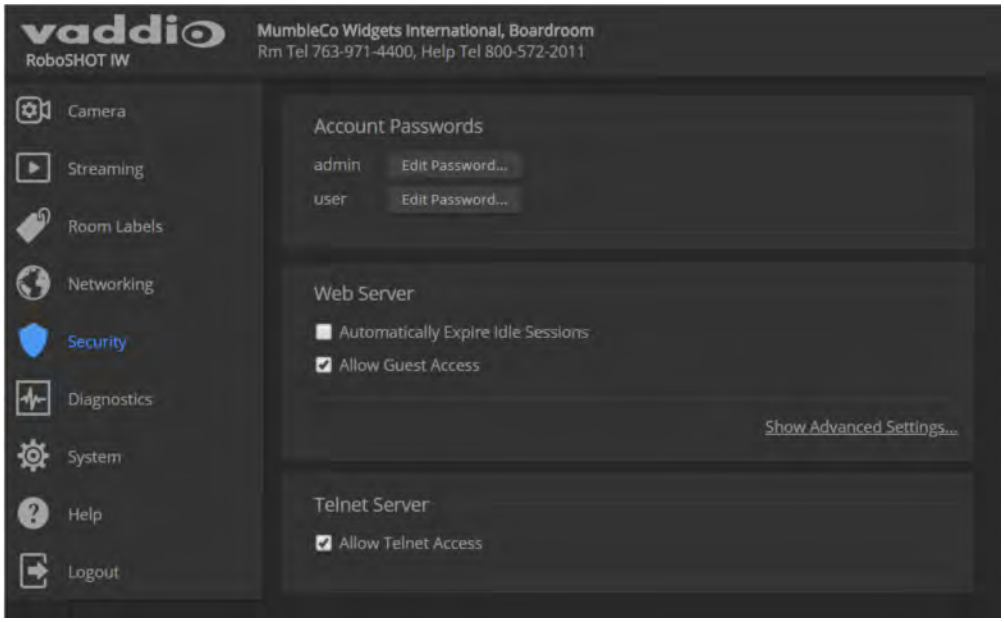
- Allow or deny access to the Camera screen without logging on (Allow Guest Access)
- Set whether inactive sessions log off automatically or not (Automatically Expire Idle Sessions)
- Change the password for the `admin` account
- Change the password for the `user` account
- Allow or disable access via Telnet (by default, access via Telnet is enabled)
- Require HTTPS for web access (by default, HTTP is also permitted)

Note

Consult your network security specialist before changing any of these settings.

Note

For best security, Vaddio strongly recommends changing the user and admin passwords from the default. *Using the default passwords leaves the product vulnerable to tampering.*



Disabling Telnet Access

SECURITY PAGE

If your installation does not require camera access via Telnet, you may choose to disable the camera's internal Telnet server.

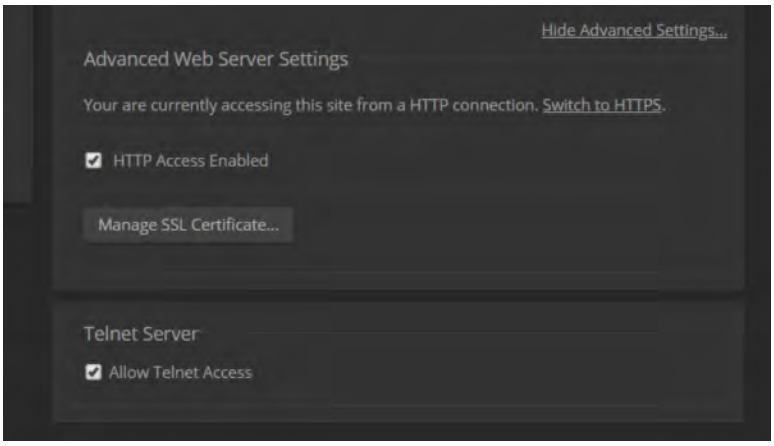
Enabling or Requiring HTTPS

SECURITY PAGE

By default, the web interface uses the HTTP protocol. You can configure the camera's web interface to require a secure HTTPS connection instead.

Caution

Consult your network security professional to manage the camera's SSL certificate. Do not make any changes in the Certificate or Private Key text boxes without guidance from your organization's network security professional.

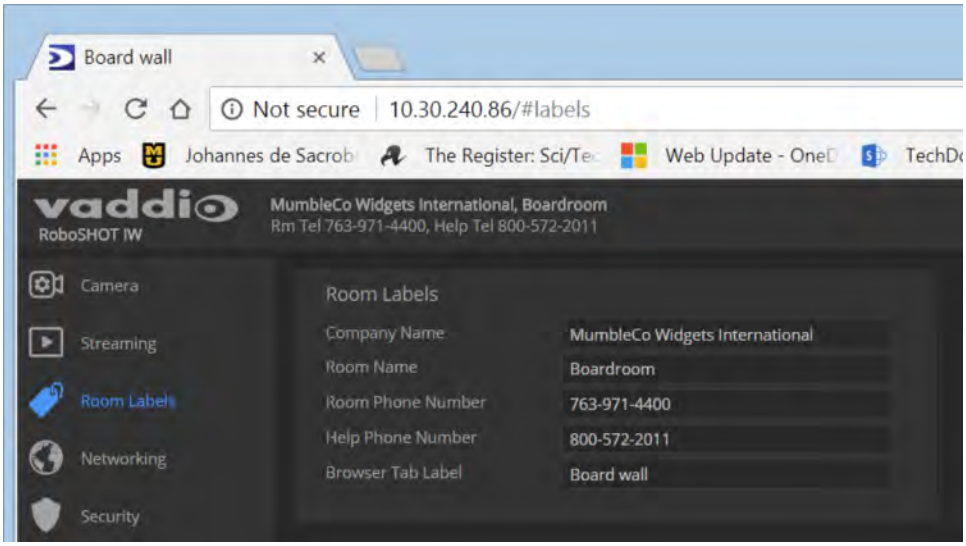


1. Select Show Advanced Settings. The advanced options open.
2. To switch to a secure HTTPS connection, select Switch to HTTPS.
   Note
   Your browser may present messages warning you that your connection is not secure, because the site's certificate is not valid. This happens when HTTPS is used but no SSL certificate is installed.
3. To require HTTPS connections, clear the box labeled HTTP Access Enabled. The camera's web interface will only be available via an HTTPS connection.

Adding Room Information to the Camera's Web Interface

ROOM LABELS PAGE

The information you enter on this page is displayed on every page of the web interface.

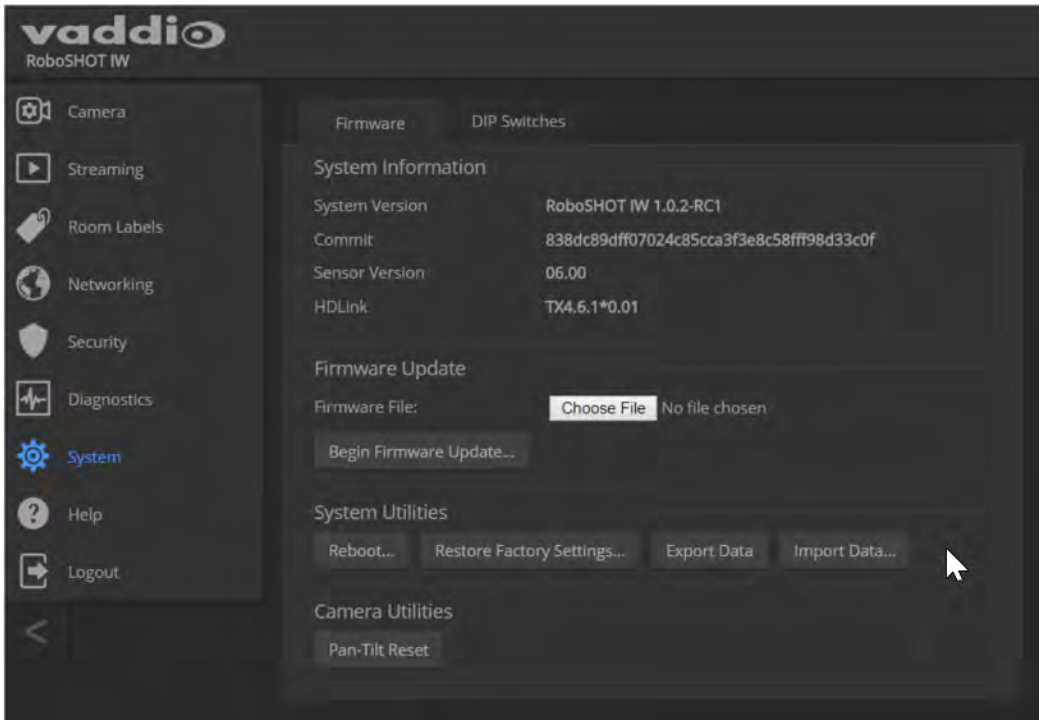


Saving (Exporting) or Restoring (Importing) a Camera Configuration

SYSTEM PAGE, FIRMWARE TAB

You can import a configuration to several cameras if you need to configure them the same way. Cameras must be of the same model, and must have a compatible firmware version installed. Configuration data does not include passwords or unique information such as hostname.

1. Configure the first camera.
2. Export its configuration (Export Data button). The export downloads to your computer as a `.dat` file. The filename is the camera's hostname.
3. Import the configuration to the other cameras (Import Data button in each camera's web interface).



Installing a Camera Firmware Update

SYSTEM PAGE, FIRMWARE TAB

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 and the indicator light on the front of the camera turns yellow. If the update process presents warnings or error messages, read them carefully.

   The camera reboots when the update is complete.

Caution

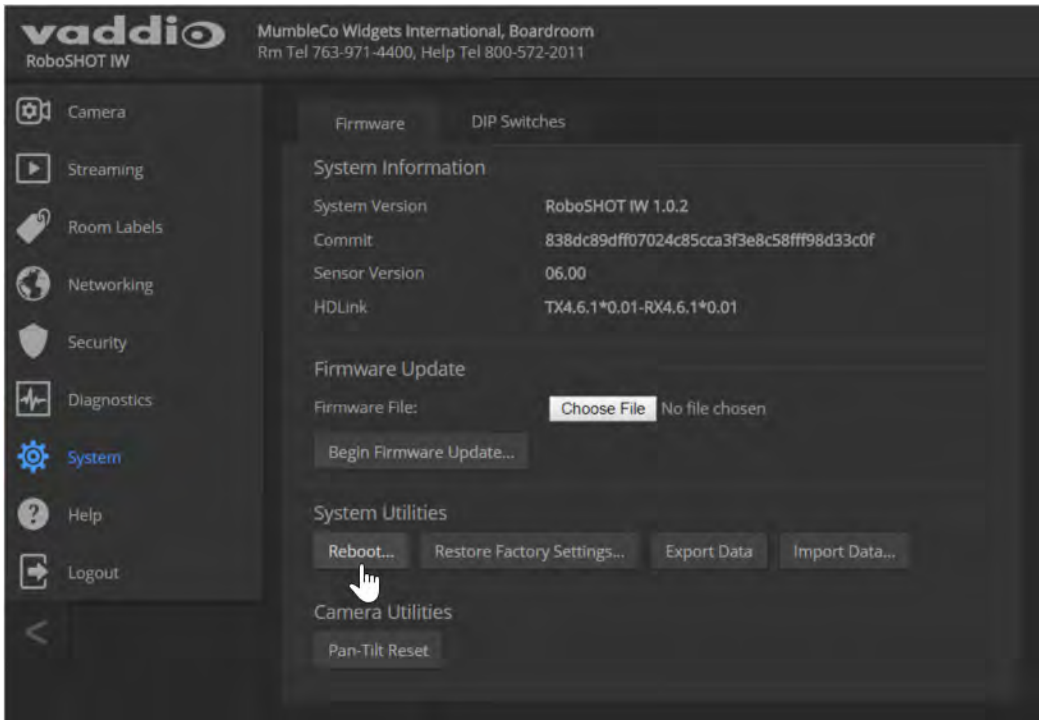
The camera must remain connected to power and to the network during the update. Interrupting the update could make the camera unusable.

Rebooting the Camera

SYSTEM PAGE, FIRMWARE TAB

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

In the System Utilities section, select Reboot.

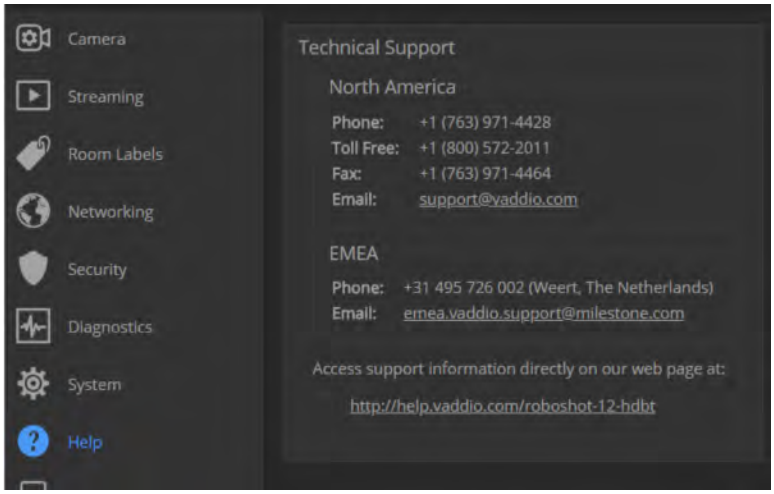


Contacting Vaddio Technical Support

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.

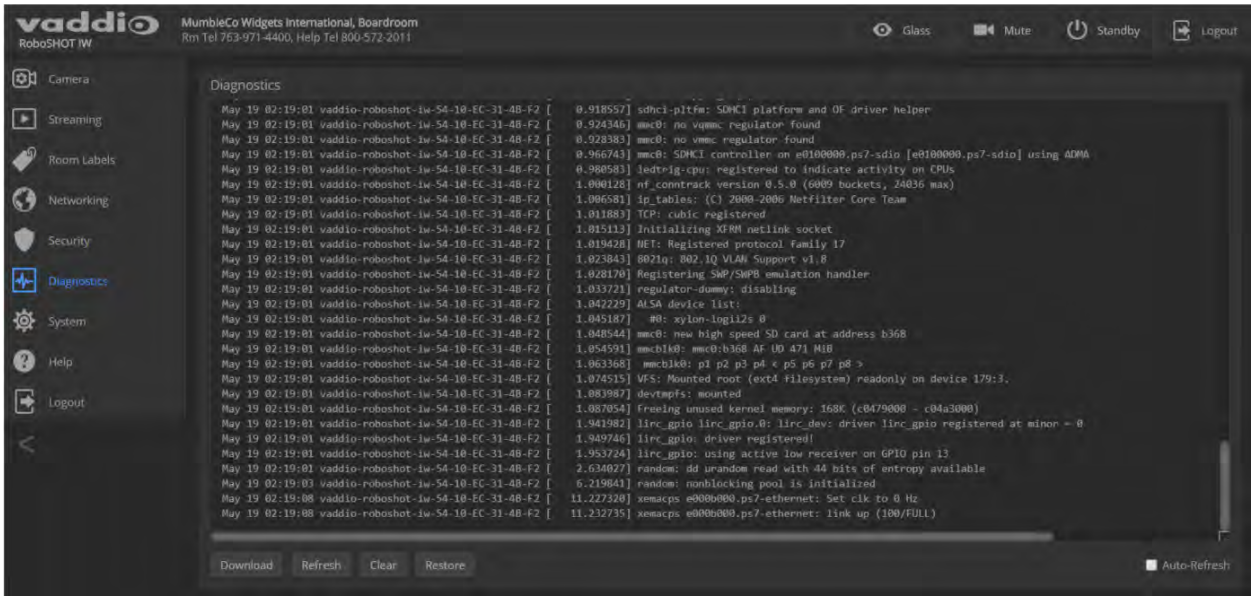
You'll find information for contacting Vaddio Technical Support on the Help page.



Accessing the Diagnostic Logs

DIAGNOSTICS PAGE

When you contact Vaddio technical support, your support representative may ask you to download and email the log file available from the Diagnostics page.



Configuring Camera Behavior

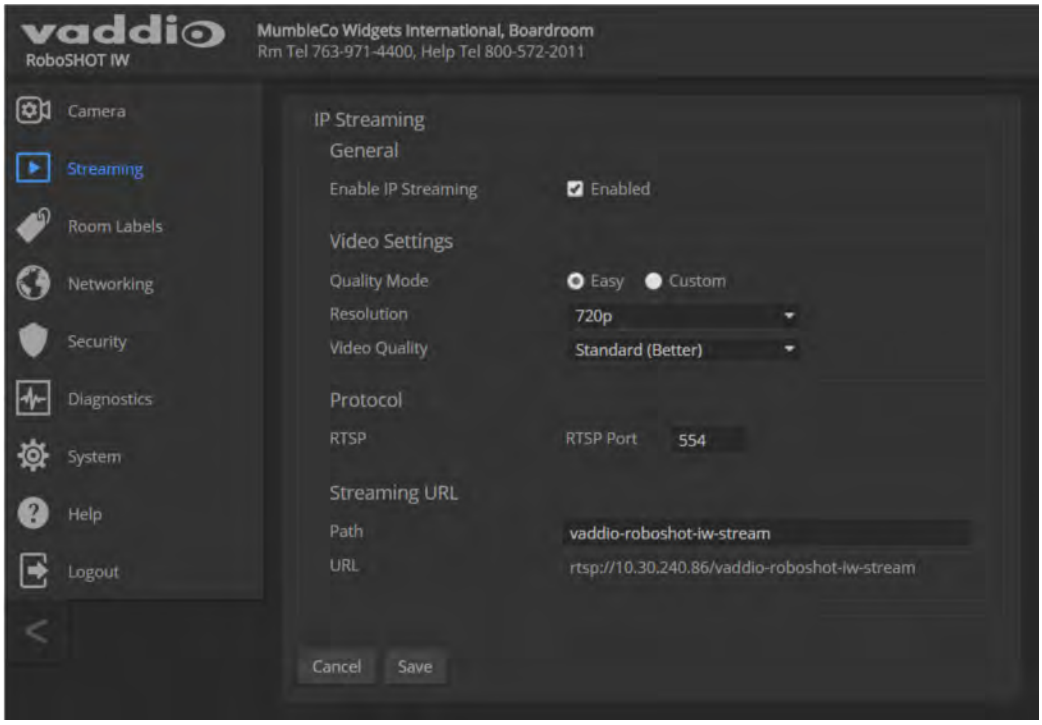
Camera configuration tasks are available on these pages:

- Camera – Color and lighting adjustments, presets (including custom Home), and real-time camera control
- Streaming – Resolution, quality, bandwidth, and more
- System (DIP Switches tab) – Camera identification (Camera 1, 2, or 3 on the remote), status light behavior, codec control mode, and more

Configuring IP Streaming

STREAMING PAGE

IP streaming is enabled by default. Use the Enable IP Streaming checkbox to change this.

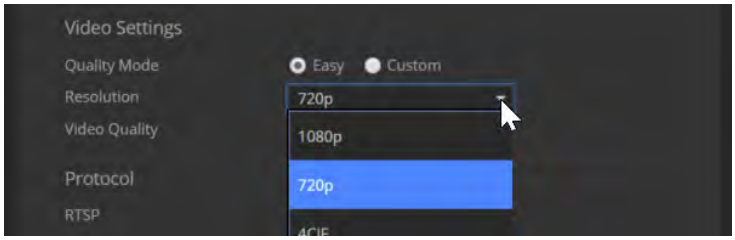


Setting up Streaming in Easy Mode

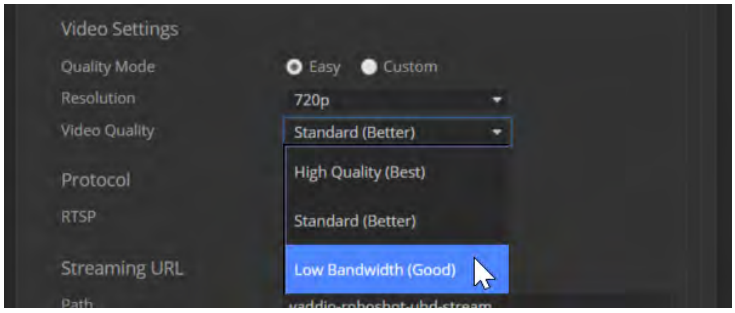
STREAMING PAGE

If you are not sure how to configure streaming settings, start with the Easy mode defaults. This configures most settings automatically.

1. Select Easy quality mode.
2. Select the desired IP streaming resolution. This determines the size of the window in which the stream is displayed.



3. Easy quality mode only: Select Video Quality.



4. Save your changes.

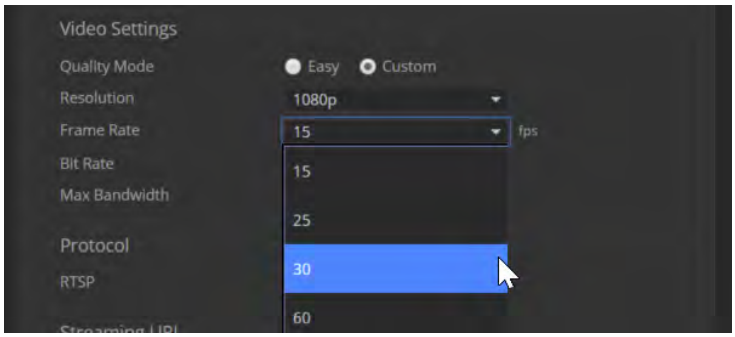
Pro Tip

If streaming video quality is poor, try a lower resolution or bandwidth.

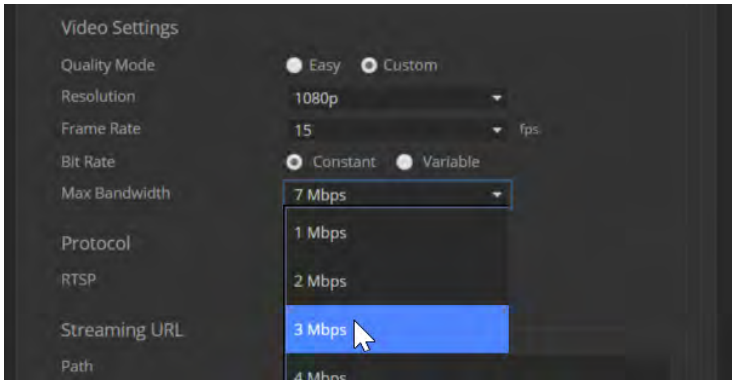
Setting up Streaming in Custom Mode

STREAMING PAGE

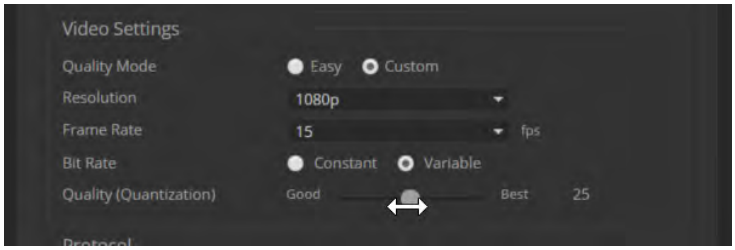
1. Select Custom quality mode.
2. Select the desired resolution.
   Resolutions range from 1080p down to CIF.
3. Select the desired IP streaming frame rate.
   Frame rates are 60/30/25/15.



4. Select Constant or Variable bit rate.
5. Constant bit rate only: Set Max Bandwidth.



6. Variable bit rate only: Set the Quality (Quantization) slider.



7. Save your changes.

Streaming Protocol and URL

STREAMING PAGE

The camera uses the RTSP protocol for H.264 streaming.

RTSP port: Vaddio strongly recommends using the default RTSP port number.

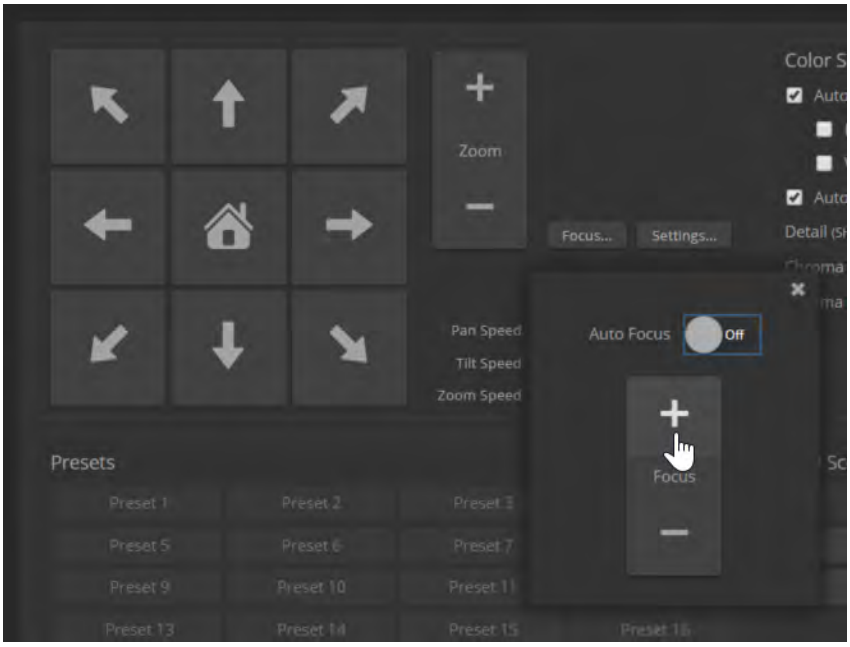
Streaming URL: If necessary, edit the path name to change the portion of the streaming URL that appears after the IP address.

Adjusting the Focus

CAMERA PAGE

Open the Focus control to select Auto-focus, or set manual focus with the + (near) and – (far) buttons. I know you already understand this, but I'm going to say it anyway: The + and – buttons don't work when the Auto Focus box is checked.

Focus control is available to users via the IR Remote Commander, but it is not available on the operator's Controls page of the web interface.



Lighting and Color Adjustments: Setting up Custom CCU Scenes

CAMERA 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 presets for common lighting scenarios (CCU scenes) – Incandescent Hi, Incandescent Lo, Fluorescent Hi, Fluorescent Lo, and Outdoor. The Auto setting allows the camera to determine the appropriate adjustments.

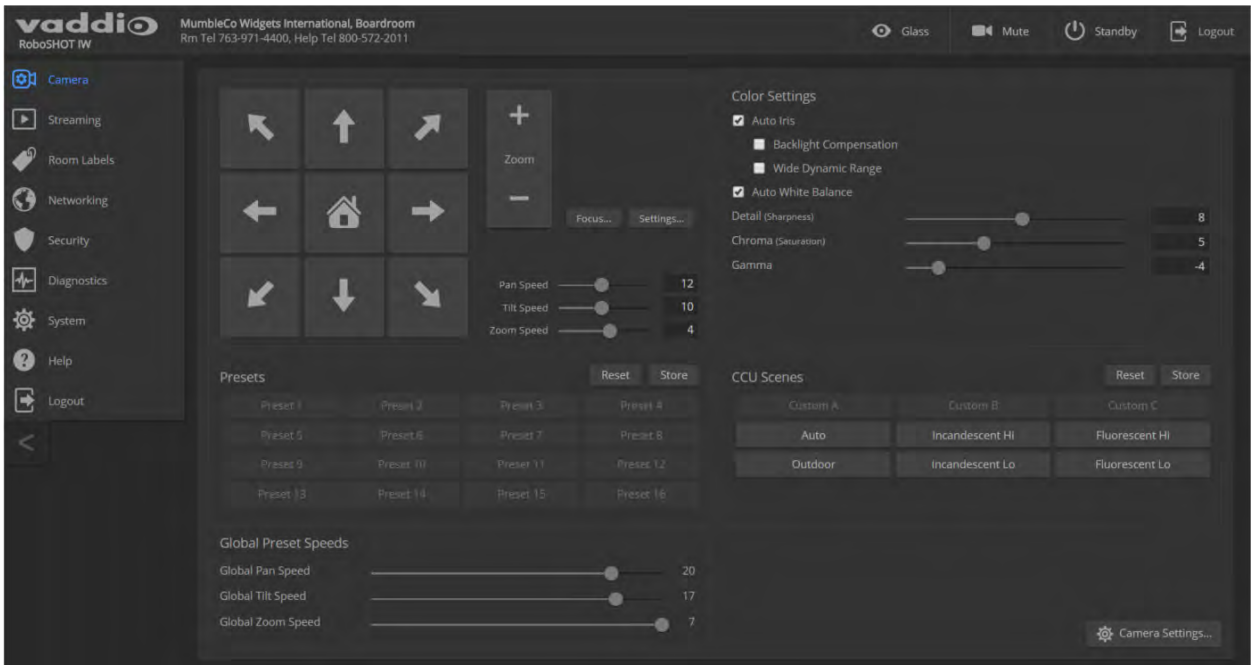
When adjusting for the room lighting, start with a factory-defined CCU scene and adjust as needed. After you customize the camera's color and lighting settings, you can save the adjustments as a custom CCU scene.

To make the initial adjustments:

Click one of the active CCU scene buttons to load a CCU scene into the camera.

Note

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



To set up custom color and lighting settings:

1. Fine-tune the color and lighting as needed using the Color Settings controls.
   - **Auto Iris** allows the camera to compensate automatically for the light level.
   - **Backlight Compensation** (available with Auto Iris) reduces contrast to adjust for bright light behind the main subject of the shot. This setting can't be used with Wide Dynamic Range.
   - **Wide Dynamic Range** (available with Auto Iris) increases the contrast between the brightest and darkest areas. This setting can't be used with Backlight Compensation
   - **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.
   - **Chroma** adjusts the color intensity.
   - **Gamma** adjusts the range between bright areas and shadows.

   The Color and Lighting Cheat Sheet may be helpful.
2. When the scene looks the way you want it to, click Store CCU Scene.
3. In the Store CCU Scene dialog box, select which custom scene to store (Custom A, B, or C) and select Save.
4. Optional: Name the new scene by right-clicking its button. A dialog box opens. Enter the name and save it.

If you make a change that you don't like, start over by selecting and then deselecting Auto White Balance.

Note

If the video looks grainy or "noisy," try a lower Detail setting. As in conversation, too much detail is bad.

Setting the Custom Home Position and Other Preset Shots

CAMERA PAGE

The camera's default home position is 0° pan and 0° tilt; you can set a different home position.

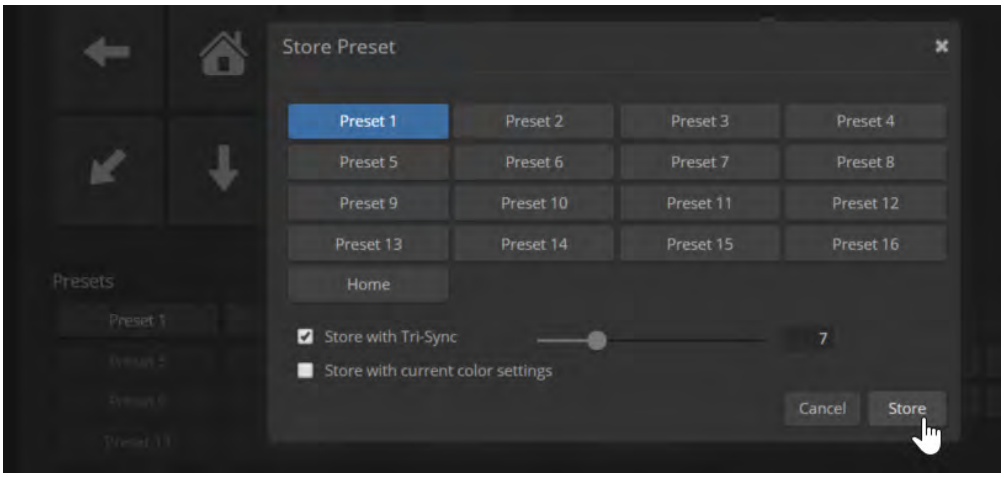
You can also define other presets, for shots that you will want to use repeatedly. Presets may include lighting and color settings and may specify Tri-Synchronous Motion or global preset speed settings.

Note

Storing a preset overwrites any information that was previously associated with that preset. The Store Preset dialog does not show which presets have already been defined. Vaddio recommends renaming presets when you store them.

To store a preset or custom home position:

1. Set up the shot.
2. Select Store to open the Store Preset dialog.
3. Select the preset to define, then save it.



Renaming Presets and Custom CCU Scenes

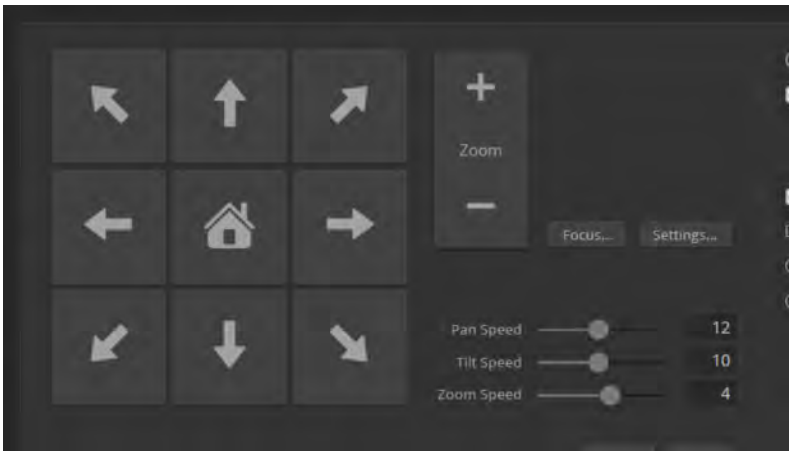
You can rename presets and custom scenes. The process is the same for both. Right-click the button for the custom scene or preset, and edit the label.

Setting the Speed for Manual Movements

CAMERA PAGE

The Pan Speed, Tilt Speed, and Zoom Speed sliders control how fast the camera moves in response to the direction and zoom controls on the IR remote and in the web interface.

Use the arrow and Zoom controls to check camera speed, and use the Speed sliders to adjust as needed.

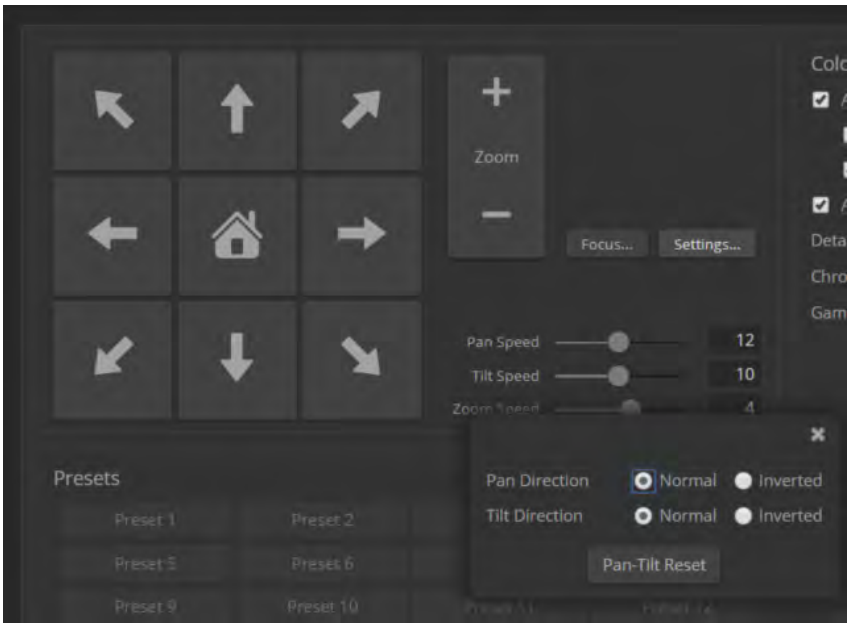


Setting the Direction for Camera Movements

CAMERA PAGE

By default, the arrow buttons on the remote and in the web interface show the direction you would see the camera move if you were looking the same direction as the camera. If a person facing the camera is controlling it with the remote, using the right arrow pans the camera to the person's left.

To make the arrow buttons indicate camera movement from the perspective of a person facing the camera, open the Settings control and invert the pan direction.



Software Switch Settings

SYSTEM PAGE, DIP SWITCHES TAB

The DIP Switches tab of the System page provides access to these features:

- **Glass Mode** (smart-glass enclosure only) – In Auto mode, the glass is clear whenever the camera is sending video. In Manual mode, the Glass control is available on all pages of the web interface.
- **Camera ID (IR Settings)** – The IR Remote Commander can control up to three cameras in the same room with different IR frequencies. Use **IR Settings** switches 1 and 2 to select the frequency to identify the camera as camera 1 (both switches up), camera 2 (switch 1 down, switch 2 up), or camera 3 (switch 1 up, switch 2 down).
- **IR On/IR Off** – Enable/disable the camera's IR sensors. The camera does not respond to the IR remote if IR is off.
- **Image Flip** – If mounting the camera upside-down, set IMAGE FLIP ON.
- **Super Wide mode** – Provides a wider horizontal field of view and greater zoom. Some distortion may be present.
- **Baud Rate** – RS-232 serial communication rate (9600 bps or 38400 bps), for communication with a controller via a OneLINK device.
- **HDMI color** – YCbCr (default) or sRGB.
- **LED on/off** – When the LED is set to OFF, it remains off even when the camera is sending video.
- **Enable LED in Standby** – When the LED is not enabled in standby mode, it is on when the camera is sending video or updating firmware; but off when the camera is in standby mode.
- **Standard Control Mode/Codec Control Mode** – Select Codec Control Mode if using the camera with a third-party codec.
- **Video resolution** – Select the desired video output resolution from the table. The pointer on the soft rotary switch matches the resolution you select.

Operating the Camera from the Web Interface

CONTROLS PAGE

The Controls page provides most of the same controls as the IR Remote Commander. If guest access is disabled, you will need to log in as **`user`** to access these controls.

- Move to camera presets, if any have been stored
- Pan, tilt, zoom, or return it to its home position
- Put the camera in standby or bring it back to the ready state
- Select a custom lighting adjustment, if any have been stored

Since the web interface is specific to the camera you are working with, it does not offer camera selection.

Switching the Camera Off or On (Standby)

Use the Standby button to switch between low-power (standby) and ready states. On entering standby mode, the camera moves to its standby position and stops sending video.

If the camera has a smart glass cover, the glass is frosted when the camera is in standby mode.

Stop or Resume Sending Video (Mute)

Use the Mute button to stop sending live video without putting the camera in standby mode. When the video is muted, the camera sends a blue or black screen. If the camera is part of a conferencing system, this does not mute the audio.

If the camera has a smart glass cover, the glass remains clear when video is muted.

Moving the Camera

Use the arrow buttons for camera pan and tilt. The center button moves the camera to the home position.

Zooming In or Out

Use the Zoom + button to zoom in and the Zoom - button to zoom out.

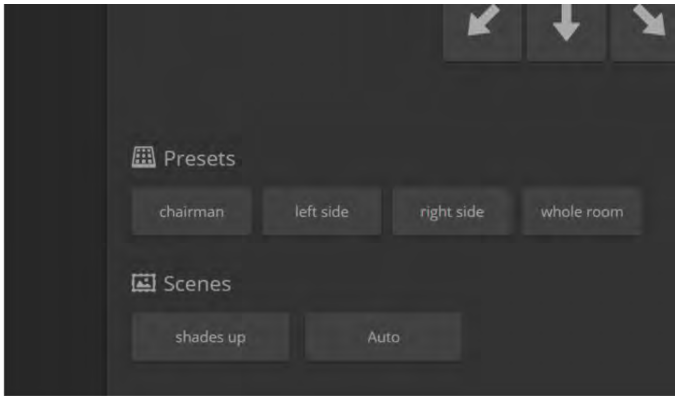
Moving the Camera to a Preset Position

Presets are camera shots that have been stored. They include pan, tilt, and zoom information, and may include color and speed information as well. If no presets are defined, the Controls page does not present the Presets section.

Use the Preset buttons to move the camera to any of its preset positions.

Adjusting the Color and Lighting

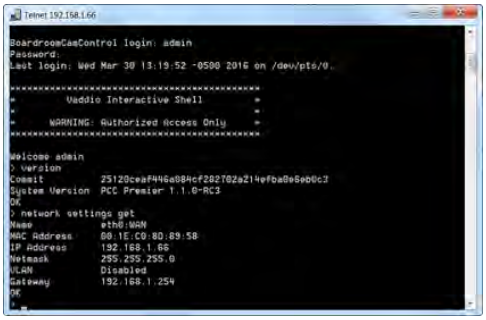
If any color and lighting adjustments (CCU scenes) have been saved, they are available in the Scenes area, along with the Auto setting. In most cases, the Auto setting is appropriate. This setting allows the camera to adjust to current conditions automatically.



Telnet Command Reference

Vaddio's Telnet command protocol is a high-level, text-based command line interface supported via Telnet session to the camera. Network connectivity and a Telnet client are required; the default Telnet port is 23. Telnet sessions require the administrator account login.

The command application protocol interface is intended to allow external devices such as AMX or Crestron to control the camera. The protocol is based upon ASCII format following the VT100 terminal emulation standard and uses an intuitive text command nomenclature for ease of use.



General format usage follows a get/set structure. Usage examples for each type are:

Set Example

COMMAND: > **`camera zoom in`**

RESPONSE: > `OK`

Get Example

COMMAND: > **`camera ccu get iris`**

RESPONSE: > `iris 11`

Syntax Error Example

COMMAND: > **`camera preset 1`**

RESPONSE: > `Syntax error: Unknown or incomplete command`

Using a question mark as a command parameter will bring up a list of available commands for the menu you are in.

Things to know about control via Telnet session:

- Command lines are terminated with a carriage return.
- All ASCII characters (including carriage returns) are echoed to the terminal program and appended with the VT100 string ESC[J (hex 1B 5B 4A), which most terminal programs automatically strip.
- CTRL-5 Clears the current serial buffer on the device.

Typographical conventions:

- { x | y | z} – Choose x, y, or z. Example: camera led { on | off | toggle }
- <variable> – Substitute the desired value here. Example: camera ccu get <param>
- < x - y > – Valid range of values is from x through y. Example: camera ccu set detail <0..15>
- [parameter] – Parameter is not required. Example: camera pan left [<speed>]

camera home

Moves the camera to its home position.

Synopsis	camera home
Example	>**camera home** OK >

camera pan

Moves the camera horizontally.

Synopsis	camera pan { left [<speed>] | right [<speed>] | stop | get | set }	
Options	`left`	Moves the camera left.
	`right`	Moves the camera right.
	`speed` <1 - 24>	Optional: Specifies the pan speed as an integer (1 to 24). Default speed is 12.
	`stop`	Stops the camera's horizontal movement.
	`get`	Returns the camera's current pan position.
	`set` <position>	Sets the camera's absolute pan position in degrees, as a floating point value between approximately -150.00 and 150.00. This is the minimum range. Individual cameras may have an additional degree or two of travel before they reach their physical limits. If the value is out of range, the camera returns an error message and no motion occurs.
Examples	>**camera pan left** OK > Pans the camera left at the default speed. >**camera pan right 20** OK > Pans the camera right using a speed of 20. >**camera pan stop** OK > Stops the camera's horizontal motion.	

camera tilt

Moves the camera vertically.

Synopsis	camera tilt{ up [<speed>] | down [<speed>] | stop }	
Options	`up`	Moves the camera up.
	`down`	Moves the camera down.
	`speed` <1 - 20>	Optional: Specifies the tilt speed as an integer (1 to 20). Default speed is 10.
	`stop`	Stops the camera's vertical movement.
	`get`	Returns the camera's current tilt position.
	`set` <position>	Sets the camera's absolute tilt position in degrees, as a floating point value between approximately -30.00 and 90.00. This is the minimum range; individual cameras may have an additional degree or two of travel before they reach their physical limits. If the value is out of range, the camera returns an error message and no motion occurs.

Examples	`>camera tilt up`
	`OK`
	`>`
	Tilts the camera up at the default speed.
	`>camera tilt down 20`
	`OK`
	`>`
	Tilts the camera down using a speed of 20.
	`>camera tilt stop`
	`OK`
	`>`
	Stops the camera's vertical motion.	

camera zoom

Zooms the camera in toward the subject or out away from the subject.

Synopsis	camera zoom { in [<speed>] | out [<speed>] | stop | get | set}	
Options	`in`	Moves the camera in.
	`out`	Moves the camera out.
	`speed` [1 - 7]	Optional: Specifies the zoom speed as an integer (1 to 7). Default speed is 3.
	`stop`	Stops the camera's zoom movement.
	`get`	Returns the camera's current zoom level.
	`set` <1..n>	Sets the zoom level as an integer value. The value of **n** (maximum zoom) depends on the camera's capabilities; for example the range is 1 – 12 for a 12x camera.
Examples	>**camera zoom in** OK > Zooms the camera in at the default speed. >**camera zoom out 7** OK > Zooms the camera out using a speed of 7. >**camera zoom stop** OK > Stops the camera's zoom motion. >**camera zoom set 14** OK > Sets the camera's zoom level to 14x. >**camera zoom get** 14 OK > Returns the camera's current zoom level.	

camera focus

Changes the camera focus.

Synopsis	camera focus { near [<speed>] | far [<speed> | stop | mode {get | auto | manual}}	
Options	`near`	Brings the focus nearer to the camera. Can only be used when camera is in manual mode.
	`far`	Moves the focus farther from the camera. Can only be used when camera is in manual mode.
	`speed` <1 - 8>	Optional: integer (1 to 8) specifies the focus speed.
	`mode {get | auto | manual}`	Returns the current focus mode, or specifies automatic or manual focus.
	`stop`	Stops the camera's focus movement.

Examples 	**`camera focus near`**
	`OK`
	`>`
	Brings the focus near at the default speed.
	`camera focus far 7`
	`OK`
	`>`
	Moves the focus farther from the camera at a speed of 7.
	`camera focus mode get`
	`auto_focus:  on`
	`OK`
	`>`
	Returns the current focus mode.	

camera preset

Moves the camera to the specified preset, or stores the current camera position and (optionally) CCU information.

Note

This command corresponds to the CAM_Memory commands in the RS-232 command set.

Synopsis	camera preset { recall | store} <1 - 16> [save-ccu]	
Options	`recall` <1 - 16>	Moves the camera to the specified preset. If CCU information was saved with the preset, the camera switches to the CCU setting associated with the preset.
	`store` <1 - 16>	Stores the current camera position as the specified preset.
	`save-ccu`	Optional: Saves the current CCU settings as part of the preset. If not specified, the last color settings are used when recalled.

Examples	`>camera preset recall 3`
	`OK`
	`>`
	Moves the camera to preset 3.
	`>camera preset store 1`
	`OK`
	`>`
	Saves the camera's current position as preset 1.
	`>camera preset store 2 save-ccu`
	`OK`
	`>`
	Stores the camera's current position as preset 2. The camera applies the current CCU settings when it is recalled to this preset.	

camera ccu get

Returns CCU (lighting and color) information.

<table>
<tr><td>Synopsis</td><td colspan="2">camera ccu get <param></td></tr>
<tr><td rowspan="12">Options
  </td><td>all</td><td>Returns all current CCU settings.</td></tr>
<tr><td>auto_white_balance</td><td>Returns the current state of the auto white balance setting (on or off).</td></tr>
<tr><td>red_gain</td><td>Returns red gain as an integer (0 to 255).</td></tr>
<tr><td>blue_gain</td><td>Returns blue gain as an integer (0 to 255).</td></tr>
<tr><td>backlight_compensation</td><td>Returns the current state for backlight compensation (on or off).</td></tr>
<tr><td>auto_iris</td><td>Returns the current auto-iris state (on or off).</td></tr>
<tr><td>iris</td><td>Returns the iris value as an integer (0 to 11).</td></tr>
<tr><td>gain</td><td>Returns gain as an integer (0 to 11).</td></tr>
<tr><td>detail</td><td>Returns detail as an integer (0 to 15).</td></tr>
<tr><td>chroma</td><td>Returns chroma as an integer (0 to 14).</td></tr>
<tr><td>wide_dynamic_range</td><td>Returns the current state for Wide Dynamic Range (on or off).</td></tr>
<tr><td>Examples</td><td colspan="2">
<pre>>camera ccu get iris
iris   6
OK
></pre>
Returns the current iris value.
<pre>>camera ccu get red_gain
red_gain   201
OK
></pre>
Returns the current red gain value.
<pre>>camera ccu get all
auto_iris   on
auto_white_balance   on
backlight_compensation off
blue_gain   193
chroma   2
detail   8
gain   3
iris   11
red_gain   201
wide_dynamic_range   off

OK
></pre>
Returns all current CCU settings.
</td></tr>
</table>

camera ccu set

Sets the specified CCU (lighting and color) information.

Synopsis	camera ccu set <param> <value>	
Options 	`auto_white_balance` {on | off}	Sets the current state of the auto white balance setting (on or off). Auto white balance overrides red gain and blue gain manual settings.
	`red_gain` <0 - 255>	Sets the red gain value as an integer (0 to 255). Can only be used when auto white balance is off.
	`blue_gain` <0 - 255>	Sets the blue gain value as an integer (0 to 255). Can only be used when auto white balance is off.
	`backlight_compensation` {on | off}	Sets the current state of the backlight compensation setting (on or off). Can only be used when wide dynamic range mode is off.
	`iris` <0 - 11>	Sets the iris value as an integer (0 to 11). Can only be used when auto-iris is off.
	`auto_iris` {on | off}	Sets the auto-iris state (on or off). Auto-iris disables manual iris and gain when it is on.
	`gain` <0 - 11>	Sets gain value as an integer (0 to 11). Can only be used when auto-iris is off.
	`detail` <0 - 15>	Sets the detail value as an integer (0 to 15).
	`chroma` <0 - 14>	Sets the chroma value as an integer (0 to 14).
	`wide_dynamic_range` {on | off}	Sets Wide Dynamic Range mode on or off. Can only be used when backlight compensation is off.
Examples	>**camera ccu set auto_iris off** OK > Turns off auto-iris mode, returning the camera to manual iris control. >**camera ccu set red_gain 10** OK > Sets the red gain value to 10.	

camera ccu scene

Stores the current CCU scene or recalls the specified ccu scene.

Synopsis	camera ccu scene {recall {factory <1 - 6> | custom <1 - 3>} | store custom <1 - 3>}	
Options	`recall factory` <1 - 6> `recall custom` <1 - 3>	Recalls the camera to the specified scene (factory 1 - 6 or custom 1 - 3) .
	`store custom` <1 - 3>	Saves the current scene as the specified custom scene.
Examples	>**camera ccu scene recall factory 2** OK > Sets the camera to use factory CCU scene 2. >**camera ccu scene store custom 1** OK > Saves the current CCU scene as custom CCU scene 1.	

camera glass mode

Set or change the control mode of the smart glass cover – auto or manual. This command has no effect if the camera has safety glass rather than smart glass.

Synopsis	camera glass mode { get | set { auto | manual } | toggle }	
Options	`get`	Returns the current smart glass mode (`auto` or `manual`).
	`set`	Sets the current smart glass mode (`auto` or `manual`).
	`auto`	In auto mode, glass control is not available to the operator. The smart glass cover is clear when the camera is sending video and opaque (frosted) when the camera is in standby mode.
	`manual`	In manual mode, the Glass control is available in the web interface and the **`camera glass state set`** and **`camera glass state toggle`** commands can be used.
	`toggle`	Changes the current smart glass mode (auto if it was manual, or manual if it was auto).
Examples	>**camera led off** OK > Disables the indicator light. You cannot tell by looking at the camera whether it is sending video. >**camera led get** led: on OK > Returns the current state of the indicator light.	

camera glass state

Set or change the state of the smart glass cover. This command has no effect if the camera has safety glass rather than smart glass.

Notes

The camera glass must be in manual mode (`camera glass mode` command) to use the set and toggle subcommands.

Unlike `video mute`, this command does not keep the camera from sending video.

Synopsis	camera glass state { get | set { clear | frosted} | toggle }	
Options	`get`	Returns the current state of the smart glass cover (`clear` or `frosted`).
	`set`	Set the state of the smart glass cover (`clear` or `frosted`).
	`clear`	Specifies that the smart glass cover is transparent.
	`frosted`	Specifies that the smart glass cover is opaque.
	`toggle`	Changes the state of the smart glass cover (clear if it was frosted, or frosted if it was clear). **`camera glass state toggle`** has the same effect as selecting the Glass control in the web interface.

Examples	`>`**`camera glass state set frosted`**
	`OK`
	`>`
	Makes the smart glass cover opaque.
	`>`**`camera glass state get`**
	`frosted`
	`OK`
	`>`
	Returns the current state of the smart glass cover.	

camera resolution

Gets or sets the camera's video output resolution.

Notes

Video streams may be at lower resolutions than the configured resolution, but cannot be at higher resolutions.

Changing the resolution interrupts the IP stream. If you are viewing the IP stream, you will need to reopen the stream on the media player.

Synopsis	camera resolution { get | set <resolution> }	
Options 	`get`	Returns the resolution and frame rate currently in use.
	`set`	Sets the resolution and frame rate.
	resolutions	1080p/60 1080p/59.94 1080p/50 1080p/30 1080p/25 1080i/60 1080i/59.94 1080i/50 720p/60 720p/59.94 720p/50
Examples	>**camera resolution get** "720p/59.94" > Returns the camera's current resolution and frame rate. >**camera resolution set 1080p/30** OK > Sets the camera's resolution and frame rate to 1080p/30.	

camera led

Set or change the behavior of the indicator light.

Synopsis	camera led { get | off | on }	
Options	`get`	Returns the indicator light's current state (on or off).
	`off`	Disables the indicator light.
	`on`	Enables the indicator light.

Examples	`>camera led off`
	`OK`
	`>`
	Disables the indicator light. You cannot tell by looking at the camera whether it is sending video.
	`>camera led get`
	`led:  on`
	`OK`
	`>`
	Returns the current state of the indicator light.	

camera standby

Set or change camera standby status.

Synopsis	camera standby { get | off | on | toggle}	
Options	`get`	Returns the camera's current standby state.
	`off`	Brings the camera out of standby (low power) mode.
	`on`	Stops video and puts the camera in standby mode.
	`toggle`	Changes the camera's standby state - if it was not in standby mode, it enters standby; if it was in standby mode, it "wakes up."

Examples 	`>camera standby off`
	`OK`
	`>`
	Brings the camera out of standby mode.
	`>camera standby get`
	`standby:  on`
	`OK`
	`>`
	Returns the current standby state.	

camera recalibrate

Recalibrates the pan and tilt motors. This is typically done in response to a motor fault indication or error message.

As the camera may be jostled during installation, you may wish to recalibrate the motors before putting the camera into service. You can also do this via the web interface; the System page includes a Pan-Tilt Reset button that recalibrates the motors.

Synopsis	camera recalibrate
Example	>**camera recalibrate** OK >

streaming settings get

Retrieves IP streaming settings. These are configured in the web interface.

Synopsis	streaming settings get	
Parameters	`IP Custom_Frame_Rate`	Frame rate selected in Custom quality mode.
	`IP Custom_Resolution`	Resolution selected in Custom quality mode.
	`IP Enabled`	`True` if IP streaming is enabled, `False` if it is not.
	`IP Port`	The RTSP port number used for IP streaming. Default is 554.
	`IP Preset_Quality`	Video quality selected in Easy video quality mode.
	`IP Preset_Resolution`	Resolution selected in Easy video quality mode.
	`IP Protocol`	The IP streaming protocol in use.
	`IP URL`	The URL where the stream is available.
	`IP Video_Mode`	Video quality mode selected (preset or custom)

Example	>**streaming settings get**
	`IP Custom_Frame_Rate 15`
	`IP Custom_Resolution 1080p`
	`IP Enabled true`
	`IP Port 554`
	`IP Preset_Quality Standard (Better)`
	`IP Preset_Resolution 720p`
	`IP Protocol RTSP`
	`IP URL vaddio-roboshot-iw-stream`
	`IP Video_Mode preset`
	Returns the current streaming settings.	

network settings get

Returns the current network settings for MAC address, IP address, subnet mask, and gateway.

Synopsis	network settings get
Example	> **network settings get** Name eth0:WAN MAC Address 00:1E:C0:F6:CA:7B IP Address 192.168.1.67 Netmask 255.255.255.0 VLAN Disabled Gateway 192.168.1.254 OK >

network ping

Sends an ICMP ECHO_REQUEST to the specified IP address or hostname.

Synopsis	network ping [count <count>] [size <size>] <destination-ip>	
Options	<count>	The number of ECHO_REQUEST packets to send. Default is five packets.
	<size>	The size of each ECHO_REQUEST packet. Default is 56 bytes.
	<destination-ip>	The IP address where the ECHO_REQUEST packets will be sent.
Examples	>**network ping 192.168.1.66** PING 192.168.1.66 (192.168.1.66): 56 data bytes 64 bytes from 192.168.1.66: seq=0 ttl=64 time=0.476 ms 64 bytes from 192.168.1.66: seq=1 ttl=64 time=0.416 ms 64 bytes from 192.168.1.66: seq=2 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=3 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=4 ttl=64 time=3.112 ms --- 192.168.1.66 ping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss round-trip min/avg/max = 0.410/0.964/3.112 ms > Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.	
	>**network ping count 10 size 100 192.168.1.1** Sends 10 ECHO_REQUEST packets of 100 bytes each to the host at 192.168.1.1. The command returns data in the same form as above.	

system reboot

Reboots the system either immediately or after the specified delay. Note that a reboot is required when resetting the system to factory defaults (system factory-reset).

Synopsis	system reboot [<seconds>]	
Options	<seconds>	The number of seconds to delay the reboot.
Examples	Reboots the system immediately. `>system reboot 30` Reboots the system in 30 seconds. The response is in the same form; the system message appears at the end of the delay.	

system factory-reset

Gets or sets the factory reset status. When the factory reset status is on, the system resets to factory defaults on reboot.

Synopsis	system factory-reset { get | on | off}	
Options	`get`	Returns the camera's current factory reset status.
	`on`	Enables factory reset on reboot.
	`off`	Disables factory reset on reboot.

Examples	`>system factory-reset get`
	`factory-reset (software):  off`
	`factory-reset (hardware):  off`
	`OK`
	`>`
	Returns the factory reset status.
	This evaluates the most recent `system factory-reset` on or off command, if one has been received, then reads the rear panel DIP switches and returns the status `on` if they are all in the down position.
	`>system factory-reset on`
	`factory-reset (software):  on`
	`factory-reset (hardware):  off`
	`OK`
	`>`
	Enables factory reset upon reboot.
	Note
	This command does not initiate a factory reset. The factory reset takes place on the next reboot.	

version

Returns the current firmware version.

Synopsis	version
Example	> **version** Commit: 206259519382dee2dee2deedee2dee9605f4e40d HDLink: TX4.6.1*0.01-RX4.6.1*0.01 PSoC Version: 1.2 Sensor Version: 06.00 System Version: RoboSHOT IW 1.0.1 OK Returns current firmware version information.

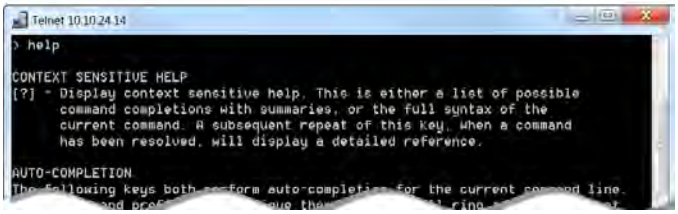
history

Returns the most recently issued commands from the current Telnet session. Since many of the programs read user input a line at a time, the command history is used to keep track of these lines and recall historic information.

Synopsis	history <limit>	
Options	<limit>	Integer value specifying the maximum number of commands to return.
Examples	**history** Displays the current command buffer. **history 5** Sets the history command buffer to remember the last 5 unique entries.	
Additional information 	You can navigate the command history using the up and down arrow keys. This command supports the expansion functionality from which previous commands can be recalled from within a single session. History expansion is performed immediately after a complete line is read. Examples of history expansion: *** !!** Substitute the last command line. *** !4** Substitute the 4th command line (absolute as per 'history' command) *** !-3** Substitute the command line entered 3 lines before (relative)	

help

Displays an overview of the CLI syntax.

Synopsis	help
Example 	**help** 

exit

Ends the command session and then closes the socket.

Synopsis	exit
Example	**exit**

RS-232 Serial Command Reference

The Vaddio RS-232 Serial Control Protocol is available if the camera is installed with a OneLINK device. It 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.

Be sure the camera is set to the same baud rate as the controller or other device originating the commands. See Software Switch Settings.

Camera Movement, 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-4000h)
	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	
	Corresponds to `camera zoom` in Telnet API		
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	
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	Auto/Manual	8x 01 04 08 10 FF	
	One Push Trigger	8x 01 04 18 01 FF	
	Near Limit	8x 01 04 28 0p 0q 0r 0s FF	
	Corresponds to `camera focus` in Telnet API		

Command Set	Command	Command Packet	Comments
Pan-TiltDrive	Up	8x 01 06 01 vv ww 03 01 FF	vv= Pan speed (01h-18h) ww=Tilt speed (01h-14h)
	Down	8x 01 06 01 vv ww 03 02 FF	
	Left	8x 01 06 01 vv ww 01 03 FF	
	Right	8x 01 06 01 vv ww 02 03 FF	
	UpLeft	8x 01 06 01 vv ww 01 01 FF	
	UpRight	8x 01 06 01 vv ww 02 01 FF	
	DownLeft	8x 01 06 01 vv ww 01 02 FF	
	DownRight	8x 01 06 01 vv ww 02 02 FF	
	Stop	8x 01 06 01 vv ww 03 03 FF	
	Home	8x 01 06 04 FF	Returns the camera to its default position
Pan-TiltDrive	Absolute Position	8x 01 06 02 vv ww 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	0Y0Y0Y0Y = Pan position ( ) 0Z0Z0Z0Z = Tilt position ( )
Pan-Tilt-ZoomDrive	Up	8x 01 06 0A vv ww rr 03 01 03 FF	vv= Pan speed (01h-18h) ww=Tilt speed (01h-14h) rr=Zoom speed (00h - 07h)
	Down	8x 01 06 0A vv ww rr 03 02 03 FF	
	Left	8x 01 06 0A vv ww rr 01 03 03 FF	
	Right	8x 01 06 0A vv ww rr 02 03 03 FF	
	In	8x 01 06 0A vv ww rr 03 03 01 FF	
	Out	8x 01 06 0A vv ww rr 03 03 02 FF	
	Stop	8x 01 06 0A vv ww rr 03 03 03 FF	
	Home	8x 01 06 0C FF	Returns the camera to the default position and zoom
Pan-Tilt-ZoomDrive	Absolute Position	8x 01 06 0B vv ww 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z 0R 0R 0R 0R FF	0Y0Y0Y0Y = Pan position (90E2h-6BD8h) 0Z0Z0Z0Z = Tilt position (EB99h-3D59h) 0R0R0R0R = Zoom position (0h-4000h) 0R0R0R0R = Zoom position

Command Set	Command	Command Packet	Comments
CAM_Memory	Reset	8x 01 04 3F 00 0p FF	Corresponds to `camera preset` in Telnet API. p= preset number(0h-0Fh) qr= Speed(01h-18h)
	Set	8x 01 04 3F 01 0p FF	
	Set with 'scene'	8x 01 04 3F 21 0p FF	
	Recall	8x 01 04 3F 02 0p FF	
	Corresponds to `camera preset` in Telnet API.		
CAM_PTZ_ PresetSpeed		8x 01 7e 01 0b pp qq rr FF	pp: pan speed (01h-18h) qq: tilt speed (01h-14h) rr: zoom speed (0h-07h)

Movement, Zoom, and Focus Inquiry Commands

Inquiry Command	Command	Response Packet	Comments
Pan-TiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww= Pan position zzzz=Tilt Position
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
	Corresponds to `camera focus mode get` in Telnet API.		
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) q: mode (00-std, 10-std /w ccu) 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)
CAM_PTZ_PresetSpeedInq	8x 09 7E 01 0B FF	y0 50 p q r FF	p:pan speed (01h-18h) q:tilt speed (01h-14h) r:zoom speed (0h-07h)

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
	Corresponds to `camera ccu set auto_white_balance` in Telnet API.		
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	
	Corresponds to `camera ccu set red_gain` in Telnet API.		
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	
	Corresponds to `camera ccu set blue_gain` in Telnet API.		
CAM_AE	Auto	8x 01 04 39 00 FF	Auto exposure mode
	Manual	8x 01 04 39 03 FF	Manual control mode
	Corresponds to `camera ccu set auto_iris` in Telnet API.		
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter setting pq = shutter position (00h – 15h) See "Shutter Speed Values (CAM_Shutter)" on page 61
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris setting pq = iris position (0h, 05h-11h) See "Iris Values (CAM_Iris)" on page 62
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	
	Corresponds to `camera ccu set iris` in Telnet API.		
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)" on page 62 and "Shutter Speed Values (CAM_Shutter)" on page 61
	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	
	Corresponds to `camera ccu set gain` in Telnet API.		

Command Set	Command	Command Packet	Comments
CAM_BackLight	On	8x 01 04 33 02 FF	Backlight compensation On/Off
	Off	8x 01 04 33 03 FF	
	Corresponds to `camera ccu set backlight_compensation` in Telnet API.		
CAM_WD	On	8x 01 04 3D 02 FF	Wide Dynamic Range On
	Off	8x 01 04 3D 03 FF	Wide Dynamic Range Off
	Corresponds to `camera ccu set wide_dynamic_range` in Telnet API.		
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	
	Corresponds to `camera ccu set detail` in Telnet API.		
CAM_Chroma	Direct	8x 01 7E 55 00 00 0p 0q FF	pq: 00h – 14h
	Corresponds to `camera ccu set chroma` in Telnet API.		
CAM_ GammaOffset	Direct	8x 01 04 1E 00 00 00 0s 0t 0u FF	s: polarity offset (0 is plus, 1 is minus) tu: offset s=0 (00h to 40h) offset s=1 (00h to 10h)
	Corresponds to `camera ccu set gamma` in Telnet API.		

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
CAM_GammaOffsetInq	8x 09 04 1E FF	y0 50 00 00 00 0s 0t 0u FF	s: Polarity offset (0 is plus, 1 is minus) tu: Offset s=0 (00h to 40h) Offset s=1 (00h to 10h)

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
	Corresponds to `camera standby` in Telnet API.		
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)
CAM_Mute	On	8x 01 04 75 02 FF	Video mute on/off
	Off	8x 01 04 75 03 FF	
	Toggle	8x 01 04 75 10 FF	
	Corresponds to `video mute` in Telnet API.		

Command Set	Command	Command Packet	Comments
Smart_Glass_ Mode	Auto	81 01 08 0B 02 FF	Operator control is only available in Manual mode.
	Manual	81 01 08 0B 03 FF	
	Corresponds to `camera glass mode` in Telnet API.		
Smart_Glass_ Assign	Clear	81 01 08 0A 02 FF	Command only recognized in manual smart glass mode.
	Frosted	81 01 08 0A 03 FF	
	Corresponds to `camera glass state` in Telnet API.		

Other Inquiry Commands

Inquiry Command	Command	Response Packet	Comments
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (standby)
	Corresponds to `camera standby get` in Telnet API		
CAM_TallyInq	8x 09 7E 01 0A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_NRInq	8x 09 04 53 FF	y0 50 0p FF	Noise reduction p: 00h to 05h
CAM_MuteModeInq	8x 09 04 75 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
	Corresponds to `video mute get` in Telnet API		
Vaddio_ModelInq	8x 09 08 0e FF	y0 50 05 10 00 00 00 FF	RoboSHOT IW
Smart_Glass_ModeInq	81 09 08 0B FF	90 50 02 FF	Automatic glass control
		90 50 03 FF	Manual glass control
	Corresponds to `camera glass mode get` in Telnet API		
Smart_Glass_AssignInq	81 09 08 0A FF	90 50 02 FF	Glass is clear
		90 50 03 FF	Glass is frosted
	Corresponds to `camera glass state get` in Telnet API		

Specifications

Camera and image

Image device	1/2.8-Type Exmor® CMOS sensor		
Pixels	2.14 million (effective), 2.38 million (total)		
Video Resolutions		**Video Aspect Ratio**	16:9 for all resolutions
Pan and tilt	Pan: +/- 31°, Tilt: +18/-30°; speed 0.35°/sec to 90°/sec		
Lens and horizontal FOV	10x optical zoom, 73.0° (wide) to 6.6° (tele)		
Min. working distance	10 in. (0.25 m) wide, 30 in. (0.8 m) tele		
Min. illumination	Recommended: 100+ lux	**Gain**	Auto/Manual (28 steps)
Backlight compensation	On/off	**Aperture/detail**	16 steps
Focusing system	Auto Focus, Manual Focus, One Push Trigger Mode, Infinity Mode, Near Limit Mode		
White balance	Auto, ATW, Indoor, Outdoor, One-push, Manual		
Sync system	Internal	**S/N ratio**	More than 50 dB
Noise reduction	On/Off, 6 Steps	**Power**	
Remote management	IR Remote Commander, web interface, Telnet and VISCA/RS-232 command APIs		

Physical and Environmental

Height	10 in. (25.4 cm)	**Weight**	
Width	15 in. (38.1 cm)	**Operating temperature**	0°C to +40°C (32°F to 104°F)
Depth	5 in. (12.7 cm) Extends 1.3 in (3.3 cm) from the wall	**Operating humidity**	20% to 80% RH, non-condensing

Specifications are subject to change without notice.

Troubleshooting and Care

Stuff happens – we get it. 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 indicator light before you do anything else.

- **Blue:** Normal operation (blinks once when the camera receives a command from the remote)
- **Red:** On-air tally
- **Blinking red:** Video is muted (UC LED color scheme only)
- **Purple:** In standby mode or booting
- **Yellow:** Firmware update in progress

If the status light is off, check whether it is disabled. (Web interface: System page, DIP Switches tab; Telnet: **`camera led get`**.)

Power/Responsiveness Issues

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 camera is not receiving power.	Is the camera's power source (OneLINK device or PoE+ injector) receiving power? Is the camera's cable connected to the power source? If both are true, either the camera cable or the camera is bad.
	The camera's status light is turned off and the camera is in standby mode.	Point the remote toward the camera and press the Power button.
	The camera's status light is turned off and the remote is not using the same IR channel as the camera.	Push the Camera Select 1 button on the remote. Try the other Camera Select buttons if necessary.
	The camera's status light is off and the camera is confused.	Reboot or power-cycle the camera.
The camera never finishes initializing and the light is purple. The web interface is not available.	The camera is not receiving enough power. Is a PoE power injector connected?	Use PoE**+** instead. PoE does not deliver enough power for a PTZ camera.
	The PoE+ power injector is bad.	Contact your reseller or Vaddio Technical Support.
The camera does not respond to the remote and the light is yellow.	A firmware update is in progress.	Wait a few minutes, and try again when the light turns blue.

Video and Streaming Issues

What is it doing?	Possible causes	Check and correct
Blue or black video. The camera's web interface is available and the camera responds to the directional controls on the remote.	Video is muted.	Select the Mute button in the web interface. This button is available on every page of the web interface.
No H.264 video stream.	Streaming is not enabled.	Enable streaming: Streaming page in the web interface.

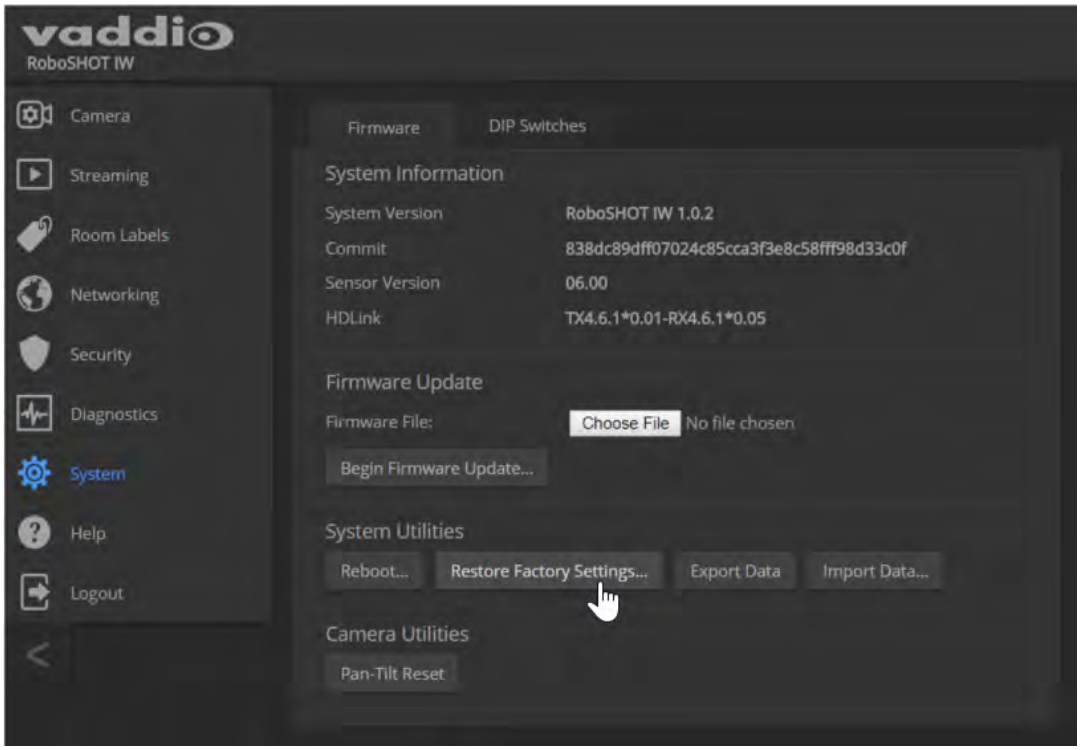
Camera Control and Other Issues

What is it doing?	Possible causes	Check and correct
The camera does not respond to the remote, but the web interface is available.	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.
	IR is switched off (Soft DIP switch 3 down)	Turn IR on (System page, DIP Switches tab). See Software Switch Settings for more information.
	The remote's batteries are dead.	Put new batteries in the remote.
The camera responds to the remote but not to the web interface.	The web interface is controlling a different camera. (Check by removing power from the camera; the web interface should become unavailable.)	Check the camera's IP address. See Getting the camera's IP address.
	More than one device is using this IP address.	
The camera responds to the remote but the web interface is not available.	The camera is not using the IP address you browsed to.	Press the Data Screen button on the remote to see camera information.
The camera responds to the web interface but does not respond to commands via RS-232 connection to the OneLINK device.	The RS-232 cable to the OneLINK device is not connected, or is bad.	Connect a known good cable.
	The camera's baud rate setting doesn't match the settings on the controlling device.	Check the baud rate setting at both ends to be sure they match. The camera's baud rate setting is available on the System page in the web UI.
The camera loses all its settings when power is cycled.	All the DIP switches are in the ON (down) position.	Set the DIP switches to their proper positions. Default is all OFF (up). See Switch Settings for more information.

Restoring Factory Settings from the Web Interface

SYSTEM PAGE, FIRMWARE TAB

Sometimes it's easiest to just start over. To restore the original factory settings…click Restore Factory Settings. This will overwrite everything you have customized – custom CCU scenes and presets, soft DIP switch settings, passwords, room labels, and more. For this reason, you may want to back up (export) the camera's configuration after you set up the customizations you want. See Saving (Exporting) or Restoring (Importing) a Configuration.

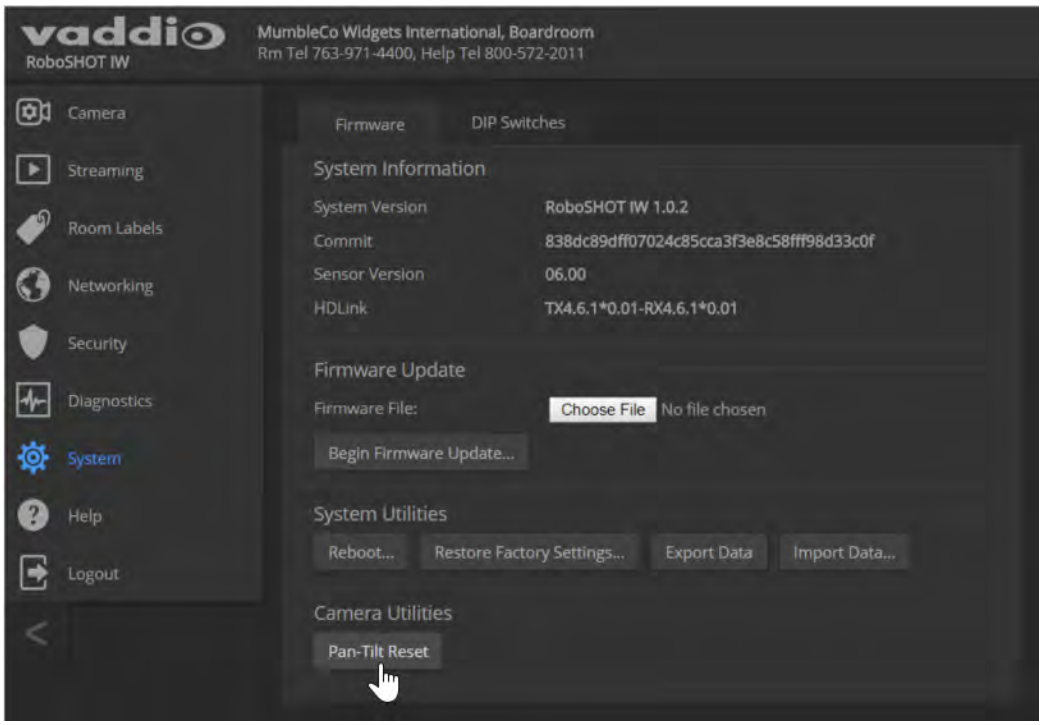


Correcting a Motor Calibration Fault

If the camera is jostled during installation or service, the motors may need to recalibrate. The status light blinks yellow in this case, if it is enabled.

To correct the fault, do one of these things:

- Using the IR Remote Commander: Press the Pan/Tilt Reset button.
- From the web interface: On the System page, select Pan/Tilt Reset.
- Via a Telnet connection, issue the command **`camera recalibrate`**.



If the camera is controlled by a PCC MatrixMIX controller, you can recalibrate the camera's motors from the controller's touch panel interface.

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
- Dry environments with an excess of static discharge

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

Compliance Statements and Declarations of Conformity

Compliance testing was performed to the following regulations:

FCC Part 15 (15.107, 15.109), Subpart B	Class A
ICES-003, Issue 54: 2012	Class A
EMC Directive 2014/30/EU	Class A
EN 55032: 2015	Class A
EN 55024: November 2010	Class A
KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)	Class A
IEC 60950-1:2005 (2nd Edition); Am 1: 2009 + Am 2: 2013	Safety
EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013	Safety

FCC Part 15 Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B, of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference including interference that may cause undesired operation of the device.

Changes or modifications not expressly approved by Vaddio can affect emission compliance and could void the user's authority to operate this equipment.

ICES-003 Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Compliance

This product has been evaluated for Electromagnetic Compatibility under the EMC Directive for Emissions and Immunity and meets the requirements for a Class A digital device. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Standard(s) To Which Conformity Is Declared:

EMC Directive 2014/30/EU	
EN 55032: 2015	Conducted and Radiated Emissions
EN 55024: November 2010	Immunity
EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001	Electrostatic Discharge
EN 61000-4-3: 2006 + A1: 2008	Radiated Immunity
EN 61000-4-4: 2004 + Corrigendum 2006	Electrical Fast Transients
EN 61000-4-5: 2006	Surge Immunity
EN 61000-4-6: 2009	Conducted Immunity
EN 61000-4-8: 2010	Power Frequency Magnetic Field
EN 61000-4-11: 2004	Voltage Dips, Interrupts and Fluctuations
KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)	IT Immunity Characteristics
EN 61000-4-2	Electrostatic Discharge
EN 61000-4-3	Radiated Immunity
EN 61000-4-4	Electrical Fast Transients
EN 61000-4-5	Surge Immunity
EN 61000-4-6	Conducted Immunity
EN 61000-4-8	Power Frequency Magnetic Field
EN 61000-4-11	Voltage Dips, Interrupts and Fluctuations
IEC 60950-1: 2005 (2nd Edition); Am 1: 2009 + Am 2: 2013	Safety
EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013	Safety

Warranty Information

See Vaddio Warranty, Service and Return Policies posted on support.vaddio.com for complete details.

Hardware* warranty: Two (2) year limited warranty on all parts and labor for Vaddio manufactured products. Vaddio warrants its manufactured products against defects in materials and workmanship for a period of two years from the day of purchase, to the original purchaser, if Vaddio receives notice of such defects during the warranty. Vaddio, at its option, will repair or replace products that prove to be defective. Vaddio manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry standard practices.

Exclusions: The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customers applied software or interfacing, unauthorized modifications or misuse, mishandling, operation outside the normal environmental specifications for the product, use of the incorrect power supply, modified power supply or improper site operation and maintenance. OEM and special order products manufactured by other companies are excluded and are covered by the manufacturer's warranty.

Vaddio Customer Service: Vaddio will test, repair, or replace the product or products without charge if the unit is under warranty. If the product is out of warranty, Vaddio will test then repair the product or products. The cost of parts and labor charge will be estimated by a technician and confirmed by the customer prior to repair. All components must be returned for testing as a complete unit. Vaddio will not accept responsibility for shipment after it has left the premises.

Vaddio Technical Support: Vaddio technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Vaddio Technical Support can be contacted by email at support@vaddio.com or by phone at one of the phone numbers listed on support.vaddio.com.

Return Material Authorization (RMA) number: Before returning a product for repair or replacement request an RMA from Vaddio's technical support. Provide the technician with a return phone number, e-mail address, shipping address, product serial numbers and original purchase order number. Describe the reason for repairs or returns as well as the date of purchase. See the General RMA Terms and Procedures section for more information. RMAs are valid for 30 days and will be issued to Vaddio dealers only. End users must return products through Vaddio dealers. Include the assigned RMA number in all correspondence with Vaddio. Write the assigned RMA number clearly on the shipping label of the box when returning the product. All products returned for credit are subject to a restocking charge without exception. Special order product are not returnable.

Voided varranty: The warranty does not apply if the original serial number has been removed or if the product has been disassembled or damaged through misuse, accident, modifications, use of incorrect power supply, use of a modified power supply or unauthorized repair.

Shipping and handling: Vaddio will not pay for inbound shipping transportation or insurance charges or accept any responsibility for laws and ordinances from inbound transit. Vaddio will pay for outbound shipping, transportation, and insurance charges for all items under warranty but will not assume responsibility for loss and/or damage by the outbound freight carrier. If the return shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Products not under warranty: Payment arrangements are required before outbound shipment for all out of warranty products.

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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
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Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society
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Main Control Room / Mission Control Room of ESA at the European Space Operations Centre (ESOC) in Darmstadt, Germany
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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.
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European Space Agency astronaut Luca Parmitano, Expedition 36 flight engineer, outside the International Space Station
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Chris Cassidy, Luca Parmitano, and Karen Nyberg, ISS, 2013. Photo Credit: NASA

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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.
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Sleeping goose
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Visit us at support.vaddio.com for firmware updates, specifications, drawings, manuals, technical support information, and more.

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