



Complete Manual for

# **RoboSHOT USB Enterprise-Class PTZ Conferencing Cameras**

Including RoboSHOT 12 USB, RoboSHOT 12E USB,  
and RoboSHOT 30E USB

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## Overview

This guide covers the RoboSHOT® USB enterprise-class PTZ conferencing cameras:

- RoboSHOT 12 USB, North America – 999-9920-000 (silver and black)
- RoboSHOT 12 USB, Europe and UK – 999-9920-001 (silver and black)
- RoboSHOT 12 USB, Australia and New Zealand – 999-9920-009 (silver and black)
- RoboSHOT 12E USB, North America – 999-99200-000 (black), 999-99200-000W (white)
- RoboSHOT 12E USB, Europe and UK – 999-99200-001 (black), 999-99200-001W (white)
- RoboSHOT 12E USB, Australia and New Zealand – 999-99200-009 (black), 999-99200-009W (white)
- RoboSHOT 30E USB, North America – 999-99230-000 (black), 999-99230-000W (white)
- RoboSHOT 30E USB, Europe and UK – 999-99230-001 (black), 999-99230-001W (white)
- RoboSHOT 30E USB, Australia and New Zealand – 999-99230-009 (black), 999-99230-009W (white)



Some models may be unavailable at this time.

## What's in this Guide

This guide covers

- Unpacking
- Physical features
- Switch settings
- Installation
- Controlling the camera using the IR remote
- Web interface: System administration and performance/behavior 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 RoboSHOT USB Enterprise-Class PTZ Conferencing Cameras**.

## Features

- RoboSHOT 12 USB and RoboSHOT 12E USB: 12x optical zoom – perfect for huddle rooms and small to medium conference rooms  
RoboSHOT 30E USB: 30x optical zoom – best for medium to large venues such as houses of worship and lecture theaters
- RoboSHOT 12 USB: Exmor<sup>®</sup> 1/2.8 type image sensor  
RoboSHOT 12E USB and RoboSHOT 30E USB: Exmor R<sup>™</sup> back-lit 1/2.5 type, high-speed, low-noise image sensor
- Simultaneous uncompressed USB 3.0 and H.264 IP streaming (RTSP or RTMP)
- Selectable IP stream resolution; USB stream resolution auto-negotiated with conferencing client
- HDMI video output for local display
- Smooth, silent direct-drive motors for precise pan and tilt movements at up to 120° per second
- Tri-Synchronous Motion<sup>™</sup> simultaneous-arrival pan/tilt/zoom movement between presets
- Universal Video Class (UVC) drivers supported in Windows<sup>®</sup>, Mac<sup>®</sup> OS, and Linux operating systems, compatible with most UC conferencing applications
- Presenter-friendly IR remote control
- Integration-ready Telnet and serial RS-232 control
- Full administrative control via web interface; manage the camera remotely while monitoring the stream separately

## Unpacking the Camera

Make sure you have received all the items you expected.

Download manuals, dimensional drawings, and other information from [www.vaddio.com/support](http://www.vaddio.com/support).

### Caution

*Always support the camera's body when lifting or moving it. Lifting the camera by its head or mounting arm will damage it.*



### Note

*Some models may be unavailable at this time.*

**RoboSHOT 12 USB, North America – 999-9920-000 (silver and black)**

**RoboSHOT 12 USB, Europe/UK – 999-9920-001 (silver and black)**

**RoboSHOT 12 USB, Australia/New Zealand – 999-9920-009 (silver and black)**

- RoboSHOT 12 USB Camera
- Vaddio IR Remote Commander
- 12 VDC, 3.0 Amp switching power supply with AC cord set(s)
- Thin Profile Wall Mount with mounting hardware, black
- EZCamera RS-232 control adapter, part number 998-1001-232
- USB 3.0 Type A to Type B cable, 6 ft. (1.8m)
- Quick Start Guide





**RoboSHOT 12E USB, North America – 999-99200-000 (black); 999-99200-000W (white)**  
**RoboSHOT 12E USB, Europe/UK – 999-99200-001 (black); 999-99200-001W (white)**  
**RoboSHOT 12E USB, Australia/New Zealand – 999-99200-009 (black); 999-99200-009W (white)**

- RoboSHOT 12E USB camera, black or white
- Thin Profile Wall Mount with mounting hardware, black or white, depending on camera color
- VaddioIR Remote Commander
- PoE+ mid-span power injector with AC cord set(s)
- EZCamera RS-232 control adapter, part number 998-1001-232
- USB 3.0 Type A to Type B cable, 6 ft. (1.8m)
- Quick Start Guide



**RoboSHOT 30E USB, North America – 999-99230-000 (black); 999-99230-000W (white)**  
**RoboSHOT 30E USB, Europe/UK – 999-99230-001 (black); 999-99230-001W (white)**  
**RoboSHOT 30E USB, Australia/New Zealand – 999-99230-009 (black); 999-99230-009W (white)**

- RoboSHOT 30E USB camera, black or white
- Thin Profile Wall Mount with mounting hardware, black or white, depending on camera color
- Vaddio IR Remote Commander
- PoE+ mid-span power injector with AC cord set(s)
- EZCamera RS-232 control adapter, part number 998-1001-232
- USB 3.0 Type A to Type B cable, 6 ft. (1.8m)
- Quick Start Guide



## A Quick Look at the Camera

This section covers the physical features of the camera.

### Front of the Camera

This photograph shows a RoboSHOT 12 USB camera. The RoboSHOT 12E USB and RoboSHOT 30E USB are similar in appearance, and are available in either black or white.



#### **Camera and Zoom Lens:**

- RoboSHOT 12 USB: 12x optical zoom (12x in Super-Wide mode, 10x in normal mode). Recommended for small to medium sized conference rooms.
- RoboSHOT 12E USB: 12x optical zoom; recommended for small to medium sized conference rooms.
- RoboSHOT 30E USB: 30x optical zoom; recommended for larger rooms.

**IR sensor:** Receives signals from the IR remote. Make sure there's nothing directly in front of the camera base, and point the remote at the camera.

**Status light:** The multi-colored LED indicates the camera's current state.

## Back of the Camera – RoboSHOT 12 USB



- **12 VDC 3.0 A** – EIAJ-04 jack. Connect only the power supply shipped with the camera or approved replacement 12 VDC, 3A power supply. This connection is not needed if you connect to the network using a mid-span PoE+ power injector.
- **Network PoE+** – RJ-45 connector. Connect to the network for network access for IP streaming and camera control via web interface or Telnet. Optionally connect to the network using a mid-span PoE+ power injector for power, streaming, and control.
- **USB 3.0** – USB type B connector. Connect to a computer for use with soft conferencing applications. Provides uncompressed USB 3.0 stream.
- **HDMI video select switch** – Select the appropriate HDMI video output resolution for the near-end video display. USB streaming resolution is auto-negotiated; IP streaming resolution is set in the administrative web interface.
- **Camera Settings** – DIP switches to set camera behaviors such as IR frequency, image flip (camera is invertible), normal or Super-Wide mode, and baud rate. See [Camera Behavior Settings](#).
- **HDMI** – HDMI video output connector. Connect to the near-end video display.
- **RS-232** – RJ-45 connector. Optionally connect to a controller to manage the camera using a modified VISCA protocol.

### **Note**

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

## Back of the Camera – RoboSHOT 12E USB and RoboSHOT 30E USB



- **Network PoE+** – RJ-45 connector. Connect to the network via mid-span PoE+ power injector. Provides power and network access for IP streaming and camera control via web interface or Telnet.
- **USB 3.0** – USB type B connector. Connect to a computer for use with soft conferencing applications. Provides uncompressed USB 3.0 stream.
- **HDMI video select switch** – Select the appropriate HDMI video output resolution for the near-end video display. USB streaming resolution is auto-negotiated; IP streaming resolution is set in the administrative web interface.
- **HDMI output** – HDMI video output connector. Connect to the near-end video display.
- **RS-232 port** – RJ-45 connector. Optionally connect to a controller to manage the camera using a modified VISCA protocol.

**Note**

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

## Installation

This section covers:

- Selecting the location for the camera
- Installing the mount
- RS-232 cable pin-out and communication settings
- Settings for the physical switches on the camera
- Connection diagrams
- Connecting and mounting the camera

And a required safety note here:

### **Note**

*PoE type networks connected to this equipment are for intra-building use only and should not be connected to lines that run outside of the building in which this product is located.*

## Don't Void Your Warranty!



### **Caution**

*Always support the camera's body when lifting or moving it. Lifting the camera by its head or mounting arm will damage it.*

### **Caution**

*This product is for indoor use. Do not install it outdoors or in a humid environment without the appropriate protective enclosure. Do not allow it to come into contact with any liquid.*

*For RoboSHOT 12 USB: Use the power supply included with the camera or recommended for use with it. Always check the output voltage listed on the power supply label, as power supplies for different products may look nearly identical. Using the wrong power supply will void the warranty, possibly causing unsafe operating conditions and damage to the product.*

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

## Before You Install the Camera

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

- Consider camera viewing angles, lighting conditions, line-of-sight obstructions, and in-wall obstructions where the camera is to be mounted.
- Ensure that the camera body can move freely and will normally point away from the ceiling and lights. The camera will not perform well if it is pointed toward a light source such as a light fixture or window.
- If the IR Remote Commander will be used, ensure that nothing blocks the IR lens in the camera's base.

Prepare for a successful installation:

- Be sure you can identify all cables correctly.
- Check Cat-5 cables for continuity.
- Ensure that the video resolution rotary switch and the DIP switches (if any) are set appropriately.
- Talk to the network administrator. If installing the camera in a non-DHCP network (one that does not automatically assign IP addresses), you will need to configure the camera with a static IP address as directed by the network administrator.

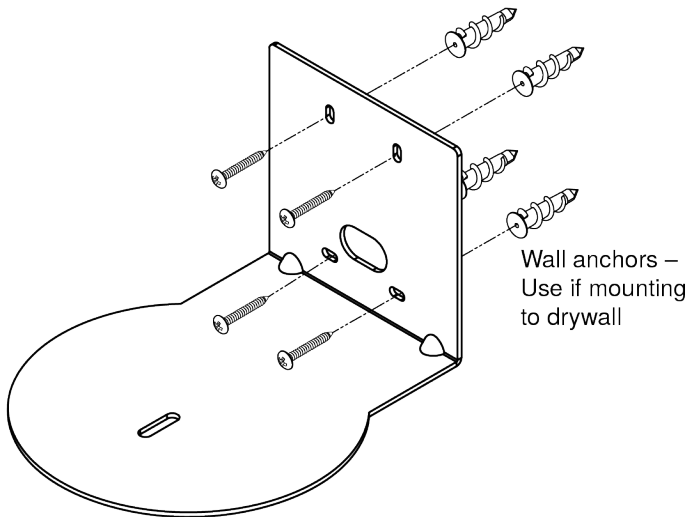
## Installing the Wall Mount

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

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

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

If you install the camera wall mount to drywall, use the wall anchors provided with the mount.



## About Ceiling-Mounted Cameras

If you use an inverted mount, set the camera's Image Flip DIP switch ON for inverted operation. This orients the video image correctly and sets the tilt motors to respond appropriately to tilt up and down commands from the remote, web interface, and connected control devices. For RoboSHOT Elite series cameras, this switch is available to the administrator on the System page of the web interface.

### **Note**


*If mounting this camera using the Half-Recessed Ceiling Mount, you will need to power the mount's IR receiver separately to use the IR remote with the camera. Use Power Extension Module 999-1005-021. This camera does not supply power to the mount's IR receiver.*

## Video Resolution Setting

A rotary switch sets the HDMI video resolution. USB streaming resolution is negotiated with the host PC and the application, and the IP streaming resolution is set via the web interface.

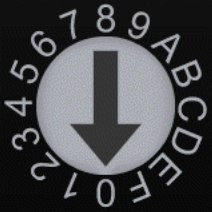
Set the desired video output resolution with the rotary switch before installing the camera. The video resolutions are mapped differently on the rotary switch for the newer Elite-series cameras.

### RoboSHOT 12 USB camera



Position	Resolution	Position	Resolution
0	720p/59.94	8	1080p/50
1	1080i/59.94	9	720p/30
2	1080p/59.94	A	1080p/30
3	720p/60	B	720p/25
4	1080i/60	C	1080p/25
5	1080p/60	D	
6	720p/50	E	
7	1080i/50	F	

### RoboSHOT 12E USB or RoboSHOT 30E USB camera



Position	Resolution	Position	Resolution
0	Software Control	8	1080p/29.97
1	1080p/60	9	1080p/25
2	1080p/59.94	A	720p/60
3	1080p/50	B	720p/59.94
4	1080i/60	C	720p/50
5	1080i/59.94	D	
6	1080i/50	E	Factory Reset
7	1080p/30	F	

For the newer Elite-series cameras: If the camera has been updated to version 3.1.0 firmware or later, Position 0 selects software control. Set video output resolution in the web interface. See [Software-Controlled Video Output Resolution Setting](#).

The default resolution is 1080p/59.94. This capability is not available in earlier firmware versions or on the older RoboSHOT 12 USB camera.

A label on the bottom of the camera provides a quick reference for setting the rotary switch.

## Camera Behavior Settings – RoboSHOT 12 USB

The RoboSHOT 12 USB camera uses DIP switches to set camera behaviors; the RoboSHOT 12E USB and RoboSHOT 30E USB cameras set all camera behaviors in the web interface.

A label on the bottom of the camera provides a quick reference for setting the switches.

**Set the switches appropriately before mounting the camera.**

After the camera is installed, you can read the switches from the camera's web interface.

**Note**

*When the camera is not inverted, DIP switches are in their default positions when they are up.*

**IR Frequency Selection:** If there are multiple cameras in the room, use **switches 1 and 2** to configure each with a different IR frequency to allow the IR Remote Commander to control them independently. Then use the Camera Select buttons at the top of the remote to select the camera you want to control.

- SW1 and SW2 up: IR frequency 1
- SW1 down, SW2 up: IR frequency 2
- SW1 up, SW2 down: IR frequency 3

**IR:** Leave **switch 3** in the default UP position if the IR remote will be used.

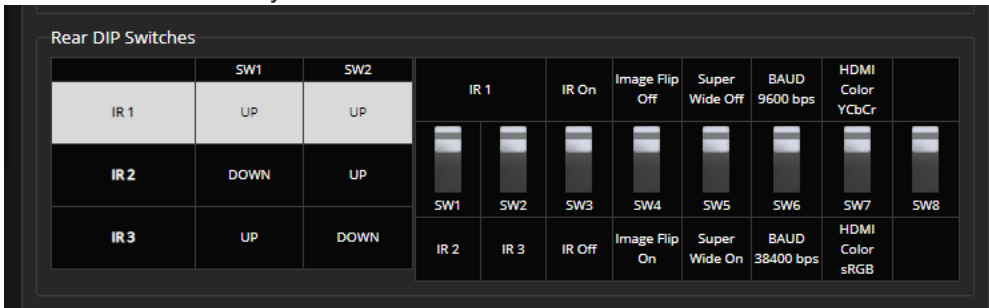
**Image Flip:** If mounting the camera upside-down, set **switch 4** to the DOWN position: IMAGE FLIP ON. This orients the video image correctly and sets the tilt motors to respond appropriately to tilt up and down commands from the remote, web interface, and connected control devices.

**Super Wide:** In normal mode, the camera has a 67.2° horizontal field of view (HFOV). For Super Wide mode, set **switch 5** to the DOWN position for a 12X, 73° horizontal angle of view.

**Baud:** Set **switch 6** to the baud rate of the device connected to the RS-232 port. The default is 9600 bps. The 38400 baud setting is optional if the connected control device supports it.

**HDMI Color:** Set the color space for the HDMI output to YCbCr (default; switch 7 UP) or sRGB.

**Switch 8** is not currently used.



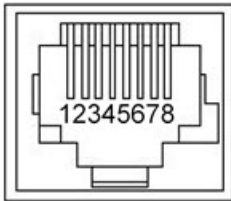


## RS-232 Serial Communication Settings

The RS-232 serial port (RJ-45, color-coded blue) on the camera's back panel enables third-party control.

Parameter	Value
Communication Speed	9600 bps or 38400 bps, switch-selectable
Number of start bits	1
Number of stop bits	1
Number of data bits	8
Parity	None
Flow control	None

## RS-232 Connector Pin-Out



Connector pin-out:

- Pin 1: Not used
- Pin 2: Not used
- Pin 3: Not used
- Pin 4: Not used
- Pin 5: Not used
- Pin 6: GND
- Pin 7: RXD (from TXD of control source)
- Pin 8: TXD (to RXD of control source)

### **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.*

## Cabling Notes

### 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

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

Label all cables at both ends.

## Connecting the Camera

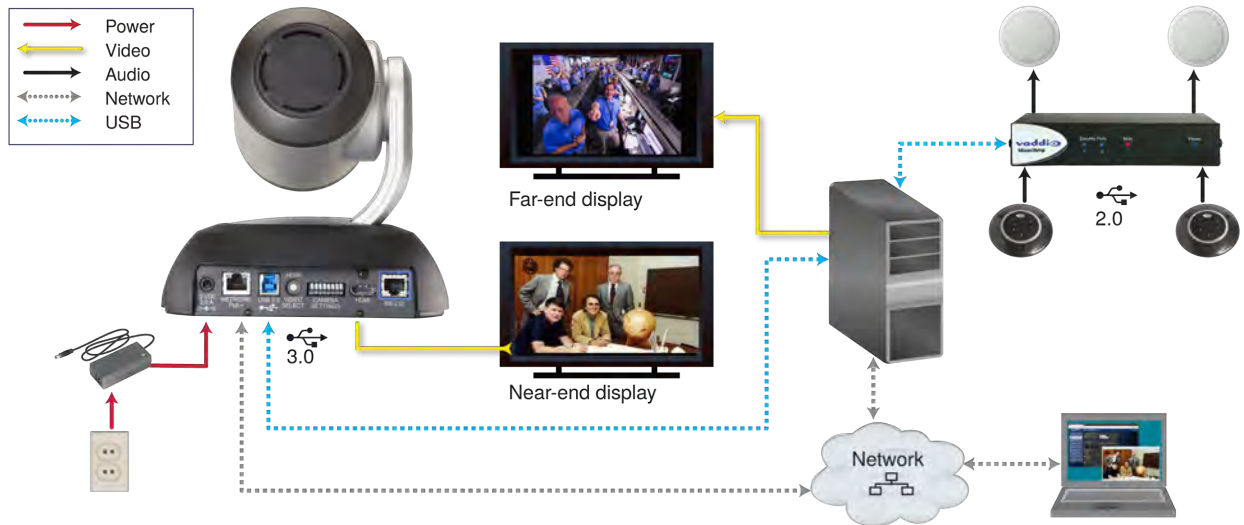
### Note

**Talk to the network administrator before you connect the equipment.**

If you install this equipment on a non-DHCP network (one that uses only static IP addresses), you may need to configure the camera with a static IP address before you connect it to the network. Work with the network administrator to determine how to configure the equipment.

### Basic Connections – RoboSHOT 12 USB

Here is an example of how the RoboSHOT 12 USB camera might be set up in a medium-size conference room. In this setup, a PC uses a unified communications conferencing application to manage the camera and an EasyUSB Mixer/Amp with attached microphones and speakers.

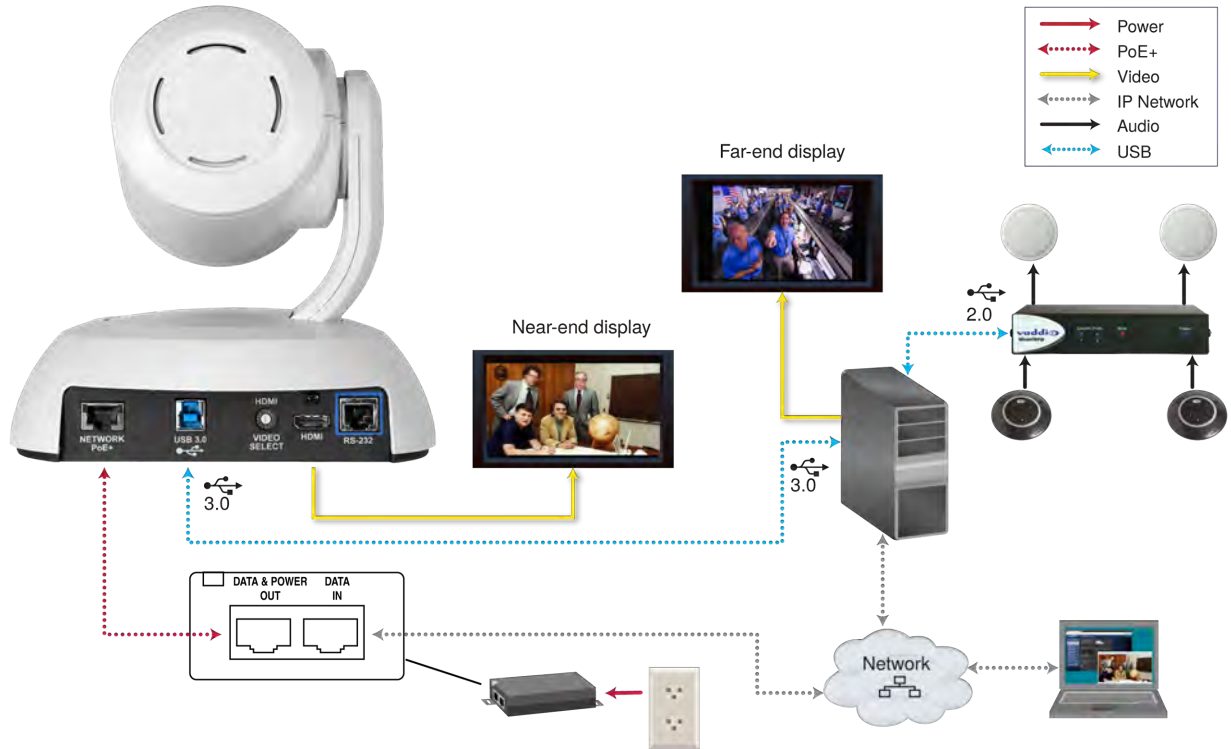


### Note

RoboSHOT 12 USB output is USB 3.0; EasyUSB Mixer/Amp is USB 2.0.

## Basic Connections – RoboSHOT 12E USB or RoboSHOT 30E USB

Here is the same installation using an Elite-series camera. Again, please note that the camera's output is USB 3.0; the EasyUSB Mixer/Amp is USB 2.0.



## Installing the Camera

### Caution

Before you start, be sure you can identify all cables correctly. Connecting a cable to the wrong port can result in equipment damage.

### Caution

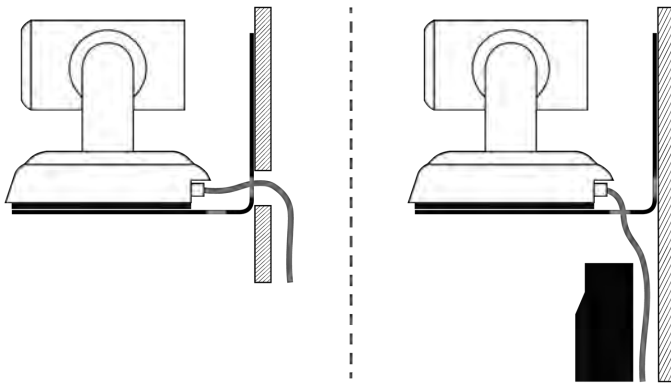
Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

1. Verify that you have set the switches on the back of the camera to the desired settings.
2. Route the cables through the opening in the mounting shelf and connect them to the camera.

### Caution:

Use the power supply shipped with the camera. Using a different power supply will damage the camera and void the warranty, and may create an unsafe operating condition.

3. Place the camera on the mount.



4. Attach the camera to the mount using the mounting screw supplied with the camera.

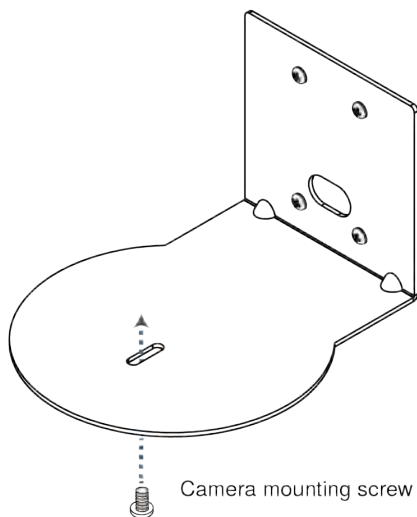


Image for illustration only; not to scale. Camera and mount details may differ.

## Powering Up the Camera

Connect camera power.

The camera will initialize and move. This will take a few seconds. When an image is available, the camera is ready to accept control information.

## Status Light

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

- Blue – Camera is active
- Purple – Standby mode or booting
- Yellow – Firmware update is in progress
- Blinking blue – USB cable is disconnected (UC color scheme)
- Blinking red – Video mute is on (UC color scheme)

### **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 Remote Control

The remote provides basic camera control.

### Quick Reference

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

## IR Remote Details

The remote provides the following functions:

**Data Screen** – Press and hold for 3 seconds to display the camera’s IP address and MAC address on the near-end display. Press momentarily to dismiss the information.

**Power indicator** – Shows power on, IR transmission, and battery level.

**Power** – Switch the selected camera on or off.

**Back Light** – Use or turn off back light compensation.

**Camera Select** – In multi-camera installations, selects the camera to be controlled.

See [Camera Behavior Settings – RoboSHOT 12 USB](#) or [Basic Camera Settings – RoboSHOT 12E USB and RoboSHOT 30E USB](#) 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.

**Std. Pan and Rev. Pan** – Control how the camera responds to the arrow buttons. Helpful for ceiling-mounted cameras and installations where the camera will point at the person using the remote.

**Pan/Tilt Reset** – Not used.

**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.

**Position Presets 1 through 6** – Move the camera to a predefined position.

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

**Reset** – Clear the saved position presets.

The web interface offers greater control over camera movements to presets (such as setting the speed for Tri-Synchronous Motion), and provides additional presets.



## Storing a Preset Using the Remote

Set up the shot using the pan, tilt, and zoom controls. 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 the web interface. If the LAN 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.

## 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](#).

If the address is 169.254.1.1, the camera is using its default IP address and you will need to configure it for your network. You can configure the camera's static IP address either through the network or from a computer connected directly to its Network/PoE+ port. You may need a crossover cable.

## 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.

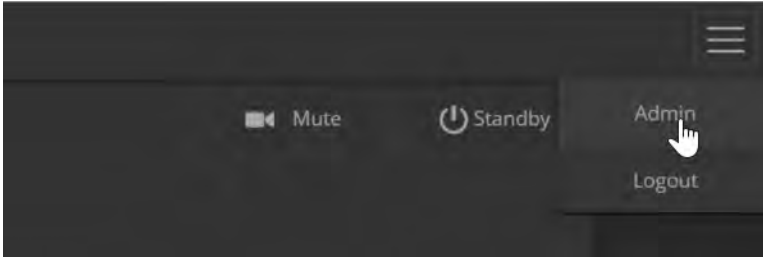
Only the Controls page is available with user-level access.



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 in as admin.



The default admin password is **password**, but this can be changed.

### 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.*

The admin account has access to system administration tasks and performance/behavior configuration tasks. System administration tasks are on the following pages, listed in the lower portion of the left navigation panel:

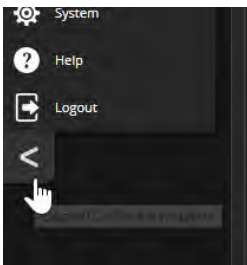
- Networking page – Configure date and time settings, hostname, and IP addressing.
- Security page – Set passwords and access other security settings.
- System page – View firmware version and switch settings, reboot, restore factory defaults, and update firmware.
- Room Labels page – Information to display on the web interface screens, including the conference room name and phone number and the in-house number for AV assistance.
- Help page – Tech support contact information and a link to the product information library on the Vaddio website.
- Diagnostics page – View or download the diagnostic log when troubleshooting issues.

Performance and behavior configuration tasks are on the following pages, listed in the upper portion of the left navigation panel:

- Camera page – Control the camera, make adjustments, create and manage presets and CCU scenes.
- Streaming page – USB device settings and IP streaming.

## 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 instead of the standard view. The button at the bottom of the menu toggles between the two views.



## Web Interface Quick Reference

Where to find the controls you need right now for camera administration and configuration.

Operator controls are available on the Controls page, with guest or user access.

What do you need?	Go to this page
Basic operation <ul style="list-style-type: none"> <li>■ Stop sending video (video mute)</li> <li>■ Enter or exit standby mode</li> </ul>	Any page
Camera operation and behavior <ul style="list-style-type: none"> <li>■ Move or zoom the camera</li> <li>■ Set, clear, or select camera presets and lighting/color settings</li> <li>■ Specify whether to use automated adjustments (auto-iris, auto white balance, backlight compensation)</li> <li>■ Set motors for inverted operation (Settings button reveals the control)</li> <li>■ Set the speed for pan, tilt, or zoom motions</li> <li>■ Focus the camera (Focus button reveals the focus control)</li> </ul>	Camera
Camera behavior <ul style="list-style-type: none"> <li>■ Status light color scheme (Pro A/V or UC)</li> <li>■ UVC-Compliant or Client Custom USB streaming</li> </ul>	System: DIP Switches tab, General tab
Access management <ul style="list-style-type: none"> <li>■ Guest access</li> <li>■ Account passwords</li> <li>■ Automatic logout for idle sessions</li> </ul>	Security
USB and IP streaming settings	Streaming
Other IP settings <ul style="list-style-type: none"> <li>■ Hostname</li> <li>■ DHCP or static addressing</li> <li>■ Static: IP address, subnet mask, gateway</li> </ul>	Networking
Date and time, time zone, and NTP server	Networking
Information about the camera <ul style="list-style-type: none"> <li>■ Room location and phone number</li> <li>■ Help desk phone number</li> </ul>	Room Labels
Reboot or reset to factory defaults	System: Firmware
Firmware <ul style="list-style-type: none"> <li>■ Current version information</li> <li>■ Save (export) and restore (import) configuration</li> <li>■ Firmware update</li> </ul>	System: Firmware
Vaddio Technical Support contact information	Help
Diagnostic logs	Diagnostics

## System Administration

This chapter covers settings for managing the camera as an element of your network.

Administrative tasks are on these pages:

- Networking – Time settings, hostname, and other network configuration
- 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, read the rear panel switches, and access the 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

See [Configuring Camera Behavior](#) for information on image adjustments, streaming configuration, and other items related to camera behavior.

### **Note**

*Vaddio's RoboSHOT series cameras all have very similar web interfaces. Some of the screen shots in this manual may be from other models in the RoboSHOT series.*

## For Non-DHCP Environments: Configuring the Device with a Static IP Address for Initial Installation

### NETWORKING PAGE

#### **Caution**

*Consult your IT department before editing network settings. Errors in network configuration can make the camera inaccessible from the network. Do not change DHCP/Static addressing, IP address, subnet mask, or gateway unless you are very familiar with the characteristics and configuration of the network where you install the camera.*

By default, the camera is set to DHCP and you do not need to configure it with a static IP address. However, if no DHCP server is available to automatically assign an address, the camera will use the default IP address of 169.254.1.1. If this is the case, you may need to follow this procedure.

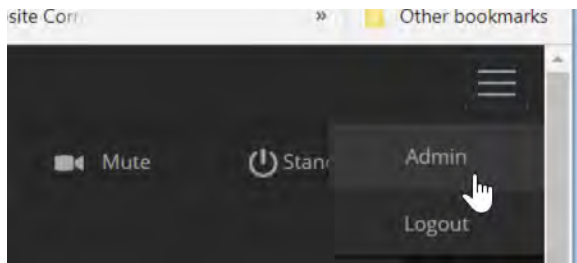
If you install more than one camera on a network that does not automatically assign IP addresses (a non-DHCP network), follow this procedure to prevent IP address conflicts.

#### **Note**

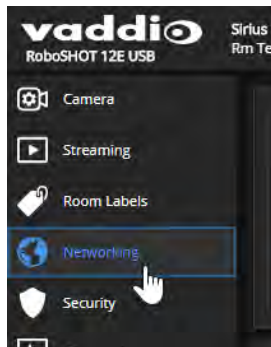
*If the camera is currently at an IP address other than 169.254.1.1, skip this section unless you are instructed to configure the camera with a static IP address.*

**To access the camera's Networking page during installation (skip this procedure if the camera has already been in service on this network):**

1. Connect the camera according to the connection diagram, but *do not connect the camera to the network*.
2. Connect the network port on the camera to the network port on a computer. Depending on the computer, you may need a crossover cable.
3. On the computer, open a browser and access the camera's web interface at <http://169.254.1.1>.
4. Log in as admin. The default password is password.

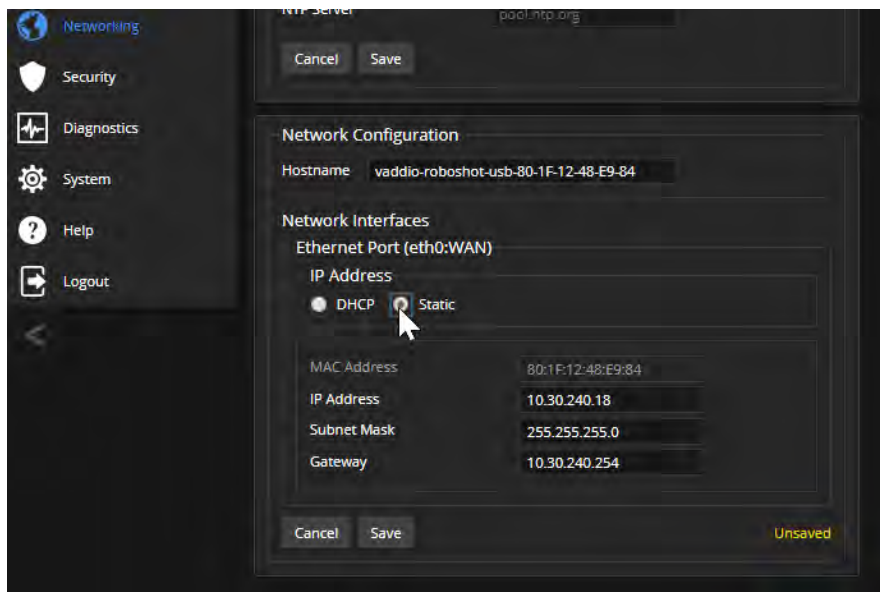


5. Navigate to the Networking page.



**To configure the camera with a static IP address:**

1. Work with your IT department to determine the correct IP address, subnet mask, and gateway to assign.
2. On the Networking page, set IP Address to Static.
3. Enter the IP address, subnet mask, and gateway as directed by the IT staffer; then save your work. The camera is now ready to be connected to the network.

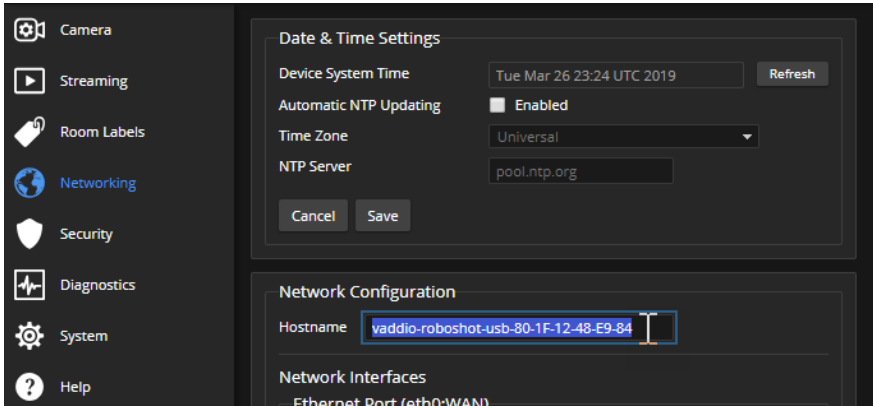


## Changing the Camera's Hostname

### 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**.

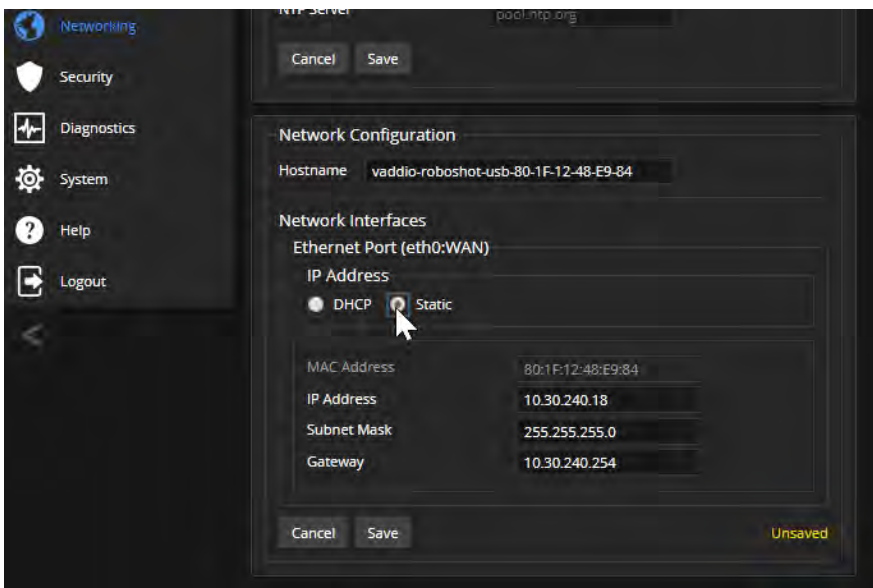
Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.



## Optional For DHCP Environments: Changing from a DHCP Address to a Static IP Address

### 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 unless your IT staff instructs you to do so.*





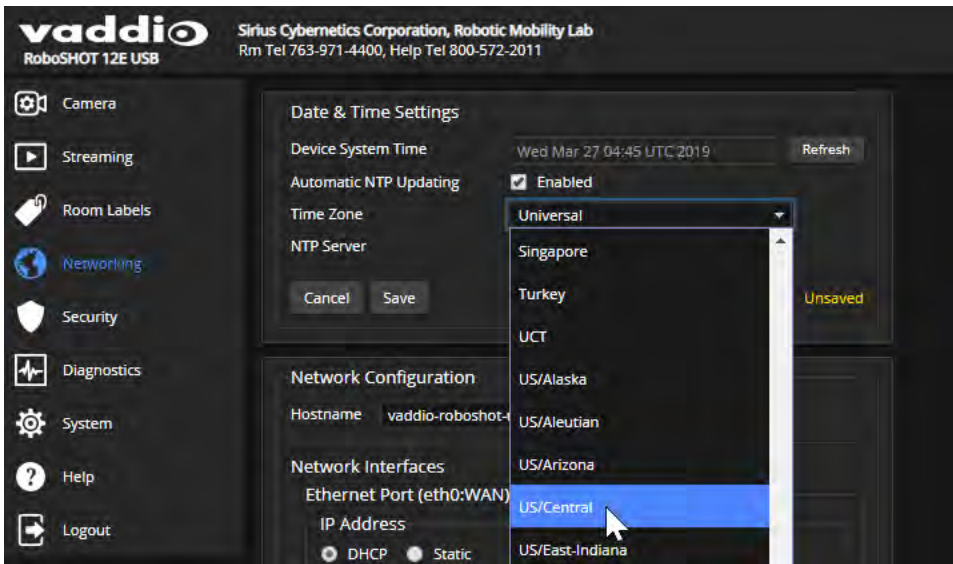
## Specifying Time Zone and NTP Server

### 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. If you are not sure about this, use the default.

You may need to refresh the system time display.



## Managing Access and Passwords

### SECURITY PAGE

Things you can do on this page:

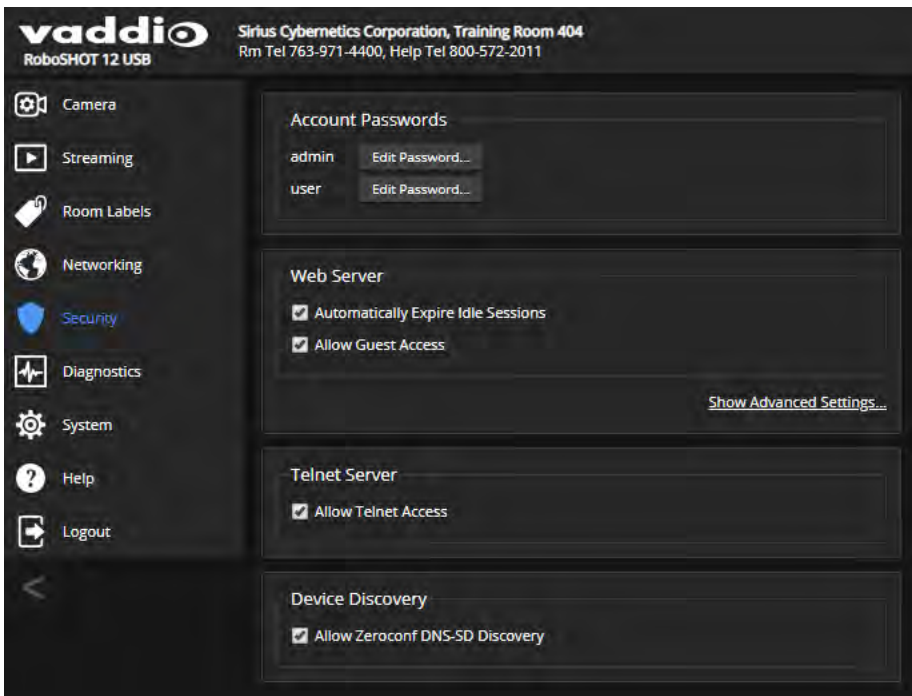
- Allow people to access the Controls screen without logging on (Allow Guest Access) – this is enabled by default
- Set whether inactive sessions log off automatically or not (Automatically Expire Idle Sessions) – by default, inactive sessions expire after 30 minutes
- Change the password for the admin account (default is **password**)
- Change the password for the user account (default is **password**)
- Allow or disable access via Telnet (by default, access via Telnet is enabled)
- Require HTTPS for web access (by default, HTTP is also permitted)
- Allow or deny device discovery (allowed by default)

#### 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. Be sure you have a way to remember the passwords after changing them.**



## 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**

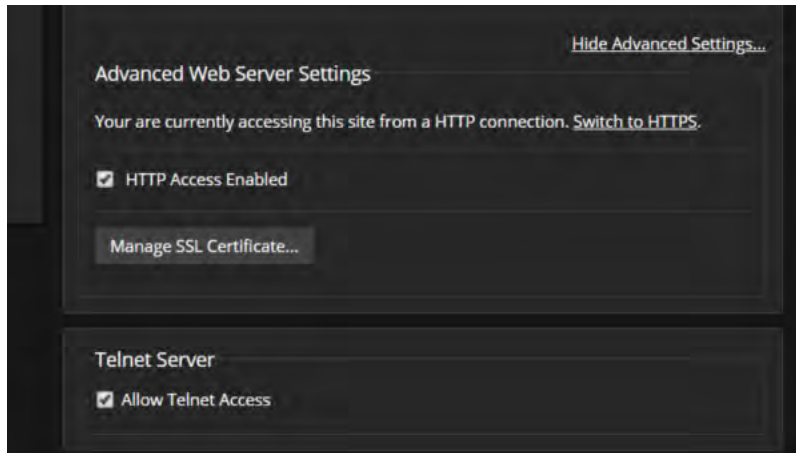
*Consult your network security professional to manage the camera's SSL certificate. Do not make any changes in the Certificate or Private Key text boxes without guidance from your organization's network security professional.*

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.*

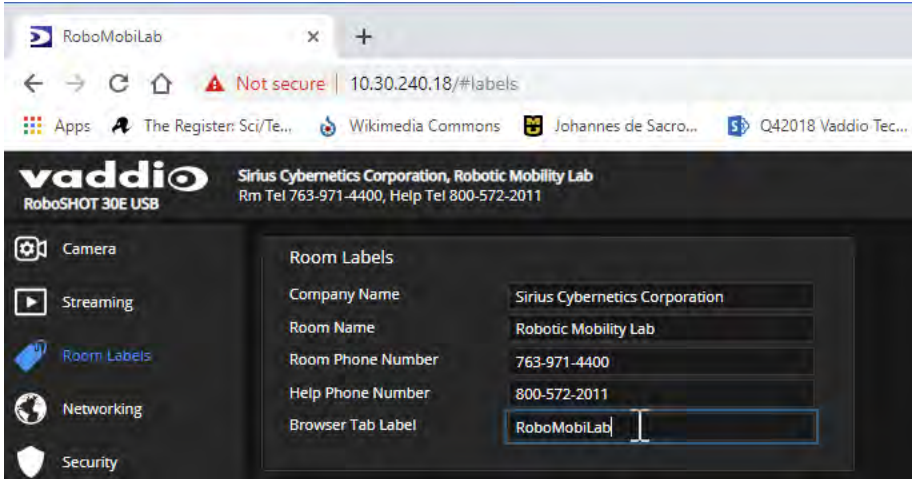
3. To require HTTPS connections, clear the box labeled HTTP Access Enabled. The camera's web interface will only be available via an HTTPS connection.



## Adding Room Information to the Screen

### ROOM LABELS PAGE

The information you enter on this page is displayed on every page of the web interface. In a multi-camera environment, you may also wish to specify what appears on the browser tab.

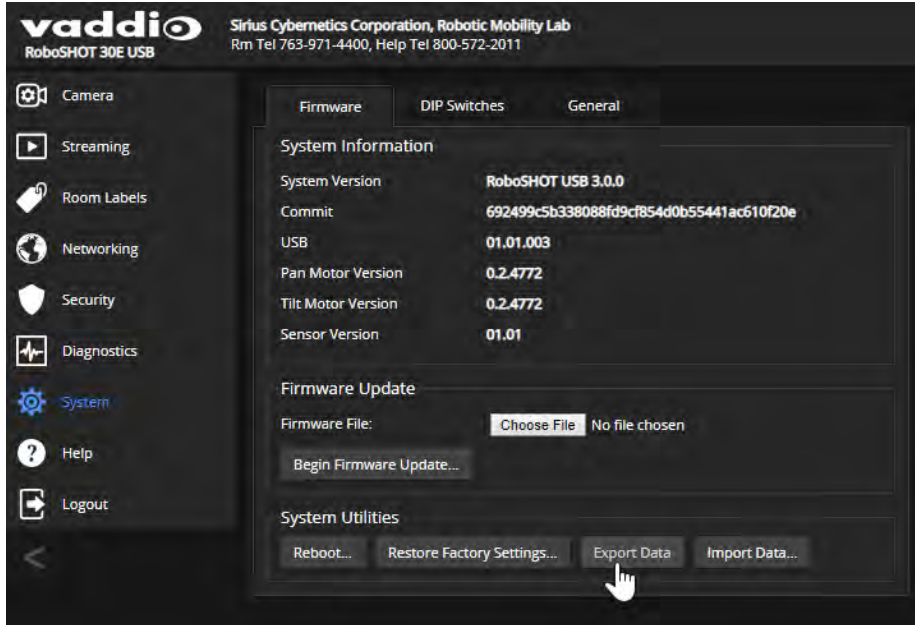


## Saving (Exporting) or Restoring (Importing) a Configuration

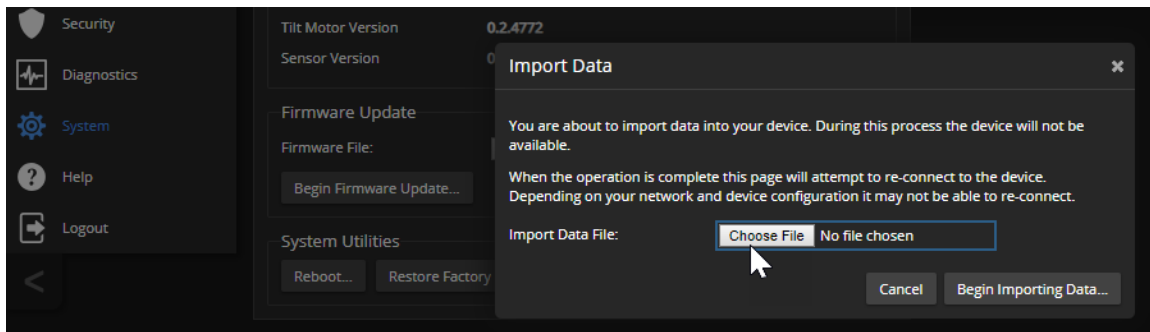
### SYSTEM PAGE, FIRMWARE TAB

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). The web interface prompts you to browse to the .dat file that will be imported.



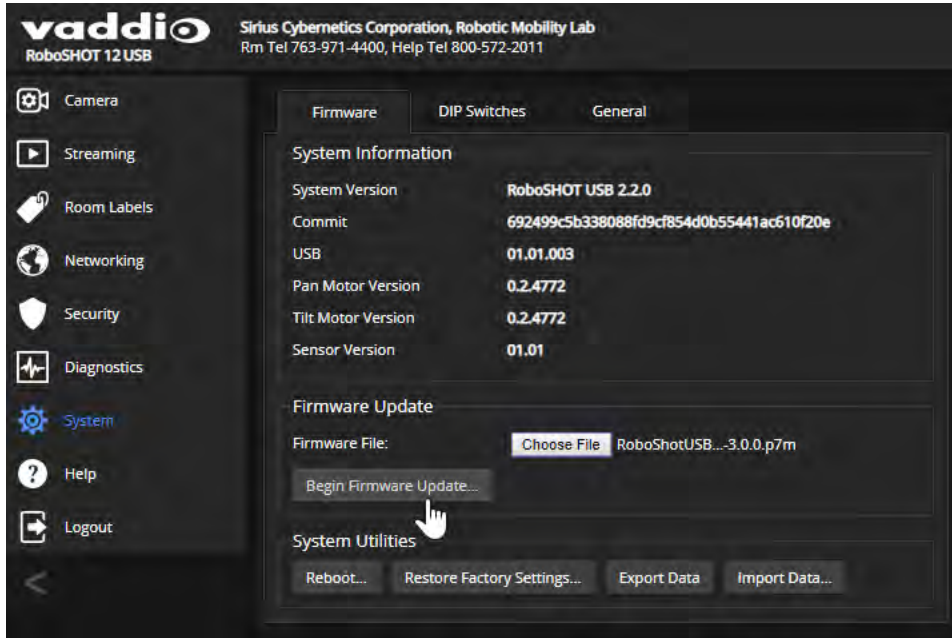
## Installing a Firmware Update

SYSTEM PAGE, FIRMWARE TAB

### Caution

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

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.
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.

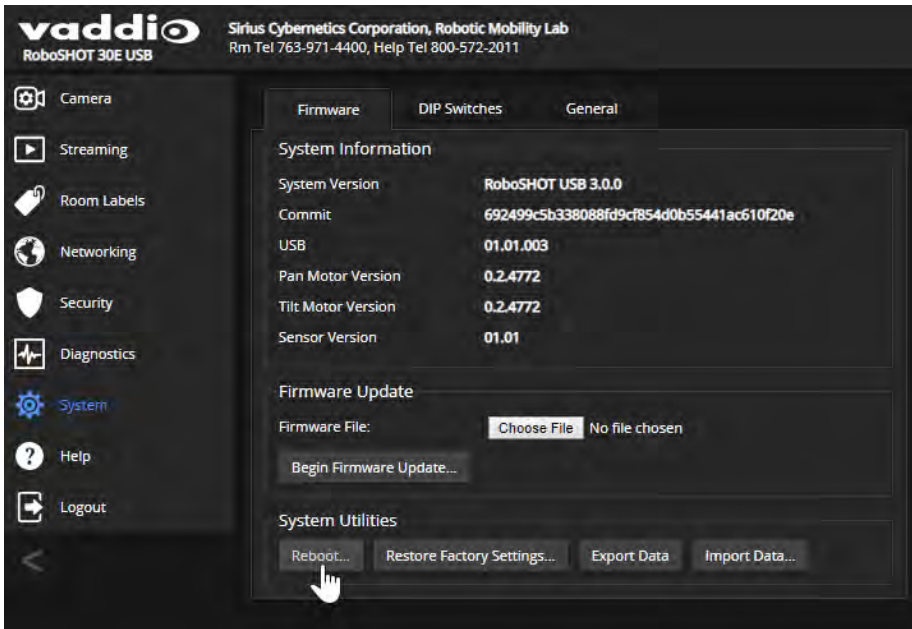
The camera reboots when the update is complete.

Contact Vaddio Technical Support if you encounter any problems with the update.

## 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.

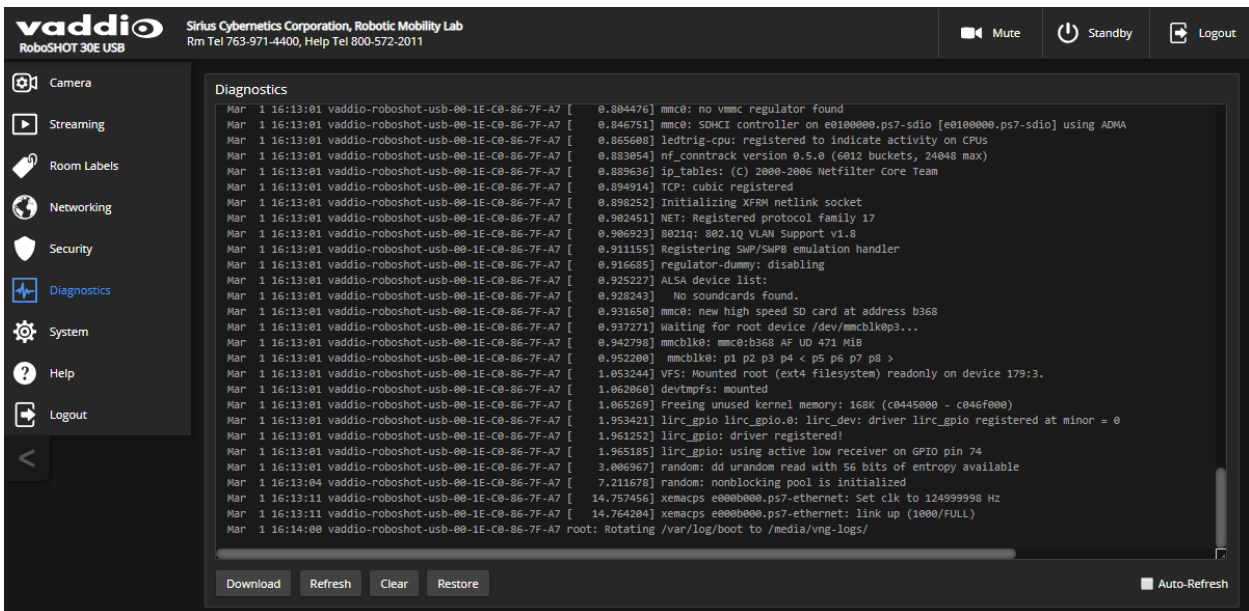
You'll find information for contacting Vaddio Technical Support on the Help screen.



## Viewing Diagnostic Logs

### DIAGNOSTICS PAGE

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





## Configuring Camera Behavior

Basic camera configuration tasks are available on the Camera page:

- Set a custom Home position and other presets
- Adjust for the lighting in the room
- Set pan, tilt, and zoom speeds

Other camera configuration tasks are available on these pages:

- Streaming – USB device settings and IP (H.264) streaming
- System (DIP Switches tab) – How the camera responds to the remote, status light behavior, image flip, and other settings

## 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.

#### 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.*

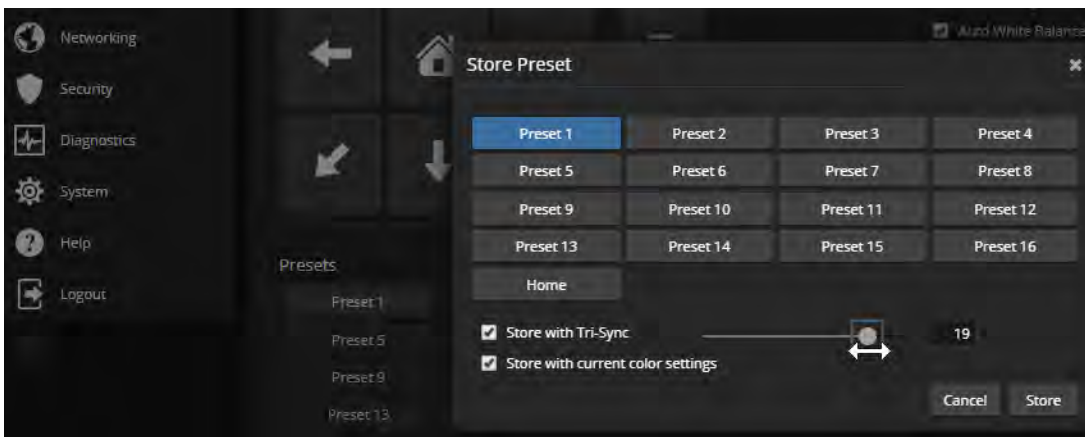
#### To store a preset or custom home position:

1. Set up the shot.
2. In the Presets area, select Store to open the Store Preset dialog.
3. Select the preset to store.
4. To save the current CCU settings along with the camera position, check Store with Current Color Settings.
5. Check Save with Tri-Sync to allow the pan, tilt, and zoom motors to move simultaneously from other presets to this position.

#### Note

*Tri-Synchronous Motion works best for on-air shots requiring significant movement. It is not useful when moving the camera less than 10°.*

6. Store the preset.



## Renaming Presets and Custom CCU Scenes

### CAMERA PAGE

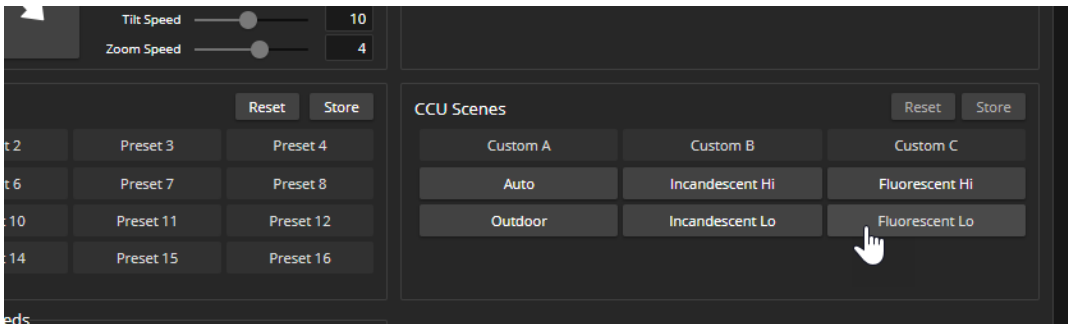
You can rename presets and custom scenes. The process is the same for both. Right-click the button for the custom scene or preset, and edit the label.



## Initial Lighting and Color Settings

### CAMERA PAGE

Adjust the camera for the lighting in use by selecting the CCU scene that best fits your environment. The camera provides presets for common lighting scenarios – Incandescent Hi, Incandescent Lo, Fluorescent Hi, Fluorescent Lo and Outdoor. The Auto setting allows the camera to determine the appropriate adjustments.



Some adjustments to lighting and color may be necessary.

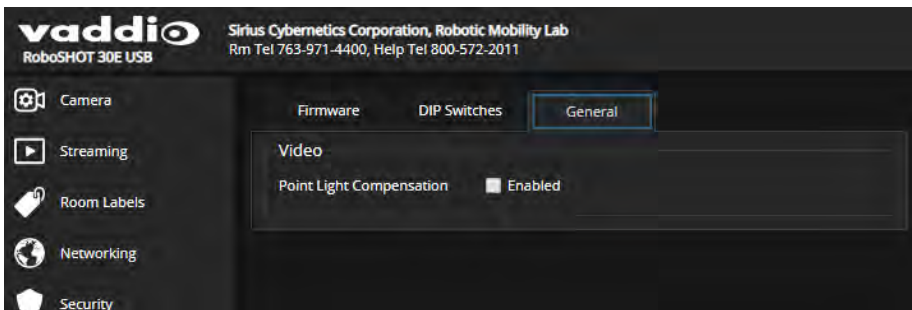
## Lighting Adjustments

### CAMERA PAGE AND SYSTEM PAGE, GENERAL TAB

The camera provides settings to compensate for common lighting problems.

- **Auto Iris** allows the camera to compensate automatically for the light level.
- **Backlight Compensation** reduces contrast to adjust for bright light behind the main subject of the shot. Use this if the subject is in front of a window, projector screen, or other bright area and appears as a silhouette. This setting can't be used with Wide Dynamic Range.
- **Wide Dynamic Range** automatically darkens bright areas and brightens dark areas to provide a more properly exposed image in challenging lighting conditions. This setting can't be used with Backlight Compensation.
- **Point Light Compensation** reduces the intensity of small, extremely bright areas (point light sources) that would otherwise swamp the camera with light and make it difficult to see details in areas with less intense lighting. *This setting is only available on the RoboSHOT 12E USB and RoboSHOT 30E USB cameras. It is on the System page, General tab.*

The [Lighting and Image Quality Quick Reference](#) may be helpful.



Depending on the camera's firmware version, additional settings may also be available on this tab.

## Adjusting the Color and Image Quality Settings

### CAMERA PAGE

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.

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

- **Auto White Balance** adjusts color automatically. Clear this box to adjust red gain and blue gain manually.
- **Red Gain** and **Blue Gain** (available when Auto White Balance is not selected) provide manual color adjustment.
- **Detail** adjusts the image sharpness. If the video looks grainy or "noisy," try a lower Detail setting.
- **Chroma** adjusts the color intensity.
- **Gamma** adjusts the range (grey density) between bright areas and shadows.

The [Color Adjustment Quick Reference](#) may be helpful.

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


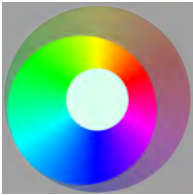
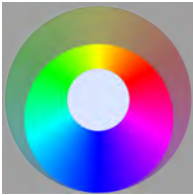


## Lighting and Image Quality Quick Reference

Here are some tips for using the CCU settings for lighting and image quality.

What do you need to correct?	Make this adjustment:
The image is too dark	Increase Iris (lower F-stop value)
	Increase Iris Gain
The image looks washed out or faded	Decrease Iris (higher F-stop value)
	Decrease Iris Gain
	Increase Chroma
	Decrease Gamma
The subject is silhouetted against a bright background	Enable Backlight Compensation
Small sources of bright light (point sources) make it hard to see details in areas with less intense lighting.	Enable Point Light Compensation (RoboSHOT 12E USB and RoboSHOT 30E USB)
Highlights and shadows look right, but mid-tones are too dark.	Increase Gamma
Shadows are too dark	Enable Wide Dynamic Range (WDR)
	Decrease Gamma
The image looks grainy	Decrease Detail
	Decrease Iris Gain
"Soft focus" effect; the image looks unrealistically smooth	Increase Detail

## Color Adjustment Quick Reference

Here are some tips for using the color-related CCU settings.

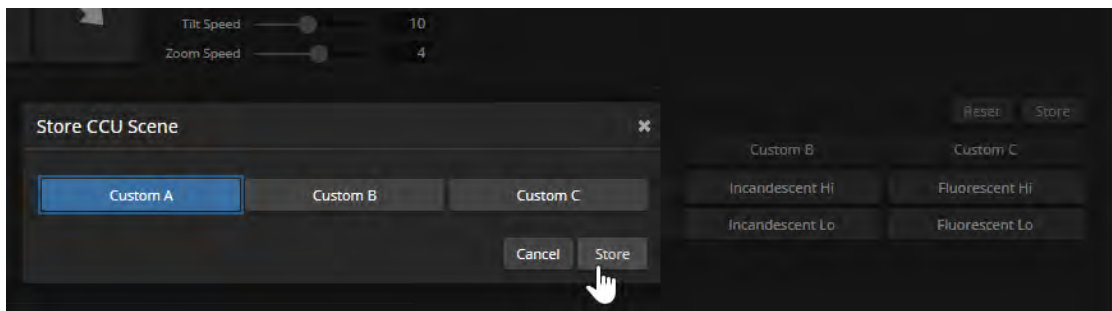
What do you need to correct?	Make this adjustment:			
Colors look less vivid than they should	Increase Chroma			
Colors look too vivid	Decrease Chroma			
Colors look wrong; white objects do not appear white	Enable Auto White Balance			
	One Push White Balance			
	Disable Auto White Balance and <ul style="list-style-type: none"> <li>■ adjust Red Gain (decrease for less red, increase for less green)</li> <li>■ adjust Blue Gain (decrease for less blue, increase for less yellow)</li> </ul>			
Too much red	Not enough red	Too much blue	Not enough blue	Balanced
				

## Saving Color and Lighting Settings

### CAMERA PAGE

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

1. Select Store CCU Scene.
2. In the Store CCU Scene dialog box, select the custom scene to store (Custom A, B, or C) and select Store. The button for this scene becomes available in the web interface.



3. Optional: Right-click the button for your custom CCU scene, and enter a short name for it in the text box that opens. Save the name.

## Adjusting the Focus

### CAMERA PAGE

Open the Focus control to select Auto-focus, or set manual focus with the + (near) and – (far) buttons. The + and – buttons only work when Auto Focus is not selected.



For users who are not logged in as admin, focus control is available via the IR Remote Commander.

## Speed Adjustments

### CAMERA PAGE

The following speed adjustments are available:

- Manual pan, tilt, and zoom speeds – Used when you control camera movements with the IR Remote Commander or the arrow buttons in the web interface
- Global Preset Non-Tri-Sync Speeds – Separate pan, tilt, and zoom speeds used for movements between presets that do not use Tri-Synchronous Motion.
- Tri-Synchronous Motion speed – Only available when storing a preset with the Store with Tri-Sync option selected.

### About Tri-Synchronous Motion

The Tri-Synchronous Motion algorithm calculates the pan, tilt and zoom speeds needed for the camera to move to a preset position, so that all three movements begin together and arrive at the same time. It ensures smooth on-air movements when making large changes in position, particularly when the zoom also changes. Tri-Synchronous Motion is only available as an option for moving to specific preset position.

Tri-Synchronous Motion is not helpful in movements of less than 10°, and is typically used only for on-air operation.

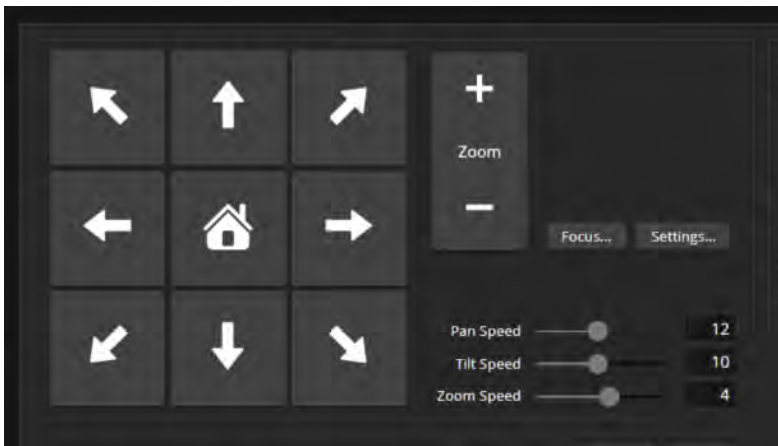
### Setting the Speeds for Manual Movements

#### 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.

#### To set speeds for movements using the arrow buttons:

Use the speed sliders to adjust the speed of movements that you control with the buttons for pan, tilt, and zoom. For tight shots, slower is usually better.



## Setting the Speeds of Movements to Presets

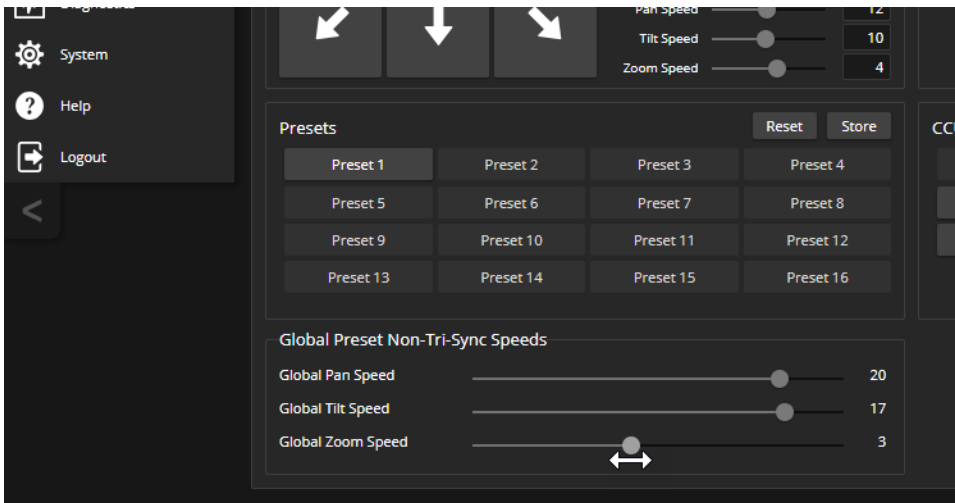
### CAMERA PAGE

The Pan Speed, Tilt Speed, and Zoom Speed sliders in the Global Preset Non-Tri-Sync Speeds control how fast the camera moves to presets saved without Tri-Synchronous Motion information.

These settings also determine the speed of movements when the camera is controlled by people at the far end of a conference. The default speeds are high; far-end participants may be more comfortable with lower speeds.

#### To set speeds for movements to presets:

In the Global Preset Non-Tri-Sync Speeds section, set the speeds for movements to presets that do not use Tri-Synchronous Motion.



## Adjusting Tri-Synchronous Motion Speed

### CAMERA PAGE

The Tri-Synchronous Motion algorithm calculates the pan, tilt and zoom speeds needed for the camera to move from one preset to the next so that all three movements begin together and arrive at the same time.

You may need to experiment to find the best Tri-Sync speed setting. Here is a simple method:

1. Store a preset, checking Save with Tri-Sync and setting the speed slider about a third of the way along the scale.
2. Move the camera to a different pan, tilt, and zoom position, and save this position as another preset. Again, check Save with Tri-Sync; but set the speed slider to about the halfway point.
3. Move the camera from one preset to the other to evaluate which movement is closer to the speed you want. Use the Tri-Sync speed associated with that preset, or adjust it as needed.
4. Store all the presets you will need.
5. Switch among the presets to determine whether any of them should use a different Tri-Sync speed.
6. Adjust the speeds as needed.

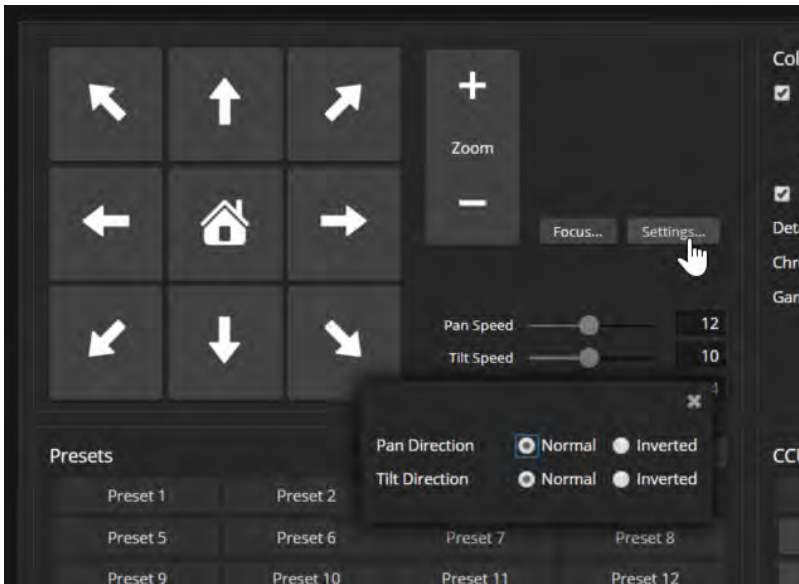


## Setting the Direction for Camera Movements

### 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.



## Configuring Streaming

### STREAMING PAGE

USB and IP streaming are enabled by default. *Just as your camera outputs video unless you mute it, the camera also streams except when you disable the stream.*

### About Streaming

Conferencing applications use *USB streaming*. The USB stream is only active during conferences.

Two *IP streaming* protocols are available: RTSP and RTMP.

- *RTSP streaming* delivers an IP stream that people can access from your network using a media player. This is the camera's default protocol for IP streaming.
- *RTMP streaming* sends a stream to a content service provider such as YouTube. No local preview is available. To use RTMP streaming, you must have an account with a streaming service.

#### To view the USB stream:

Start or join a conference.

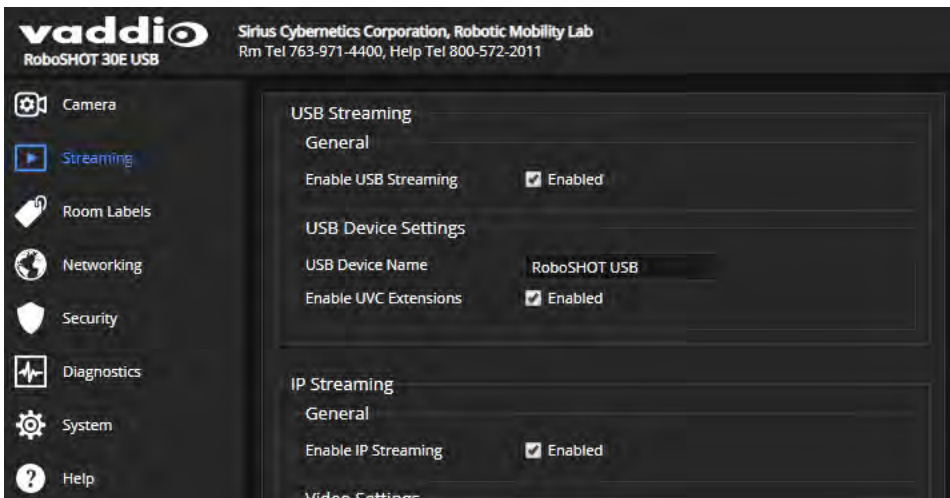
#### To view the RTSP stream:

1. Open a stream viewer such as VLC Media Player.
2. Select "Network stream" or your viewer's equivalent option.
3. Copy the streaming URL from the camera's Streaming page and paste it into the viewer as the URL for the network stream.

## Enabling or Disabling Streaming

### STREAMING PAGE

IP and USB streaming are enabled by default. Use the Enable USB Streaming and Enable IP Streaming checkboxes to change this. *Just as your camera outputs video unless you mute it, the camera also outputs an IP streams except when you disable the stream.*



## Configuring USB Streaming

### STREAMING PAGE

These settings affect how the camera works with soft conferencing applications.

**To change the way the camera shows up in your soft client's camera selection list:**

Edit the USB Device Name.

**To allow conferencing applications to control the audio:**

Check the Enabled box for HID Audio Controls.

**To allow conferencing applications to control the camera:**

Check the box marked Enable UVC Extensions.

**Note**

*USB streaming resolution and frame rate are automatically negotiated between the camera and the conferencing application.*

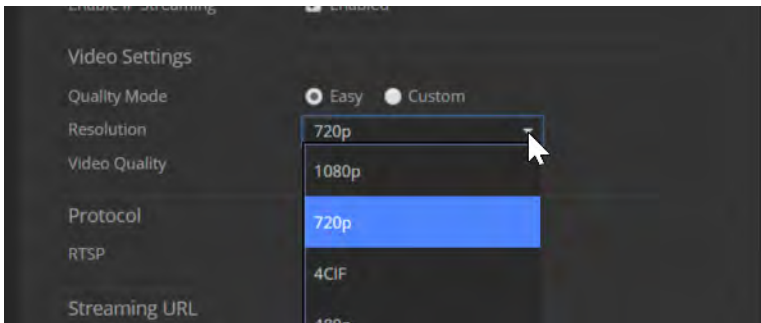
## Setting up IP Streaming in Easy Mode

### STREAMING PAGE

If you are not sure about these settings, start with the defaults.

Select the video Quality Mode: Easy or Custom. Easy takes care of most settings automatically; Custom provides additional control.

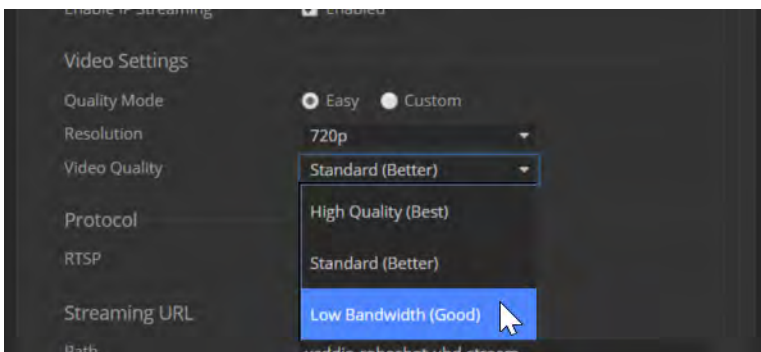
1. Select Easy Quality Mode.
2. Select the desired IP streaming resolution. This determines the size of the window in which the stream is displayed.



### Note

The IP streaming resolution and frame rate cannot be higher than the local video rates (the value set with the video resolution switch on the back of the camera).

3. Select Video Quality.



4. Save your changes.

## Setting up IP Streaming in Custom Mode

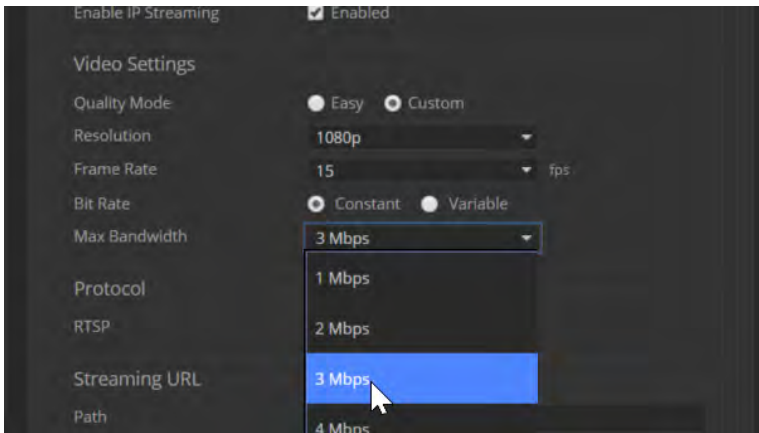
### STREAMING PAGE

1. Select Custom quality mode.
2. Select the desired resolution.

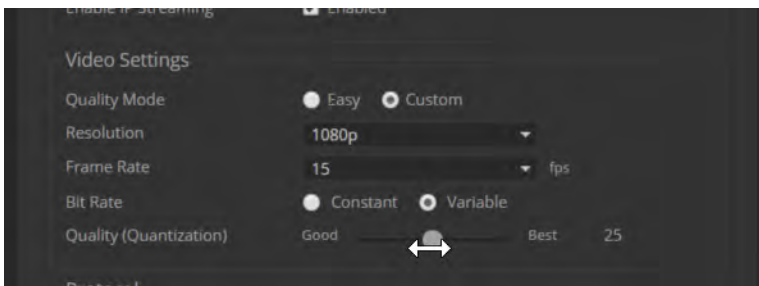
**Note**

*The IP streaming resolution and frame rate cannot be higher than the local video rates (the value set with the video resolution switch on the back of the camera).*

3. Select the desired frame rate.
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.

## RTSP Streaming Protocol and URL

### STREAMING PAGE

RTSP is the default streaming protocol. When IP streaming is enabled, the RTSP stream is automatically available at the streaming URL shown.

Consult your IT department before changing these settings.

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

**Path:** The portion of the streaming URL that appears after the IP address. You may wish to change this to help identify the stream source – for example, `demo-studio-3`.

**URL:** The location where the stream can be viewed. This will change if you edit the path.

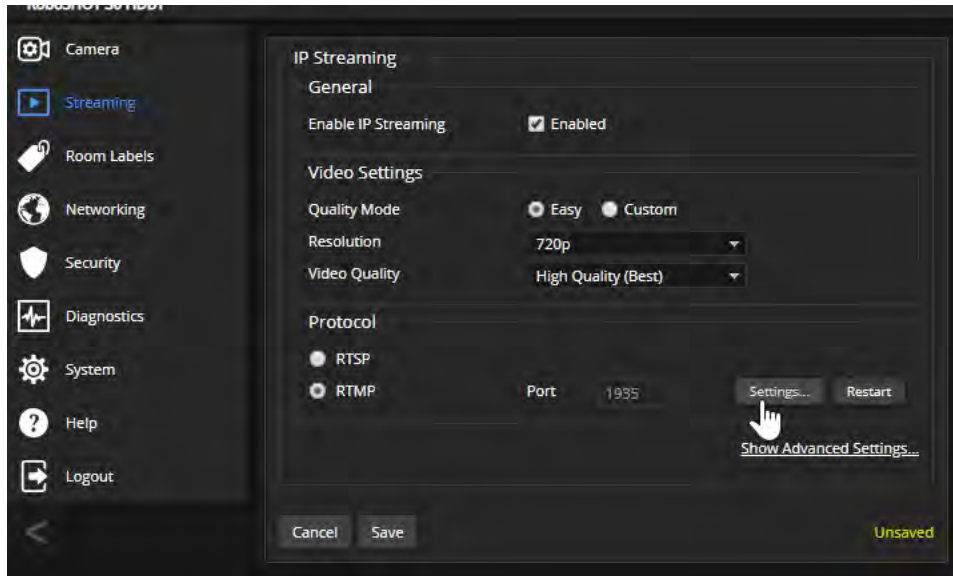
## Configuring RTMP Streaming

### STREAMING PAGE

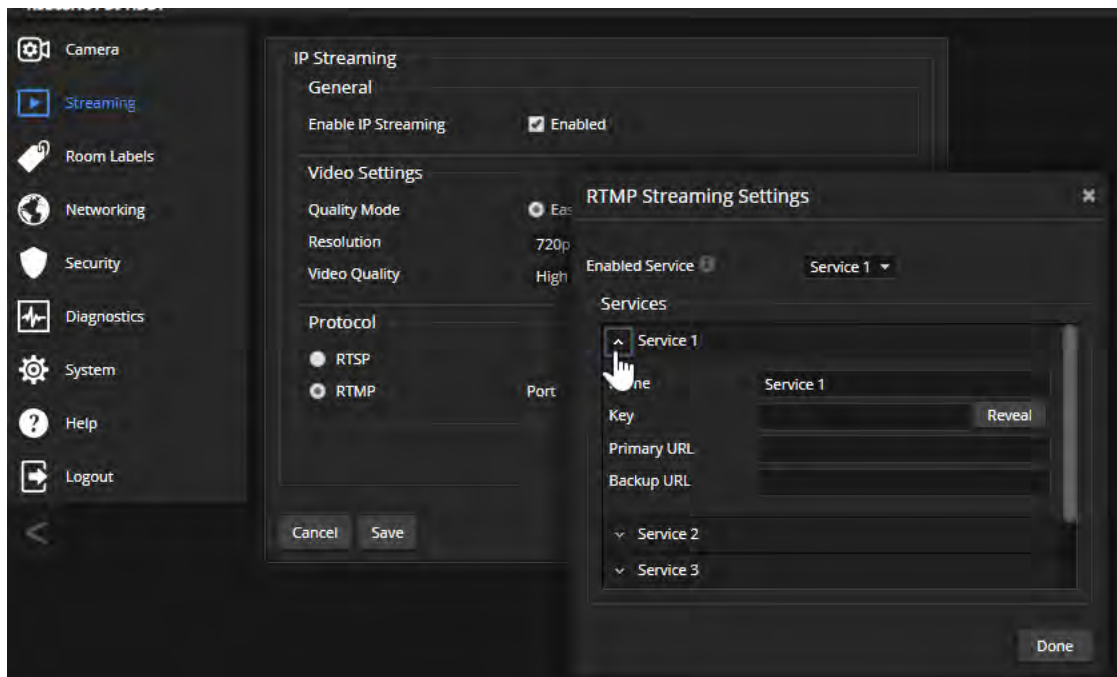
To use RTMP streaming, you must have an account with a streaming service.

**To configure an RTMP streaming service:**

1. Select RTMP streaming, and select Settings.



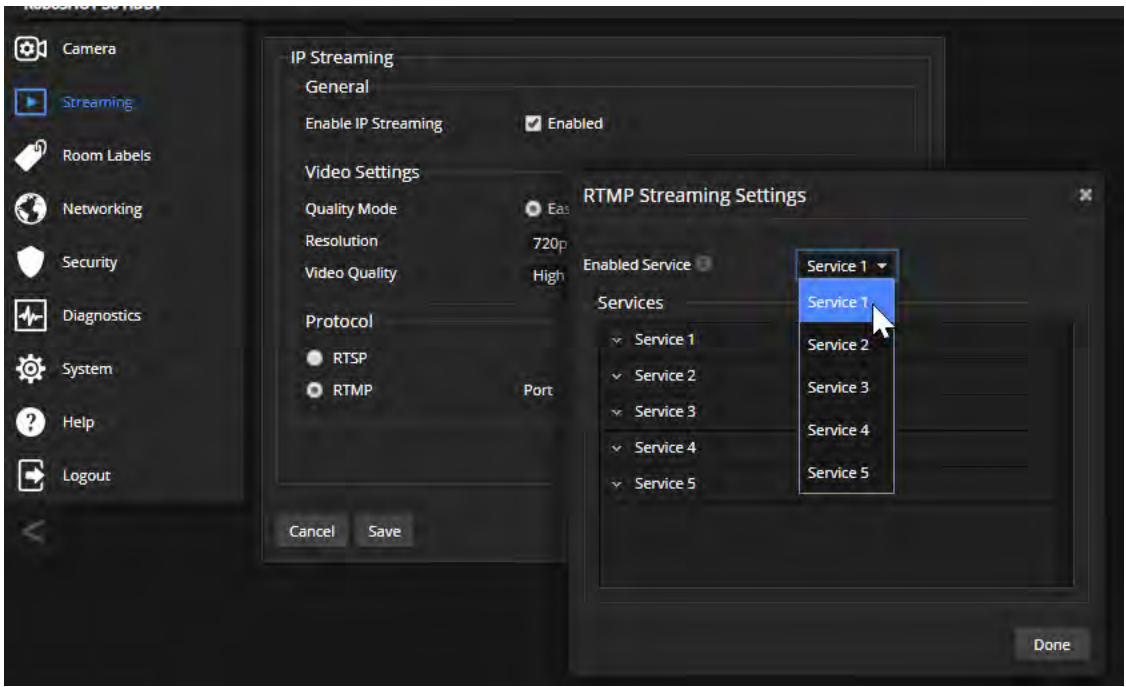
2. Expand the information box for the service.



3. Enter the name of the service.
4. Paste in the key and URL(s) provided by the service.

**To select the enabled RTMP streaming service:**

Expand the list of available streaming services, and select the one to use.



**Note**

When RTMP streaming is selected and a service is configured, the camera streams to that service until you stop the stream.

**Advanced: Changing MTU**

**STREAMING PAGE**

The default packet size for streaming is 1400. Do not change this except in consultation with your network administrator.

## Reading the Camera's Switches

### SYSTEM PAGE, DIP SWITCHES TAB

Open the DIP Switches tab to see the camera's current switch settings and configure certain camera behaviors. This tab shows the current positions of the physical switch(es) on the back of the camera, along with the soft DIP switches.

**vaddio** Sirius Cybernetics Corporation, Robotic Mobility Lab  
RoboSHOT 12E USB Rm Tel 763-971-4400, Help Tel 800-572-2011

Camera | Streaming | Room Labels | Networking | Security | Diagnostics | **System** | Help | Logout

Firmware | **DIP Switches** | General

#### Soft DIP Switches

Pro AV LED Color Scheme	UVC Compliant	LED On	Standard Control Mode	Enable LED in Standby	Manual Standby
UC LED Color Scheme	Client Custom	LED Off	Codec Control Mode	Disable LED in Standby	USB Standby

#### Soft DIP Switches

	SOFT-SW1	SOFT-SW2	IR 1	IR On	Image Flip Off	BAUD 9600 bps	HDMI Color YCbCr	
IR 1	UP	UP						
IR 2	DOWN	UP	IR 2	IR 3	IR Off	Image Flip On	BAUD 38400 bps	HDMI Color sRGB
IR 3	UP	DOWN						

#### Rear Rotary Switch

0	1080p/60	8	1080p/29.97
1	1080p/59.94	9	1080p/25
2	1080p/59.94	A	720p/60
3	1080p/50	B	720p/59.94
4	1080i/60	C	720p/50
5	1080i/59.94	D	
6	1080i/50	E	Factory Reset
7	1080p/30	F	



## Basic Camera Settings – RoboSHOT 12E USB and RoboSHOT 30E USB

### SYSTEM PAGE, DIP SWITCHES TAB

Basic settings for the RoboSHOT E-series cameras are on the lower row of soft DIP switches. These correspond to the physical switches on the older RoboSHOT 12 USB cameras.

**IR Frequency Selection:** If there are multiple cameras in the room, use **switches 1 and 2** to configure each with a different IR frequency to allow the IR Remote Commander to control them independently. Then use the Camera Select buttons at the top of the remote to select the camera you want to control.

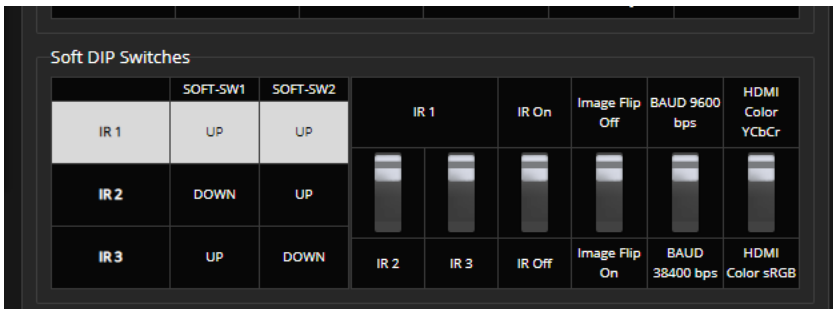
- SW1 and SW2 up: IR frequency 1
- SW1 down, SW2 up: IR frequency 2
- SW1 up, SW2 down: IR frequency 3

**IR:** Leave **switch 3** in the default UP position if the IR remote will be used.

**Image Flip:** If mounting the camera upside-down, set **switch 4** to the DOWN position: IMAGE FLIP ON. This orients the video image correctly and sets the tilt motors to respond appropriately to tilt up and down commands from the remote, web interface, and connected control devices.

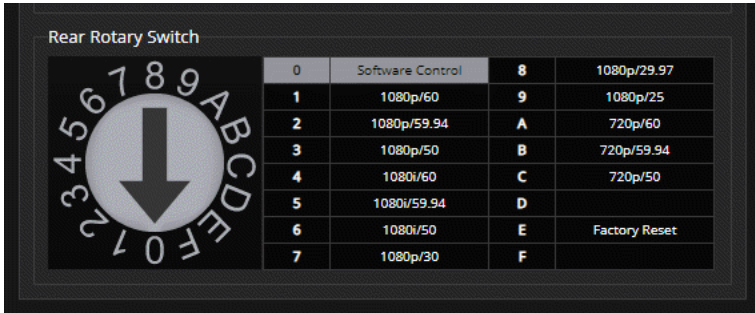
**Baud:** Set **switch 6** to the baud rate of the device connected to the RS-232 port. The default is 9600 bps. The 38400 baud setting is optional if the connected control device supports it.

**HDMI Color:** Set the color space for the HDMI output to YCbCr (default; switch 7 UP) or sRGB.

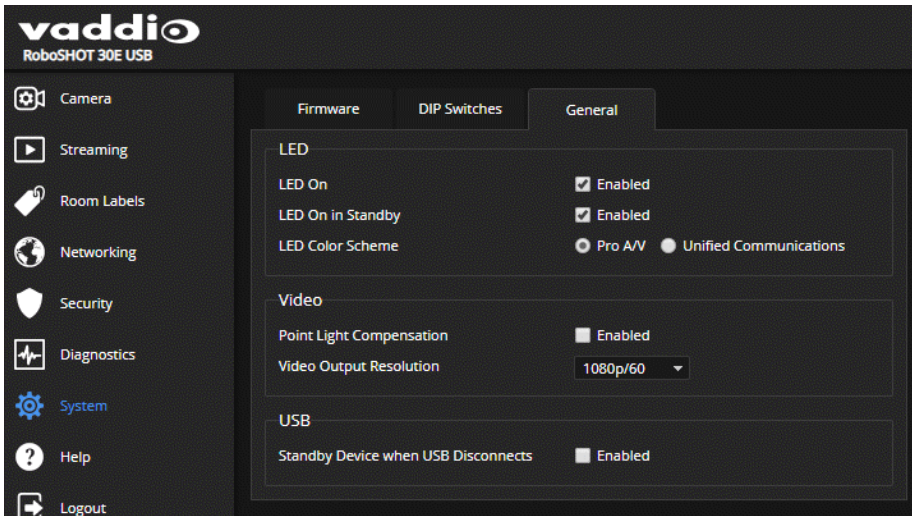


## Software-Controlled Video Output Resolution Setting

**RoboSHOT 30E USB only:** If the camera has been updated to version 3.1.0 firmware or later, the rotary switch can be set to position 0 to select software control. The default resolution is 1080p/59.94. This capability is not available in earlier firmware versions or on the older RoboSHOT 12 USB camera.



Set the video output resolution on the System page, General tab.



## Additional Camera Settings

### SYSTEM PAGE, DIP SWITCHES TAB

The DIP Switches tab of the System page provides access to several features via soft DIP switches.

#### **Note**

*If your camera has been updated to firmware version 3.1.0 or later, most of these settings are now on the General tab.*

**LED color scheme** – Status light color codes for Pro AV (broadcast) or UC (unified conferencing); default is Pro AV.

**USB stream format (UVC Compliant or Client Custom)** – Client Custom enables far-end camera control when used with the Zoom soft client. Use the default UVC Compliant setting with most other conferencing applications.

**LED On/Off** – In most cases, Vaddio recommends leaving the status light on, to let people in the room know whether the camera is currently sending video.

**Standard Control Mode/Codec Control Mode** – Select Codec Control Mode if using the camera with a third-party codec.

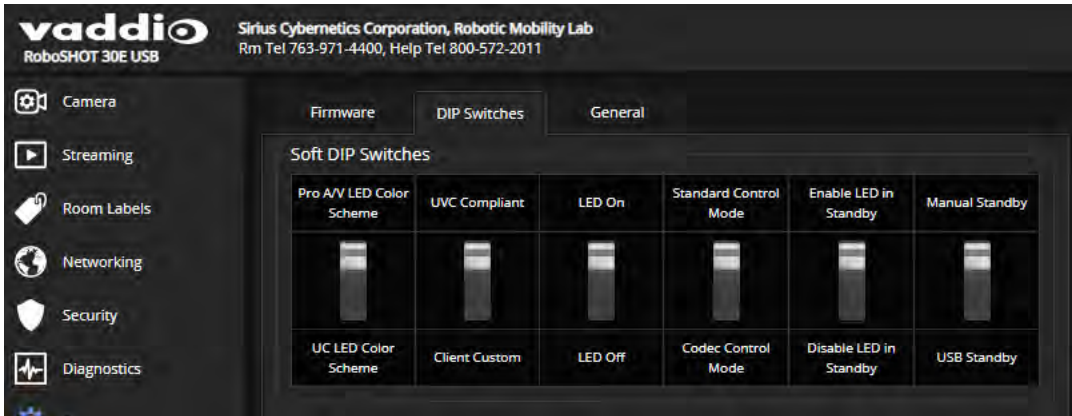
**Enable/Disable LED in Standby Mode** – Select Disabled to turn off the LED when the camera is in standby mode.

**Manual Standby/USB Standby** – Select USB standby to set the camera in standby mode when no USB stream is present (not in a conference).

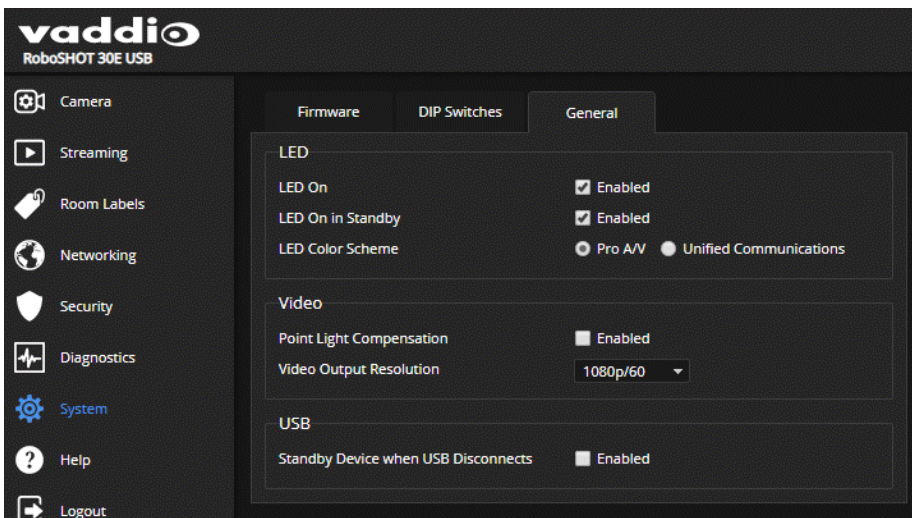
**IR On/IR Off** – Enable/disable the camera's IR sensors. The camera does not respond to the IR remote if IR is off.

**Image Flip** – If mounting the camera upside-down, set IMAGE FLIP ON. This orients the video image correctly and sets the tilt motors to respond appropriately to tilt up and down commands from the remote, web interface, and connected control devices.

**Pre-3.1.0 firmware:**



**Version 3.1.0 and later firmware:**

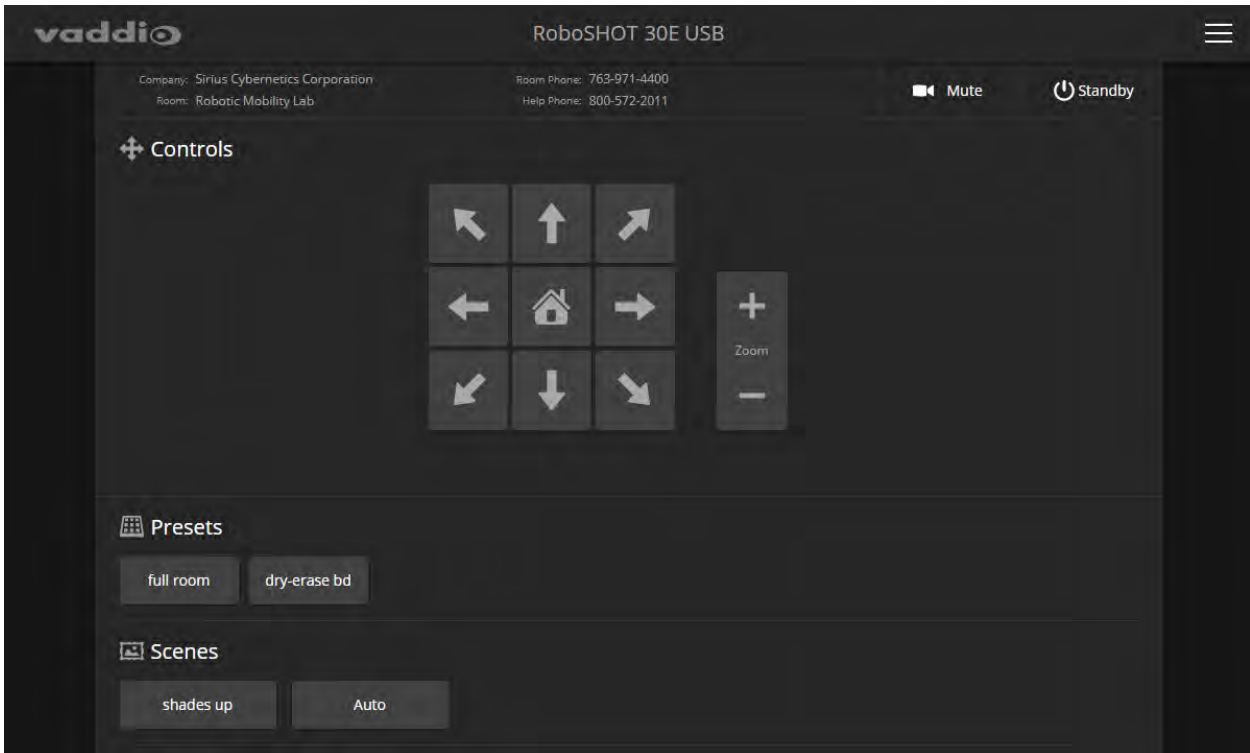


## Operating the Camera

### CONTROLS PAGE (USER OR GUEST ACCESS)

The Controls page provides most of the same controls as the IR Remote Commander, along with some that are not available from the remote:

- Pan, tilt, zoom, or return to home position
- Stop or resume transmitting live camera video (video mute)
- Put the camera in standby or bring it back to the ready state
- Move to camera presets, if any have been stored
- Select a custom lighting adjustment, if any have been stored



### 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.

### Stopping or Resuming Video

Use the Mute button to temporarily stop video from the camera without placing it in standby. Remember that the mute button does not mute the room's microphones. In video mute mode, the camera transmits blue or black video, with a message that the video is muted.

### Managing the Camera Ready State

Use the Standby button to switch between low-power (standby) and ready states.

In standby mode, the button is red and the screen presents the message "Device is in standby." On entering standby mode, the camera pans 90° from center and 30° downward. Inverted cameras also point downward in standby mode; this keeps dust from collecting on the lens.

## 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

Use the Preset buttons (if available) to move the camera to any of its programmed positions. Presets are only available if they have been set in the administrative interface.

## Telnet Serial Command API

The Vaddio Telnet command API allows an external device such as an AMX or Crestron presentation system to control the camera. Network connectivity and a Telnet client are required; Telnet port 23 is used. In addition to the camera control commands, Telnet session management commands are available – help, history, and exit.

### Note

*When you connect via Telnet, you must log in using the admin account.*

Things to know about Telnet:

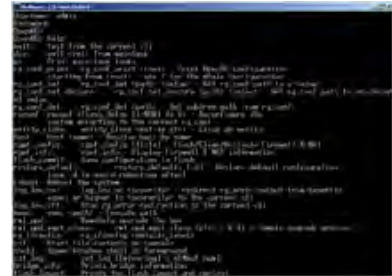
- The > character is the command prompt.
- Using a question mark as a command parameter will bring up a list of available subcommands or parameters. Example:

```
camera focus ?
camera focus
near   Focus the camera near
far    Focus the camera far
stop   Stop the camera focus
mode   Camera focus mode
```

- CTRL-5 clears the current serial buffer on the device.

Typographical conventions:

- n{x|y|z} – Choose x, y, or z.
- n<variable> – Substitute the desired value here.
- n<x-y> – Valid range of values is from x through y.
- n[optional] – Parameter is not required.



## 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 <position> [<speed>] }	
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.
	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 slightly more travel before they reach their physical limits.
	get	Returns the camera's absolute pan position in degrees, as a floating point value between approximately -150.00 (left) and 150.00 (right).
Examples	<pre>&gt;camera pan left OK &gt;</pre> <p>Pans the camera left at the default speed.</p> <pre>&gt;camera pan right 20 OK &gt;</pre> <p>Pans the camera right using a speed of 20.</p> <pre>&gt;camera pan stop OK &gt;</pre> <p>Stops the camera's horizontal motion.</p>	



## camera tilt

Moves the camera vertically.

Synopsis	camera tilt{ up [<speed>]   down [<speed>]   stop   get   set <position> [<speed>] }	
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.
	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.
	get	Returns the camera's absolute tilt position in degrees, as a floating point value between approximately -30.00 (down) and 90.00 (up). Note that the range is roughly 30.00 to -90.00 if Image Flip is selected.
Examples	<pre>&gt;camera tilt up OK &gt; Tilts the camera up at the default speed.  &gt;camera tilt down 20 OK &gt; Tilts the camera down at a speed of 20.  &gt;camera tilt 15.25 12 OK &gt; Tilts the camera to position 15.25 at a speed of 12.</pre>	

## camera zoom

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

Synopsis	camera zoom { in [<speed>]   out [<speed>]   stop   get   set <position> [<speed>] }	
Options	in	Zooms the camera in.
	out	Zooms 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.
	set <zoom>	Sets the camera's zoom level as a floating point value between 1.00 and 12.00 or 30.00, depending on the camera's zoom capabilities.
	get <zoom>	Returns the camera's zoom setting as a floating point value between 1.00 and 12.00 or 30.00, depending on the camera's zoom capabilities.
Examples	<pre>&gt;camera zoom in OK &gt; Zooms the camera in at the default speed.  &gt;camera zoom out 7 OK &gt; Zooms the camera out using a speed of 7.  &gt;camera zoom stop OK &gt; Stops the camera's zoom motion.</pre>	

## camera focus

Changes the camera focus.

Synopsis	<code>camera focus { near [&lt;speed&gt;]   far [&lt;speed&gt;   stop   mode {get   auto   manual} }</code>	
Options	<code>near</code>	Brings the focus nearer to the camera. Can only be used when camera is in manual mode.
	<code>far</code>	Moves the focus farther from the camera. Can only be used when camera is in manual mode.
	<code>speed &lt;1 - 8&gt;</code>	Optional: integer (1 to 8) specifies the focus speed.
	<code>mode [get   auto   manual]</code>	Returns the current focus mode, or specifies automatic or manual focus.
	<code>stop</code>	Stops the camera's focus movement.
Examples	<p><code>camera focus near</code> OK &gt; Brings the focus near at the default speed.</p> <p><code>camera focus far 7</code> OK &gt; Moves the focus farther from the camera at a speed of 7.</p> <p><code>camera focus mode get</code> auto_focus: on OK &gt; Returns the current focus mode.</p>	




## camera preset

Moves the camera to the specified preset, or stores the current camera position and optionally CCU information, either with or without specifying that Tri-Synchronous Motion is to be used when moving to this position.

Synopsis	camera preset { recall   store} [1 - 16] [tri-sync <1 - 24>] [save-ccu]	
Options	recall [1 - 16]	Moves the camera to the specified preset, using Tri-Synchronous Motion. If this was saved with the 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.
	tri-sync [1 - 24]	Optional: Specifies that the camera uses Tri-Synchronous Motion to move to this position, using the specified speed.
	save-ccu	Optional: Saves the current CCU (color and lighting) settings as part of the preset. If not specified, the last color settings are used when recalled.
Examples	<pre>&gt;camera preset recall 3 OK &gt;</pre> <p>Moves the camera to preset 3.</p> <pre>&gt;camera preset store 1 OK &gt;</pre> <p>Saves the camera's current position as preset 1.</p> <pre>&gt;camera preset store 4 tri-sync 15 OK &gt;</pre> <p>Stores the camera's current position as preset 4. The camera will use Tri-Synchronous Motion at speed 15 when it is recalled to this preset.</p> <pre>&gt;camera preset store 2 tri-sync 10 save-ccu OK &gt;</pre> <p>Stores the camera's current position as preset 2. The camera apply the current CCU settings and use Tri-Synchronous Motion at speed 15 when it is recalled to this preset.</p>	

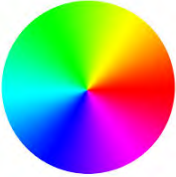
## camera ccu get

Returns CCU (lighting and color) information.

Synopsis	<code>camera ccu get &lt;param&gt;</code>	
	<code>auto_white_balance</code>	Returns the current state of the auto white balance setting (on or off).
	<code>red_gain</code>	Returns the red gain value as an integer (0 to 255).
	<code>blue_gain</code>	Returns the blue gain value as an integer (0 to 255).
	<code>backlight_compensation</code>	Returns the current state of the backlight compensation setting (on or off).
	<code>iris</code>	Returns the iris value as an integer (0 to 11).
	<code>auto_iris</code>	Returns the current auto-iris state (on or off).
	<code>gain</code>	Returns the gain value as an integer (0 to 11).
	<code>detail</code>	Returns the detail value as an integer (0 to 15).
	<code>chroma</code>	Returns the chroma value as an integer (0 to 14).
	<code>gamma</code>	Returns gamma as an integer (-64 to 64)
	<code>wide_dynamic_range</code>	Returns the current setting for Wide Dynamic Range (on or off).
	<code>all</code>	Returns all current CCU settings.
Examples	<pre>&gt;camera ccu get iris iris 6 OK &gt;  Returns the current iris value.  &gt;camera ccu get red_gain red_gain 201 OK &gt;  Returns the current red gain value.  &gt;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 &gt;  Returns all current CCU settings.</pre>	

## camera ccu set

Sets the specified CCU (lighting) information.

Synopsis	<code>camera ccu set &lt;param&gt; &lt;value&gt;</code>	
Options  	<code>auto_white_balance {on   off}</code>	Sets the current state of the auto white balance setting (on or off). Auto white balance overrides red gain and blue gain manual settings.
	<code>red_gain &lt;0 - 255&gt;</code>	Sets the red gain value as an integer (0 to 255). Can only be used when auto white balance is off.
	<code>blue_gain &lt;0 - 255&gt;</code>	Sets the blue gain value as an integer (0 to 255). Can only be used when auto white balance is off.
	<code>backlight_compensation {on   off}</code>	Sets the current state of the backlight compensation setting (on or off). Can only be used when wide dynamic range mode is off.
	<code>iris &lt;0 - 11&gt;</code>	Sets the iris value as an integer (0 to 11). Can only be used when auto-iris is off.
	<code>auto_iris {on   off}</code>	Sets the auto-iris state (on or off). Auto-iris disables manual iris and gain when it is on.
	<code>gain &lt;0 - 11&gt;</code>	Sets gain value as an integer (0 to 11). Can only be used when auto-iris is off.
	<code>detail &lt;0 - 15&gt;</code>	Sets the detail value as an integer (0 to 15).
	<code>chroma &lt;0 - 14&gt;</code>	Sets the chroma value as an integer (0 to 14).
	<code>gamma &lt;-64 - 64&gt;</code>	Sets the gamma value as an integer (-64 to 64)
	<code>wide_dynamic_range {on   off}</code>	Sets Wide Dynamic Range mode on or off. Can only be used when backlight compensation is off.
Examples	<pre>&gt;camera ccu set auto_iris off OK &gt;  Turns off auto-iris mode, returning the camera to manual iris control.  &gt;camera ccu set red_gain 10 OK &gt;  Sets the red gain value to 10.</pre>	

## 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	<pre>&gt;camera ccu scene recall factory 2 OK &gt; Sets the camera to use factory CCU scene 2.  &gt;camera ccu scene store custom 1 OK &gt; Saves the current CCU scene as custom CCU scene 1.</pre>	

## 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	<pre>&gt;camera led off OK &gt; Disables the indicator light. You cannot tell by looking at the camera whether it is sending video.  &gt;camera led get led:  on OK &gt; Returns the current state of the indicator light.</pre>	

## 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 (sleep) 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	<pre>&gt;camera standby off OK &gt;</pre> <p>Brings the camera out of standby mode.</p> <pre>&gt;camera standby get standby:      on OK &gt;</pre> <p>Returns the current standby state.</p>	

## streaming ip enable

Set or change the state of IP streaming.

Synopsis	streaming ip enable { get   on   off   toggle }	
Parameters	get	Returns the current state of IP streaming
	on	Enables IP streaming.
	off	Disables IP streaming.
	toggle	Changes the state of IP streaming (on if it was off, or off if it was on). <b>streaming ip enable toggle</b> has the same effect as selecting the Enable IP Streaming checkbox in the web interface.
Example	<pre>&gt;streaming ip enable on &gt; OK</pre> <p>Enables IP streaming.</p> <pre>&gt;streaming ip enable get enabled: true &gt; OK</pre> <p>Returns the current state of IP streaming.</p>	



## streaming settings get

Returns current IP and USB streaming settings.

Synopsis	streaming settings get	
Parameters	IP Custom_Frame_Rate	Frame rate (Custom mode).
	IP Custom_Resolution	Resolution (Custom mode).
	IP Enabled	True if IP streaming is enabled, False if it is not.
	IP Port	Port number used for IP streaming. RTSP default is 554; RTMP default is 1935.
	IP Preset_Quality	Video quality (Easy mode).
	IP Preset_Resolution	Resolution (Easy mode).
	IP Protocol	IP streaming protocol in use.
	IP URL	URL where the RTSP stream is available.
	IP Video_Mode	Video quality mode (preset or custom).
	USB Active	True if a USB stream is present; false if not.
	USB Device	The USB Device Name currently assigned.
	USB Frame_Rate	Frame rate for the USB stream (negotiated with conferencing client). 0 when no USB stream is present.
	USB Resolution	Resolution of the USB stream (negotiated with conferencing client). 0x0 when no USB stream is present.
	USB Version	2 or 3, as negotiated with the conferencing client. 0 if no USB stream is present.
UVC Extensions_Enabled	Allow or disable far-end control of the camera.	
Example	<pre> &gt;streaming settings get IP Custom_Frame_Rate 30 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-usb-stream IP Video_Mode preset USB Active true USB Device RoboSHOT USB USB Frame_Rate 30 USB Resolution 360p USB Version 2 UVC Extensions_Enabled false OK &gt; </pre>	

## network settings get

Returns the camera's current network settings and MAC address.

Synopsis	<code>network settings get</code>
Example	<pre>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 &gt;</pre>

## network ping

Sends an ICMP ECHO\_REQUEST to the specified hostname or IP address.

Synopsis	<code>network ping [count &lt;count&gt;] [size &lt;size&gt;] &lt;string&gt;</code>	
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.
	<string>	The hostname or IP address where the ECHO_REQUEST packets will be sent.
Examples	<pre>&gt;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 &gt;</pre> <p>Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.</p>	
	<pre>&gt;network ping count 10 size 100 192.168.1.1</pre> <p>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.</p>	


## 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	<pre>&gt;system reboot OK &gt; The system is going down for reboot NOW!roboshot-usb-D8-80-39-62-A7-C5  Reboots the camera immediately.  &gt;system reboot 30  Reboots the camera in 30 seconds. The response is in the same form; the system message appears at the end of the delay.</pre>	

## 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 and returns the camera's current factory reset status.
	off	Disables factory reset on reboot and returns the camera's current factory reset status.
Examples	 <pre>&gt;system factory-reset get factory-reset (software):    off factory-reset (hardware):    off OK &gt;  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.  &gt;system factory-reset on factory-reset (software):    on factory-reset (hardware):    off OK &gt;  Enables factory reset upon reboot.  <b>Note</b> This command does not initiate a factory reset. The factory reset takes place on the next reboot.</pre>	

## 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	<p><b>history</b> Displays the current command buffer.</p> <p><b>history 5</b> Sets the history command buffer to remember the last 5 unique entries.</p>	
Additional information	<p>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.</p> <p>Examples of history expansion:</p> <ul style="list-style-type: none"> <li>* !! Substitute the last command line.</li> <li>* !4 Substitute the 4th command line (absolute as per 'history' command)</li> <li>* !-3 Substitute the command line entered 3 lines before (relative)</li> </ul>	



## version

Returns the current firmware version.

Synopsis	version	
Example	<pre>&gt;version Commit                e0942f89c8520093d375ac6834c67fb2daa598fb Pan Motor Version      0.2.4772 Sensor Version         04.00 System Version         RoboSHOT USB 2.1.2 Tilt Motor Version     0.2.4772 OK &gt;</pre>	

## help

Displays an overview of the CLI syntax.

Synopsis	help	
Example	<p><b>help</b></p>	

## exit

Ends the command session and closes the socket.

Synopsis	<code>exit</code>
Example	<code><b>exit</b></code>

## RS-232 Control

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

For RS-232 communication settings and connector pin-out, see [RS-232 Serial Communication](#).

### 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 <code>camera zoom</code> 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 <code>camera focus</code> 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	
	Absolute Position	8x 01 06 02 vv ww 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	0Y0Y0Y0Y = Pan position (90E2h-6BD8h) 0Z0Z0Z0Z = Tilt position (EB99h-3D59h)
Home	8x 01 06 04 FF	Returns the camera to its default 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)

Command Set	Command	Command Packet	Comments
CAM_Memory	Reset	8x 01 04 3F 00 0p FF	Corresponds to <code>camera preset</code> in Telnet API. p= preset number(0h-0Fh) qr= Speed(01h-18h)
	Set standard	8x 01 04 3F 01 0p FF	
	Set standard with 'scene'	8x 01 04 3F 21 0p FF	
	Set Tri-sync	8x 01 04 3F 11 0p 0q 0r FF	
	Set Tri-Sync with 'scene'	8x 01 04 3F 31 0p 0q 0r FF	
	Recall standard	8x 01 04 3F 02 0p FF	
	Corresponds to <code>camera preset</code> 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
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_FocusModelInq	8x 09 04 38 FF	y0 50 02 FF	Auto focus
		y0 50 03 FF	Manual focus
		Corresponds to <code>camera focus mode get</code> in Telnet API.	
Pan-TiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0z 0z 0z 0z FF	www= Pan position zzzz=Tilt Position
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 <code>camera ccu set auto_white_balance</code> 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 <code>camera ccu set red_gain</code> 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 <code>camera ccu set blue_gain</code> 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 <code>camera ccu set auto_iris</code> in Telnet API.		
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter setting
	Up	8x 01 04 0A 02 FF	pq = shutter position (00h – 15h)
	Down	8x 01 04 0A 03 FF	See <a href="#">Shutter Speed Values – CAM_Shutter Command</a>
	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 <a href="#">Iris Values – CAM_Iris Command</a>
	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 <code>camera ccu set iris</code> in Telnet API.		
CAM_Gain	Reset	8x 01 04 0C 00 FF	Iris gain setting
	Up	8x 01 04 0C 02 FF	pq = gain position (01h – 0Fh)
	Down	8x 01 04 0C 03 FF	p = gain limit (04h-0Fh)
	Direct	8x 01 04 4C 00 00 0p 0q FF	See <a href="#">Iris Gain and Gain Limit Values – CAM_Gain Command</a>
	+Gain Limit	8x 01 04 2C 0p FF	
	Corresponds to <code>camera ccu set gain</code> 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 <code>camera ccu set backlight_compensation</code> 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 <code>camera ccu set wide_dynamic_range</code> 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 <code>camera ccu set detail</code> in Telnet API.		
CAM_Chroma	Direct	8x 01 7E 55 00 00 0p 0q FF	pq: 00h – 14h
	Corresponds to <code>camera ccu set chroma</code> 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 <code>camera ccu set gamma</code> 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_WBModelInq	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_AEModelInq	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_WDModelInq	8x 09 04 3D FF	y0 50 02 FF	On
		y0 50 03 FF	Off

Inquiry Command	Command	Response Packet	Comments
CAM_BackLightModelnq	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 <code>camera standby</code> 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 <code>video mute</code> 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 <code>camera standby get</code> 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

Inquiry Command	Command	Response Packet	Comments
CAM_MuteModelnq	8x 09 04 75 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
	Corresponds to <code>video mute get</code> in Telnet API		
IPAddressInq	8x 09 08 4E 00 00 FF	90 50 49 50 00 00 00 0p 0p 0p 0q 0q 0q 0r 0r 0r 0s 0s 0s FF	pppqqrrrss = IP address Example: 90 50 49 50 00 00 00 00 01 00 00 03 00 02 04 00 01 09 00 FF = 10.30.240.190
Vaddio_ModelInq	8x 09 08 0e FF	y0 50 05 02 00 00 00 FF	RoboSHOT 12 USB

## Specifications

### Camera and Image

<b>Image device, RoboSHOT 12 USB</b>	Exmor® 1/2.8-type CMOS sensor	<b>Image device, RoboSHOT 12E USB and RoboSHOT 30E USB</b>	Exmor R™ back-lit 1/2.5 type
<b>IP (H.264) RTSP Video Resolutions</b>	1080p down to 180p 1080p at 30/25/15; others 60/30/25/15	<b>USB 3.0 (UVC) Video Resolutions</b>	1080p down to 180p at 60/30/15
<b>Pan angle and speed</b>	± 170°, up to 120°/sec	<b>Tilt angle and speed</b>	+90° -30°, up to 120°/sec
<b>Lens and horizontal FOV, RoboSHOT 12 USB</b>	10x zoom, 67.3° wide to 2.3° tele, f=3.8 mm to 38 mm, F1.8 to F3.4 Super-wide: 12x optical zoom, 73° wide to 6.6° tele, f=3.91 mm to 47 mm, F1.8 to F3.4		
<b>Lens and horizontal FOV, RoboSHOT 12E USB</b>	12x zoom, 70.2° wide to 6.8° tele, f = 4.4 mm to 88.4 mm, F2 to F3.8		
<b>Lens and horizontal FOV, RoboSHOT 30E USB</b>	30x zoom, 70.2° wide to 3.1° tele, f = 4.4 mm to 88.4 mm, F2 to F3.8		
<b>Min. working distance</b>	10mm (wide), 800 mm (tele)	<b>Min. illumination</b>	100+ lux recommended
<b>Aperture/detail</b>	16 steps	<b>Gain</b>	Auto or manual (28 steps)
<b>Backlight compensation</b>	On or off	<b>White balance</b>	Auto, ATW, indoor, outdoor, one-push, manual
<b>Focusing system</b>	Auto or manual	<b>Noise reduction</b>	On or off (6 steps)
<b>Sync system</b>	Internal	<b>S/N ratio</b>	Over 50 dB
<b>Remote management</b>	Web interface, Telnet, RS-232	<b>Power</b>	12 VDC, 3.0A or PoE+ (25 watts)

### Physical and Environmental

<b>Height</b>	6.94 in. (176 mm)	<b>Operating temperature</b>	0°C to +40°C (32°F to 104°F)
<b>Width</b>	7.06 in. (179 mm)	<b>Operating humidity (relative)</b>	20% to 80% non-condensing
<b>Depth</b>	6.76 in. (172 mm)	<b>Storage temperature</b>	-20°C to +60°C (-4°F to 140°F)
<b>Weight</b>	4.85 lbs.(2.2 kg)	<b>Storage humidity (relative)</b>	20% to 95% non-condensing

Specifications are subject to change without notice.



## Troubleshooting and Care

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

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

What is it doing?	Possible causes	Check and correct
Nothing. The light on the front is off and no video is available.	At least one of the cables is bad.	Check using known good cables.
	The wall outlet is not active. (Check by finding out if it powers something else, such as a laptop or phone charger.)	Use a different outlet.
	The camera or its power supply is bad.	Contact your reseller or Vaddio Technical Support.
The light on the front of the camera is off but the web interface and video are available.	The status light is turned off.	You can turn it on again using the LED soft DIP switch on the System page, or using the Telnet command <b>camera led on</b> .
The camera is not responding 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.
The camera does not respond to the remote, but the web interface is available.	The remote is not using the same IR channel as the camera.	Push the Camera Select 1 button on the remote.
	The batteries in the remote are dead.	Put new batteries in the remote.
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's web UI is available but the camera does not respond to commands via RS-232 connection.	The RS-232 cable is not connected, or is bad.	Connect a known good cable.
	The camera's RS-232 settings don't match the settings on the controlling device.	Check the settings at both ends to be sure they match. The camera's baud rate can be viewed but not changed 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. (Verify on the DIP Switches tab of the System page.)	Set the DIP switches to their proper positions. Default is all OFF (up). See <a href="#">Switch Settings</a> for more information.
No H.264 video stream.	IP streaming is not enabled.	Enable IP streaming: Streaming page in the web interface.
No USB video stream.	USB streaming is not enabled.	Enable USB streaming: Streaming page in the web interface.

## Status Light

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

- Blue – Camera is active
- Purple – Standby mode or booting
- Yellow – Firmware update is in progress
- Blinking blue – USB cable is disconnected (UC color scheme)
- Blinking red – Video mute is on (UC color scheme)

### 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

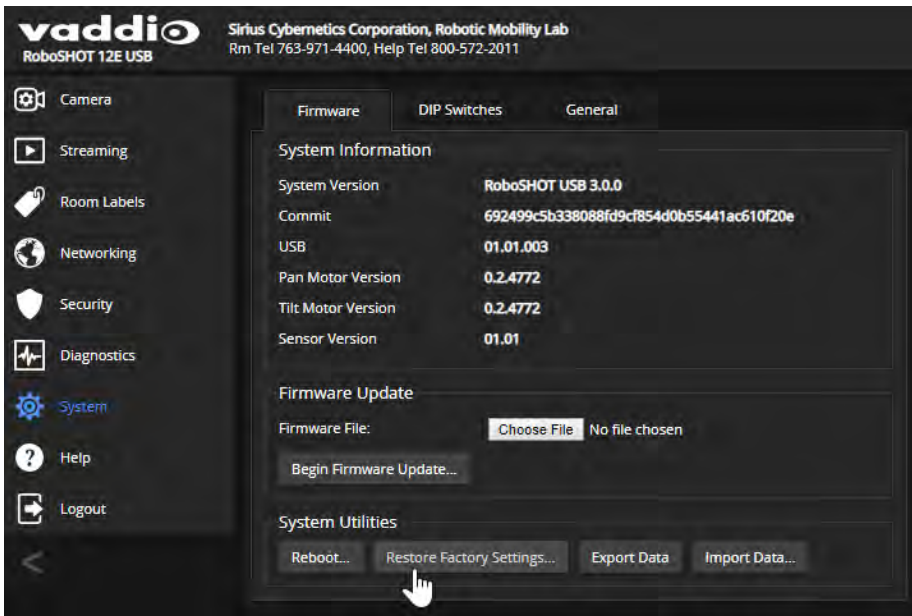
*By default, the camera's status light is active during normal operation; however, it can be configured to remain off when the camera is powered up. The camera may be sending video even if the indicator light is off.*

## Restoring Default Camera Settings

Factory reset clears most settings and returns soft DIP switches (on the DIP Switches tab of the System page) to their default positions.

**Using the switches on the back of the camera:** Set all DIP switches DOWN and cycle the power to reload the default camera settings. Then return all DIP switches to the desired settings.

**From the web interface:** Log on using the admin account, go to the System page's Firmware tab, and select Restore Factory Settings.



## 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
- Between converging tectonic plates
- Dry environments with an excess of static discharge

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

## Compliance and Conformity Statements – RoboSHOT 12E USB and RoboSHOT 30E USB

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 2004/108/EC	Class A
EN 55032: 2015	Class A
EN 55024: November 2010	Class A
KN22 2008 (CISPR 22: 2006)	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'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites 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 2004/108/EC**

**EN 55022: December 2010**

**EN 55024: November 2010**

EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001

EN 61000-4-3: 2006 + A1: 2008

EN 61000-4-4: 2004 + Corrigendum 2006

EN 61000-4-5: 2006

EN 61000-4-6: 2009

EN 61000-4-8: 2010

EN 61000-4-11: 2004

Conducted and Radiated Emissions

Immunity

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and  
Fluctuations

**KN22 2008 (CISPR 22: 2006)**

**KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)**

EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-8

EN 61000-4-11

Conducted and Radiated Emissions

IT Immunity Characteristics

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and  
Fluctuations

**IEC 60950-1: 2005 (2nd Edition); Am 1: 2009 + Am 2: 2013**

**EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013**

Safety

Safety

## Compliance and Conformity Statements – RoboSHOT 12 USB

Compliance testing was performed to the following regulations:

FCC Part 15 (15.107, 15.109), Subpart B	Class B
ICES-003, Issue 54: 2012	Class A
EMC Directive 2004/108/EC	Class A
EN 55022: December 2010	Class A
EN 55024: November 2010	Class A
KN22 2008 (CISPR 22: 2006)	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 B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



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'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites 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 2004/108/EC**

**EN 55022: December 2010**

**EN 55024: November 2010**

EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001

EN 61000-4-3: 2006 + A1: 2008

EN 61000-4-4: 2004 + Corrigendum 2006

EN 61000-4-5: 2006

EN 61000-4-6: 2009

EN 61000-4-8: 2010

EN 61000-4-11: 2004

**KN22 2008 (CISPR 22: 2006)**

**KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)**

EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-8

EN 61000-4-11

**IEC 60950-1: 2005 (2nd Edition); Am 1: 2009 + Am 2: 2013**

**EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013**

Conducted and Radiated Emissions

Immunity

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and Fluctuations

Conducted and Radiated Emissions

IT Immunity Characteristics

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and Fluctuations

Safety

Safety

## Warranty and Return Policy

**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](mailto:support@vaddio.com) or by phone at one of the phone numbers listed on [support.vaddio.com](http://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 products are not returnable.

**Voided warranty:** 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.



**General RMA Terms and Procedures:** RMA's are valid for 30 days and will be issued to Vaddio dealers only.

- End users must return products through Vaddio dealers.
- Before a defective product can be authorized to send in for repair, it must first go through the troubleshooting process with a member of the Vaddio Technical Support team.
- Products authorized for repair must have a valid RMA (Return Material Authorization) number.
  - Vaddio RMA Team will issue the RMA number.
  - An RMA number is to be included in all correspondence with Vaddio.
  - The RMA number must appear clearly on the shipping label (not the box) when the product is returned.
  - A packing slip must be included on the inside of the box with the RMA number listed and reason for RMA return.
- Products received at Vaddio that do not have a valid RMA number clearly marked on the outside of the shipping container may be refused and returned to sender.
- Boxes showing external damage will be refused and sent back to the sender regardless of the clearly marked RMA number and will remain the responsibility of the sender.

**RMA Charges (Restocking):** All qualified returns must be made in unopened, original packaging with all original materials.

- Initial shipments of equipment that are refused upon attempted delivery, for any reason, are subject to restocking charges.
- The Dealer has up to 60 days from the date of purchase to return Vaddio product for credit for future purchases of Vaddio product only.
- The Dealer has 61 to 90 days from the date of purchase to return Vaddio product with a 15% restocking fee or \$50.00 fee, whichever amount is greater
- The Dealer has up to 30 days from the date of purchase to return OEM and other manufacturer's products with a 15% restocking fee or \$50.00 fee, whichever amount is greater.
- NOTE: Special Order products from other manufacturers (identified in the Vaddio Price Guide as noncancelable, nonreturnable and not refundable) are not eligible for advance replacement from Vaddio.

**Advance Replacement Policies:** For Vaddio manufactured products, advance replacement will be provided for up to one (1) year after the initial shipment of products.

- NOTE: OEM and other manufacturer's products are excluded from the Vaddio advance replacement policy. Advance replacement will be provided for up to 30 days after initial shipment of OEM products. Thereafter, a return to Vaddio and factory repair is offered during the other manufacturer's warranty period. Vaddio will determine if the returned product is qualified for the OEM warranty.
- NOTE: Special Order products from other manufacturers (identified in the Vaddio Price Guide as noncancelable, nonreturnable and not refundable) are not eligible for advance replacement from Vaddio.

**Advance Replacement Procedures:** The Vaddio Dealer must submit a non-revocable purchase order for advance replacement equipment at normal dealer pricing. Credit shall be issued upon complete product return (including all accessories) for dealers with Net 30 terms. For credit card accounts, charges will be assessed to the credit card for the replacement and credited back upon complete product return.

- Returns must be made in the original Vaddio packaging with all original materials if at all possible. Vaddio products with missing original materials will be billed to the dealer at dealer price.
- NOTE: OEM products must be returned in the original packaging with all materials and the RMA number written on the shipping label only and not on the OEM box. If the return is incomplete and/or the OEM box is defaced, the product shall be returned to the dealer and the RMA will not be credited.
- Equipment returned with “No Trouble Found” after advanced replacement will be assessed a full 15% or \$50.00 restocking fee (whichever is greater) for each item and may also be assessed for additional charges to compensate for wear, damages and reconditioning.
- All returns must be accompanied by RMA # as stated above.
- All Advanced Replacement products are sent via 2-day service in the continental USA. If the product is requested to be sent via priority or overnight shipping, the Dealer shall pay shipping costs. The dealer can elect to supply their preferred shipping account number.
- International customers are responsible for all freight charges for equipment returned to Vaddio, including international shipping, taxes, and duties, insurance and all other associated logistic charges.

**Warranty Repair Terms and Procedures:** Vaddio will repair any product free of charge, including parts and labor, within the terms outlined in the warranty agreement for that product.

- Customers must provide proof of the product’s purchase date.
- Product that is within the warranty period will be repaired under the non-warranty terms if:
  - The equipment has been damaged by negligence, accident, act of God, mishandling, used with the incorrect, modified or extended power supply or has not been operated in accordance with the procedures described in the operating and technical instructions.
  - The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative.
  - Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment, which in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or the equipment’s original serial number has been modified or removed.
- Customer is responsible for shipping charges to send defective product under warranty to Vaddio. Vaddio will pay ground service return shipping charges during the 2nd year of the warranty period.
- Standard return shipping method for products under warranty, but out of the advance replacement warranty period, is ground shipment. Extra charges associated with priority shipping, when requested, will be the responsibility of the customer.

**Non-Warranty Repair Terms:** Vaddio will repair any non-obsolete product that does not meet the terms of the warranty. Non-warranty repair terms are as follows:

- The customer is responsible for, and agrees to pay, all parts and labor costs associated with the repair. Standard non-warranty repair charges are outlined below.
- Customers must provide payment method and one of the following, prior to receiving an RMA:
  - Hard copy of a PO, for dealers with Net 30 terms and in good standing with Vaddio.
  - Valid credit card number - Credit card will be charged upon shipping repaired product back to customer.
- Request for COD: Customers will be notified of COD charges prior to shipping repaired unit.
- Customer is responsible for all shipping charges both to and from Vaddio, and may use their own carrier.
- Customers will receive a courtesy call notifying them of total repair charges prior to return shipping.

**Non-Warranty Repair Charges:** Total repair charges (per unit) for a non-warranty repair consist of the following:

- Cost of any replacement parts needed to repair the defect.
- Labor costs billed per hour after minimum charges/time.
- Labor charges include troubleshooting and repair time only.
- Burn-in time and final test time is not included in the labor charges.
- Labor time is rounded to the nearest quarter hour.
- Labor charges are billed at the prevailing rate for the category of equipment repaired, after minimum charges/time. For prevailing labor rates, please contact the Vaddio technical support.
- All shipping and handling costs are the responsibility of the customer for non-warranty repairs.

**Minimum Labor Charges:** All non-warranty repairs are subject to a minimum evaluation/repair labor charge even if there is no problem found. Please contact Vaddio technical support for the current applicable rate.

**Repair Charge Estimates:** Estimates on repair charges for a specific problem will not be given before an RMA is issued and the actual product has been evaluated by a Vaddio technician. Repair estimates will be given after the repair department receives and evaluates the unit.

- Customers requesting an estimate on repair charges must do so up front when they call in for an RMA. The RMA team will call or email with the estimate after evaluating the unit and before proceeding with the repair.
- Any product evaluated for a repair estimate is still subject to the minimum labor charges even if the customer decides not to proceed with the repair.
- Vaddio does not guarantee estimates given on repair charges. Actual repair costs may exceed the estimate.
- Customer is responsible for actual repair charges, regardless of estimate.

**Repair Policy Notes:**

- **Duration of Repair:** Products are repaired on a first come first serve basis. The turn-a-round time of a particular repair is dependent upon circumstances such as product type, the nature of the problem and current repair volumes. Requests for expedited repair service will be considered on a case-by-case basis.
- **Repair Warranty:** Vaddio guarantees all of its repair work, performed on non-warranty items, for 90 days from the day the repaired product is shipped back to the customer. If the original problem described was not resolved or reoccurs within the 90-day period, Vaddio will repair the unit free of labor charges. However additional material charges may apply unless the parts used to affect the repair are again deemed defective.

## Photo Credits

This guide may include some or all of these photos.

European Space Agency (ESA) astronaut Samantha Cristoforetti, a Flight Engineer with Expedition 42, photographs the Earth through a window in the Cupola on the International Space Station

By NASA - [https://blogs.nasa.gov/ISS\\_Science\\_Blog/2015/03/06/women-in-space-part-two-whats-gender-got-to-do-with-it/](https://blogs.nasa.gov/ISS_Science_Blog/2015/03/06/women-in-space-part-two-whats-gender-got-to-do-with-it/), Public Domain, <https://commons.wikimedia.org/w/index.php?curid=38834990>

Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society

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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

Nicolas Altobelli, Rosetta Scientist at ESA's European Space Astronomy Centre, Villanueva de la Cañada, Madrid, Spain

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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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