



VADDIO™ ROBOSHOT™ 12 USB CAMERA

Enterprise-Class, High Definition PTZ Conferencing Camera with simultaneous USB 3.0, IP (H.264) Streaming and HDMI Outputs, Tri-Synchronous™ Motion and Wide Angle 12X Optical Zoom Lens

RoboSHOT 12 USB Part Numbers:

999-9920-000 (North America)

999-9920-001 (International)



Inside Front Cover, Mostly Blank

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OVERVIEW

The Vaddio RoboSHOT 12 USB Camera is an Enterprise Class, high definition PTZ conferencing camera with very high quality imaging, truly fine detail and exceptional color reproduction. With simultaneous USB 3.0 and IP Streaming (H.264) capabilities with an HDMI video output, this camera offers integrators, dealers and end users with an incredible improvement over other conferencing cameras available today.

The RoboSHOT 12 is perfect for small to medium sized conference rooms, training rooms or classrooms and provides incomparable support for applications especially in UC conferencing, videoconferencing, distance learning, lecture capture, telepresence and more!

The key features of the RoboSHOT cameras are Tri-Synchronous Motion, the silent direct drive pan/tilt motors, advanced Exmor® image sensor, wide angle 12X lens, built-in web server and an advanced ISP (image signal processor).

The lens, image sensor and ISP combination are the real magic behind this camera's remarkable video performance characteristics. The lens is a multi-element, glass lens featuring a 12X optical zoom with a 73° wide horizontal field of view. The latest generation Exmor® 1/2.8", 2.38 Megapixel, Full HD (native 1080p/60) high-speed, low noise CMOS image sensor combined with the new ISP produces vivid and realistic color with very fast, razor sharp auto-focus routine.

The Tri-Synchronous Motion algorithm in the RoboSHOT cameras is capable of moving all three (pan, tilt and zoom) axes simultaneously. The algorithm calculates the position and velocity of the smooth, direct-drive motor movements between the presets so pan, tilt and zoom arrive at the preset subject simultaneously, which finally allows for smooth and manageable on-air camera movements. Yep, there's no more pan/tilt, then zoom like other PTZ cameras available today.

The RoboSHOT 12 USB has an *PoE+ GB Ethernet* port and a built-in web server, which allows the user to power the camera and control the camera's functions with an internal web page with any browser from anywhere in the world, over the IP network, while watching the RSTP IP video stream. This feature is perfect for remote management, network operating centers and overall IT control. Telnet, IR Remote and RS-232 control for the camera are available to satisfy almost any, if not all, system control requirements.

The RoboSHOT 12 USB camera was designed for the times and represents a new era in specifying and integrating professional quality cameras into UC Conferencing and Pro AV system configurations. The features, flexibility and the value of the RoboSHOT 12 USB conferencing camera is unparalleled in today's PTZ camera market. All this and it's made in the USA, at the Vaddio HQ in Minnetonka, Minnesota.

Intended Use:

Before operating the device, please read the entire manual thoroughly. The system was designed, built and tested for use indoors with the power supply provided. The use of a power supply other than the one provided or outdoor operation hasn't been tested and may damage the device and/or create an unsafe operating condition.

Save These Instructions:

The information contained in this manual will help you install and operate your product. If these instructions are misplaced, Vaddio keeps copies of Specifications, Installation and User Guides and most pertinent product drawings (DWG and PDF) for the Vaddio product line on the Vaddio website. These documents can be downloaded from www.vaddio.com free of charge.



Image: RoboSHOT 12 USB, HD PTZ on Supplied Thin Profile Wall Mount



Example: Built-in Camera Control Web Page

Important Safeguards:

Read and understand all instructions before using. Do not operate any device if it has been dropped or damaged. In this case, a Vaddio technician must examine the product before operating. To reduce the risk of electric shock, do not immerse in water or other liquids and avoid extremely humid conditions.



Use only the power supply provided with the system. Use of any unauthorized or extended DC power supplies will void any and all warranties.

UNPACKING THE CAMERA SYSTEMS

Carefully remove the product and all of the included parts from the packaging. Identify the following parts:

RoboSHOT 12 USB System

Part Number: 999-9920-000

- One (1) RoboSHOT 12 USB HD PTZ Camera
- One (1) Vaddio IR Remote Commander
- One (1) 12 VDC, 3.0 Amp Switching Power Supply
- One (1) North American AC Cord Set
- One (1) Thin Profile Wall Mount & Mounting Hardware
- One (1) EZCamera™ Control Adapter
- One (1) 6' (1.83m) USB 3.0 Cable
- One (1) Quick Start Guide

Note: Full Manuals are downloaded from vaddio.com



RoboSHOT 12 USB System

Part Number: 999-9920-001

- One (1) RoboSHOT 12 USB HD PTZ Camera
- One (1) Vaddio IR Remote Commander
- One (1) 12 VDC, 3.0 Amp Switching Power Supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) Thin Profile Wall Mount & Mounting Hardware
- One (1) EZCamera™ Control Adapter
- One (1) 6' (1.83m) USB 3.0 Cable
- One (1) Quick Start Guide

Note: Full Manuals are downloaded from vaddio.com



Image: RoboSHOT 12 HD PTZ Camera

Camera Front View with Feature Call-outs



1) Camera and Zoom Lens: This RoboSHOT model features a 12X optical zoom lens (12X in Super-Wide mode and 10X in normal mode) that is built around an Exmor 1/2.8-Type, high-speed, low noise image sensor with a total of 2.38 megapixels for exceptionally precise HD video image acquisition in a small to medium sized conference room.

2) Camera Support Arm: The RoboSHOT cameras use a single control arm for pan and tilt movements. Both ends of the cast control arm are anchored with silent and smooth BLDC (brushless DC) direct drive motors. These motors provide ultra-accurate and fast camera positioning and are capable of the slowest of crawls, which are suitable for on-air use.

3) IR Sensors: IR sensors are built into the front of the RoboSHOT to receive IR signals from the IR Remote Commander supplied with the camera. The IR sensors sit behind the Makrolon IR Window on the front of the base.

4) Multi-Color LED:

The multi-colored LED indicates the use states of the camera:

- Purple LED is for Boot-up and Standby modes.
- Blue LED is for normal operation and is a power on, ready condition.
- The blue LED will blink when the camera receives a valid IR command.
- Solid red LED is to indicate a tally function illuminating when the camera is on-air.
- Blinking red LED indicates a fault condition.
- Yellow LED illuminates during a firmware update.

5) Logo: Really Cool Logo Badge (RCLB) is located on the IR Window.

6) Camera Base: Cast zinc alloy base for strength and stability, powder coated for toughness with fine texture.

Image: RoboSHOT 12 USB Rear Panel Connections.



1) Power Connector: 12 VDC, 3.0 Amp power input on an EIAJ-04 connector with a positive center.

2) Network PoE+ RJ-45: The PoE+ Gb Ethernet port allows the camera to be powered from a PoE+ network switch or power injector, controlled from embedded web server with a web browser or through a Telnet session. It also will IP Video in a RTSP format with H.264 compression up to 1080p/30. Note: for RoboSHOT 12 USB Release 1.0.0, 1080p is the only active IP (H.264) streaming resolution available. More resolutions will be added in the next software releases.

3) USB 3.0 Port: This port will stream uncompressed UVC (USB Video Class) standard video up to 1080p. The camera will detect the connection to a USB 2.0 video port and provide standard resolution video to the host PC that USB 2.0 can handle (640x480, 360p/30, 240p/30, 320x240 and 180p). Many UC clients will not ask for more than standard resolutions such as these.

4) HDMI VIDEO SELECT: A rotary switch allows the user to choose the HDMI video output resolution. See the Switch Settings page for additional information.

5) Camera Setting DIP Switch: DIP switch settings for IR remote frequency, baud rate and image flip can be configured on these switches. See the Switch Settings page for additional information.

6) HDMI Video Output: This is the HDMI video output (what else can you say?).

7) RS-232 Port (Color Coded Blue): The RS-232 port accepts modified VISCA protocol for camera control over a Cat-5/5e/6 cable.

BASIC APPLICATION DIAGRAMS

Diagram: Basic Wiring Configuration - UCC Application

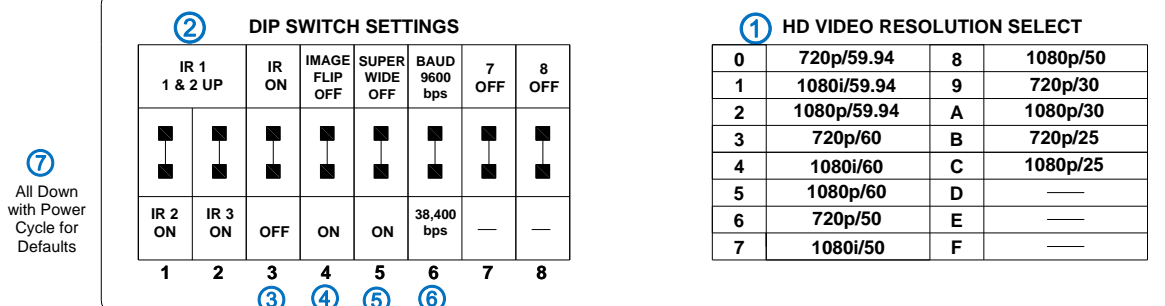
RoboSHOT 12 USB, EasyUSB™ Mixer/Amp, EasyMic™, UC Conferencing Application, Monitors and Speakers make up this UCC Application. Near-end and Far-end video is simulated.



SETTING UP THE ROBOSHOT

The RoboSHOT 12 USB HDMI video resolution is set with The HDMI VIDEO SELECT rotary switch (previous page) the USB 3.0 Resolution is negotiated with the host PC and application and the IP resolution is set with the embedded web server. There is also a set of eight (8) DIP switches that determine certain camera functions. The HDMI resolutions and switch functions are on a metalized polyester label, next to the warp plasma conduit on the bottom of the camera

Drawing: DIP Switch and Resolution Label on the Bottom of the RoboSHOT 12 USB




Setting the RoboSHOT Switch Gear:

- 1) Set the desired and available HD output resolution for the camera with the Rotary Switch.
- 2) Set the IR control frequency of the camera if it is to respond to the IR remote control.
- 3) The IR reception from the IR Remote Commander can be turned off. The default is ON.
- 4) If inverting the camera, turn the IMAGE FLIP ON (SW4).
- 5) For the RoboSHOT 12X model only, set the Super-wide mode to ON for a 12X, 73° horizontal super-wide angle of view. Normal mode will produce 67.2° horizontal field of view (HFOV).
- 6) Set the Baud Rate DIP switch (SW6) to 9600bps for most applications. The default is 9600 bps.
- 7) Setting all DIP switches DOWN with a power cycle loads the default camera settings. Return DIPs to desired operating position after power cycle.

Note: Switches 7 & 8 are reserved for future use.

Dip Switch Settings Further Explained:

- **IR 1, 2 and 3 (SW 1 & 2):** A single IR remote has the capability of operating up to three different PTZ cameras in a room. Use these selector DIP switches and the selector buttons at the top of the IR remote to select the frequency. 
- **IR ON/OFF (SW3):** Turn off the IR reception when only using RS-232 control, Telnet control or controlling the camera from the web server. The IR is defaulted to ON. **Hint:** Turning off the IR may be confusing to the users that grab the remote and expect the camera to respond, instead it will seem busted, which is never good.
- **Image Flip (SW4):** To invert the camera, turn the IMAGE FLIP ON (switch down).
- **Super-Wide Mode:** Super-wide works only with the RoboSHOT 12 model and allows the camera to switch from 67.3° wide end HFOV to a Super Wide 73° wide end HFOV.
- **Baud Rate (SW6):** The options for baud rate are either 9600 or 38,400 bps. The 9600 bps works best with Cat-5e over distance. Use 38,400 bps for short control lines only.
- **DIP Switches (SW7 & 8):** Not used for operation, please leave these DIP switches up or in the OFF position.

Setting the RoboSHOT 12 USB Resolution with the Rotary Switch

- For HDMI, set the desired HD resolution with the HDMI VIDEO SELECT rotary switch on the back of the camera.
- For USB 3.0 streaming, the Host PC's OS and conferencing/recording application will negotiate the streaming resolution. Some applications will the highest possible resolution that the camera and PC can use while others pick lower resolutions and use the video content as an auxiliary input where the data has priority. Just remember that the USB resolutions are always negotiated
- For the IP Stream (RTSP format with H.264 compression), the resolution is set over the Ethernet network via the RoboSHOT's web server on the Streaming menu page.

INSTALLATION BASICS:

The RoboSHOT cameras include a Thin Profile Wall Mount for...wall mounting the camera. There are options for IN-Wall™ mounts and IN-Ceiling™ Half-Recessed mount as well.

Step 1: Determine Camera Mount Location

When locating the camera, consider viewing angles, lighting conditions, possible line of site obstructions and check for in-wall or in-ceiling obstructions where the camera is to be mounted. Always pick a mounting location to optimize the performance of the camera. Please locate the camera to enable easy positioning of the camera body with the ability to point down and away from the ceiling and a pile of fluorescent lighting cells. *Cameras generally don't like to be swamped with fluorescent light and nobody sits or stands on the ceiling anyway.*



Step 2: After determining the optimum location of the camera system, pull and route the required cables from the camera location back to the PC, network, monitor, switcher or other video destination. The connections can be routed through the back of the mount, into the wall, or through the bottom of the mount and drop down behind a monitor to hide the cables. The following connections are available:

- HDMI Video, which is great for testing if the video is present and troubleshooting USB or IP streaming issues. Like the example on the previous page, it can be used as a near end (self-view) monitor or for a variety of other applications.
 - USB 3.0 Streaming Video (UC Conferencing)
 - IP Streaming Video (RTSP format with H.264 compression)
 - DC Power on a 12 VDC, 3 Amp EIAJ-04 Connector
- Connect any or all of the video outputs for whatever application is used.

Step 3: The Thin Profile Wall Mount Bracket's mounting holes are slotted and are 90° opposing to provide easy leveling. If mounting to Drywall, hold the mount to the wall and using a level, level it. Mark the center of the slotted holes. Install the provided wall anchors and attach the mount to the anchors. If the mount is to be mounted on a 2-gang wall box, use the screws supplied with the wall box cover plate to attach Thin Profile Wall Mount Bracket.

Step 4: Place the camera on the mount and connect the desired cables for the application. Check the level again to avoid any of those *weird Batman camera angles*. Use the provided ¼"-20 x .375 mounting screw to attach the Camera to the mount. The cables are fed through the cable management slots (back or bottom) provided by all Vaddio mounting options.

Step 5: After connecting the desired video cables, plug in the camera's 12 VDC, 3.0 Amp power supply AC power cord to an electrical outlet. The camera will boot up and the motors will start up and initialize. The process may look a little spazzy, but it is normal for these direct drive BLDC motors. In a few seconds, the camera will settle down and appear normal. When an image is available, the camera is ready to accept control information from the IR remote control or RS-232, Telnet or internal web server.

CONTROLLING THE CAMERA

IR Remote Commander

The following functions are accessible with the Vaddio IR remote:

- Camera Power On/Off (Toggle on/off same button)
- Back Light Compensation (Toggle on/off same button)
- Data Screen: **Toggle on/off the OSD for the RoboSHOT's IP/MAC Address**
- Camera Select (the remote can operate 3 cameras (with 3-IR Freq.)
- Pan/Tilt and Home controls with Reverse and Std. Pan direction
- Pan/Tilt Reset
- Auto Focus (Toggle on/off same button)
- Zoom In/Out controls Wide & Telephoto
 - Fast speed controls (W & T)
 - Slow speed controls (W & T)
- Manual Focus On/Off control (Toggle on/off same button)
 - Near (-) adjustment
 - Far (+) adjustment
- Six (6) pan/tilt/zoom positioning presets (1 through 6)
- Preset Set (store)
- Preset Reset (clear)
- Red LED that indicates IR Transmission and battery level

Vaddio
IR Remote
Commander



The IR Remote operational characteristics are as follows:

- **Finding the Camera's IP/MAC Address:** Use the data screen button on the remote to turn on and off the IP and MAC address. When turned on the Address will remain on the screen for 30 seconds.
- **Preset Activation:** IR Remote is limited to executing Presets 1 through 6.
- **Tri-Sync Speed on Preset:** If a global Tri-Sync speed is stored in the preset in the internal web pages by the user/admin, then that speed is used. If no Tri-Sync speed is used, then a default medium speed will be used.
- **Preset Store:** IR Remote is limited to positional (PTZ) type presets. To set a preset, position the camera, hold down the Preset Button and touch the one of the preset numbered buttons 1 through 6.

Telnet* Control Example

The following *Telnet commands are available through the Ethernet Port.

- Camera Home
- Camera Pan (left, right and speed - real-time operation)
- Camera Tilt (up, down and speed - real-time operation)
- Camera Zoom (zoom in/out/stop and speed - real-time operation)
- Camera Store Preset (Gets or Sets 12 presets with global relative PTZ [Tri-Sync] speed control to destination)
- Camera Image (Gets or sets current image control values, sets in 1 of 3 CCU presets)
(AWB or manual w/Red and Blue gain, BLC on/off, Auto Iris or manual with Iris value and Gain, Detail and Chroma)
- Camera Sleep (Gets or sets standby power mode - camera has to us less power in this mode)
- Exit (ends Telnet session)
- Help (displays CLISH syntax)
- History (command history)
- Network Ping (send ICMP ECHO_REQUEST to network hosts)
- Network Settings (Gets MAC address, IP address, Subnet Mask, Gateway and NTP server address)
- Streaming (Method used to get or set the current **streaming** settings)
- System Factory Reset
- System Reboot
- Version (system version information)
- Exit

*Please see the **full and actual** Telnet command list at the end of this manual.



RS-232 Control

The RoboSHOT has an API for control of the camera's operating functions over RS-232. Vaddio RoboSHOT Control Protocol is similar, but not identical 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 many Vaddio specific commands in the following Command and Inquiry Lists

Built-in Webserver Control

The RoboSHOT camera platform uses a Linux OS and has a built-in web server. The internal web pages will allow control of the attached camera via an Ethernet network connection.

So FAR

The RoboSHOT camera has an embedded webserver for system configuration and control. A network connection is required for camera configuration, camera control and Telnet

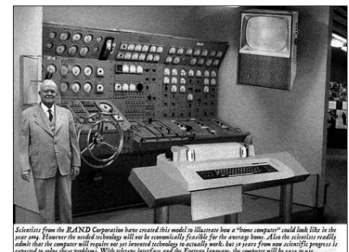
Next, for your reading enjoyment, a Software/OS Compatibility section and a Screen Shot tour has be prepared for the RoboSHOT 12 USB camera.

SOFTWARE AND OS COMPATIBILITY

The RoboSHOT 12USB will work with the following web browsers, soft codecs, computer operating systems and media players:

Compatibility - Web Browsers:

- 1) Internet Explorer (IE 8 to 11)
- 2) Safari (Rev 6 and 7)
- 3) Chrome (the latest and current release - auto updating)
- 4) Firefox (the latest and current release - auto updating)



UC Soft Client Compatibility: The RoboSHOT 12 USB is a standard USB Video Class (UVC) imaging device with native support in Windows, Mac OS, and Linux operating systems. Interoperability testing was conducted on some of the major UC clients to validate operations within a UC session. Below is a listing UC clients tested along with any findings observed. Please do not interpret this list as the only UC clients that work with the RoboSHOT 12 USB. The RoboSHOT 12 USB should work with any software application designed to interface with standard UVC device drivers.

Table: Tested UC Soft Clients

Soft Client	Version	Findings
Skype for Business (Lync)	15.0.4X	No issue found
Skype		Mac OS 10.8 & below- Video can occasionally freeze.
Google Hangouts		No issues found
Cisco WebEx	WBS 29	No issues found
Cisco Spark		No issues found
Cisco Jabber		No issues found
GoToMeeting	7.2.0	No issues found
Zoom		Mac OS 10.8 & below - Default to 720 in video settings needs to be unchecked or video can occasionally freeze.
Adobe Connect	9	No issues found

Compatibility: Media Players:

The UVC and IP with H.264 video are compatible with the industry leading PC media players.

- Quick-Time
- VLC Media Player
- Real Player

Compatibility: Operating Systems

- Apple OS X (10.7 and above)
- Windows 7 & 8, Windows XP w/Service Pack 3 with known issues and errata
- Linux

USB 3.0 UVC Drivers

The USB 3.0 UVC (USB Video Class) video driver resolution table is an internal list of resolutions available for the Host PC and the camera to negotiate and use for any approved/tested USB application. Typically, the highest resolution possible between both the PC and RoboSHOT 12 USB is used. However, not all OS and application combinations are altogether typical.

Table: Supported USB 3.0 UVC Resolutions Uncompressed

Format	Resolution	Frame Rate	Aspect Ratio	Notes
YUY2	1080p	60	16:9	1080p/60 is not implemented in Release 1.0.0
	1080p	30/15	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	720p (1280 x 720)	60/30/15	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	960 x 540 (qHD)	30/15	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	848 x 480	30/5	~16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	704 x 576	30/15	4CIF (PAL)	
	640 x 480	30/15	4:3	
	640 x 360 (360p)	60/15/30	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	424 x 240	30/15	~16:9	*15 FPS - Microsoft Lync Video Capture Rev. G Compliant
	352 x 288	30/15	CIF (PAL)	
	352 x 240	30/15	SIF	
	320 x 240	30/15	4:3	
	180p (320x180)	30/15	16:9	*15 FPS - Microsoft Lync Video Capture Rev. G Compliant

Table: Supported USB 2.0 UVC Resolutions Uncompressed

Below is a table of Video Resolutions supported when connecting a RoboSHOT 12 USB to a USB 2.0 port:

Format	Resolution	Frame Rate	Aspect Ratio	Notes
YUY2	960 x 540 (qHD)	30/15	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	848 x 480	30/5	~16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	704 x 576	30/15	4CIF (PAL)	
	640 x 480	30/15	4:3	
	640 x 360 (360p)	60/15/30	16:9	*30 FPS Microsoft Lync Video Capture Rev. G Compliant
	424 x 240	30/15	~16:9	*15 FPS - Microsoft Lync Video Capture Rev. G Compliant
	352 x 288	30/15	CIF (PAL)	
	352 x 240	30/15	SIF	
	320 x 240	30/15	4:3	
	180p (320x180)	30/15	16:9	*15 FPS - Microsoft Lync Video Capture Rev. G Compliant

Table: Supported IP Streaming Resolutions in Firmware Release 1.0.1 RoboSHOT 12 USB

Format	Compression	Resolutions	Frame Rates	Aspect Ratio
RTSP	H.264 Video	1080p	30/25/15	16:9
		720p	60/30/25/15	16:9
		704 x 576	60/30/25/15	4CIF (~5:4)
		720 x 480p	60/30/25/15	3:2
		640 x 480p	60/30/25/15	4:3
		360p (640x360)	60/30/25/15	16:9
		352 x 288p	60/30/25/15	CIF (~5:4)

THE ROBOSHOT 12 USB SCREEN SHOT TOUR

The RoboSHOT12 USB camera platform uses a Linux OS and has a built-in web server. The internal web pages will allow control of the attached camera via an Ethernet network connection. These web pages will allow the user or administrator to control the camera, set PTZ presets, set security passwords, change the IP address, view diagnostics, access the firmware upgrade page and more!

DHCP IP Set-up (Dynamic Host Configuration Protocol)

DHCP Set-up (skip this section if Static IP). If the LAN has a DHCP (dynamic host configuration protocol) server, then the IP address, gateway and routing information will automatically be assigned. The software is defaulted to DHCP and will attempt to dynamically obtain an IP address using DHCP, but it will fall back to the default address of (169.254.1.1) if no DHCP server can be found.

Static IP Set-up:

The static IP can be assigned either through the network or directly to a computer using a cross-over cable. Depending on the age of the computer, you may not need a cross-over cable. Either way the steps are the same for network or direct connection to a computer. The default address of the camera is 169.254.1.1 and the Subnet mask is 255.255.0.0. Different computer OS types all have their own way of doing things (without question), but they are essentially doing the same stuff, changing the IP address so the web pages of the RoboSHOT are accessible.

Screen Shot: Login

The RoboSHOT webserver is intended as a user's camera control page at one level, and an administrator's management tool at another level, which requires password authentication for access. The Login Page will appear if there is a user name assigned by the administrator. Assigning a user name can limit access to the admin menus by a general user.

- By default, the User name is: *user*, and the password for the User account is: *password*. The Administrator can set the name and password for the User account.
- By default, the Admin user name is: *admin*, and the password for the admin account is: *password*



- If a user or an admin logs in through this screen, then the next page shown will be the camera control page.
- The user will only have access to the camera control page.
- The Admin will have complete access to all web pages.

Screen Shot: Camera Control Page

This web page provides access to the camera controls for the User and the Admin.



- 1) **Pan, Tilt and Home Controls:** These intuitive controls use the up/down and diagonal arrows for camera pan and tilt. The center button will move the camera to the home position.
- 2) **Zoom Control:** The camera's zoom lens can be controlled with the "+" to zoom-in and the "-" to zoom out.
- 3) **Focus Control:** Click on the Focus button to move to manual focus. A pop-up window will present with the controls. Unclick Auto Focus and use the "+" and "-" to move the focus to the near or far end. Click the corner x to shut the window. Default is always auto, unless it's changed.
- 4) **Standby:** The Standby control puts the camera in low power mode and effectively puts the RoboSHOT to sleep. The camera will pan 90° from center and 30° downward (to not collect dust on the lens). When the camera is inverted (ceiling mounted) the camera will pan 90° from center and 30° downward. If the system is on, then the button will be blue and controls will be visible. If the button is red, no controls are accessible and the screen states: Device is in standby. Click to power-up, then you'll know what to do.
- 5) **Pan/Tilt and Zoom Speed Controls:** The speed for both the Pan/Tilt and Zoom controls can be adjusted with the three (3) sliders in this section. For tighter shots, it is recommended that the slower speed is used. These controls are for real-time camera movements only.
- 6) **Camera Presets:** Twelve (12) camera position presets can be recalled simply by clicking a preset number.
- 7) **Store Preset Button:** Clicking the Store button opens up a Store Preset pop-up dialog box. To set presets, set up the camera shot, click on choice of preset number (1 through 12). The preset is stored and the dialog box closes. The Store Preset dialog box will prompt the operator to enter the Tri-Sync speed to the stored camera preset and if the current color settings are to be stored with the preset too (see the next page).
- 8) **CCU Scenes:** The user has access to the CCU scenes set and stored on the Admin pages. There are three (3) user definable presets and six (6) presets preconfigured by the technical folks at Vaddio (really Scott set them all) that are meant to be used in certain lighting scenarios. These lighting presets included: Automatic, Incandescent Hi, Incandescent Lo, Fluorescent Hi, Fluorescent Lo and Outdoor.
- 9) **Administration Menu:** By clicking on the Administration menu bar, the Admin Login screen will appear.

Screen Shot: Storing Presets



- 1) **Store Preset:** When the Store Preset button is clicked (point 7 on previous page), the Store Preset dialog pops into existence. To save the current camera shot, click one of the Preset buttons (1 through 12), the button will be highlighted and the dialog box will present the Tri-Sync controls and if the CCU setting are to be kept with the preset.
- 2) **Save with Tri-Sync and Setting the Tri-Sync Speed:** The Tri-Synchronous Motion algorithm in the RoboSHOT cameras is capable of moving all three (pan, tilt and zoom) axes simultaneously. The algorithm calculates the PTZ position so pan, tilt and zoom arrive at the preset subject simultaneously. Tri-Sync speed is speed at which all other presets will use to get to the preset being stored. All axes will launch at the same time and if the next preset position is not too close or too far, axes should simultaneously arrive at the preset location. Storing the preset with Tri-Sync is fairly straight forward. Here's a quick method to set Tri-Sync:
 - a) Position the first preset, click on Store Preset and click on Preset 1. Check the Save with Tri-Sync box. Move the tri-Sync speed slider to about the approximate position above (about 1/3 up the speed scale). This is the speed that all the other presets will use to get to this Preset 1. The speed is stored with the destination preset. Click on Save to store the camera location and Tri-Sync speed.
 - b) Set another camera position, and try a different pan, tilt and zoom position and click on Store Preset. Click on Preset 2 through 12, click on the Save with Tri-Sync box and set the slider to about 1/2 way this time and click on Save. These two presets are stored with different preset destination speeds.
 - c) Click between these two recently stored presets and note the different speeds applied to the 2 presets.



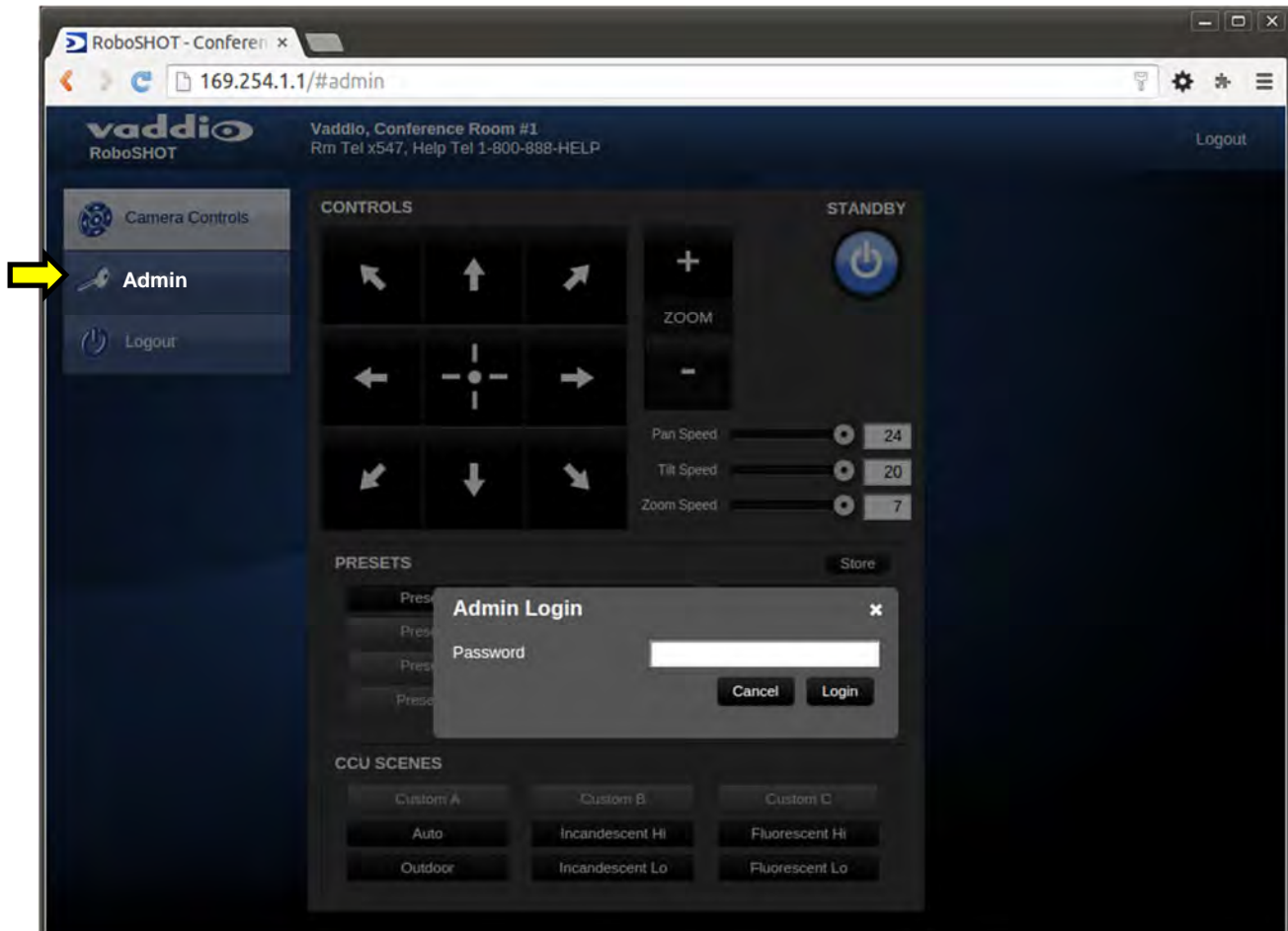
Tri-Sync Notes: If a preset is very close to the previous preset, like within 10° with no change in zoom, it certainly doesn't need to be Tri-Sync'd. If a preset is super-fast and off-air, Tri-Sync won't be of much use either. Tri-Sync is a cool tool to set for on-air shots, but the process of setting the speeds will need some practice.

- 3) **Store with Current Color Settings:** To save the currently assigned CCU scenes settings, check this box.
- 4) Click Save or Cancel to exit this pop-up dialog box.

Screen Shot: Admin login from the Camera Control Page

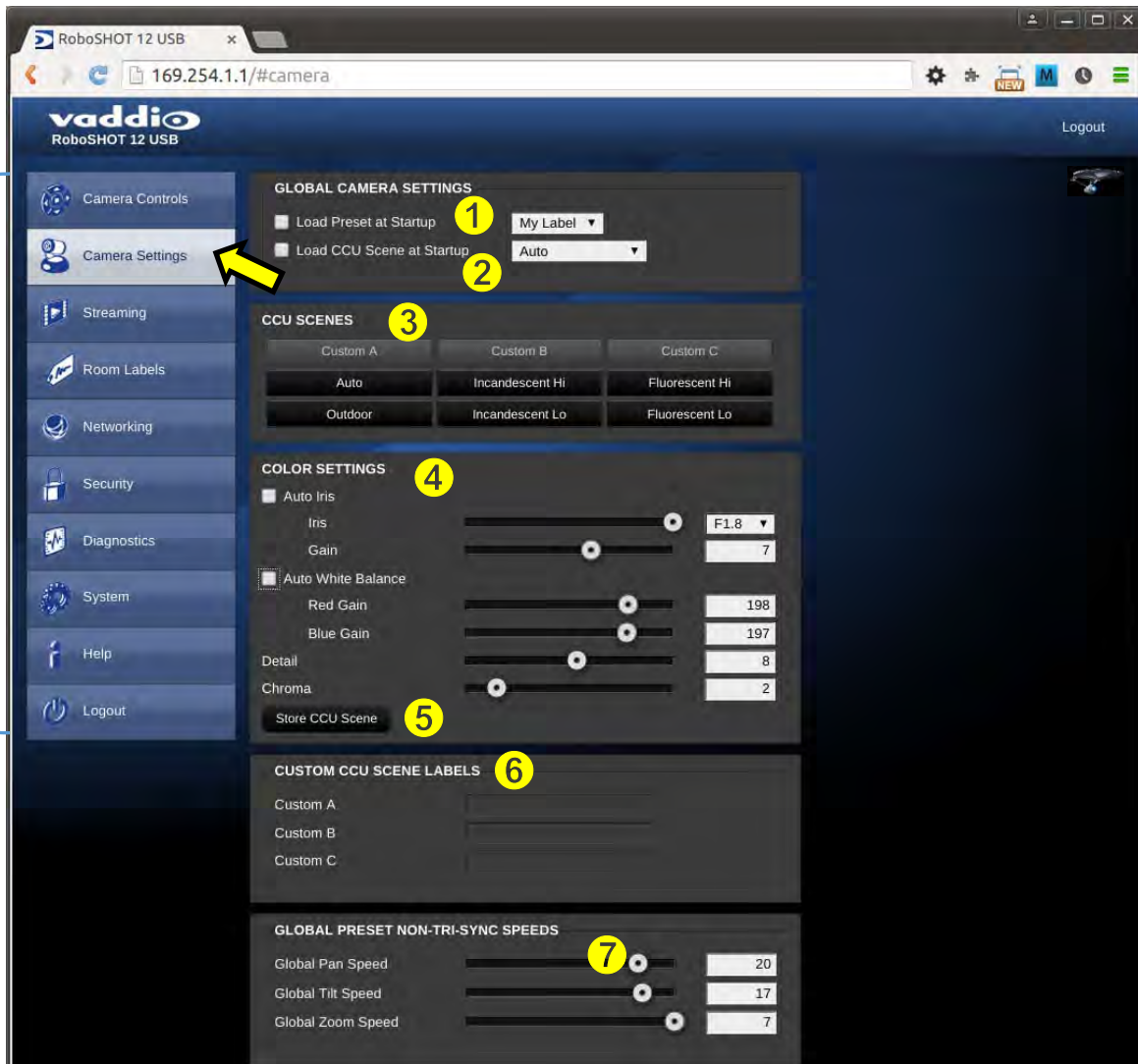
On the security page, which will be reviewed at a bit later in the tour, allows the Admin to set the system to allow automatic guest access to the main camera control page. If guest access is turned on by the Admin, then system will open to the camera control page and an additional Admin Login is provided.

The default Admin password is: [password](#).



Screen Shot: Admin Menu - Camera Settings

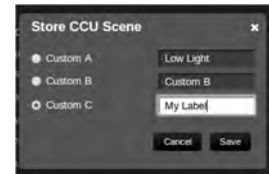
Once the Admin logs in, then all the admin menu buttons appear on the left side of the screen. The first menu after camera controls is Camera Settings.



- 1) **Load Preset at Startup:** Check this box to move the camera to a predefined preset location when the camera powers up. Use the pull down menu to select the Preset 1 through 12 to be loaded when this box is checked.
- 2) **Load CCU Scene at Startup:** Check this box to load a CCU Scene into the camera when the camera powers up. The pull down menu will allow the selection of one of the 6-factory scenes, or one of the 3 custom scenes.
- 3) **CCU Scenes:** Click on any of these 9 buttons to load one of the CCU scenes into the camera. These Scenes can be fine-tuned if changes are needed, and stored into any of the three Custom CCU Scenes.
- 4) **Color Settings:** When painting or shading camera scenes for specific lighting situations or environments, these parameters can be adjusted for matching cameras in the same area. The parameters within the Color Settings section are defined below (top to bottom):
 - **Auto Iris Check Box:** When checked, the camera will operate in Auto Iris mode, when unchecked, the camera will be in Manual Iris mode and allow adjustment of Iris and Iris Gain levels.
 - **Iris:** Move adjustment slider as required to adjust the iris opening. A numeric value will be displayed in the box to the right of the slider.
 - **Gain:** Move adjustment slider as required for amount of iris gain desired. Numeric value will be displayed in the box to the right of the slider.

- **Auto White Balance check box:** When checked, camera will operate in Auto White Balance mode, when unchecked camera will be in Manual White Balance Mode and allow for adjustment of Red and Blue Gain.
 - **Red Gain:** Move the adjustment slider as required for amount of Red Gain desired. A numeric value will be displayed in the box to the right of the slider.
 - **Blue Gain:** Move the adjustment slider as required for amount of Blue Gain desired. Numeric value will be displayed in the box to the right of the slider.
- **Back Light Compensation:** When checked, Back Light Compensation will be applied to the camera if camera is in Auto White Balance mode.
- **Detail:** Move the adjustment slider as required for amount of detail (Aperture) desired. A numeric value will be displayed in the box to the right of the slider. **Note:** If the detail is too high, the video can look grainy and appear noisy too.
- **Chroma:** Move the adjustment slider as required for the amount of Chroma (Color Vibrancy) desired. A numeric value will be displayed in the box to the right of the slider.

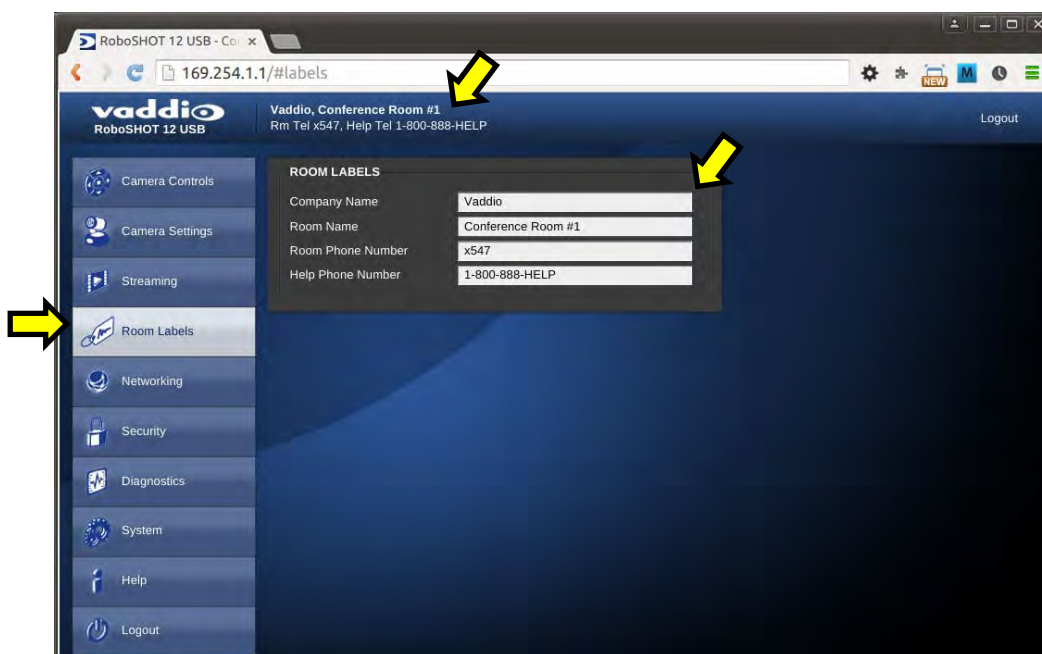
5) **Store CCU Scene button:** Once the desired scene adjustments have been made, this button will activate a pop-up menu that can be used to store this scene into one of the three User Defined Scene locations. These User Defined Scenes can be named as required for clarity. These User Defined CCU Scenes can be adjusted and re-saved at any time.



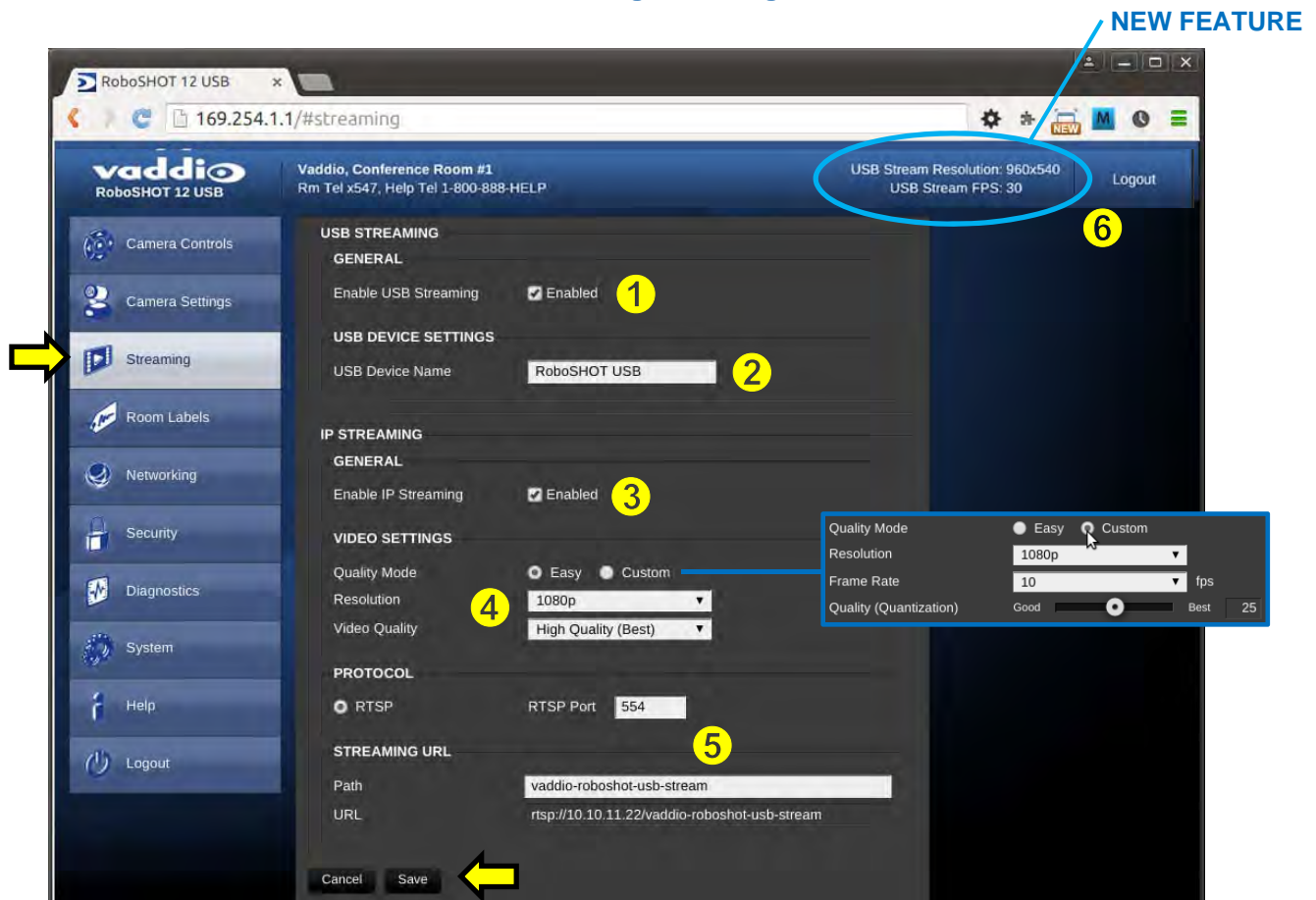
- 6) **Custom CCU Scene Labels:** The labels for the (3) User Defined customizable Scenes can be changed as needed. Mouse the cursor into the appropriate window and edit the text. Press Save to store these changes or press Cancel to exit this window.
- 7) **Global Preset Non-Tri-Sync Speeds:** When Tri-Sync Presets are not being used, then this section governs the pan, tilt and zoom speeds between the camera presets. These will be defaulted to a nominal level, but can be tailored to most any application.

Screen Shot: Admin Menu - Room Labels

The Room Labels menu allows the Admin to label the company name, room name, room phone and help phone on a per RoboSHOT basis. The labels appear on every page at the top/middle of the page. Simply enter the room information and click Save.



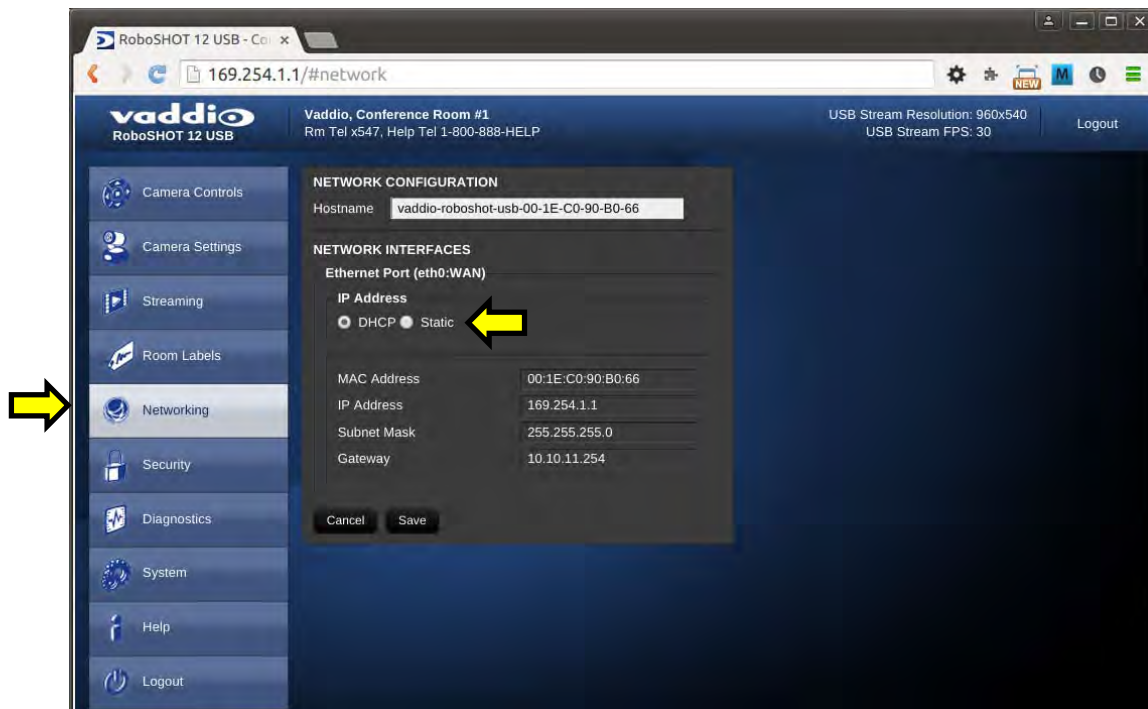
Screen Shot: Admin Menu - USB 3.0 and IP Streaming Video Page



- 1) **USB Streaming Mode:** Streaming can be set for either USB 3.0 streaming (uncompressed) and IP streaming (RTSP format with H.264 compression). The RoboSHOT can simultaneously stream USB and IP video, Telnet or IP control of the webserver control. Enable the USB 3.0 UVC streaming here
 - 2) **USB Device Name:** Allows the user to use a “friendly name” per system. The user has the ability to move between different UC conference rooms and have the ability to assign the PC’s USB resources to that room.
 - 3) **IP Streaming Enable:** This check box enables the IP (H.264) streaming in a RTSP format. Unchecking the box, discontinues streaming.
 - 4) **IP Streaming Settings:** The Video Settings allow the selection of the target performance for the IP Streaming. There are two Modes for the User:
 - a. **Easy Mode:** In Easy Mode, the user selects the resolution and picks between three preset quality levels, which includes High Quality (best), Standard Quality (better) and Low Bandwidth (good).
 - b. **Custom Mode:** In Custom Mode, the user can select the resolution, the target frame rate and the Quality (Quantization) of the stream on a slider. Setting the Custom Mode inappropriately may yield less than desirable results.
 - 5) **Streaming Protocol and URL:** The IP Streaming format is RTSP with a default port of 554, which can be changed. The admin sets the name of the path to the streaming server (friendly name) and the Streaming URL auto populates. Use this URL and enter it on the Streaming Line in the media player to view the IP stream.
 - 6) **New Feature - USB Monitor:** When the system is streaming USB video, a monitor on the top bar will indicate the USB Streaming resolution and Frame rate that has been selected by the application and the host PC.
- When finished setting up the streaming parameters click Save to put the changes into effect or cancel, which will not save the configuration.

Screen Shot: Admin Menu - DHCP Network Configuration

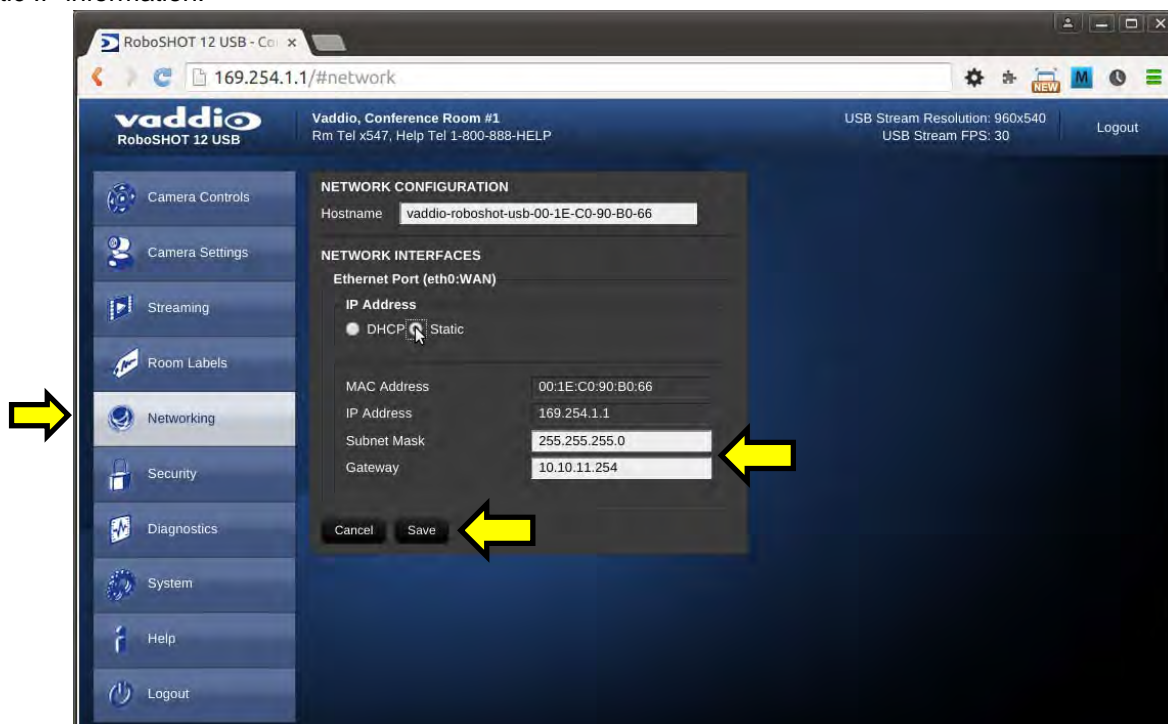
Under the Networking menu, The Network Configuration and Network Interfaces are displayed. This is where the Network administrator assigns either DHCP or a Static address and the associated parameters.



Notes: If the LAN has a DHCP (dynamic host configuration protocol) server, then the IP address, gateway and routing information will automatically be assigned. The software is defaulted to DHCP and will attempt to dynamically obtain an IP address using DHCP, but it will fall back to the default address of (169.254.1.1) if no DHCP server can be found.

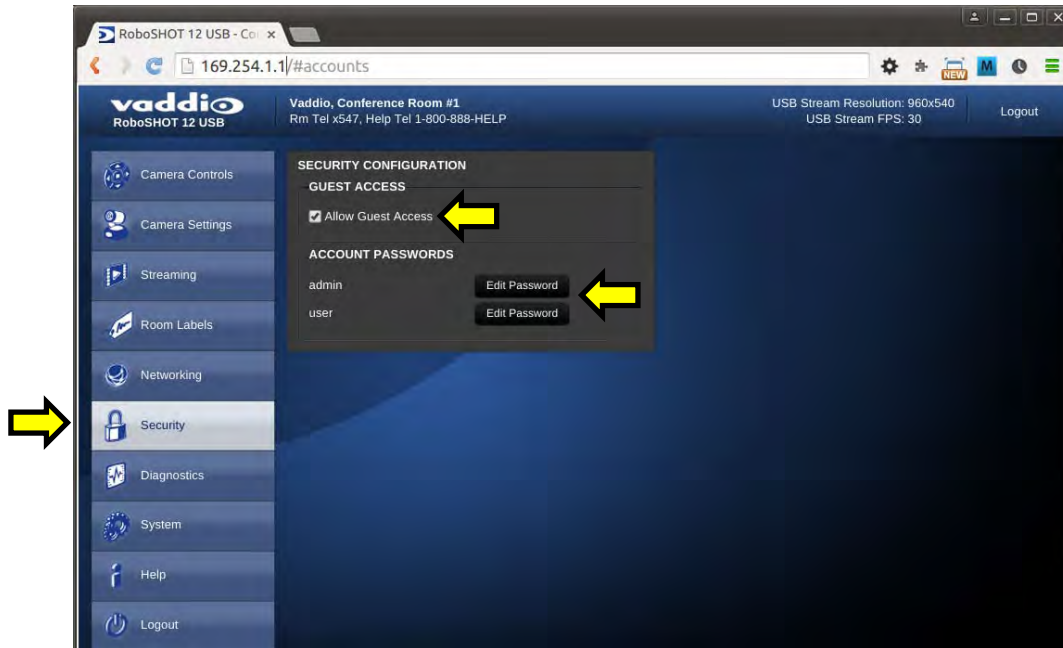
Screen SHOT: Admin Menu - Static IP Configuration

If Static IP is used, the IP Address, Subnet Mask and Gateway are manually entered. Click on Save to keep the Static IP information.



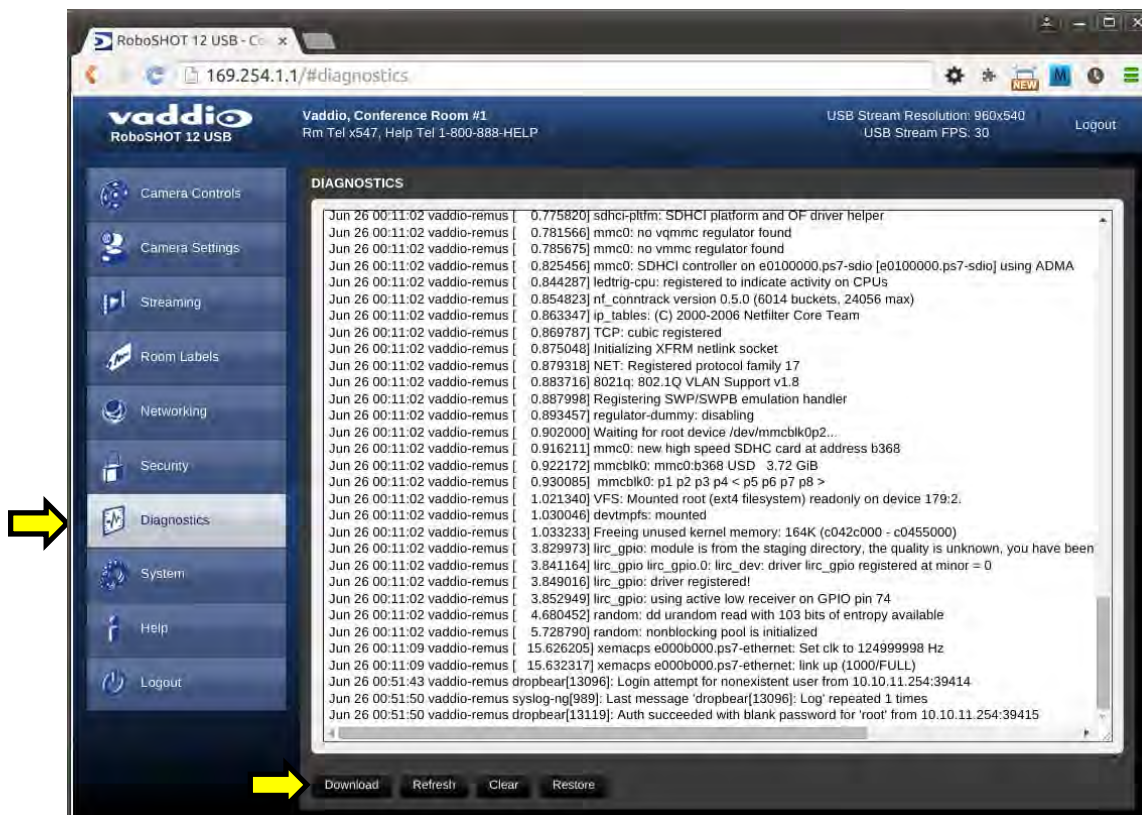
Screen SHOT: Admin Menu - Security

The Security menu allows the Admin to set the Admin and User account names and passwords. There is only one “user” password and only one “admin” password at any given time. If changes are made, click on Save to store the change (it’s best to write down the new names and passwords). A Guest Access check box is provided to let any user access the camera control page without logging in. An Admin Login is provided on the camera control page if the “Allow Guest Access” box is checked.



Screen Shot: Admin Menu - Diagnostics

Diagnostics menu button will display a set of self-diagnostics. These diagnostics may help the Vaddio technical support team diagnose a problem with the RoboSHOT camera. The controls include Download, Refresh, Clear and Restore.



Screen Shot: Admin Menu - System

The System Menu is where the System Info is displayed and Firmware Updates are performed. There will be firmware updates and upgrades over the life of the camera. The file for the firmware update is chosen in this menu and the update is started here too. A remote system Reboot and Restore to Factory Presets is also available.



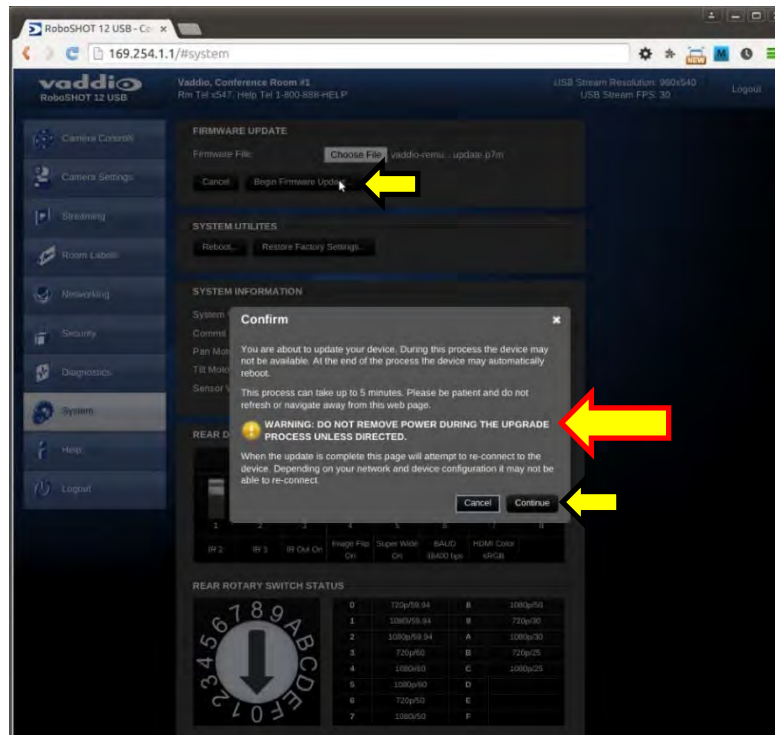
- 1) **Firmware Update:** The file for the firmware update is chosen in this menu and the update is started here.
- 2) **System Utilities:** A remote system Reboot and Restore to Factory Presets is also available.
- 3) **System Information:** The System version, Pan & Tilt Motor Versions and Sensor version are displayed in this section.
- 4) **Rear DIP Switch Status:** The DIP Switches on the camera are read and displayed for the Admin's reference. This information is read only. These switches determine the IR remote frequency, image flip, and baud rate of the camera and more!
- 5) **Rear Rotary Switch Status:** The rotary switch on the back of the RoboSHOT camera determines the video output resolution of the camera. The status is read from the camera (read only) and displayed for the Admin's reference.



Important Note: Anytime a **Firmware Update**, a **System Reboot** or a **Restore to Factory Settings** button is clicked, then a pop-up dialog box will spring up and ask if the intent is to continue or cancel. Please read and understand all the information in the presented in the dialog box prior to proceeding with any unknown procedure.

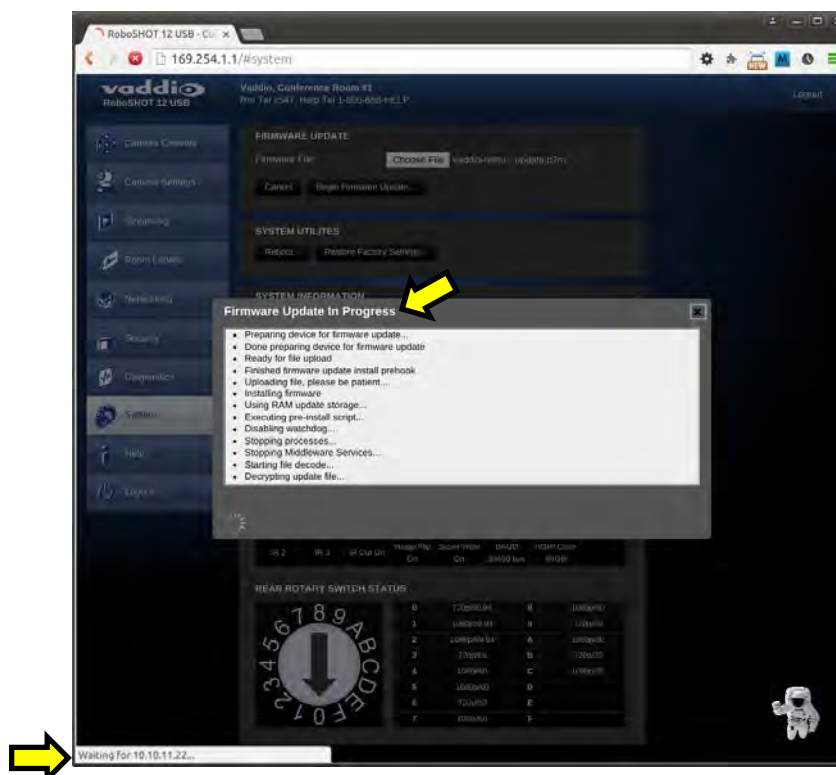
Screen Shot: Admin Menu - Update Confirmation

After choosing an update file and clicking on “Begin Firmware Update...” a confirmation pop-up and warning will be displayed. Please contact Vaddio Tech support for assistance with updates. Please read and completely understand the pop-up warnings as it is easy to lose patience waiting for updates. Click on continue to start the update.



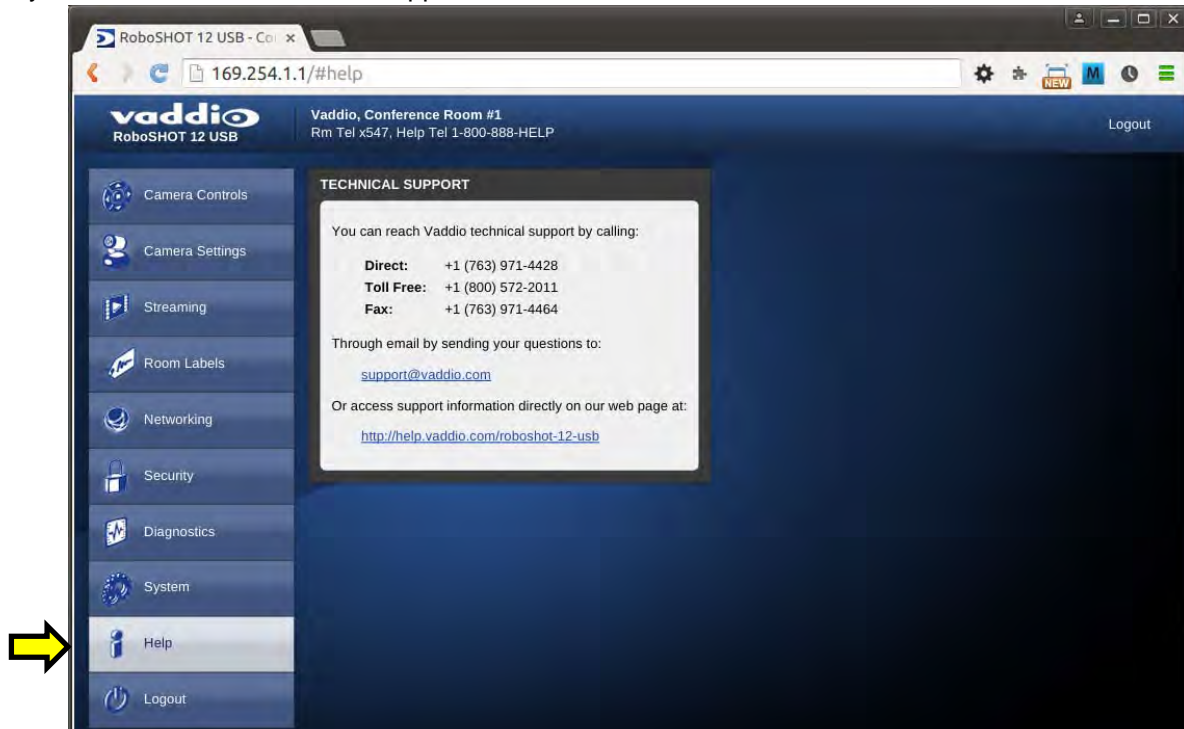
Screen Shot: Admin Menu - Update in Progress

After the firmware load has been started, a pop-up screen will advise patience and notify, in terms of percentage completed, the progress of the firmware update load. Again, please don't interrupt the firmware load.



Screen Shot - Admin Menu - Help

Service/Help information can be found under the Help menu. Support phone numbers and e-mail, manuals, FAQ's and System information is listed on support@vaddio.com.



TECHNICAL SUPPORT NOTE: Please work with your Network Administrator prior to calling Vaddio for technical support. Please have on-site network personnel initiate tech support calls with Vaddio only.



This concludes the Screen Shot Tour for the RoboSHOT 12 USB. The General Specifications, Communication Specifications, API, Telnet Command List, Warranty Information and Declarations of Compliance are breathtaking, stimulating and provocative as one would expect.



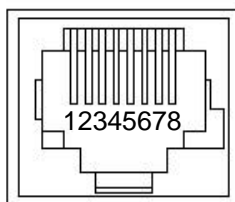
GENERAL SPECIFICATIONS

RoboSHOT 12 USB	Description
Part Numbers	RoboSHOT 12 USB Camera, 999-9920-000 (North America), 999-9920-001 (Int'l)
Image Device	1/2.8-Type Exmor CMOS Sensor
HDMI Video Resolution/Freq	1080p60/59.94/50/30/25, 1080i/60/59.94i/50, 720p/60/59.94/50/30/25
Vaddio Special Features	<ul style="list-style-type: none"> • Tri-Synchronous Motion: Concurrent PTZ motor movement and simultaneous PTZ arrival at a stored preset • Advanced ISP: Vivid and accurate color reproduction with extremely fast, razor sharp automatic focus and iris routines
Video Aspect Ratio	16:9 Aspect Ratio for all resolutions
Effective Pixels	2.14 Million Effective pixels 2.38 Million Total Pixels
Lens Magnification and Horizontal Angles of View	12X Optical Zoom, Super Wide Mode: 73.0° (wide) to 6.6° (tele), f=3.91mm to 47.0mm, F1.8 to F3.4 10X Optical Zoom, Normal Mode: 67.3° (wide) to 7.6° (tele), f=3.8mm to 38.0mm, F1.8 to F3.4
Minimum illumination	1.0 lx (F1.8, 50IRE), recommended illumination >100 lux and <100,000 lux (stare into the sun)
Minimum working distance	10mm (wide), 800mm (tele)
S/N ratio	More than 50 dB
Sync system	Internal
White balance	Auto, ATW, Indoor, Outdoor, One-push, Manual (accessible through external control)
Gain	Auto / Manual (0 to 28 steps - accessible through external control)
Back-light compensation	On/Off (IR Remote)
Focusing system	Auto Focus / Manual Focus Mode / One Push Trigger Mode / Infinity Mode / Near Limit Mode
Noise Reduction	On/Off, 6 Steps, Off through 5 (accessible through external control)
Aperture/Detail	16 Steps (accessible through external control)
Supported Streaming	Simultaneous IP (RTSP format with H.264 compression) up to 1080p/30 and USB 3.0 (UVC, uncompressed) streaming up to from 180p to 1080p
Connectors	USB: Type-B USB 3.0 Compliant Connector, Supported Drivers: USB Video Class, (UVC) Network: Shielded RJ-45 PoE+ GB Ethernet Port with LEDs to show connection and usage, RTSP Format RS-232: Shielded RJ-45, Carries bidirectional control to and from the camera. HDMI: HDMI female with screw flange mounted to back panel Power: EIAJ-04 Connector with a Positive Center
Control Interface(s)	<ul style="list-style-type: none"> • RS-232 API: Modified VISCA Emulation (TTL signal level) Baud rate: 9600 bps and 38,400 bps, 1-Stop bit. Default to 9.6 Kb/s for Cat-5e Distance • Telnet Serial Command API • Embedded Web Server for Network Configuration, IP streaming, firmware updates and network management • Vaddio IR Remote Commander
Pan & Tilt Angle/Speed	Pan/Tilt Angles: ±160°, Tilt: +90°, -30° Pan/Tilt Speeds: Both Axes 0.35°/sec to 120°/sec
Rear Panel Controls	<ul style="list-style-type: none"> • 16-Position Rotary Switch for Resolution selection • 8-Position DIP Switch for IR Frequency, Image Flip, wide mode and Reset to Default Settings
Power Supply	12 VDC, 3.0 Amp Power Supply PoE+ Switch or PoE+ Power Injector (25.5w over Cat-5 at a distance of 328' or 100m)
Compatible Vaddio Controllers	ProductionVIEW Precision Camera Controller
Operating Temperature/Humidity	0°C (32°F) to 40°C (104°F), 20% to 80% Relative Humidity
Mass	4.85 lbs.(2.1999235643 kg)
Dimensions	Small (3 dimensions not counting space/time) 6.942" (176.3mm) H x 7.056" (179.2 mm) W x 6.757" (171.6mm) D,

Notes: Specifications and pricing are subject to change without prior notice or obligation.
For dimensional drawings of the products, go to support.vaddio.com and click on drawings.

COMMUNICATION SPECIFICATION

Communication Speed: 9600 bps (default)
 Start bit: 1
 Stop bit: 1
 Data bits: 8
 Parity: None
 No Flow control



Pin #	Signal (RS-232) Pin-out
1	Unused
2	Unused
3	Unused
4	Unused
5	Unused
6	GND
7	RXD (from TXD of control source)
8	TXD (to RXD of control source)

NOTE: The Vaddio RoboSHOT Control Protocol is similar, but not identical 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 many Vaddio specific commands in the following Command and Inquiry Lists.

RoboSHOT Command List (1/3)

Command Set	Command	Command Packet	Comments
AddressSet	Broadcast	88 30 01 FF	Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
CommandCancel		8x 2p FF	p= Socket No.(1-2)
CAM_Power	On	8x 01 04 00 02 FF	Power on
	Off	8x 01 04 00 03 FF	Power off
CAM_Zoom	Stop	8x 01 04 07 00 FF	p= speed 0:low to 7:high p= speed 0:low to 7:high pqrs=Zoom Position (0h-4000h)
	Tele(std)	8x 01 04 07 02 FF	
	Wide(std)	8x 01 04 07 03 FF	
	Tele(variable)	8x 01 04 07 2p FF	
	Wide(variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	
CAM_DZoom		Not supported	
CAM_Focus	Stop	8x 01 04 08 00 FF	p= speed 0:low to 7:high p= speed 0:low to 7:high 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	One push AF Trigger pqrs=Near focus Limit***
CAM_AFSensitivity	Normal	8x 01 04 58 02 FF	AF Sensitivity High / Low
	Low	8x 01 04 58 03 FF	
CAM_AFMode	Normal AF	8x 01 04 57 00 FF	AF movement mode
	Internal AF	8x 01 04 57 01 FF	
	Zoom Trigger AF	8x 01 04 57 02 FF	
	Activate/Internal Time	8x 01 04 27 0p 0q 0r 0s FF	
CAM_IRCorrection	Standard	8x 01 04 11 00 FF	Focus IR compensation data switching
	IR light	8x 01 04 11 01 FF	
CAM_ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs=Zoom Position (0h – 7AC0h) tuvw=Focus Position (1000h – F000h)
CAM_WB	Auto	8x 01 04 35 00 FF	Normal Auto Indoor mode Outdoor mode One Push WB mode Auto Tracing White Balance Manual Control mode One Push WB Trigger Outdoor auto Auto including sodium lamp source Sodium lamp source fixed mode Outdoor auto including sodium lamp source
	Indoor	8x 01 04 35 01 FF	
	Outdoor	8x 01 04 35 02 FF	
	One Push WB	8x 01 04 35 03 FF	
	ATW	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	One Push Trigger	8x 01 04 10 05 FF	
	Outdoor Auto	8x 01 04 35 06 FF	
	Sodium Lamp Auto	8x 01 04 35 07 FF	
	Sodium Lamp	8x 01 04 35 08 FF	
	Sodium Lamp Outdoor Auto	8x 01 04 35 09 FF	
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual control of red gain
	Up	8x 01 04 03 01 FF	
	Down	8x 01 04 03 02 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	
CAM_BGain	Reset	8x 01 04 04 00 FF	Manual control of blue gain
	Up	8x 01 04 04 01 FF	
	Down	8x 01 04 04 02 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	
CAM_AE	Full Auto	8x 01 04 39 00 FF	Auto Exposure mode Manual Control mode Shutter Priority Auto Exposure mode Iris Priority Auto Exposure Mode Bright Mode (modified AE mode)
	Manual	8x 01 04 39 03 FF	
	Shutter Priority	8x 01 04 39 0A FF	
	Iris Priority	8x 01 04 39 0B FF	
	Bright	8x 01 04 39 0D FF	

RoboSHOT Command List (2/3)

Command Set	Command	Command Packet	Comments
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting pq=Shutter Position (00h – 15h)
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting pq=Iris Position** RoboSHOT 12 (0h, 07h-11h) RoboSHOT 30 (0h, 05h-11h)
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	
CAM_Gain	Reset	8x 01 04 0C 00 FF	Iris Gain Setting pq=Gain Position (01h – 0Fh) p= Gain limit (04h-0Fh)
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4C 00 00 0p 0q FF	
	+Gain Limit	8x 01 04 2C 0p FF	
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation On Exposure Compensation Off pq=ExpComp Position(0h-0Eh)
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	
CAM_BackLight	On	8x 01 04 33 02 FF	Backlight Compensation On/Off
	Off	8x 01 04 33 03 FF	
CAM_Tally	On	8x 01 7E 01 0A 00 02 FF	
	Off	8x 01 7E 01 0A 00 03 FF	
CAM_WD	On	8x 01 04 3D 02 FF	WD On WD Off VE On p=Display brightness level (0Dark – 6Bright) r=Brightness compensation selection (0:Very dark,1:Dark,2:std,3:bright) s=Compensation level (0:Low,1:Mid,2:High)
	Off	8x 01 04 3D 03 FF	
	VE On	8x 01 04 3D 06 FF	
	Set Parameter	8x 01 04 2D 00 0q 0r 0s	
		00 00 00 00 FF	
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Setting pq=Aperture Position (0h-ffh)
	Up	8x 01 04 02 01 FF	
	Down	8x 01 04 02 02 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	
CAM_HR	On	8x 01 04 52 02 FF	High Resolution Mode On/Off
	Off	8x 01 04 52 03 FF	
CAM_NR	--	8x 01 04 53 0p FF	p= Noise Reduction level(0:Off,1-5)
CAM_Gamma	--	8x 01 04 5B 0p FF	p= Gamma setting(0:std,1:Straight)
CAM_LR_Reverse	On	8x 01 04 61 02 FF	LR Reverse On/Off (mirror)
	Off	8x 01 04 61 03 FF	
CAM_Freeze	On	8x 01 04 62 02 FF	Freeze On/Off
	Off	8x 01 04 62 03 FF	
CAM_PictureEffect	Off	8x 01 04 63 00 FF	Picture Effect Setting
	Neg. Art	8x 01 04 63 02 FF	
	Black & White	8x 01 04 63 04 FF	
CAM_PictueFlip	On	8x 01 04 66 02 FF	Image-Flip On/Off
	Off	8x 01 04 66 03 FF	
CAM_ICR	On	8x 01 04 01 02 FF	ICR Mode On/Off
	Off	8x 01 04 01 03 FF	
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs=Camer ID (0h-ffffh)
CAM_Memory	Reset	8x 01 04 3F 00 0p FF	p= preset number(0h-0fh) qr= Speed(01h-18h)
	Set standard	8x 01 04 3F 01 0p FF	
	Set standard with 'scene'	8x 01 04 3F 21 0p FF	
	Set Tri-sync	8x 01 04 3F 11 0p 0q 0r FF	
	Set Tri-Sync with 'scene'	8x 01 04 3F 31 0p 0q 0r FF	
	Recall standard	8x 01 04 3F 02 0p FF	
	Recall Tri-sync	8x 01 04 3F 12 0p FF	

RoboSHOT Command List (3/3)

Command Set	Command	Command Packet	Comments
Cam_Display	On On(alternate) Off Off(alternate) On/Off On/Off(alternate)	8x 01 04 15 02 FF 8x 01 06 06 02 FF 8x 01 04 15 03 FF 8x 01 06 06 03 FF 8x 01 04 15 10 FF 8x 01 06 06 10 FF	Display On/Off
Cam_Mute	On Off On/Off	8x 01 04 75 02 FF 8x 01 04 75 03 FF 8x 01 04 75 10 FF	Mute On/Off
CAM_ColorEnhance	Parameter Set On Off	8x 01 04 20 mm 00 pp qq rr ss tt uu FF 8x 01 04 50 02 FF 8x 01 04 50 03 FF	mm: Threshold level pp: Y fixed color for high-intensity qq: Cr fixed color for high-intensity rr: Cb fixed color for high-intensity ss: Y fixed color for low-intensity tt: Cr fixed color for low-intensity uu: Cb fixed color for low-intensity Each parameter setting 00h to 7Fh Color Enhancement On/Off
CAM_ChromaSuppress		8x 01 04 5F pp FF	pp: Chroma Suppress setting level 00: Off 01h to 03h: On (3 levels). Effect increases as the level number increases.
CAM_ColorGain	Direct	8x 01 04 49 00 00 00 0p FF	p: Color Gain Setting 0h to 4h
CAM_ColorHue	Direct	8x 01 04 4F 00 00 00 0p FF	p: Color Hue Setting 0h (-14 degrees) to Eh (+14 degrees)
CAM_GammaOffset	Direct	8x 01 04 1E 00 00 00 0s 0t 0u FF	s: Polarity offset (0 is plus, 1 is minus) tu: Offset s=0 (00h to 40h) Offset s=1 (00h to 10h)
Pan-TiltDrive	Up Down Left Right UpLeft UpRight DownLeft DownRight Stop	8x 01 06 01 vv ww 03 01 FF 8x 01 06 01 vv ww 03 02 FF 8x 01 06 01 vv ww 01 03 FF 8x 01 06 01 vv ww 02 03 FF 8x 01 06 01 vv ww 01 01 FF 8x 01 06 01 vv ww 02 01 FF 8x 01 06 01 vv ww 01 02 FF 8x 01 06 01 vv ww 02 02 FF 8x 01 06 01 vv ww 03 03 FF	vv= Pan speed (01h-18h) ww=Tilt speed (01h-14h)
	Absolute Position	8x 01 06 02 vv ww 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	vv= Pan speed (01h-18h) ww=Tilt speed (01h-14h) 0Y0Y0Y0Y = Pan position (90E2h-6BD8h) 0Z0Z0Z0Z = Tilt position (EB99h-3D59h)
	Home	8x 01 06 04 FF	
Pan-Tilt-ZoomDrive	Up Down Left Right In Out Stop	8x 01 06 0A vv ww rr 03 01 03 FF 8x 01 06 0A vv ww rr 03 02 03 FF 8x 01 06 0A vv ww rr 01 03 03 FF 8x 01 06 0A vv ww rr 02 03 03 FF 8x 01 06 0A vv ww rr 03 03 01 FF 8x 01 06 0A vv ww rr 03 03 02 FF 8x 01 06 0A vv ww rr 03 03 03 FF	vv= Pan speed (01h-18h) ww=Tilt speed (01h-14h) rr=Zoom speed (00h-07h)
	Absolute Position	8x 01 06 0B vv ww 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z 0R 0R 0R 0R FF	vv: Pan speed (01h-18h) ww: Tilt speed (01h-14h) 0Y0Y0Y0Y = Pan position (90E2h-6BD8h) 0Z0Z0Z0Z = Tilt position (EB99h-3D59h) 0R0R0R0R = Zoom position (0000h-7AC0h)
	Home	8x 01 06 0C FF	
CAM_PTZ_PresetSpeed (Non-Tri-Sync)		8x 01 7e 01 0b pp qq rr FF	pp:pan speed (01h-18h), qq:tilt speed (01h-14h), rr:zoom speed (0h-07h)

RoboSHOT Inquiry List (1/2)

Inquiry Command	Command	Response Packet	Comments
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF y0 50 03 FF	On Off (Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusModelInq	8x 09 04 38 FF	y0 50 02 FF y0 50 03 FF	Auto Focus Manual Focus
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_FocusNearLimitInq	8x 09 04 28 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Near Limit Position
CAM_AFSensitivityInq	8x 09 04 58 FF	y0 50 02 FF y0 50 03 FF	AF Sensitivity Normal AF Sensitivity Low
CAM_AFModelInq	8x 09 04 57 FF	y0 50 00 FF y0 50 01 FF y0 50 02 FF	Normal AF Interval AF Zoom Trigger AF
CAM_AFTimeSettingInq	8x 09 04 27 FF	y0 50 0p 0q 0r 0s FF	pq: Movement Time, rs: Interval
CAM_IRCorrectionInq	8x 09 04 11 FF	y0 50 00 FF y0 50 01 FF	Standard IR Light
CAM_WBModelInq	8x 09 04 35 FF	y0 50 00 FF y0 50 01 FF y0 50 02 FF y0 50 03 FF y0 50 04 FF y0 50 05 FF y0 50 06 FF y0 50 07 FF y0 50 08 FF y0 50 09 FF	Auto Indoor Outdoor One Push WB ATW Manual Outdoor Auto Sodium Lamp Auto Sodium Lamp Sodium Lamp Outdoor Auto
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModelInq	8x 09 04 39 FF	y0 50 00 FF y0 50 03 FF y0 50 0A FF y0 50 0B FF y0 50 0D FF	Full Auto Manual Shutter Priority Iris Priority Bright
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_GainLimitInq	8x 09 04 2C FF	y0 50 0q FF	p: Gain Limit
CAM_ExpCompModelInq	8x 09 04 3E FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BackLightModelInq	8x 09 04 33 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_TallyInq	8x 09 7E 01 0A FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ResolutionInq	8x 09 06 23 FF	y0 50 0p 0q FF	Pq=Video Resolution
CAM_WDModelInq	8x 09 04 3D FF	y0 50 02 FF y0 50 03 FF y0 50 06 FF	On Off VE On
CAM_WDParameterInq	8x 09 04 2D FF	y0 50 00 0q 0r 0s 0t 0u 00 00 FF	q: Display brightness level (0: Dark to 6: Bright) r: Brightness compensation selection (0: Very dark, 1: Dark, 2: Standard, 3: Bright) s: Compensation level (00h: Low, 01h: Mid, 02h: High) tu: Always 0
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_HRModelInq	8x 09 04 52 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_NRInq	8x 09 04 53 FF	y0 50 0p FF	Noise Reduction p: 00h to 05h
CAM_GammaInq	8x 09 04 5B FF	y0 50 0p FF	Gamma p: 00h , 01h

RoboSHOT Inquiry List (2/2)

Inquiry Command	Command	Response Packet	Comments
CAM_LR_ReverseModelInq	8x 09 04 61 FF	y0 50 02 FF y0 50 03 FF	On (mirror) Off
CAM_FreezeModelInq	8x 09 04 62 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_PictureEffectModelInq	8x 09 04 63 FF	y0 50 00 FF y0 50 02 FF y0 50 04 FF	Off Neg. Art Black & White
CAM_PictureFlipModelInq	8x 09 04 66 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ICRModelInq	8x 09 04 01 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_MemoryInq	8x 09 04 3F FF	y0 50 pp FF	pp: Memory number recalled last
CAM_MemoryStatusInq	8x 09 04 3F 0p FF	y0 50 0p 0q 0r 0s FF	p: Memory number q: mode (00-std, 10-std /w ccu, 01-trisync, 11-trisync /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 07h (Address) pqrs: 0000h to FFFFh (Data)
CAM_DisplayModelInq	8x 09 04 15 FF (8x 09 06 06 FF)	y0 50 02 FF y0 50 03 FF	On Off
CAM_MuteModelInq	8x 09 04 75 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_IDInq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	pqrs: Camera ID
CAM_VersionInq	8x 09 00 02 FF	y0 50 00 10 mn pq 0E 0E 02 FF	mnpq: Model Code
Vaddio_ModelInq	8x 09 08 0e FF	y0 50 05 00 00 00 00 FF y0 50 05 01 00 00 00 FF	RoboSHOT-12 RoboSHOT-30
CAM_RegisterValueInq	8x 09 04 24 mm FF	y0 50 0p 0p FF	mm: Register No. (=00h to 7Fh) pp: Register Value (=00h to FFh)
CAM_ColorEnhanceInq	8x 09 04 20 FF 8x 09 04 50 FF	y0 50 mm 00 pp qq rr ss tt uu FF y0 50 02 FF y0 50 03 FF	mm: Threshold level pp: Y fixed color for high-intensity qq: Cr fixed color for high-intensity rr: Cb fixed color for high-intensity ss: Y fixed color for low-intensity tt: Cr fixed color for low-intensity uu: Cb fixed color for low-intensity On Off
CAM_ChromaSuppressInq	8x 09 04 5F FF	y0 50 pp FF	pp: Chroma Suppress setting level
CAM_ColorGainInq	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: Color Gain Setting 0h to 4h
CAM_ColorHueInq	8x 09 04 4F FF	y0 50 00 00 00 0p FF	p: Color Hue Setting 0h (- 14 degrees) to Eh (+ 14degrees)
CAM_TemplInq	8x 09 04 68 FF	Y0 50 00 00 0p 0q FF	pq: Lens Temperature
CAM_GammaOffsetInq	8x 09 04 1E FF	y0 50 00 00 00 0s 0t 0u FF	s: Polarity offset (0 is plus, 1 is minus) tu: Offset s=0 (00h to 40h) Offset s=1 (00h to 10h)
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	www= Pan position zzzz=Tilt Position

COMMAND SETTING VALUES

Exposure Control

Shutter Speed	Value	60/59.94/30/29.97	50/25
	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	Value	RoboSHOT 12	RoboSHOT 30
	0x11	F1.8	F1.6
	0x10	F2	F2
	0x0F	F2.4	F2.4
	0x0E	F2.8	F2.8
	0x0D	F3.3	F3.4
	0x0C	F4	F4
	0x0B	F4.8	F4.8
	0x0A	F5.6	F5.6
	0x09	F6.8	F6.8
	0x08	F8	F8
	0x07	F9.6	F9.6
	0x06	N/A	F11
	0x05	N/A	F14
	0x00	CLOSE	CLOSE

Iris Gain	Value	Steps
	0x0F	28
	0x0E	26
	0x0D	24
	0x0C	22
	0x0B	20
	0x0A	18
	0x09	16
	0x08	14
	0x07	12
	0x06	10
	0x05	8
	0x04	6
	0x03	4
	0x02	2
	0x01	0

Iris Gain Limit	Value	Steps
	0x0F	28
	0x0E	26
	0x0D	24
	0x0C	22
	0x0B	20
	0x0A	18
	0x09	16
	0x08	14
	0x07	12
	0x06	10
	0x05	8
	0x04	6



Exposure Comp.	Value	Iris	Gain
	0x0E	+7	+10.5 dB
	0x0D	+6	+9 dB
	0x0C	+5	+7.5 dB
	0x0B	+4	+6 dB
	0x0A	+3	+4.5 dB
	0x09	+2	+3 dB
	0x08	+1	+1.5 dB
	0x07	0	0 dB
	0x06	-1	-1.5 dB
	0x05	-2	-3 dB
	0x04	-3	-4.5 dB
	0x03	-4	-6 dB
	0x02	-5	-7.5 dB
	0x01	-6	-9 dB
	0x00	-7	-10.5 dB

ROBOSHOT TELNET SERIAL COMMAND API

The Vaddio Serial Command protocol is a high level text based command line interface supported via telnet session on the RoboSHOT. The command application protocol interface is intended to allow external device such as AMX or Crestron to control the camera. The protocol is based upon ASCII format following the VT100 terminal emulation standard and uses an intuitive text command nomenclature for ease of use. The API is accessed by a telnet client on the Ethernet port. All ASCII characters will be **echoed** to terminal program and appended with VT100 string - **ESC[J** (HEX- 1B 5B 4A). Vaddio Command lines are terminated on carriage return. After the carriage return, the VT100 appends with **ESC[J**. (**Note:** Most terminal programs automatically strip the VT100 string.) General format usage follows a **get/set** structure. Usage examples for each type are:

Set Example

COMMAND: > camera pan right
RESPONSE: > OK

Get Example

COMMAND: > camera home get
RESPONSE: > OK

Syntax Error Example

COMMAND: > camera right pan
RESPONSE: > ERROR

Additional programming controls associated with the terminal protocol includes:

- **CTRL 5** - Clears the current serial buffer on the device.

Telnet sessions will require access verification and uses the same username and password associated with the Administrator account on the embedded web server. The default Telnet Port is 23. Command lines are terminated with a carriage return.

Telnet Command List

Camera Home

- **NAME**
camera home - Move the camera to the home position
- **SYNOPSIS**
camera home
- **DESCRIPTION**
Method used to move the **camera** to the *home* position
- **EXAMPLES**
camera home Move the **camera** back to the *home* position

Camera Pan

- **NAME**
camera pan - Pans the camera left or right
- **SYNOPSIS**
camera pan { left [<speed>] | right [<speed>] | stop }
- **DESCRIPTION**
Method used to *pan* the **camera**
- **OPTIONS**
 - left** Move the **camera** left
 - right** Move the **camera** right
 - stop** Stop the **camera** movement
 - speed** Optional integer from 1-24 that represents the speed (Default: 12)
- **EXAMPLES**
 - camera pan left**
Pans the **camera** left at the default speed
 - camera pan right 20**
Pans the **camera** right using a speed of 20
 - camera pan stop**



Image: Invigorating simulated Telnet session.

Camera Tilt

- **NAME**
camera tilt - Tilts the camera up or down
- **SYNOPSIS**
camera tilt { *up* [<speed>] | *down* [<speed>] | *stop* }
- **DESCRIPTION**
Method used to *tilt* the **camera**
- **OPTIONS**
up Move the **camera** up
down Move the **camera** down
stop Stop the **camera** movement
speed Optional integer from 1-20 that represents the speed (Default: 10)
- **EXAMPLES**
camera tilt up Tilts the **camera** up at the default speed
camera tilt down 20 Tilts the **camera** up using a speed of 20
camera tilt stop Stops the *tilt* movement of the **camera**



Camera Zoom

- **NAME**
camera zoom - *zoom* the camera in or out
- **SYNOPSIS**
camera zoom { *in* [<speed>] | *out* [<speed>] | *stop* }
- **DESCRIPTION**
Method used to *zoom* the **camera**
- **OPTIONS**
in Zoom *in*
out Zoom *out*
stop Stop the **camera** movement
speed Optional integer from 1-7 that represents the speed (Default: 3)
- **EXAMPLES**
camera zoom in - Zooms the **camera** in at the default speed
camera zoom out 7 - Zooms the **camera** out using a speed of 7
camera zoom stop - Stops the *zoom* movement of the **camera**

Camera Preset

- **NAME**
camera preset
- **SYNOPSIS**
camera preset recall <1-16>
camera preset store <1-16> [*tri-sync* <1-24>] [*save-ccu*]
- **DESCRIPTION**
Method used to recall and store **camera** presets
- **OPTIONS**
recall Recall *preset*
store Store *preset*
preset
Required value from 1-16 used to indicate the *preset* number
- **EXAMPLES**
camera recall 3 - Move **camera** to *preset* position 3
camera store - Store current **camera** position as *preset* 1
camera preset store 2 tri-sync 10 save-ccu
Store current **camera** position and CCU settings as *preset* 2, will recall using *tri-sync* at speed 10
camera preset store 4 tri-sync 15
Store current **camera** position as *preset* 4, will recall using *tri-sync* at speed 15

Camera Focus

- **NAME**
camera focus
- **SYNOPSIS**
camera focus { { *near* [<speed>] | *far* [<speed>] } | *stop* }
camera focus mode { *auto* | *manual* }
- **DESCRIPTION**
Method used to *focus* the **camera**
- **OPTIONS**
 - near* Move the **camera focus near** (with optional speed)
 - far* Move the **camera focus far** (with optional speed)
 - stop* Stop the **camera focus**
 - mode* Set the *focus mode* to *auto* or *manual*
 - speed* Optional integer from 1-8 that represents the speed
- **EXAMPLES**
 - camera focus near**
Focuses the **camera** near at the default speed

 - camera focus far 8**
Focuses the **camera** far at a speed of 8

 - camera focus stop**
Stops focus movement of the **camera**



Camera CCU

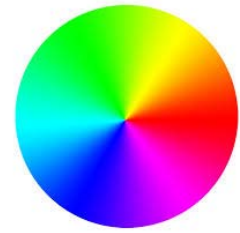
- **NAME**
camera ccu get - Gets the ccu settings
- **SYNOPSIS**
camera ccu get <key>
- **DESCRIPTION**
Method used to get the ccu values of the connected camera
- **OPTIONS**
 - <key>
 - all** Gets all supported CCU information
 - auto_white_balance** Gets auto white balance
 - red_gain** Gets red gain value
 - blue_gain** Gets blue gain value
 - backlight_compensation** Gets backlight compensation
 - auto_iris** Gets auto-iris mode
 - iris** Gets iris value gain
 - gain** Gets gain value
 - detail** Gets detail value
 - chroma** Gets chroma value
- **EXAMPLES**
 - Camera **ccu get iris** Gets the iris value
 - camera **ccu get red gain** Gets the red gain

CCU Camera Scene

- **NAME**
camera ccu scene - Stores or recalls the ccu scene
- **SYNOPSIS**
camera ccu scene {recall {factory [1-6]|custom [1-3]} | *store* [1-3]}
- **DESCRIPTION**
Method used to get or set the *ccu scene*
- **OPTIONS**
 - recall** Recalls a *ccu scene*
 - store** Stores a custom *ccu scene*
 - custom** A custom *scene* (can be stored or recalled)
 - factory** A factory *scene* (can be recalled)
- **EXAMPLES**
 - camera ccu scene recall factory 2** - Recalls the factory *scene* stored at index 2

Camera CCU Set

- **NAME**
camera ccu set - Sets and gets the CCU Settings
- **SYNOPSIS**
camera ccu set <key> <value>
- **DESCRIPTION**
Method used to sets the *ccu* values
- **OPTIONS**
 - <key>
 - auto_white_balance** Sets auto white balance to {on/off}
 - red_gain** <0-255> Sets red gain value
 - blue_gain** <0-255> Sets blue gain value
 - Backlight_compensation** Sets backlight compensation {on/off}
 - auto_iris** Sets auto iris {on/off}
 - iris** Sets iris value <0-13>
 - gain** Sets gain value <0-13>
 - detail** Sets detail value <0-15>
 - chroma** Sets chroma value <0-14>
- **EXAMPLES**
 - camera ccu set auto iris off** Sets the *auto iris* off
 - camera ccu set red gain 10** Sets the red *gain* to be 10



Camera Standby

- **NAME**
camera standby
- **SYNOPSIS**
camera standby { on | off | toggle }
- **DESCRIPTION**
Method used to put the **camera** in and out of *standby*
- **OPTIONS**
 - <key>
 - on* put the **camera** into *standby* mode
 - off* put the **camera** out of *standby* mode *toggleswitches* the *standby* mode state
- **EXAMPLES**
 - camera ccu set auto iris off** Sets the *auto iris* off
 - camera ccu set red gain 10** Sets the red *gain* to be 10

Streaming

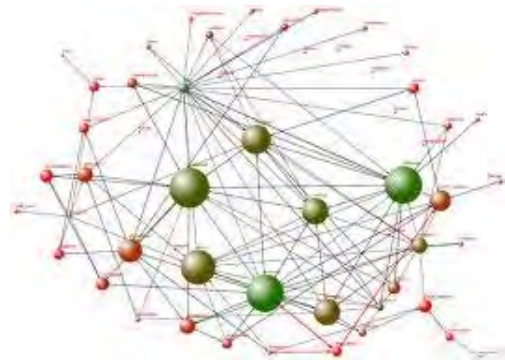
- **NAME**
streaming
- **SYNOPSIS**
streaming settings get
- **DESCRIPTION**
Method used to *get* or *set* the current **streaming settings**
- **OPTIONS**
settings View **streaming settings**
- **EXAMPLES**
 - streaming settings get**
 - IP Enabled** true
 - IP Port** 554
 - IP Protocol** RTSP
 - IP Quality** High Quality (Best)
 - IP Resolution** 720p
 - IP Url** lobby-conference
 - USB Enabled** true

History

- **NAME**
history - command history
- **SYNOPSIS**
history [*limit*]
- **DESCRIPTION**
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 also recall historic information
- **HISTORY NAVIGATION**
The command **history** can be navigated using the up and down arrow keys. The up arrow will move up a single entry in the command **history** while the down arrow moves down in the command **history**.
- **HISTORY EXPANSION**
The command **history** 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.
Listed below are examples of **history** expansion:
* **!!** Substitute the last command line.
* **!N** Substitute the Nth command line (absolute as per '**history**' command)
* **!-N** Substitute the command line entered N lines before (relative)
- **EXAMPLES**
history - Displays the current command buffer
history 5 - Sets the **history** command buffer to remember the last 5 unique entries

Network Settings

- **NAME**
network settings - get current network settings
- **SYNOPSIS**
network settings {get}
- **DESCRIPTION**
Method used to get the current **network settings** of the device
- **OPTIONS**
get Get the current **network settings** for the machine
- **EXAMPLES**
network settings get
MAC Address: 00:04:a3:85:0a:ee
IP Address: 10.10.8.116
Netmask: 255.255.255.0
Gateway: 10.10.8.100
Returns the current **network settings** for mac address, ip address, netmask, and gateway



Network Ping

- **NAME**
network ping - send ICMP ECHO_REQUEST to network hosts
- **SYNOPSIS**
network ping [*count* <*count*>] [*size* <*size*>] <destination-ip>
- **DESCRIPTION**
Use the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway. ECHO_REQUEST datagrams have an IP and ICMP header, followed by a structured timeval and then an arbitrary number of pad bytes used to fill out the packet.
- **OPTIONS**
count Stop after sending *count* ECHO_REQUEST packets. With deadline option, *ping* waits for *count* ECHO_REPLY packets, until the timeout expires. The default is 5.
destination The destination IP address where the ECHO_REQUESTS are sent
size The data *size* of the ICMP packet to send. The default is 56 bytes
- **EXAMPLES**
network ping 192.168.1.1
Attempt to send 5 ICMP ECHO_REQUESTs with data *size* 56 to the host at 192.168.1.1
network ping count 10 size 100 192.168.1.1
Attempt to send 10 ICMP ECHO_REQUESTs with data *size* of 100 to the host at 192.168.1.1

System Factory-Reset

- **NAME**
system factory-reset - Gets or sets factory reset status
- **SYNOPSIS**
system factory-reset {get|on|off}
- **DESCRIPTION**
Method used to get or set the factory reset status
- **OPTIONS**
 - get* Get the current factory reset status
 - on* Enable factory reset on reboot
 - off* Disable factory reset on reboot
- **EXAMPLES**

```

system factory-reset get
factory-reset (software):
    off
factory-reset (hardware): [Hardware reset is designated by rear panel DIP switches in down position]
    off
Returns the factory reset status
---
System factory-reset on
factory-reset (software): on
factory-reset (hardware): off
Enables factory reset upon reboot

```



System Reboot

- **NAME**
system reboot - Reboots system
- **SYNOPSIS**
system reboot [<seconds>]
- **DESCRIPTION**
Method used to reboot system
- **OPTIONS**
 - seconds**
The number of seconds to delay the *reboot*
- **EXAMPLES**

```

reboot Reboot system immediately
reboot 30 Reboot the system in 30 seconds

```

Help

- **NAME**
help - display an overview of the CLI syntax
- **SYNOPSIS**
help
- **DESCRIPTION**
Display an overview of the command line syntax

Version

- **NAME**
version - display the system version information
- **SYNOPSIS**
version
- **DESCRIPTION**
Display an overview of the command line syntax
- **EXAMPLES**

```

version Returns the current software version

```

Exit

- **NAME**
exit
- **SYNOPSIS**
exit
- **DESCRIPTION**
Ends the current API command session. If the session is over telnet, the session is ended and the socket is closed. If the session is over serial, a new session is started.



COMPLIANCE AND CE DECLARATION OF CONFORMITY - ROBOSHOT 12 USB CAMERA

Compliance testing was performed to the following regulations:

- **FCC Part 15** (15.107, 15.109), **Subpart B**
- **ICES-003, Issue 4: 2004**
- **EN 55022:2010**
- **KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)**
- **KN22 2008 (CISPR 22: 2006)**
- **EMC Directive 2004/108/EC**
- **EN 55024: A2: 2003**
- **IEC 60950-1:2005 (2nd Edition); Am 1:2009**
- **EN 60950-1:2006+A11:2009+A1:2010+A12:2011**

Class A
Class A
Class A
Class A
Class A
Class A
Class A
Safety
Safety



FCC Part 15 Compliance

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

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

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



ICES-003 Compliance

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

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



European Compliance

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

Standard(s) To Which Conformity Is Declared:

EMC Directive 2004/108/EC

EN 55022:2010

EN 55024: 1998 + Amendments A1: 2001 + A2: 2003

- EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001
- EN 61000-4-3: 2006 + A1: 2008
- EN 61000-4-4: 2004 + Corrigendum 2006
- EN 61000-4-5: 2006
- EN 61000-4-6: 2009
- EN 61000-4-8: 2010
- EN 61000-4-11: 2004

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

- EN 61000-4-2
- EN 61000-4-3
- EN 61000-4-4
- EN 61000-4-5
- EN 61000-4-6
- EN 61000-4-8
- EN 61000-4-11

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

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

Conducted and Radiated Emissions

Immunity

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and Fluctuations

IT Immunity Characteristics

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and Fluctuations

Safety

Safety

WARRANTY INFORMATION

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

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

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

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

Vaddio Technical Support: Vaddio technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Vaddio Technical Support can be contacted through one of the following resources: e-mail support at support@vaddio.com or online at vaddio.com.

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

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

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

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

Other General Information:

Care and Cleaning

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

- Do not spill liquids in the product
- Keep this device away from food and liquid
- For smears or smudges on the product, wipe with a clean, soft cloth
- Do not use any abrasive chemicals.

Operating and Storage Conditions:

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

- Temperatures above 40°C (104°F) or temperatures below 0°C (32°F)
- High humidity, condensing or wet environments
- In inclement weather
- In swimming pools, generally
- Dry environments with an excess of static discharge
- Inside the Large Hadron Collider (LHC)
- Under severe vibration



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