



Complete Manual for

PrimeSHOT HDMI

PTZ Cameras

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Contents

Overview	1
What's in this guide	1
Features	1
A quick look at the camera	2
Installation	4
Before you install the camera	4
Don't void your warranty!	4
Cabling notes	5
Video resolution setting	5
Pre-installation functional check	6
Status light	6
Basic connections	7
RS-232 serial communication settings	8
RS-232 connector pin-out	8
Installing the wall mount	9
About ceiling-mounted cameras	9
Installing the camera	10
Initial device set-up	11
Initial device set-up using the Vaddio Deployment Tool	11
Initial device set-up using the Vaddio Device Controller	12
Manual access and initial device set-up	12
About the web interface	12
Getting the camera's IP address for manual access	12
If the camera is at 169.254.1.1	13
Initial access to the web interface	13
Completing the initial device set-up	13
System administration	14
Changing the camera's hostname	14
Configuring access and other security settings	15
Adding room information to the camera's web interface	16
Configuring camera behavior	17
Storing preset positions including custom Home	17
Configuring streaming behavior	18
Enabling or disabling IP streaming	18
Viewing the IP stream (RTSP)	19
RTSP streaming protocol and URL	19
Setting up IP streaming in Easy mode	20
Setting up IP streaming in Custom mode	21
Configuring RTMP streaming	22
Changing MTU	22

Adjusting color, lighting, and image quality settings	23
Lighting and image quality quick reference	24
Color adjustment quick reference	24
Speed adjustments	25
Setting the speeds for manual movements	25
Setting the speeds of movements to presets	25
Setting the direction for camera movements	26
Setting other system behaviors	27
System maintenance	28
Saving (exporting) or restoring (importing) a configuration	28
Installing a firmware update	29
Contacting Vaddio technical support and viewing diagnostic logs	30
Operating the camera	32
Moving the camera	33
Zooming in or out	33
Moving the camera to a preset position	33
Stopping or resuming video	33
Managing the camera ready state	34
Command Line Interface SHell (CLISH) reference	35
Requirements	35
Usage notes	35
Getting more information	35
Typographical conventions	35
Camera and video management commands	36
camera home	36
camera pan	37
camera tilt	38
camera zoom	39
camera ptz-position	40
camera focus	41
camera preset	42
camera ccu get	43
camera ccu set	44
camera ccu scene	45
camera led	45
camera standby	46
video mute	46
Network and communication commands	47
streaming ip enable	47
streaming settings get	48
network settings get	48

network ping	49
Maintenance and troubleshooting commands	50
camera recalibrate	50
system reboot	50
system factory-reset	51
Session information and management commands	51
version	51
help	52
history	52
exit	52
VISCA-compatible serial command reference	53
Camera movement, zoom, and focus commands	53
Movement, zoom, and focus inquiry commands	55
Color and light management commands	56
Shutter speed values (CAM_Shutter)	58
Iris values (CAM_Iris)	59
Iris gain and gain limit values (CAM_Gain)	59
Color and light management inquiry commands	60
Other commands	60
Other inquiry commands	61
Troubleshooting and care	62
Power and control	62
Other issues	63
Status light	63
Correcting a motor calibration error	64
Restoring factory default settings	65
Operation, storage, and care	65
Glossary	66
Photo credits	68
Index	69

Overview

This guide covers:

PrimeSHOT 10 HDMI PTZ camera

- North America – 999-30410-000 (black), 999-30410-000W (white)
- Europe and UK – 999-30410-001 (black), 999-30410-001W (white)
- Australia and New Zealand – 999-30410-009 (black), 999-30410-009W (white)



PrimeSHOT 20 HDMI PTZ camera

- North America – 999-30420-000 (black), 999-30420-000W (white)
- Europe and UK – 999-30420-001 (black), 999-30420-001W (white)
- Australia and New Zealand – 999-30420-009 (black), 999-30420-009W (white)

What's in this guide

This guide covers

- Physical features
- Switch settings
- Installation
- Initial set-up and system administration
- Performance/behavior configuration
- System maintenance
- Operation
- Command reference
- Troubleshooting

For your convenience, the information you need to install this product is also available in the smaller, stand-alone **Installation Guide for PrimeSHOT HDMI PTZ Cameras**.

Features

- PrimeSHOT 10 HDMI: PTZ camera for small to medium spaces
PrimeSHOT 20 HDMI: PTZ camera for medium to large venues such as houses of worship and lecture theaters
- 2.12 Megapixel effective, native 1080p/60 full HD image sensor
- PrimeSHOT 10 HDMI: 10x zoom, 67° horizontal field of view (wide end)
PrimeSHOT 20 HDMI: 20x zoom, 55° horizontal field of view (wide end)
- Simultaneous HDMI 1.3 and IP (H.264) streaming outputs
- Precise pan and tilt movements at up to 90° per second
- Command Line Interface SHell (CLISH) and VISCA control for ease of integration
- Enterprise-class IT administrative capabilities with full web controls for remote management
- Presenter-friendly IR remote control

A quick look at the camera

This section covers the physical features of the camera.



Camera and zoom lens – The PrimeSHOT 10 HDMI camera (left) has a 10x zoom lens. The PrimeSHOT 20 HDMI camera (right) has a 20x zoom lens.

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. This light can be turned off in the administrative web interface.

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 light is off.



From left to right:

Power connector – Connect the 12 VDC, 3 A power supply shipped with the camera.

Rotary switch – Select the video output resolution.

Ethernet connector – Connect to the network.

RS-232 connector – Optional. Connect to a camera controller to manage the camera.

HDMI connector – HDMI 1.3 video output.

Older PrimeSHOT 20 HDMI cameras also have an S-Video connector.

Installation

This section covers:

- Selecting the location for the camera
- Verifying that the camera is ready to install
- Installing the mount
- RS-232 cable pin-out and communication settings
- Connection diagrams
- Mounting the camera

Before you install the camera

Camera placement tips:

- 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 remote 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.
- If you make cables for this installation, check them for continuity.
- Ensure that the Video Resolution rotary switch is 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.

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.

Caution

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 of different voltages may look nearly identical. Using the wrong power supply will void the warranty, possibly causing unsafe operating conditions and damage to the product.

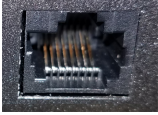
Caution

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.

Cabling notes

Caution

Do not use pass-through RJ-45 connectors when making cables for this product. Poorly crimped connectors of this type can cause intermittent connections and degraded signal quality. They can also damage the connectors on the product, which will void your warranty.



Intact – will make reliable contact with cable connector



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

When making cables for this product, 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 routed near sources of electromagnetic interference such as power lines or fluorescent light fixtures.

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.

Video resolution setting

Use the rotary switch on the back of the camera to set the desired HDMI output resolution.



For cameras with S-Video output, the resolution can be set to PAL or NTSC in the administrative interface. Default is NTSC.

Pre-installation functional check

If you're installing the camera where it's hard to reach, you may want to verify functionality before you install it.

1. Connect the camera in its minimum functional configuration.



2. Connect power.

If the camera turns on and sends video, continue with the installation. If it does not, follow the applicable [Troubleshooting](#) steps.

Status light

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

- Purple – Standby mode or booting
- Blue – Camera is active
- Yellow – Firmware update is in progress
- Blinking yellow – Motor out of calibration

Caution

Do not remove power or reset the camera while the status light 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 light is off.

Basic connections

This diagram shows a simple installation, with a PCC Premier camera controller providing the option for an operator to control the camera. This is not required; the camera can also be controlled using the remote or the web interface.

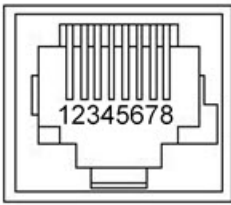


RS-232 serial communication settings

The RS-232 serial port connects to a third-party device for external 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

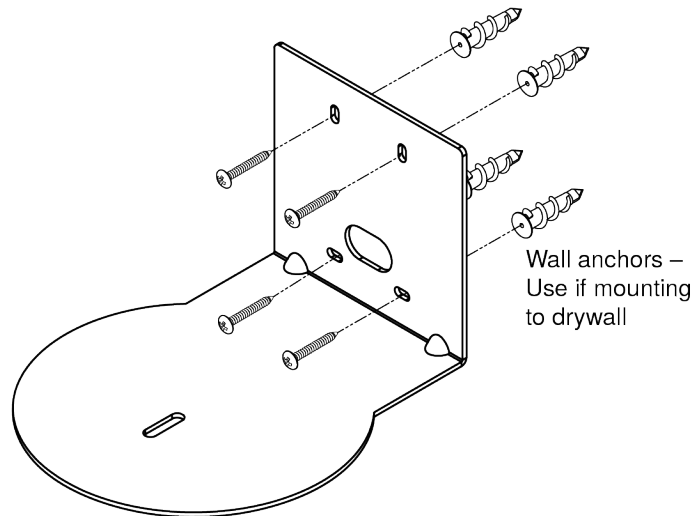
Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

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.



About ceiling-mounted cameras

If you use an inverted mount, set the camera's Image Flip mode 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. This control is available to the administrator on the web interface's System page.

See [Setting other camera behaviors](#) for more information.

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

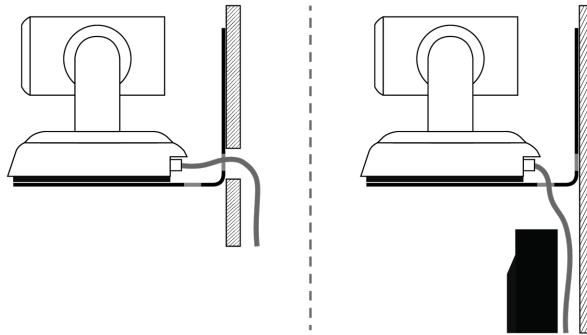
Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

1. Verify that you have set the switch on the back of the camera to the desired video resolution. See [Video resolution setting](#).
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.

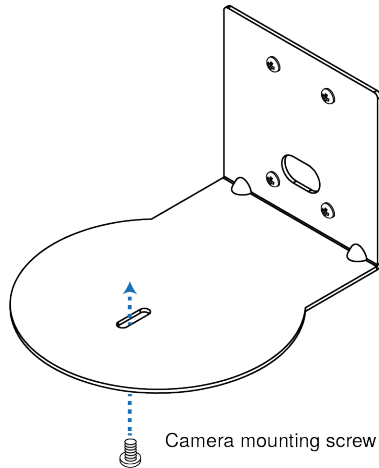


Image for illustration only; not to scale. Camera and mount details may differ.

Note

If the camera is jostled or bumped while it is connected to power, it may require a pan-tilt reset.

Initial device set-up

Vaddio cameras have a web interface for initial device set-up, administrative control, and operation. When any Vaddio product is shipped from the factory, the administration and operation areas of the web interface are not available. You will need to set the admin password to access the full web interface.

Initial device set-up using the Vaddio Deployment Tool

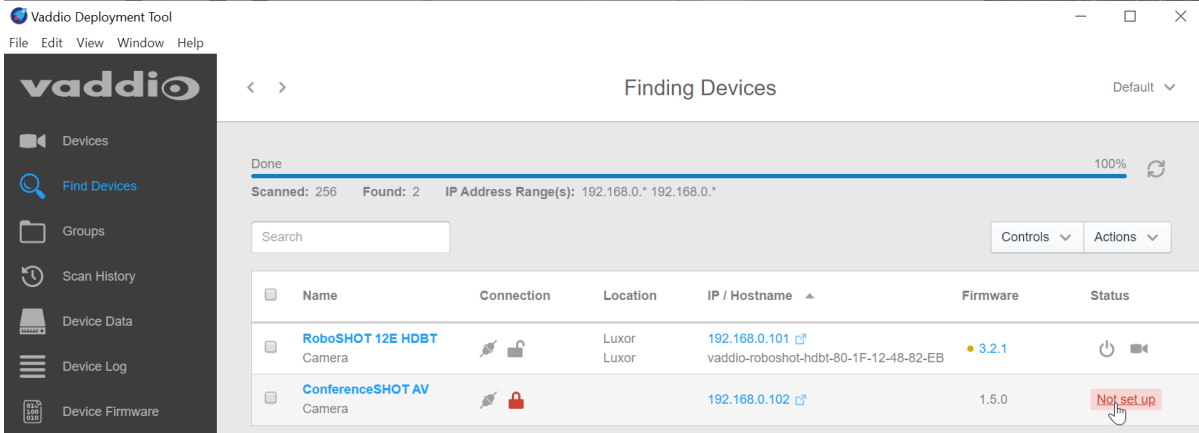
The Vaddio Deployment Tool provides an option to do the initial device set-up for all connected devices, and provides a shortcut to each device's web interface for system administration. This tool is available as a free download at <https://info.legrandav.com/VaddioDeploymentTool>.

Note

Be sure you have the current version of the Vaddio Deployment Tool. If it notifies you that an update is available, install the update. This ensures that you have access to the full capabilities of the tool.

To complete the initial device set-up with the Vaddio Deployment Tool:

1. Power up the camera and other devices if you have not done so already.
2. On the Find Devices page, select Scan. If the scan does not locate the devices you need to set up, your computer may be on a different subnet. Return to the Find Devices page and set up an advanced scan to search the appropriate portion of the network.
3. In the list of equipment that the scan discovers, locate the devices marked Not Set Up.



4. For each device that you need to work with, click the Not Set Up button and set the admin password. You can now access the administrative web interface for system administration and other configuration tasks.

Initial device set-up using the Vaddio Device Controller

The Vaddio Device Controller is a stand-alone tablet device for working with Vaddio products' web interfaces.

To complete the initial device set-up with the Vaddio Device Controller:

1. Connect the touch-panel to the network on the same subnet as the products you need to work with – for example, connect both to the same PoE+ switch.
2. Go to the touch-panel's Configuration page (gear icon) and select Scan.
3. Locate the device you need to work with, and select Use.
4. Select Exit to leave the Configuration page and open the device's web interface.
5. Set the admin password.

If the Vaddio Device Controller does not find the camera, verify that the Vaddio Device Controller and camera are connected to the same subnet.

Manual access and initial device set-up

If you do not use a Vaddio Device Controller or the Vaddio Deployment Tool, you will need to complete the initial device set-up manually, which requires you to discover the device's IP address and browse to the device's web interface.

About the web interface

The camera's web interface provides:

- **Admin access** for system administration, maintenance, and performance/behavior configuration.
- **User access** for operation, including camera controls similar to those available from the IR remote. Set the user password or enable guest access for this portion of the web interface.

We have tested this product with these web browsers:

- Microsoft® Edge
- Chrome®
- Firefox®
- Safari®

We test using the browser version available from the vendor at that time. Other browsers are likely to work also.

Getting the camera's IP address for manual access

If you know that your network does not automatically assign IP addresses, skip this section: The camera's address is 169.254.1.1. You will need to connect your computer's network port to the camera's network port to do the initial device configuration and network configuration.

If you are not sure, or you know that your network automatically assigns IP addresses, you will need to be able to view the camera's video output.

To get the camera's IP address:

Press the Network button on the remote. The display presents the camera's IP address and MAC address.

To dismiss the data display:

Press the Network button again to dismiss the information, or use the Data Screen On/Off control on the System page.

Note

If you have an older remote, use the Data Screen button.

If the camera is at 169.254.1.1

This is the camera's default IP address. This means one of these things:

- 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.

To communicate directly with the camera, connect a cable from your computer's network port to the camera's network port.

After you have done the initial device set-up, you will need to configure the camera for the network.

Initial access to the web interface

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

HTTP access is disabled initially. **This is also true after restoring factory defaults.** When you access the web interface without using the `https://` prefix, you may encounter a message saying that HTTP has been disabled on this device. Use the button in the message box to switch to HTTPS.

Expect a security warning from your browser the first time you access the device's web interface.

Different browsers will respond with different messages and options. Your browser will probably present a message indicating one of these things:

- The connection is not private
- The site is not secure
- The site is not trusted
- The site poses a security threat

This is because the certificate (the product's website security credential) is self-signed rather than being issued by an external certificate authority. *The HTTPS connection is secure and traffic is encrypted, however.*

You will need to make the selections that your browser's security message discourages.

Depending on the browser, the warning presents an option to learn more, view details, or go to the "Advanced" page. When you select this, your browser provides an explanation and a button or link to continue to the IP address you entered, with a reminder that it may be unsafe. Select the option to continue. *Your HTTPS connection is safe.*

After you have accessed the product's web interface once, your browser may remember its IP address and not present the security message again.

Completing the initial device set-up

Set the admin password and complete any other required tasks, such as accepting agreements.

The full administrative interface opens when you finish.

Note

Be sure you have a way to remember the admin password. If the password is lost, you will need to restore factory defaults.

Note

This page includes a link to the company's standard privacy policy. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered "personally identifiable information" for the purposes of the privacy policy.

System administration

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

- Security – Passwords, guest access, other IT security-related settings
- Network configuration
- Time settings

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

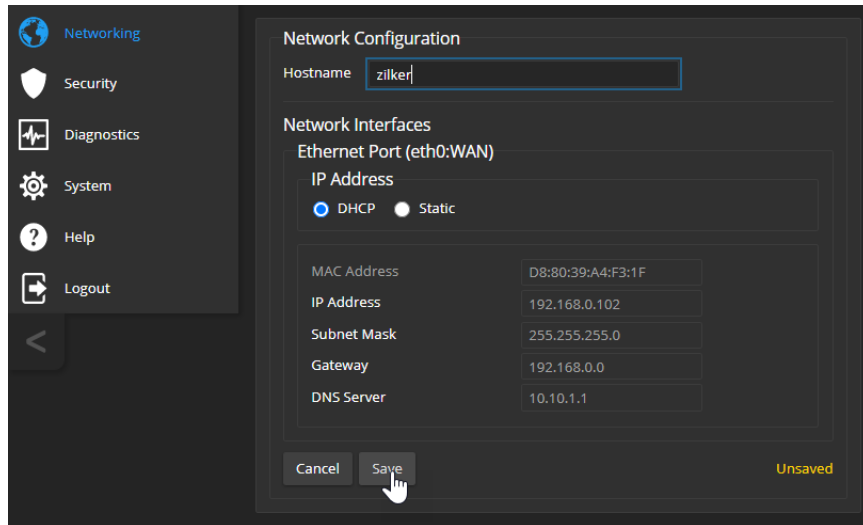
Changing the camera's hostname

NETWORKING PAGE

If your network supports hostname resolution, you can change the camera's hostname. Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.

Note

You may need to log in to the web interface again after changing the hostname.

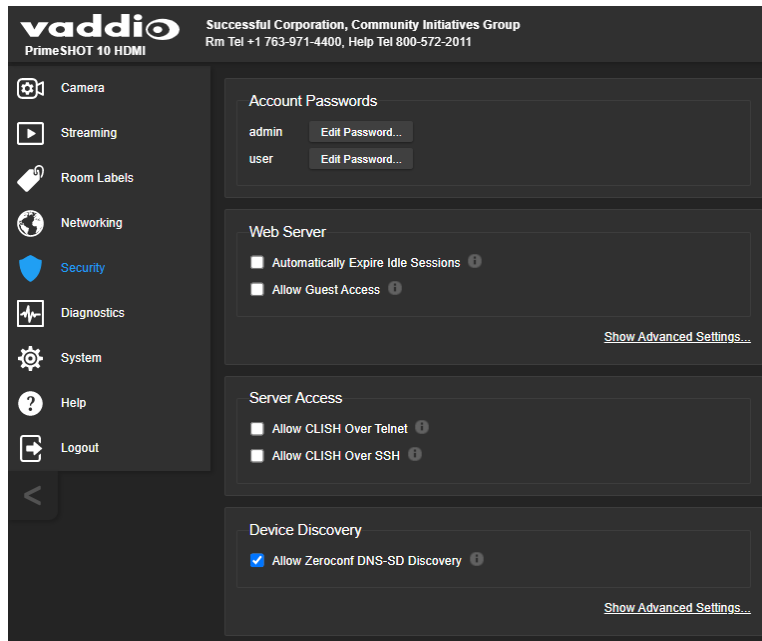


Configuring access and other security settings

SECURITY PAGE

The Account Passwords and Web Server areas of the Security page provide basic security for the web interface:

- **Admin password** – Required. The web interface is unavailable if no admin password is set.
- **User password** – Password-protected access to the operator's page of the web interface.
- **Automatically Expire Idle Sessions** – Automatically logs you out after 30 minutes of inactivity. Enabled by default.
- **Allow Guest Access** – Allow access the operator's page without a password. Disabled by default.



Other security settings include:

- **Allow CLISH over Telnet** – disabled by default.
- **Allow CLISH over SSH** – disabled by default.
- **Allow Zeroconf DNS-SD discovery** – allows other Vaddio devices and tools to detect the camera. Enabled by default.
- Advanced Settings – **Enable HTTP access** (disabled by default) and **Manage SSL Certificate**.

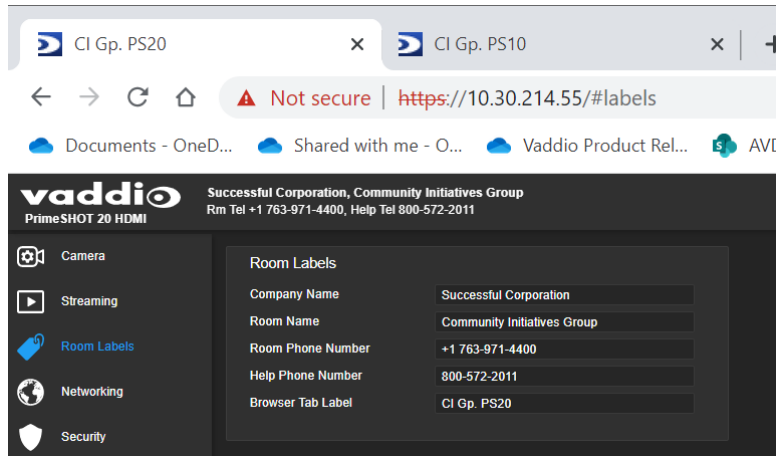
Note

Consult your network security specialist before changing any of these settings. Seek explicit guidance concerning the SSL certificate.

Adding room information to the camera's web interface

ROOM LABELS PAGE

The information you enter on this page is displayed on every page of the web interface. You may also wish to specify what appears on the browser tab.



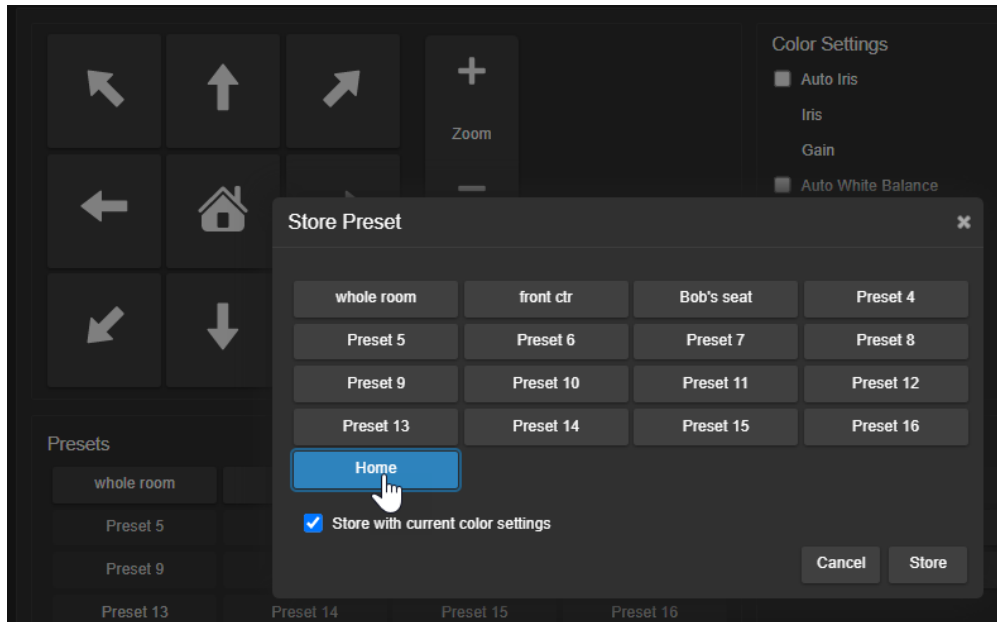
Configuring camera behavior

This chapter covers settings for defining how the camera performs in your environment:

- Camera presets and preset chains
- Zoom, focus, and color settings
- Other camera behaviors

Storing preset positions including custom Home

1. Set up the camera shot, then use the Store button to open the Store Preset box.
2. Select one of the preset buttons – either a numbered preset or the Home button.
3. To save the current CCU settings along with the camera position, check Store with Current Color Settings.
4. Store the preset.



Configuring streaming behavior

IP streaming is disabled by default.

Note

The screen shots in this section are representative, but may differ from what you see.

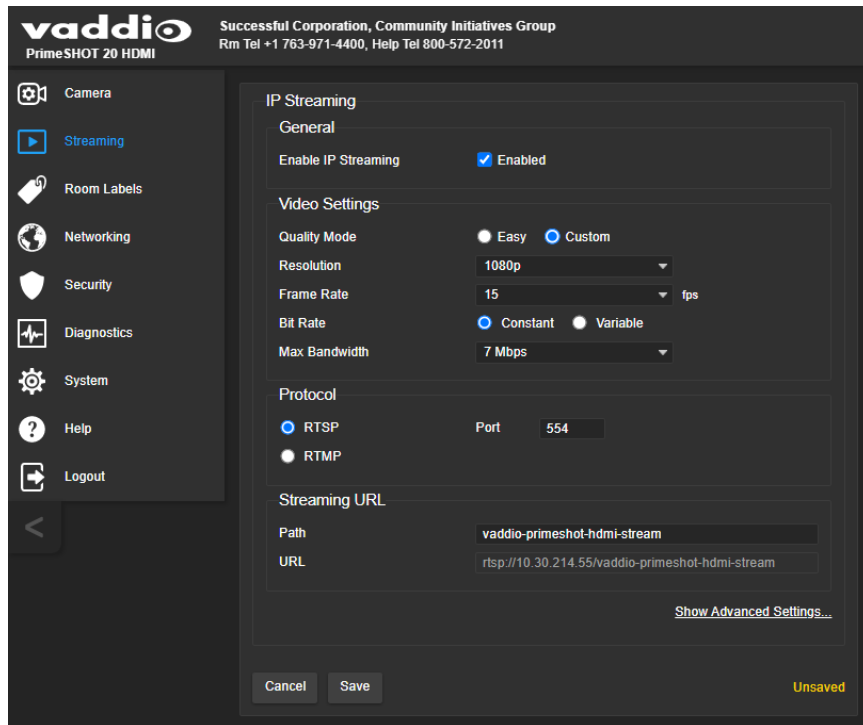
Enabling or disabling IP streaming

STREAMING PAGE

IP streaming is disabled by default.

Two IP streaming protocols are available:

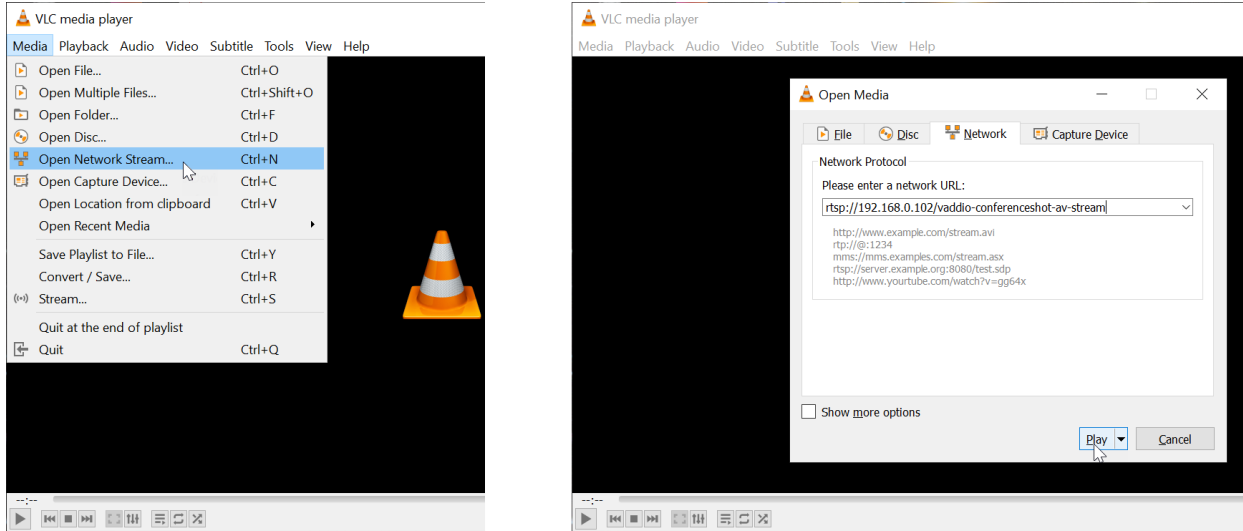
- *RTSP streaming* delivers an IP stream that people can access from your network using a media player.
- *RTMP streaming* sends a stream to a content service provider such as YouTube. To use RTMP streaming, you must have an account with a streaming service.



Viewing the IP stream (RTSP)

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.

The image below shows how you would view a camera's IP stream using VLC Media Player. The media player will correctly identify your camera by model.



RTSP streaming protocol and URL

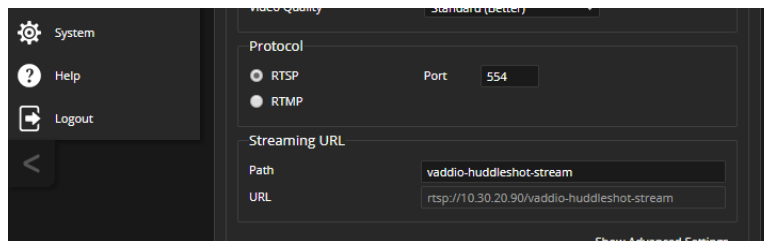
STREAMING PAGE

When IP streaming is enabled and RTSP is selected, the RTSP stream is automatically available. 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.



Setting up IP streaming in Easy mode

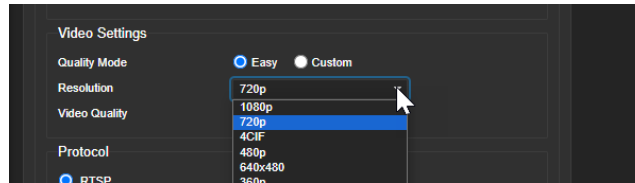
STREAMING PAGE

Note

Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

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

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



3. Select Video Quality. Then save your changes.



Setting up IP streaming in Custom mode

STREAMING PAGE

Note

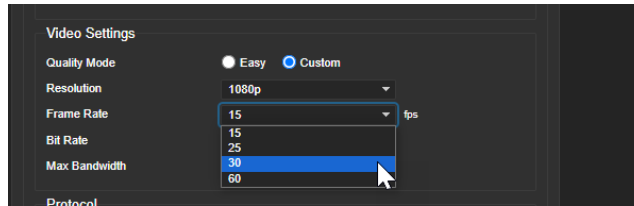
Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

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).

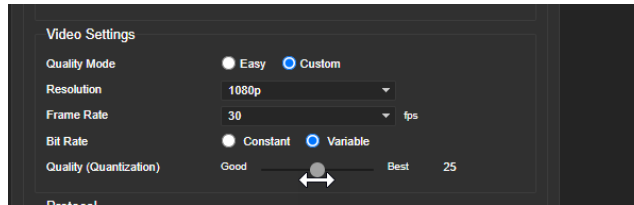
3. Select the desired frame rate.



Note

Some combinations of resolution and frame rate are not valid, and will generate notifications.

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. Then save your changes.



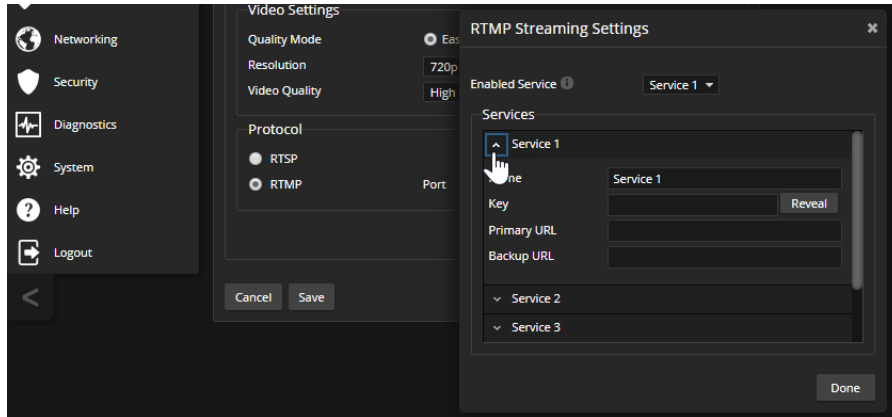
Configuring RTMP streaming

STREAMING PAGE

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

To configure an RTMP streaming service:

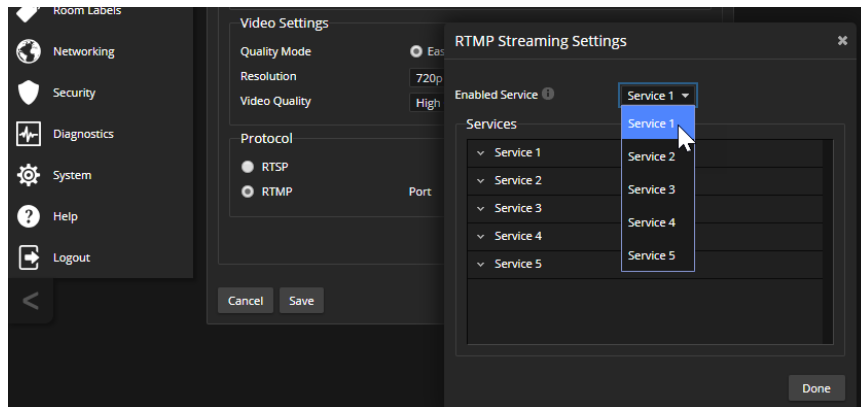
1. Select RTMP streaming, then select Settings.
2. Expand the information box for the service.



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.

Changing MTU

STREAMING PAGE, ADVANCED SETTINGS

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

Adjusting color, lighting, and image quality settings

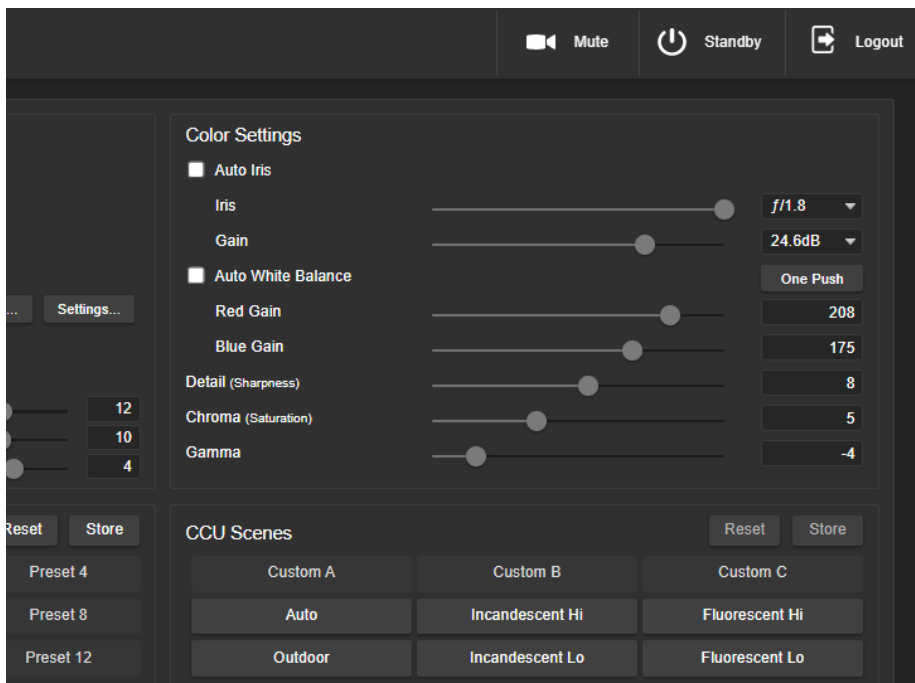
CAMERA PAGE

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

- **Auto Iris** allows the camera to compensate automatically for the light level. Clear this box to adjust iris and gain manually.
- **Backlight Compensation** (available when Auto Iris is selected) reduces contrast to adjust for bright light behind the main subject of the shot. This setting can't be used with Wide Dynamic Range.
- **Wide Dynamic Range** (available when Auto Iris is selected) increases the contrast between the brightest and darkest areas. This setting can't be used with Backlight Compensation.
- **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 (gray density) between bright areas and shadows.

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




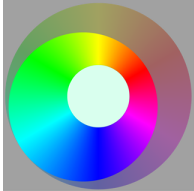



Lighting and image quality quick reference

Here are some tips for using the color 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
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"> ▪ adjust Red Gain (decrease for less red, increase for less green) ▪ adjust Blue Gain (decrease for less blue, increase for less yellow) 			
Too much red	Not enough red	Too much blue	Not enough blue	Balanced
				

If you are adjusting for lighting conditions that are likely to recur, you can store presets with color settings.

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 Speeds – Separate pan, tilt, and zoom speeds used for movements between presets.

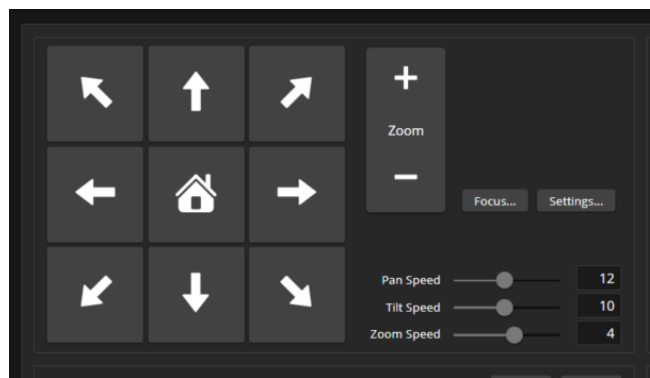
Setting the speeds for manual movements

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 Speeds control how fast the camera moves to presets.

To set speeds for movements to presets:

In the Global Preset Speeds section, set the speeds for movements to presets.

Setting the direction for camera movements

CAMERA PAGE

The camera's default references for left, right, up, and down may not suit your situation.

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 the presenter will control the camera with the remote:

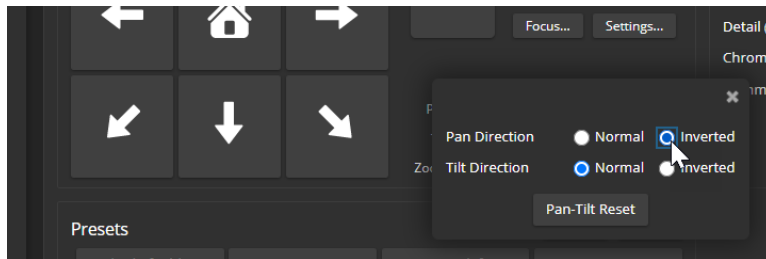
1. Select Settings to open the direction control box.
2. Set Pan Direction to Inverted to make the camera move to the presenter's left when they press the left arrow button.

If controlling the camera with a joystick:

1. Select Settings to open the direction control box.
2. Set Tilt Direction to Inverted to make the camera tilt down when you push the joystick forward.

Note

Inverting tilt direction is only for joystick control. For ceiling-mounted cameras, use the Image Flip setting to invert the video and make the arrow controls on the remote and in the web interface match the actual tilt direction.

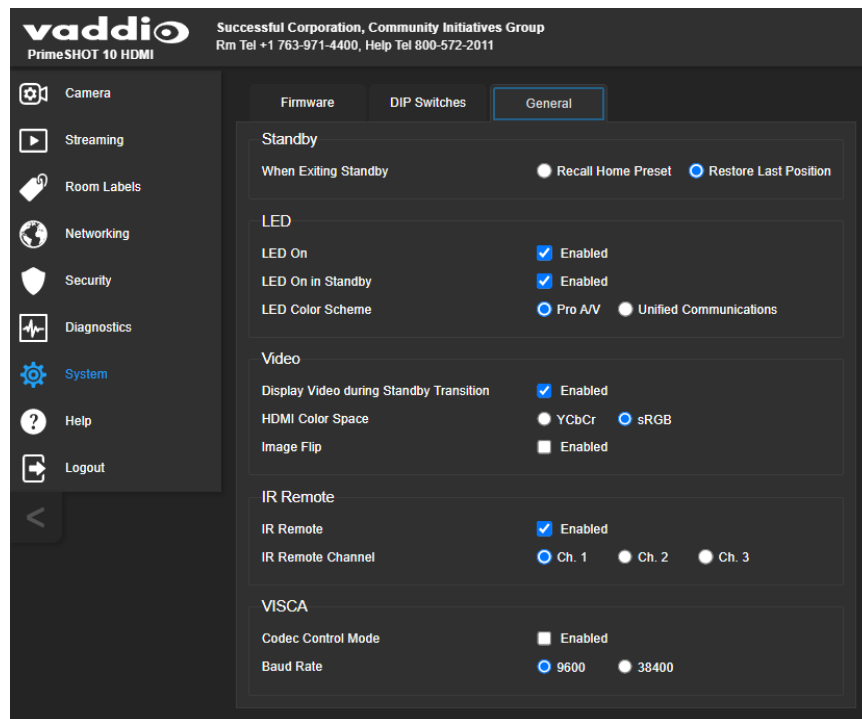


Setting other system behaviors

SYSTEM PAGE, GENERAL TAB

The following settings are available on the System page:

- **When Exiting Standby** – Set the camera to return to the Home preset or to the last shot in use when it comes out of standby mode. Both settings restore the camera to the zoom level associated with that position as well as the pan/tilt position.
- **LED On** – Enabled by default. If desired, the status light can be turned off.
- **LED On in Standby** – Enabled by default. Disable to turn off the status light when the camera is in standby mode.
- **LED color scheme** – Status light color codes for Pro AV (broadcast) or UC (unified conferencing); default is Pro AV.
- **Display Video during Standby Transition** – allows the camera to start sending video immediately on return from standby, rather than waiting until it reaches its Home position or last position.
- **HDMI Color Space** – Set the color space for the HDMI output to YCbCr (default) or sRGB.
- **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 commands from the remote, web interface, and connected control devices.
- **IR Remote** – Enabled by default. Clear the check box if you need to prevent people from operating the camera with the remote.
- **IR Remote Channel** – The remote can control up to three cameras in the same room with different IR frequencies. Select channel 1, 2, or 3; then use the Camera Select buttons on the remote to select the camera you want to control.
- **Codec Control Mode** – Select Codec Control Mode if using the camera with a third-party codec.
- **Baud Rate** – RS-232 serial communication rate; 9600 bps is default. Must match the baud rate of the device connected to the RS-232 port.



System maintenance

This chapter covers tasks for keeping your system up-to-date and operating properly:

- Rebooting
- Backing up and restoring the camera configuration
- Installing firmware updates
- Getting help

Saving (exporting) or restoring (importing) a configuration

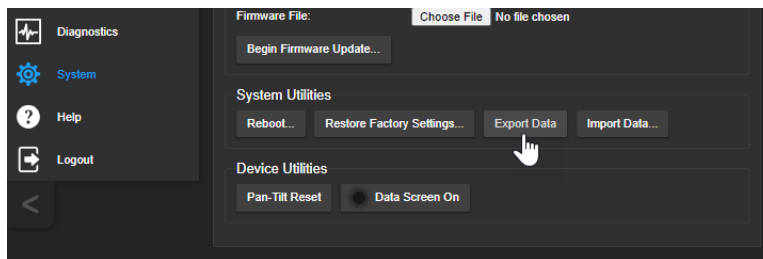
SYSTEM PAGE, FIRMWARE TAB

If you need to restore a camera's factory default settings, you can export the configuration beforehand to restore customized information instead of re-entering it manually.

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 compatible firmware versions installed.

The data export includes home and other presets, NTP and time zone information, and room labels.

It does not include any information that is unique to the device, such as passwords, hostname, or color and lighting settings.



To export a configuration:

Select Export Data. The export downloads to your computer as a .dat file. The filename is the camera's hostname.

To import a configuration file:

Select Import Data. The web interface prompts you to select the file to import.

Installing a firmware update

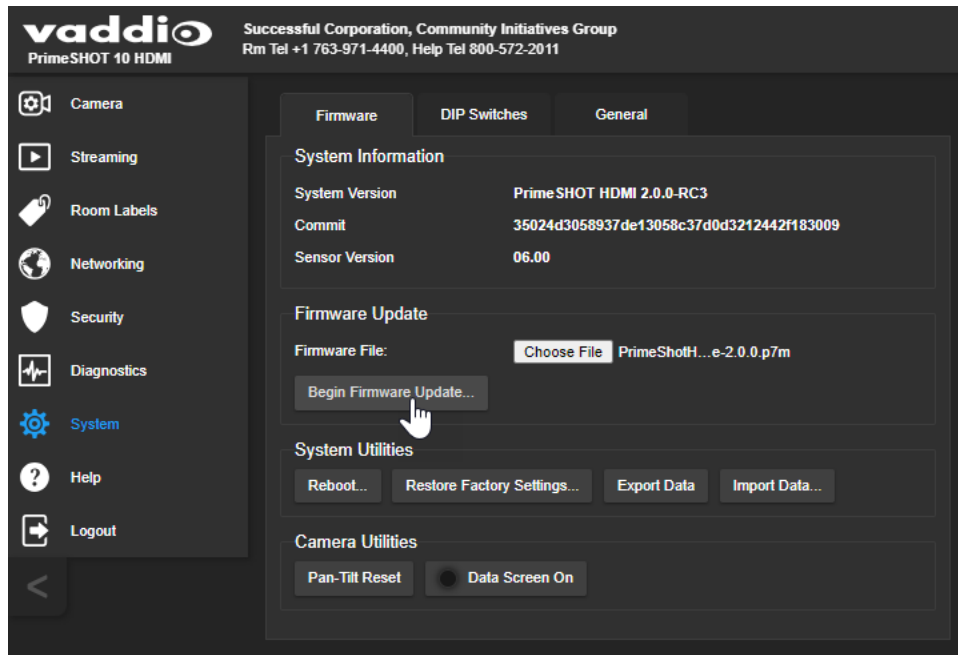
SYSTEM PAGE, FIRMWARE TAB

The latest firmware and release notes are available on the product's web page at www.legrandav.com. The release notes provided with each update can help you to decide whether to install the update.

Caution

Be sure the camera stays connected to power and to the network during the update. Interrupting the update could make it unusable.

1. Read the release notes and download the firmware update file.
2. Select the firmware update file that you downloaded. The filename ends with .p7m.



3. Select Begin Firmware Update.
4. Read and understand the information in the Confirm dialog box, then select Continue. A progress message box opens and the status light on the front of the camera turns yellow. If the update process presents warnings or error messages, read them carefully.

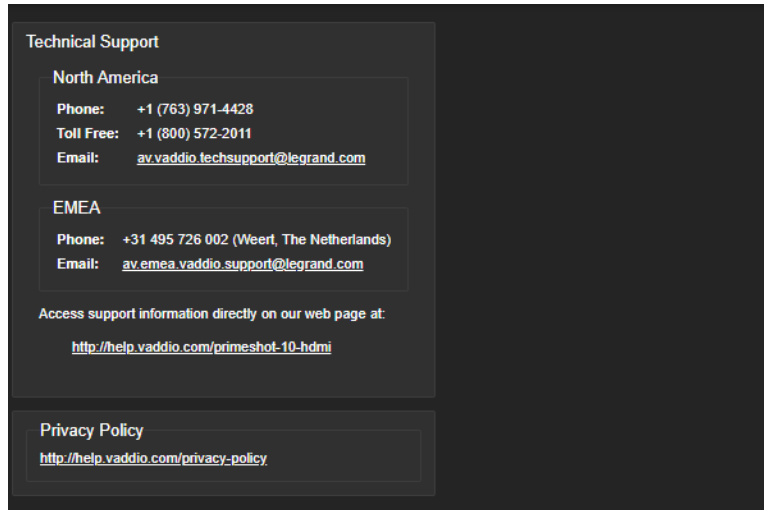
The camera reboots to complete the update, and the web interface prompts you to log in again.

Contacting Vaddio technical support and viewing diagnostic logs

[HELP PAGE](#), [DIAGNOSTICS PAGE](#)

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

You'll find information for contacting Vaddio Technical Support on the Help screen. This screen shot is from a PrimeSHOT 10 HDMI camera; the link to product information will show your camera's model.



Note

The Help page provides a link to our standard privacy notice. This product does not record or save video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the camera's IP address is considered "personally identifiable information" for the purposes of the privacy notice. This information is stored for display to the user, but not otherwise shared or transmitted

Your Vaddio technical support representative may ask you to download and email the log file from the Diagnostics page.

Note

The log may include large numbers of internal events even when no errors have occurred. Rebooting generates over 100 log entries.

The screenshot shows the Vaddio web interface for a PrimeSHOT 10 HDMI camera. The top navigation bar includes the Vaddio logo, contact information for Successful Corporation, and status icons for Mute, Standby, and Logout. A left sidebar contains menu items: Camera, Streaming, Room Labels, Networking, Security, Diagnostics (highlighted), System, Help, and Logout. The main content area is titled 'Diagnostics' and displays a terminal log of system boot events. The log entries include timestamps, device identifiers, and kernel messages such as 'mmc0: no vmmc regulator found', 'mmc0: SDHCI controller on e0100000.ps7-sdio [e0100000.ps7-sdio] using ADMA', and 'VFS: Mounted root (ext4 filesystem) readonly on device 179:2'. At the bottom of the log area, there are buttons for 'Download', 'Refresh', 'Clear', and 'Restore', along with an 'Auto-Refresh' checkbox.

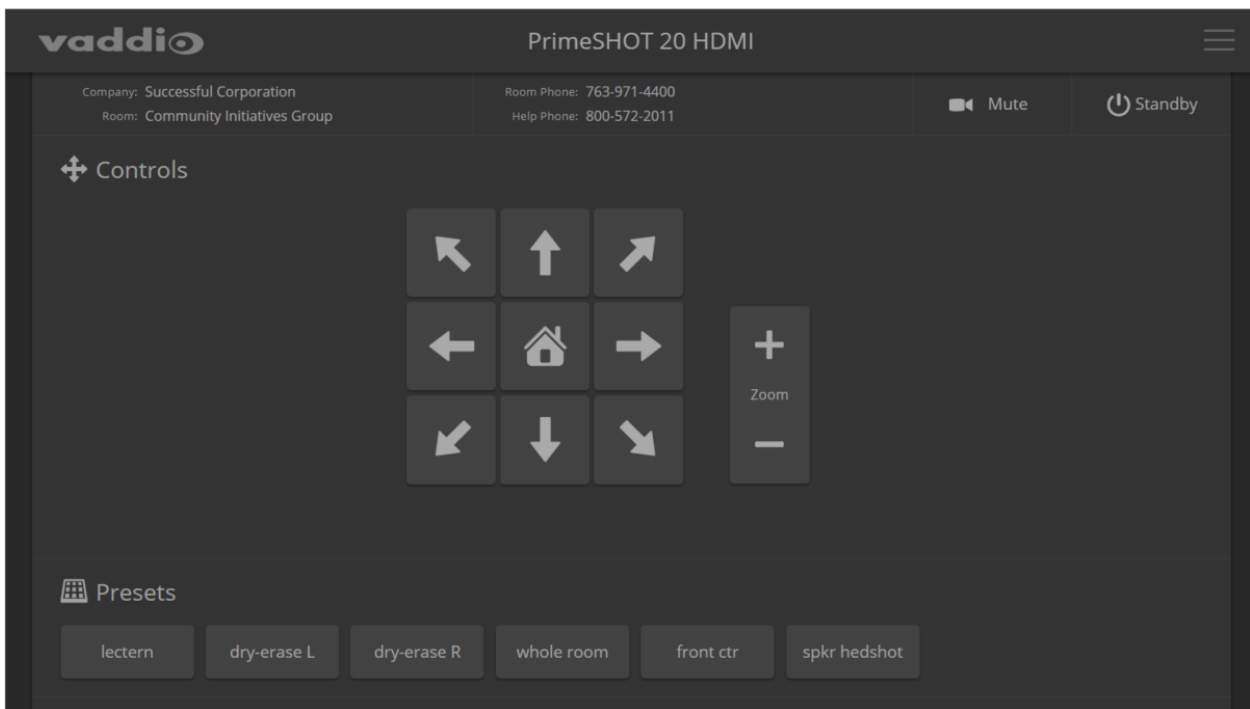
Operating the camera

In most cases, the remote provides all the controls you need to operate the camera. Refer to the user guide for the remote, which is available on the same page of the website as this manual.

By default, the operator's page of the web interface is not available. The administrator must set a password for the `user` account, or enable guest access; this provides access to the operator's page only. The web interface is available on the Vaddio Device Controller touch panel (if your installation uses one) or from a web browser.

The operator's Camera page provides most of the same controls as 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



Moving the camera

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

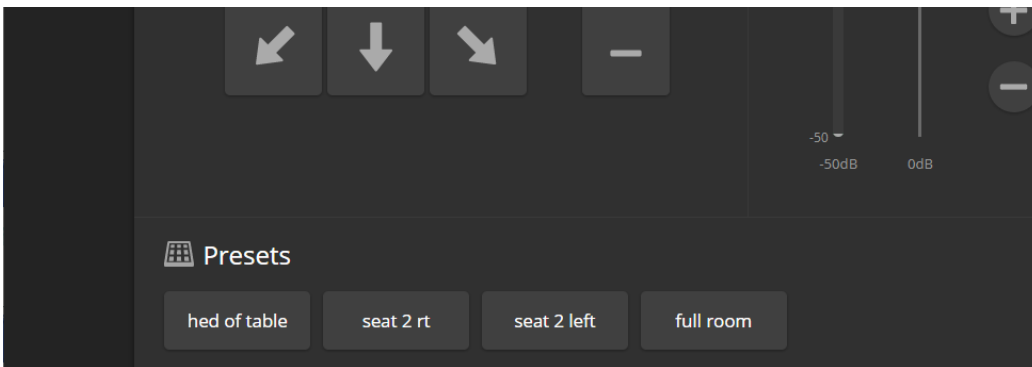
Zooming in or out

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



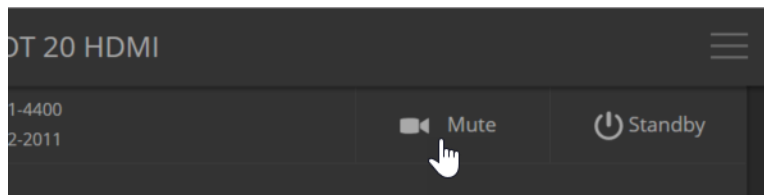
Moving the camera to a preset position

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.



Stopping or resuming video

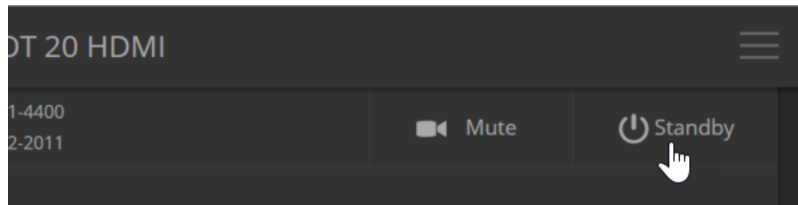
Use the mute button to temporarily stop video from the camera without placing it in standby. Remember that the video mute button does not mute the room's microphones, conference phone, or your computer's microphone. In video mute mode, the camera transmits blue or black video, with a message that the 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 screen presents the message “Device is in standby.” On entering standby mode, the camera pans 90° from center and 30° downward.



Command Line Interface SHell (CLISH) reference

The Vaddio Command Line Interface SHell (CLISH) allows an external device such as an AMX or Crestron presentation system to control the camera. It is also used for writing macros.

Requirements

- SSH (recommended) or Telnet must be enabled on the Security page of the device's web interface.
- Your computer must have a suitable SSH or Telnet client. If using Telnet, port 23 is used.
- Your computer must be able to connect to the device over the network.
- When you start a CLISH session, you must log in using the admin account.

Usage notes

- The > character is the command prompt.
- In addition to the camera control commands, session management commands are available – help, history, and exit.
- CTRL-5 clears the current serial buffer on the device.

Getting more information

Use a question mark as a command or command parameter to display a list of available commands, subcommands, or command parameters. For example, ? returns all top-level commands; **network ?** returns the valid subcommands for the **network** command; and **network ping ?** returns the parameters available for the **network ping** command.

Firmware updates sometimes implement new commands or command parameters. We do not update the manuals for every firmware update, and occasionally the author makes a mistake. Querying returns the command parameters that are currently available, along with guidance on command syntax.

Typographical conventions

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

Camera and video management commands

The following camera and video management commands are available:

- camera home
- camera pan
- camera tilt
- camera zoom
- camera ptz-position
- camera preset
- camera focus
- camera ccu get
- camera ccu set
- camera led
- camera icr
- camera standby
- video mute

camera home

Synopsis	camera home
Example	>camera home OK >

camera pan

Moves the camera horizontally.

Synopsis	<code>camera pan { left [<speed>] right [<speed>] stop get set <position> [<speed>] [no_wait] }</code>	
Options	<code>left</code>	Moves the camera left.
	<code>right</code>	Moves the camera right.
	<code>speed <1 - 24></code>	Optional: Specifies the pan speed as an integer (1 to 24). Default speed is 12.
	<code>stop</code>	Stops the camera's horizontal movement.
	<code>set <position></code>	Sets the camera's absolute pan position in degrees, as a floating point value between roughly -160.00 (left) and 160.00 (right). Individual cameras may have slightly more travel before they reach their physical limits.
	<code>no_wait</code>	Optional – allows the <code>camera pan set</code> command to return the command prompt immediately, while the requested camera movement is still in progress. Unless this is used, the camera blocks subsequent commands until it reaches the specified position.
	<code>get</code>	Returns the camera's absolute pan position in degrees, as a floating point value between roughly -160.00 (left) and 160.00 (right).
Examples	<pre>>camera pan left OK > Pans the camera left at the default speed. >camera pan right 20 OK > Pans the camera right using a speed of 20. >camera pan stop OK > Stops the camera's horizontal motion. >camera pan set -15 OK > Pans the camera to 15° left of its centerline at the default speed.</pre>	

camera tilt

Moves the camera vertically.

Synopsis	<code>camera tilt{ up [<speed>] down [<speed>] stop get set <position> [<speed>] [no_wait] }</code>	
Options	<code>up</code>	Moves the camera up.
	<code>down</code>	Moves the camera down.
	<code>speed <1 - 20></code>	Optional: Specifies the tilt speed as an integer (1 to 20). Default speed is 10.
	<code>stop</code>	Stops the camera's vertical movement.
	<code>set <position></code>	Sets the camera's absolute tilt position in degrees, as a floating point value between roughly -30.00 and 90.00. Individual cameras may have an additional degree or two of travel before they reach their physical limits.
	<code>no_wait</code>	Optional – allows the <code>camera tilt set</code> command to return the command prompt immediately, while the requested camera movement is still in progress. Unless this is used, the camera blocks subsequent commands until it reaches the specified position.
	<code>get</code>	Returns the camera's absolute tilt position in degrees, as a floating point value between roughly -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>>camera tilt up OK > Tilts the camera up at the default speed. >camera tilt down 20 OK > Tilts the camera down at a speed of 20. >camera tilt set -5 OK > Tilts the camera 5° down from level at the default speed.</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> }	
Options	in	Zooms the camera in.
	out	Zooms the camera out.
	stop	Stops the camera's zoom movement.
	set <zoom>	Sets the camera's zoom level as a floating point value between 1.00 and 10.00 for PrimeSHOT 10 HDMI or 1.00 and 20.00 for PrimeSHOT 20 HDMI.
	no_wait	Optional – allows the camera zoom set command to return the command prompt immediately, while the requested camera movement is still in progress. Unless this is used, the camera blocks subsequent commands until it reaches the specified position.
	get <zoom>	Returns the camera's zoom setting as a floating point value.
Examples	<pre>>camera zoom in OK > >camera zoom stop OK > Stops the camera's zoom motion.</pre>	

camera ptz-position


Specifies multiple-axis movements to absolute positions.

Pan, tilt, and zoom may be specified in any order. All movements start simultaneously.

Synopsis	camera ptz-position pan <position> tilt <position> zoom <position> [no_wait]	
Options	pan <position>	<position> is a floating-point value roughly -160.00 to 160.00. Individual cameras may have slightly more travel.
	tilt <position>	<position> is a floating-point value roughly -30.0 to 93.0. Individual cameras may have slightly more travel.
	zoom <position>	<position> is a floating-point value 1.0 to 10.0 for PrimeSHOT 10 HDMI or 1.0 to 20.0 for PrimeSHOT 20 HDMI.
	no_wait	Optional – allows the command to return the command prompt immediately, while the requested camera movement is still in progress. Unless this is used, the camera blocks subsequent commands until it reaches the specified position.
Examples	<pre>>camera ptz-position pan -15 tilt 5 zoom 1.5 no_wait OK ></pre> <p>Moves the camera 15° left from its centerline and 5° up from horizontal, and zooms to 1.5. The command prompt appears while the camera is still in motion.</p>	

camera focus

Changes the camera focus.

Synopsis	<code>camera focus { near [<speed>] far [<speed> 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 <1 - 8></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	 <pre> camera focus near OK > Brings the focus near at the default speed. camera focus far 7 OK > Moves the focus farther from the camera at a speed of 7. camera focus mode get auto_focus: on OK > Returns the current focus mode. </pre>	


camera preset

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

Synopsis	<code>camera preset { recall store } [1 - 16] [save-ccu]</code>	
Options	<code>recall [1 - 16]</code>	Moves the camera to the specified preset.
	<code>store [1 - 16]</code>	Stores the current camera position as the specified preset.
	<code>save-ccu</code>	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>>camera preset recall 3 OK > Moves the camera to preset 3. >camera preset store 1 OK > Saves the camera's current position as preset 1.</pre>	

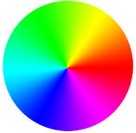
camera ccu get

Returns CCU (lighting and color) information. Entering the command without specifying a parameter returns all current CCU settings.

Synopsis	<code>camera ccu get <param></code>	
Options 	<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 20).
	<code>blue_gain</code>	Returns the blue gain value as an integer (0 to 20).
	<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 (1 to 10).
	<code>detail</code>	Returns the detail value as an integer (0 to 10).
	<code>chroma</code>	Returns the chroma value as an integer (0 to 20).
	<code>gamma</code>	Returns gamma as an integer (-16 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>>camera ccu get iris iris 6 OK ></pre> <p>Returns the current iris value.</p> <pre>>camera ccu get all auto_iris on auto_white_balance on backlight_compensation off blue_gain 10 chroma 7 detail 3 gain 2 iris 9 red_gain 10 wide_dynamic_range on OK ></pre> <p>Returns all current CCU settings.</p>	

camera ccu set

Sets the specified CCU (lighting) information.

Synopsis	<code>camera ccu set <param> <value></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 <0 - 20></code>	Sets the red gain value as an integer (0 to 20). Can only be used when auto white balance is off.
	<code>blue_gain <0 - 20></code>	Sets the blue gain value as an integer (0 to 20). 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 <0 - 11></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 <1 - 10></code>	Sets gain value as an integer (1 to 11). Can only be used when auto-iris is off.
	<code>detail <0 - 10></code>	Sets the detail value as an integer (0 to 10).
	<code>chroma <0 - 20></code>	Sets the chroma value as an integer (0 to 20).
	<code>gamma <-16 - 64></code>	Sets the gamma value as an integer (-16 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>>camera ccu set auto_iris off OK > Turns off auto-iris mode, returning the camera to manual iris control. >camera ccu set red_gain 10 OK > Sets the red gain value to 10.</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>>camera ccu scene recall factory 2 OK > Sets the camera to use factory CCU scene 2. >camera ccu scene store custom 1 OK > Saves the current CCU scene as custom CCU scene 1.</pre>	

camera led

Set or change the behavior of the status light.

Synopsis	camera led { get off on }	
Options	get	Returns the status light's current state (on or off).
	off	Disables the status light.
	on	Enables the status light.
Examples	<pre>>camera led off OK > Disables the status light. When the LED is off, you cannot tell by looking at the camera whether it is sending video. >camera led get led: on OK > Returns the current state of the status 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>>camera standby off OK > Brings the camera out of standby mode. >camera standby get standby: on OK > Returns the current standby state.</pre>	

video mute

Gets or sets the camera's video mute status. When video is muted, the camera sends blue or black video with an on-screen message stating that video mute is on.

Synopsis	video mute { get off on toggle }	
Options	get	Returns the current video mute status.
	off	Unmutes the video. (Normal video resumes.)
	on	Mutes the video. (Blue or black screen with message)
	toggle	Changes the camera's video mute status.
Examples	<pre>>video mute get mute: off OK > Returns video mute status. >video mute on OK > Transmits blue or black video.</pre>	

Network and communication commands

The following communication-related commands are available:

- streaming ip enable
- streaming settings get
- network settings get
- network ping

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). streaming ip enable toggle has the same effect as selecting the Enable IP Streaming checkbox in the web interface.
Example	<pre>>streaming ip enable on > OK Enables IP streaming. >streaming ip enable get enabled: true > OK Returns the current state of IP streaming.</pre>	

streaming settings get

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

Synopsis	streaming settings get	
Parameters	IP Custom_Frame_Rate	Frame rate selected in Custom quality mode.
	IP Custom_Resolution	Resolution selected in Custom quality mode.
	IP Enabled	True if IP streaming is enabled, False if it is not.
	IP Port	The RTSP port number used for IP streaming. Default is 554.
	IP Preset_Quality	Video quality selected in Easy video quality mode.
	IP Preset_Resolution	Resolution selected in Easy video quality mode.
	IP Protocol	The IP streaming protocol in use.
	IP URL	The URL where the stream is available.
	IP Video_Mode	Video quality mode selected (preset or custom)
Example	<pre>>streaming settings get IP Custom_Frame_Rate 15 IP Custom_Resolution 1080p IP Enabled true IP Port 554 IP Preset_Quality Standard (Better) IP Preset_Resolution 720p IP Protocol RTSP IP URL vaddio-primeshot-hdmi-stream IP Video_Mode preset OK ></pre> <p>Returns the current streaming settings.</p>	

network settings get

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

Synopsis	network settings get	
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 ></pre>	

network ping

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

Synopsis	<code>network ping [count <count>] [size <size>] <string></code>	
Options	<code><count></code>	The number of ECHO_REQUEST packets to send. Default is five packets.
	<code><size></code>	The size of each ECHO_REQUEST packet. Default is 56 bytes.
	<code><string></code>	The hostname or IP address where the ECHO_REQUEST packets will be sent.
Examples	<pre>>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 ></pre> <p>Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.</p>	
	<pre>>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>	

Maintenance and troubleshooting commands

The following commands are available for maintenance and troubleshooting:

- network ping
- system reboot
- system factory-reset
- version

camera recalibrate

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

Synopsis	camera recalibrate
Example	> camera recalibrate OK >


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.

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>>system factory-reset get factory-reset (software): off factory-reset (hardware): off OK ></pre> <p>Returns the factory reset status.</p> <p>This evaluates the most recent <code>system factory-reset on</code> or <code>off</code> command, if one has been received, then reads the rear panel rotary switch and returns the status <code>on</code> if it is in the D position.</p> <pre>>system factory-reset on factory-reset (software): on factory-reset (hardware): off OK ></pre> <p>Enables factory reset upon reboot.</p> <p>Note <i>This command does not initiate a factory reset. The factory reset takes place on the next reboot.</i></p>	

Session information and management commands

The following commands are available for help and session management:

- history
- help
- exit

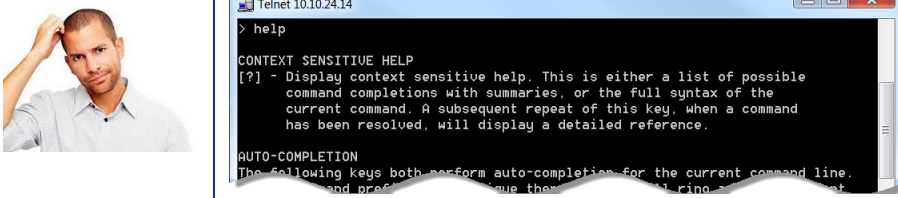
version

Returns the current firmware version.

Synopsis	version	
Example	<pre>>version Commit b0c31c48ff4f1d128ceb6cf7ebd0c2861cf440ed Sensor Version 1.1 System Version PrimeSHOT HDMI 1.0.0 OK ></pre>	

help

Displays an overview of the CLI syntax.

Synopsis	help
Example	<p>help</p> 

history

Returns the most recently issued commands from the current 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>history Displays the current command buffer.</p> <p>history 5 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"> * !! Substitute the last command line. * !4 Substitute the 4th command line (absolute as per 'history' command) * !-3 Substitute the command line entered 3 lines before (relative) 	

exit

Ends the command session and closes the socket.

Synopsis	exit
Example	exit



VISCA-compatible serial command reference

Vaddio cameras use a control protocol 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.

“Get” commands (inquiries) return a response string. The format of a “get” response is a 4-digit response code, a space, and a two-digit hex value.

Most “Set” commands return the response 4100 (OK), usually followed by a two-digit code indicating the action requested in the command.

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-7AC0h)
	Tele (std)	8x 01 04 07 02 FF	
	Wide (std)	8x 01 04 07 03 FF	
	Tele (variable)	8x 01 04 07 2p FF	
	Wide (variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	
	Corresponds to <code>camera zoom</code> CLISH command		
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> CLISH command		

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-TiltDrive	Reset	81 01 06 05 FF	Resets/recalibrates the pan and tilt motors
	Corresponds to <code>camera recalibrate</code> CLISH command		
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	p= preset number(0h-0Fh)
	Set	8x 01 04 3F 01 0p FF	
	Set with 'scene'	8x 01 04 3F 21 0p FF	
	Recall	8x 01 04 3F 02 0p FF	
	Corresponds to <code>camera preset</code> CLISH command.		

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_FocusModeInq	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> CLISH command.		
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> CLISH command.		
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual control of red gain pq = red gain (00h – 14h)
	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> CLISH command.		
CAM_BGain	Reset	8x 01 04 04 00 FF	Manual control of blue gain pq = blue gain (00h – 14h)
	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> CLISH command.		
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> CLISH command.		
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 Shutter Speed Values – CAM_Shutter Command
	Direct	8x 01 04 4A 00 00 0p 0q FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris setting pq = iris position (0h, 05h-11h) See Iris Values – CAM_Iris Command
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	
	Corresponds to <code>camera ccu set iris</code> CLISH command.		
CAM_Gain	Reset	8x 01 04 0C 00 FF	Iris gain setting pq = gain position (01h – 0Fh) p = gain limit (04h-0Fh) See Iris Gain and Gain Limit Values – CAM_Gain Command
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4C 00 00 0p 0q FF	
	+Gain Limit	8x 01 04 2C 0p FF	
	Corresponds to <code>camera ccu set gain</code> CLISH command.		
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> CLISH command.		

Command Set	Command	Command Packet	Comments
CAM_WD	On	8x 01 04 3D 02 FF	Wide Dynamic Range On
	Off	8x 01 04 3D 03 FF	Wide Dynamic Range Off
	Corresponds to camera ccu set wide_dynamic_range CLISH command.		
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture setting pq = aperture position (0h-0fh)
	Up	8x 01 04 02 01 FF	
	Down	8x 01 04 02 02 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	
	Corresponds to camera ccu set detail CLISH command.		
CAM_Chroma	Direct	8x 01 7E 55 00 00 0p 0q FF	pq: 00h – 14h
	Corresponds to camera ccu set chroma CLISH command.		
CAM_Gamma	--	8x 01 04 5B 0p FF	p = gamma setting (0: std, 1: straight)
	Corresponds to camera ccu set gamma CLISH command.		

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
CAM_BackLightModelInq	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_GammaInq	8x 09 04 5B FF	y0 50 0p FF	Gamma p: 00h , 01h

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> CLISH command.		
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> CLISH command.		

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> CLISH command		
CAM_TallyInq	8x 09 7E 01 0A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_NRInq	8x 09 04 53 FF	y0 50 0p FF	Noise reduction p: 00h to 05h
CAM_MuteModelInq	8x 09 04 75 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
	Corresponds to <code>video mute get</code> CLISH command		
IPAddressInq	8x 09 08 4E 00 00 FF	90 50 49 50 00 00 00 0p 0p 0p 0q 0q 0q 0r 0r 0s 0s 0s FF	pppqqrrrrsss = 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	90 50 04 6C 00 00 00 FF	PrimeSHOT 10 HDMI
		90 50 04 68 00 00 00 FF	PrimeSHOT 20 HDMI

Troubleshooting and care

When the camera doesn't behave as you expect, check the status light on the front before you do anything else. Then use this table to determine whether it's time to call Vaddio Technical Support.

Power and control

What is it doing?	Possible causes	Check and correct
Nothing. The light on the front is off and no video is available.	The cable to the Network/PoE port is disconnected.	Make sure everything is plugged in.
	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 On setting on the General tab of the System page, or using the CLISH command <code>camera led on</code> .
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.	Change the IR channel with the Camera Select buttons on the remote.
	The remote is disabled in the web interface.	Enable the remote on System > General.
	The batteries in the remote are dead.	Put new batteries in the remote.
	The batteries were installed incorrectly in the remote.	Install the batteries as shown in the diagram inside 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.

Other issues

What is it doing?	Possible causes	Check and correct
IP and MAC address appear in video output	The data display has been selected. This is normal.	To clear the display, press the Network or Data Screen button on the remote, or select the Data Screen On/Off control on the System page.
The camera loses all its settings when power is cycled.	The rotary switch is in the D position. (Verify on the DIP Switches tab of the System page.)	Set the rotary switch to a valid video resolution. See Video Resolution Settings for more information.
Status light blinks yellow	Pan or tilt motor is out of calibration	Reset the pan and tilt motors. See Correct a Motor Calibration Error .

Need help? Call Vaddio Technical Support at (+1) 763-971-4400 or 800-572-2011.

Status light

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

- Purple – Standby mode or booting
- Blue – Camera is active
- Yellow – Firmware update is in progress
- Blinking yellow – Motor out of calibration

Caution

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

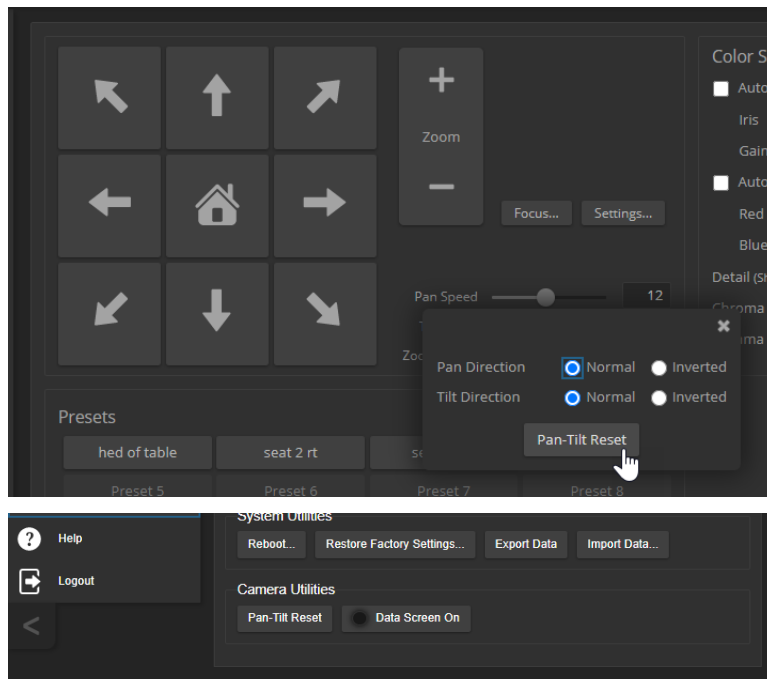
Note

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 light is off.

Correcting a motor calibration error

If the web interface presents an error message about the motors, or if the camera's status light is blinking yellow, you will need to reset the pan and tilt motors.

1. On the Camera Controls page, select Settings to open the pan and tilt settings box;
OR
On the System page, go to the Firmware tab if you are on a different tab.
2. Select Pan-Tilt Reset. The camera sends blue video while the motors recalibrate. This takes a few seconds.

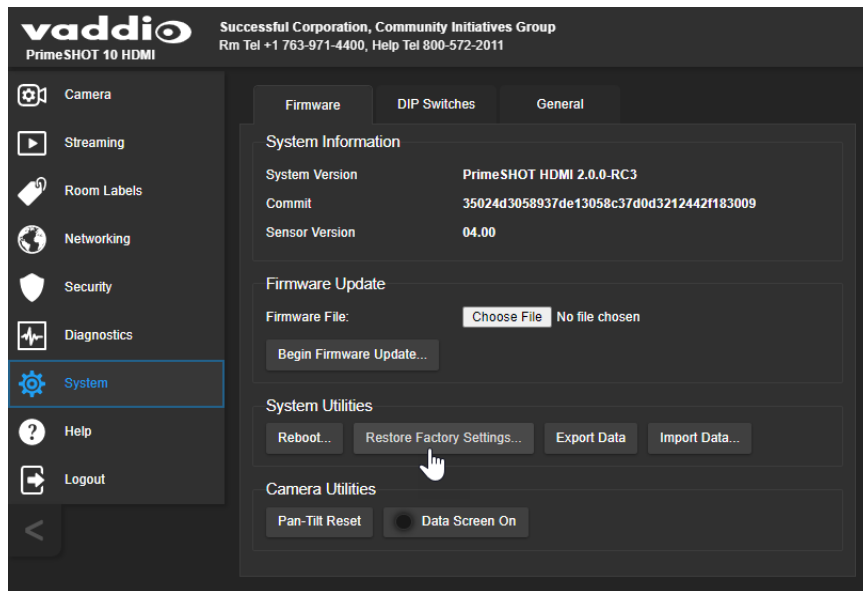


Restoring factory default settings

This returns the camera to its original state. If you export the camera's configuration before restoring factory defaults, you will be able to restore some settings by importing the configuration afterward. See [Saving \(exporting\) or restoring \(importing\) a configuration](#).

Using the rotary switch on the back of the camera: Disconnect power, set the switch to the D position, and reconnect power. Wait for the camera to finish booting. Then disconnect power again, return the switch to the desired resolution setting, and reconnect power.

From the web interface: On the System page's Firmware tab, 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
- On the hull of an orbital launch vehicle
- Dry environments with an excess of static discharge

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

Glossary

auto white balance

A setting that allows the camera to manage color adjustments automatically.

backlight compensation

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

bandwidth

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

chroma

A setting that adjusts color intensity.

detail

A setting that adjusts image sharpness. If detail is set too low, the image may appear unrealistically smooth.

DHCP

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

dynamic range

The amount of difference between extremes - for example, the darkest and lightest areas in a shot, or the softest and loudest sounds that a microphone picks up.

Field of View (FOV)

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

flombodulator

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

gamma

A setting that adjusts the range (gray density) between bright areas and shadows.

gateway

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

HDMI

A video output format; may also carry audio information.

home (camera)

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

HTTP

HyperText Transfer Protocol. The magic that makes websites work.

HTTPS

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

IP address

Where a given device is on the IP network, logically. The IP address enables the network to route data to the right device – and that's the reason IP address conflicts are bad.

IP address conflict

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

LED

Light-Emitting Diode. An indicator light.

NTP

Network Time Protocol. Ensures that NTP-enabled devices on the network all show the same system time, so timestamps are accurate.

preset

A stored camera position. Contains pan, tilt, and zoom position; may also include color settings.

resolution

1. The image size. Expressed in terms of digital TV standards, with 1080p being the default in most cases. 2. The thing that usually flies out the window by January 10th.

SSL certificate

A file used with HTTPS proving that a web page really originates from its purported source. If you use HTTPS on a camera or other device without installing an SSL certificate, your browser will pop up security warnings when you try to browse to the device's web interface. The connection is secure, warnings notwithstanding.

subnet mask

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

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

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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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Sleeping goose

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

Index

A

- absolute position 37-38, 40
- admin password 13, 15
 - changing 15
 - initial 13
- anatomy of the camera 2
- Anti-flicker Filter (setting) 27
- API 53, 55-56, 58-61
 - VISCA 53, 55-56, 58-61
- auto focus 41
- auto iris 23, 43-44
- Auto Standby (setting) 27
- auto white balance 23-24, 43-44

B

- backing up a configuration 28
- backlight compensation 23-24, 43-44
- bandwidth 21
- bit rate (IP streaming setting) 21
- blue gain 23-24, 43-44
- browsers 12-13
 - HTTP and HTTPS access 13
 - security warnings 13

C

- cable connectors 5
- calibration fault, correcting 50, 64
- camera mount 4, 9-10
- camera placement 4
- camera standby position 34
- capabilities 1
- CCU scenes 45
 - custom 45
 - recalling 45
- CCU settings 23-24, 42-44
 - adjusting 24
 - in the web interface 23
 - storing with a preset 42
- ceiling-mounted cameras 9

- cheat sheet 24
 - color adjustment 24
 - lighting and image quality 24
- chroma setting 23-24, 43-44
- cleaning 65
- CLISH 35-52
 - disabled by default 35
 - session history 52
 - session, ending 52
 - syntax help 35, 52
 - typographical conventions in command reference 35

- color codes for status light 6, 63
- color settings 23-24, 43-45
 - storing and recalling 45
- command history 52
- command set, VISCA 53, 55-56, 58-61
- conferencing 18
- configuration, saving or restoring 28
- connection example 7
- connector pin-out, RS-232 8
- Constant Bit Rate (IP streaming setting) 21
- Controls page (web) 32
- custom home position 17

D

- damage, preventing 4-5, 8
- default settings, restoring 51, 65
- detail setting 23-24, 43-44
- DHCP vs. non-DHCP networks 13
- diagnosing issues 49, 62
- diagnostic logs 30
- Diagnostics page (web) 30
- directional controls 33

F

- factory defaults, restoring 51, 65
- fault isolation 49, 62
- firmware update 29
- firmware version 51
- focus 41

G

- gain 23-24
 - blue 23-24
 - iris 24
 - red 23-24
- gamma setting 23-24
- getting help 30
- guest access 15

H

- Help page (web) 30
- home position 17, 33, 36
- hostname 14
- HTTP, enabling 15
- HTTPS 13, 15
 - browser warnings 13
 - SSL certificate 15

I

- importing a configuration 28
- inactive sessions (web interface) 15
- indicator light 6, 27, 45, 63
 - behavior 27, 45
 - enabling/disabling 27
 - meaning of colors 6, 63
- information, conference room 16
- initial device set-up 11-13
 - using the Vaddio Device Controller 12-13
 - using the web interface 12-13
 - using Vaddio Deployment Tool 11
- installation 9-10
 - camera 10
 - camera mount 9
- installation, typical 7
- inverted installation 9
- IP address 12-13
 - camera, discovering 12
 - default 12-14
- IP streaming 18-22, 47-48
 - enabling/disabling 18
 - settings 19-22, 47-48

- iris settings 24, 43-44

L

- labels, room 16
- LED control 45
- light, status indicator 6, 45, 63
 - behavior 45
 - meaning of colors 6, 63
- lighting settings 23, 43-44
- location of the camera 4, 16
- log files 30
- low-power (standby) state 34, 45-46

M

- manual focus 41
- Max Bandwidth (IP streaming setting) 21
- media player 18
- motor calibration 50, 64
- mount 4, 9-10
- mounting the camera 4, 10
- MTU (IP streaming setting) 22
- muting 33, 46
 - video 33, 46

N

- network configuration 14, 48
- Networking page (web) 14

O

- One Push White Balance 24
- operating environment 4, 65

P

- page 14-16, 18-22, 30, 32
 - Controls 32
 - Diagnostics 30
 - Help 30
 - Networking 14
 - Room Labels 16
 - Security 15
 - Streaming 18-22
- pan 25-26, 33, 37, 40
 - absolute position 37, 40

- direction 26
- speed 25, 37
- pan/tilt 42, 50, 64
 - recalibration 50, 64
 - storing as a preset 42
- passwords 13, 15
 - admin 13, 15
 - user 15
- Path (IP streaming setting) 19
- pin-out, RS-232 connector 8
- ping command 49
- Point Light Compensation setting 24
- position, absolute 37-38, 40
- power on/power off 34, 46
- precautions 4
 - for operating the system 4
- presets 17, 33, 42
 - moving to 33, 42
 - setting 17, 42
- product capabilities 1

Q

- Quality/Quantization (IP streaming setting) 21
- quick reference 24

R

- ready state 34, 46
- rebooting 50
- recalibration, pan and tilt 50, 64
- red gain 23-24, 43-44
- requirements 4
 - installation 4
 - mounting 4
- reset 50, 64, See also rebooting; restoring default settings
 - pan and tilt motors 50, 64
- resolution 5
 - switch setting 5
- Resolution (IP streaming setting) 20-21
- restoring a configuration 28
- restoring default settings 51, 65

- RJ-45 connectors 5
- room information 16
- Room Labels page (web) 16
- rotary switch settings 5
- RS-232 commands See VISCA commands
- RS-232 communication settings 8
- RS-232 connector pin-out 8
- RS-232 serial connection 8
- RTMP streaming 18, 22
- RTSP streaming 18-19

S

- saving a configuration 28
- Security page (web) 15
- self-signed certificate 13
- setting up and storing shots 17
- settings, default, restoring 51, 65
- shelf-mounted cameras 10
- shelf, camera mount 9
- site requirements 4
- software update 29
- solving problems 62
- speed 25, 37-39, 41
 - focus 41
 - Global Preset (defined) 25
 - Global Preset Non-Tri-Sync, setting 25
 - manual (defined) 25
 - manual, setting 25
 - pan 25, 37
 - tilt 25, 38
 - zoom 25, 39
- SSL certificate 15
- standby (low-power) state 27, 34, 45-46
- status light 6, 45, 63
 - behavior 45
 - meanings of colors 6, 63
- storage environment 65
- storing a configuration 28
- stream viewer 18
- streaming 18-22, 47-48
 - enabling/disabling 18
 - IP 18, 20-21

- settings 19, 21-22, 48
- state 47
- Streaming page (web) 18-22
- streaming URL 19
- switch settings 9
 - image flip 9
- switch, video resolution 5
- syntax help, CLISH commands 35, 52

T

- tablet 12
- technical support 30
- Telnet 15, 48
 - commands 48
 - enabling access via 15
- temperature, operating and storage 65
- third-party control 8, 35
- tilt 25, 33, 38, 40
 - absolute position 38, 40
 - speed 25, 38
- troubleshooting 49, 62

U

- update 29
- URL, RTSP streaming 19, 22
- user password 15

V

- Vaddio Deployment Tool 11
 - check for the latest version 11
 - initial device set-up 11
- Vaddio Device Controller 12
- Variable Bit Rate (IP streaming setting) 21
- version, firmware 51
- video mute 33, 46
- Video Quality (IP streaming setting) 20
- video resolution (IP streaming setting) 20
- video resolution setting 5
- VISCA commands 53, 55-56, 58-61
 - setting values 58-59
- visual parts identification 2

W

- wall mount 9
- warranty 4
- web browsers supported 12
- web interface 12, 14-16, 18-22, 30, 32
 - accessing 12
 - Controls page 32
 - Diagnostics page 30
 - Help page 30
 - Networking page 14
 - Room Labels page 16
 - Security page 15
 - Streaming page 18-22
- Wide Dynamic Range setting 24

Z

- zoom 25, 33, 39-40, 42
 - absolute position 39-40
 - in stored presets 42
 - speed 25, 39

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