WallVIEW™ HD-USB SR System

Featuring the ClearVIEW™ HD-USB PTZ Camera, CONCEAL™ Mount, Active USB Extension Cable and Power Extension Module

Part Numbers:
999-6994-000 - North America
999-6994-001 - International

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OVERVIEW:

Based on the remarkable Vaddio ClearVIEW HD-USB PTZ Conferencing Camera, the WallVIEW HD-USB SR (short range) System includes many of the features that you would expect out of a WallVIEW branded product. The ClearVIEW HD-USB is the world's first broadcast-quality HD PTZ camera with USB 2.0 output, Ethernet streaming and analog component (YPbPr) outputs built right into the camera. Simply plug the HD-USB camera directly into your PC and there is no need for a separate capture device. The ClearVIEW HD-USB uses standard USB 2.0 UVC drivers, which means that no special USB drivers require installation or can provide headaches. As a result the HD-USB camera works seamlessly with any software application running on any OS that supports USB 2.0 devices. All this, and the ClearVIEW HD-USB PTZ cameras are made in the USA too.

The ClearVIEW HD-USB combines impressive performance with an equally impressive feature set. Using the UVC standard drivers for USB 2.0 video, the HD-USB camera is a plug and play PTZ camera for Unified Communications soft client conferencing systems such as Skype®, Jabber® and Lync®, which offers a vast improvement over the "inexpensive webcam" systems available today.

WallVIEW HD-USB SR System with CONCEAL Mount

The HD-USB is a high definition conferencing camera suitable for the small, medium or even the largest conferencing space available. The HD zoom lens allows HD-USB to capture a wide angle of view (58.1°) to view everyone at a conference room table, as well as capture an individual from a long distance (3.2°) in a larger room. The motorized zoom lens offers 19X optical zoom and is built around a 1/3-Type Sony® Exmor, progressive scan, high-speed, low noise CMOS image sensor with a total of 1.3 Megapixels for precise and vibrant HD color video images. The HD-USB achieves improved picture quality even in low light environments requiring a minimum illumination rated at an amazingly low 0.7 LUX (F1.6 - 50IRE).

Soft Ware Notes:

Like the ClearVIEW HD-USB PTZ Camera, the WallVIEW systems will be released with two (2) major software releases. Release 1.0 will allow USB 2.0 streaming and with the following Release 2.0 software, the ClearVIEW HD-USB will also support H.264 video streaming. It has a built in Ethernet network interface for both IP control and IP Streaming can be initiated directly from the camera. It will support either RTSP or HLS streaming protocols. The software is easily upgradeable in the field over the Ethernet port.

The WallVIEW HD-USB SR system includes the HD-USB camera, the CONCEAL camera mount, an active, port-powered 20m (65.6168') USB-2.0 extension cable, the Vaddio Power Extension Module for extending power over CAT-5 cable to the camera and all the USB 2.0 cables, power supplies and mounting hardware that are required to install the WallVIEW HD-USB SR system.

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 power supply will void any and all warranties.

Please do not use "pass-thru" type RJ-45 connectors. These pass-thru type connectors do not work well for professional installations and can be the cause of intermittent connections which can result in the RS-232 control line failing and locking up, and/or compromising the HSDS™ signals. For best results please use standard RJ-45 connectors and test all cables for proper pin-outs prior to use and connection to Vaddio product.

Intended Use:
Before operating the device, please read the entire manual thoroughly. The system was designed, built and tested for use indoors, and with the provided power supply and cabling. The use of a power supply other than the one provided or outdoor operation has not been tested and could damage the device and/or create a potentially 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 for the Vaddio product line on the Vaddio website. These documents can be downloaded from www.vaddio.com free of charge.

UNPACKING

North American Version 999-6994-000
Carefully remove the device and all of the parts from the packaging.
Unpack and identify the following parts:

- One (1) ClearVIEW HD-USB PTZ Camera (998-6990-000)
- One (1) Vaddio IR Remote Commander
- One (1) EZCamera™ Control Adapter (RJ-45 to DB-9)
- One (1) Vaddio PowerRite™ 12 VDC, 3.0 Amp Power Supply
- One (1) AC Cord Set for North America
- One (1) 10' (3.05m) USB 2.0 Type A (Male) to USB B (Male) Cable
- One (1) 1' (305mm) USB 2.0 Type A (Male) to USB B (Male) Cable
- One (1) 20m (65') Active, Port Powered USB 2.0 Extension Cable
- One (1) Power Extension Module
- One (1) 24 VDC, 2.75 Amp PowerRite™ Switching Power Supply
- One (1) AC Cord Set for North America
- One (1) CONCEAL Mount and Hardware for the HD-USB Camera
- Documentation

International Version 999-6994-001
Carefully remove the device and all of the parts from the packaging.
Unpack and identify the following parts:

- One (1) ClearVIEW HD-USB PTZ Camera (998-6990-000)
- One (1) Vaddio IR Remote Commander
- One (1) EZCamera™ Control Adapter (RJ-45 to DB-9)
- One (1) Vaddio PowerRite™ 12 VDC, 3.0 Amp Power Supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) 10' (3.05m) USB 2.0 Type A (Male) to USB B (Male) Cable
- One (1) 1' (305mm) USB 2.0 Type A (Male) to USB B (Male) Cable
- One (1) 20m (65') Active, Port Powered USB 2.0 Extension Cable
- One (1) Power Extension Module
- One (1) 24 VDC, 2.75 Amp PowerRite™ Switching Power Supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) CONCEAL Mount and Hardware for the HD-USB Camera
- Documentation

ClearVIEW HD-USB PTZ Conferencing Camera
Diagram: Rear View Connectors with Feature Call-outs:

Note: Use the EZ POWER VIDEO port with the Power Extension Module
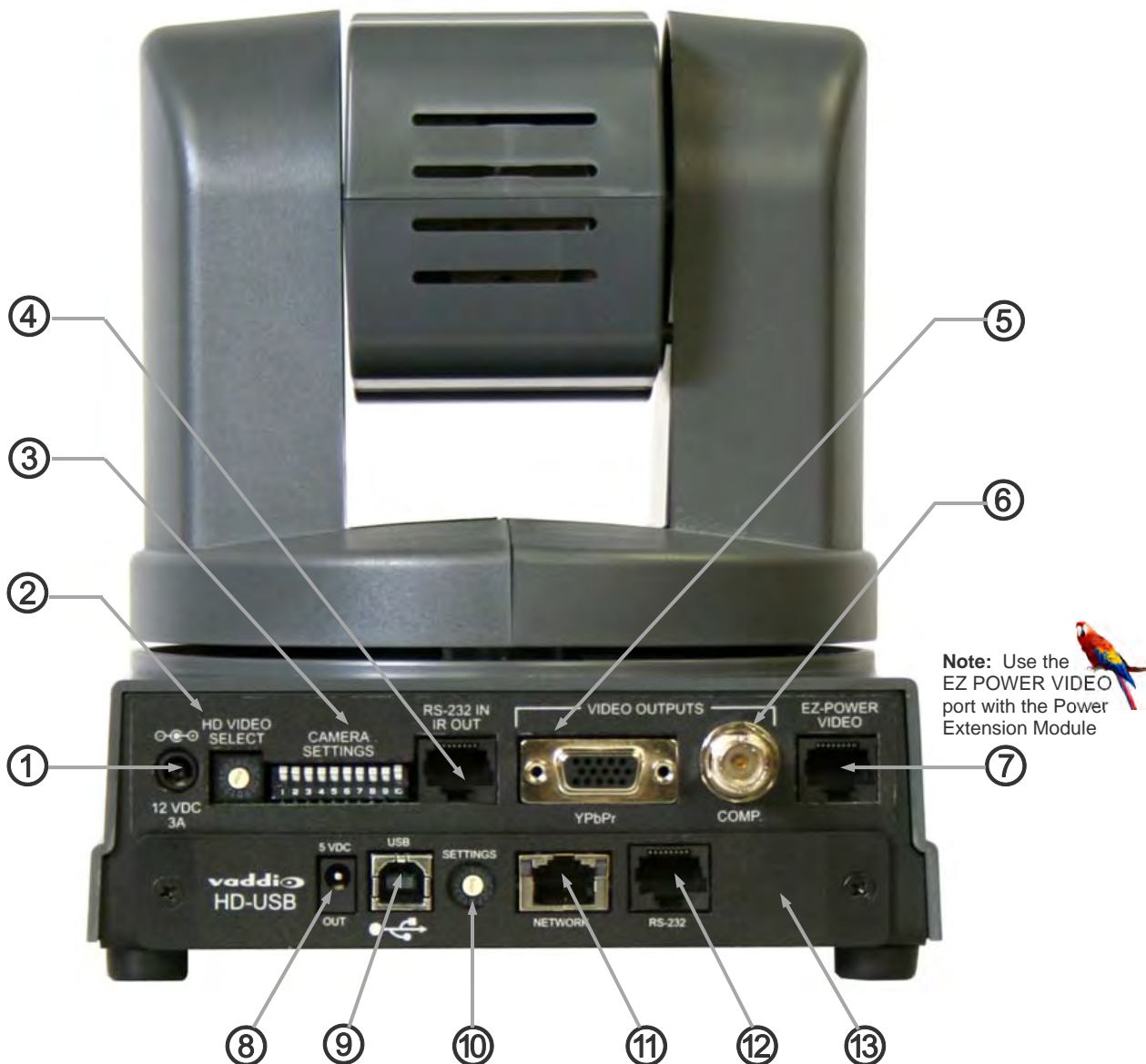
Connectors and Functions:

1) **12 VDC Input:** Power input on EIAJ-04 connector for local power.

2) **HD Video Select:** A rotary switch that allows the user to choose the component HD output video resolution and format. For the USB output, use rotary switch settings 0, 1, 4, or 5. Please see the sections on available resolutions and concurrent resolutions when using USB 2.0 and analog component outputs

3) **Camera Settings (Dip Switch Settings):** Settings for IR remote frequency, baud rate, SD output format, and image flip, test bars can be configured on these switches.

4) **RS-232 IN & IR Out:** The upper RS-232 Port is not implemented on the HD-USB Camera. Use the RS-232 Port on the lower card ONLY.

5) **YPbPr Output:** Component HD video is fed through the DE-15 connector (HD-15 for the shell sized challenged). YPbPr and Composite signals are simultaneous. Note: This is an HD camera and the SD signals are down converted and are really not the sweet spot of this camera. This is a courtesy feature only.

Connectors and Functions (continued)

6) **Composite Video (CVBS) Output:** The CVBS output feeds out SD video signals and is configurable with the dip switches to choose between 480i/NTSC or 576i/PAL in 4:3 formats. Squeeze and letterbox modes are also available (see dip switches).

7) **EZ POWER VIDEO Port:** Use the RJ-45 EZ POWER VIDEO port with the Power Extension Module. The Power Extension Module sends DC power over pins 1 & 2 to power the HD-USB camera for up to 150' (45.72m). In the Case of the WallVIEW HD-USB SR system, the limitation is the USB 2.0 Extension Cable, which extends USB 2.0 only 65' (20m).

8) **5 VDC Output:** The 5 VDC output is on an EIAJ-03 connector was added to supply power to the active Extreme USB Extender transmitter side. The receiver side is powered by the computer's USB port or powered USB Hub.

9) **USB 2.0 Connector:** The USB 2.0 is on a type-B Female and attaches to a PC running a soft-client video conferencing system or video capture software that uses UVC (USB Video Class) standard drivers. No other drivers are required to plug the HD-USB into a computer and have it work. The UVC drivers will auto negotiate the top resolution that the PC and HD-USB Camera can accomplish together and auto implement it, and bob's your uncle.

10) **Settings Rotary Encoder:** The Settings encoder allows the user to easily access automatically negotiated USB or H.264 Preset and User configurations without having to plug in a computer to configure it. While a computer is recommended for set-up, this rotary allows for a quick set-up.

11) **Ethernet 10/100 Port (H.264 Streaming Active with Software Release 2.0):** The network port has green and yellow LEDs that indicate ready and usage states. The port allows for access to the internal web pages for camera set-up and control. The network port will stream (unicast) H.264/MPEG4/AVC video (from CIF up to and including 1080p/30) starting with Release 2.0 of the Software.

12) **RS-232 Port:** The RS-232 Port allows external control systems to engage a rudimentary API. Basic functions include pan, tilt zoom, on/off etc. The functions on the Vaddio IR Remote Commander are mirrored in the API. Most control is expected to come from the internal web page via Ethernet, Telnet or over USB 2.0.

13) **Permanent USB Resource Slot Card:** The lower row of connectors and the brains of the HD-USB Camera are located on this permanent slot card. The card is not removable and is not compatible with any other Vaddio camera. Please do not try to remove this card at any time.

ClearVIEW HD-USB PTZ Conferencing Camera
Diagram: Front View with Feature Call-outs:

1) **Zoom Lens and Image Sensor:** The 19X optical zoom lens is built around a 1/3-Type, high-speed, progressive scan CMOS image sensor with a total of 1.3 Megapixels for precise HD video image acquisition.

2) **Blue Power Light:** A Vaddio blue power light is illuminated when the camera is turned on.

3) **IR Sensors:** IR sensors are built into the front of the HD-USB to re control supplied with the camera.

4) **Red Tally Light:** The red tally light is not used with the HD-USB Camera

CONNECTING THE EXTENSION DEVICES TO THE CAMERA

The following diagrams pertain to the connectivity of the WallVIEW HD-USB SR Camera System with the CONCEAL Mount, Power Extension Module and 20m (65.6') Active USB Extension Cable

Diagram: Basic Connectivity Example:

WallVIEW HD-USB with CONCEAL Mount

USB 2.0 Distance Limit with the Active Extension Cable = 20m (65.6')

24 VDC, 2.75A Power Supply

Power Extension Module

To EZ POWER VIDEO RJ-45 Port

CAT-5 Cable - 24 VDC Power
(Pin 1: +, Pin 2: -)

M - F

Active USB
2.0 Extension
Cable
*
Type-A Male
to Type-A
Female

1' (305mm)
USB 2.0
Cable
*
Type-B Male
to Type-A
Male

M

USB 2.0 Video using
USB Video Class
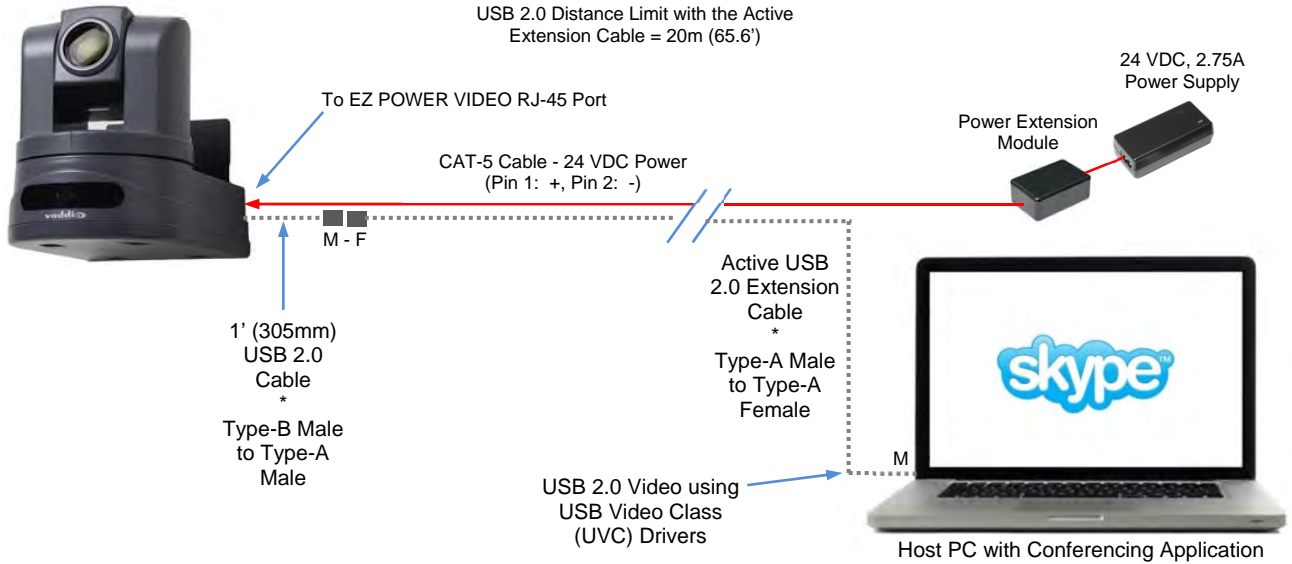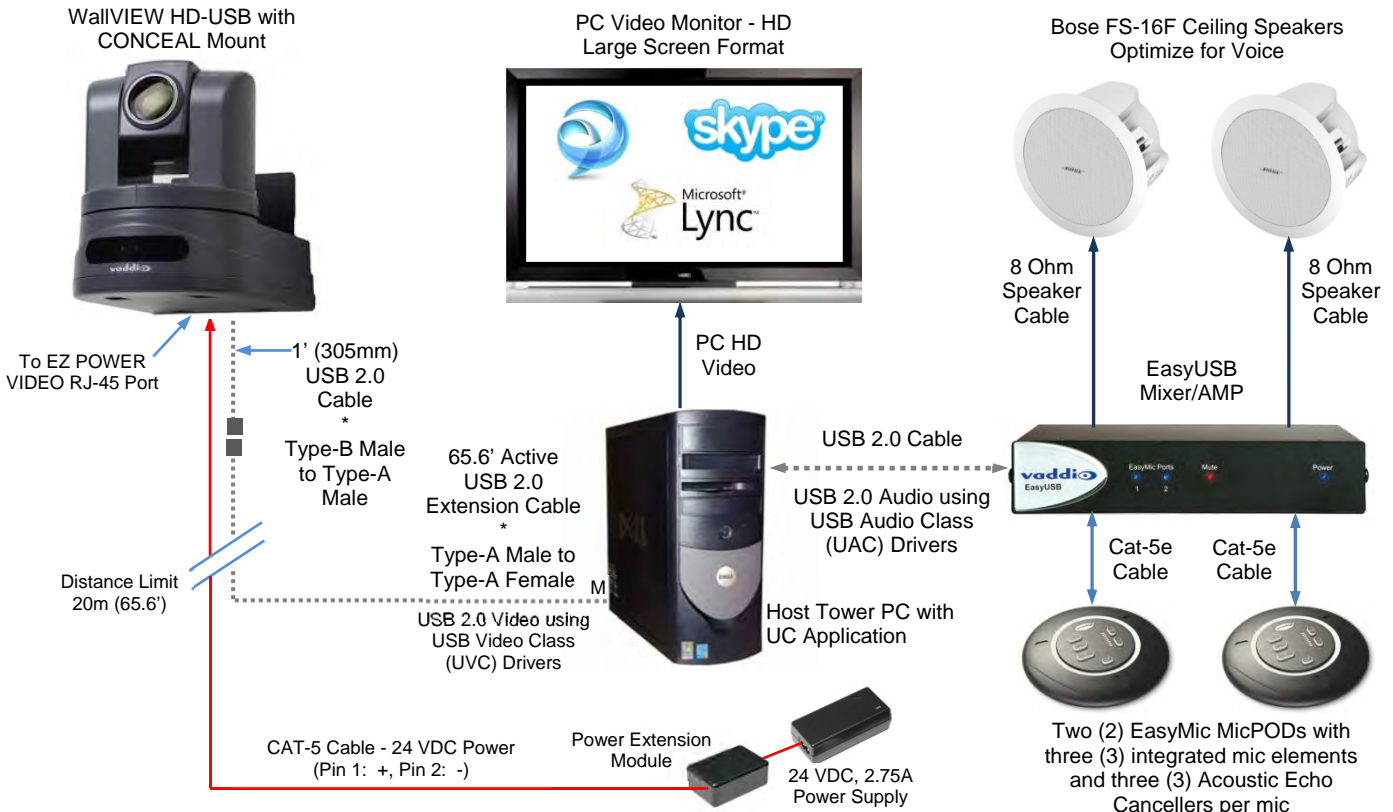(UVC) Drivers

Host PC with Conferencing Application

Diagram: Basic Connectivity Example:

This example uses the HD-USB PTZ Camera and Vaddio's EasyUSB Mixer/Amp, two (2) Echo Cancelling EasyMic™ MicPODs, Power Extension Module, Active USB 2.0 Extension Cable and Two (2) Bose Ceiling Speakers to create a complete room system.

WallVIEW HD-USB with CONCEAL Mount

PC Video Monitor - HD
Large Screen Format

Bose FS-16F Ceiling Speakers
Optimize for Voice

8 Ohm
Speaker
Cable

8 Ohm
Speaker
Cable

To EZ POWER
VIDEO RJ-45 Port

1' (305mm)
USB 2.0
Cable
*
Type-B Male
to Type-A
Male

PC HD
Video

EasyUSB
Mixer/AMP

65.6' Active
USB 2.0
Extension Cable
*
Type-A Male to
Type-A Female

USB 2.0 Cable

USB 2.0 Audio using
USB Audio Class
(UAC) Drivers

Cat-5e
Cable

Cat-5e
Cable

Distance Limit
20m (65.6')

M

USB 2.0 Video using
USB Video Class
(UVC) Drivers

Host Tower PC with
UC Application

CAT-5 Cable - 24 VDC Power
(Pin 1: +, Pin 2: -)

Power Extension
Module

24 VDC, 2.75A
Power Supply

Two (2) EasyMic MicPODs with
three (3) integrated mic elements
and three (3) Acoustic Echo
Cancellers per mic

Detail
Diagram: Connection Detail with the Power Extension Module and the Active USB 2.0 Extension Cable
The 24VDC connection from the Power Extension Module to the camera can provide adequate power up to 150' (45.7m) away. The 65.6' (20m) long USB extension cable limits the overall distance the camera and computer can be separated.

HD-USB PTZ Camera
Rear View

Power Extension
Module

CAT-5 Cable - 24 VDC Power
(Pin 1: +, Pin 2: -)

DC Power

The 24VDC connection from the Power Extension Module will power the camera up to 150' (45.7m) away.

24 VDC, 2.75A
Power Supply

1' (305mm)
USB 2.0
Cable
*
Type-B Male
to Type-A
Male

M
F

65.6' (20m) Active USB 2.0 Extension Cable
Type-A Male to Type-A Female
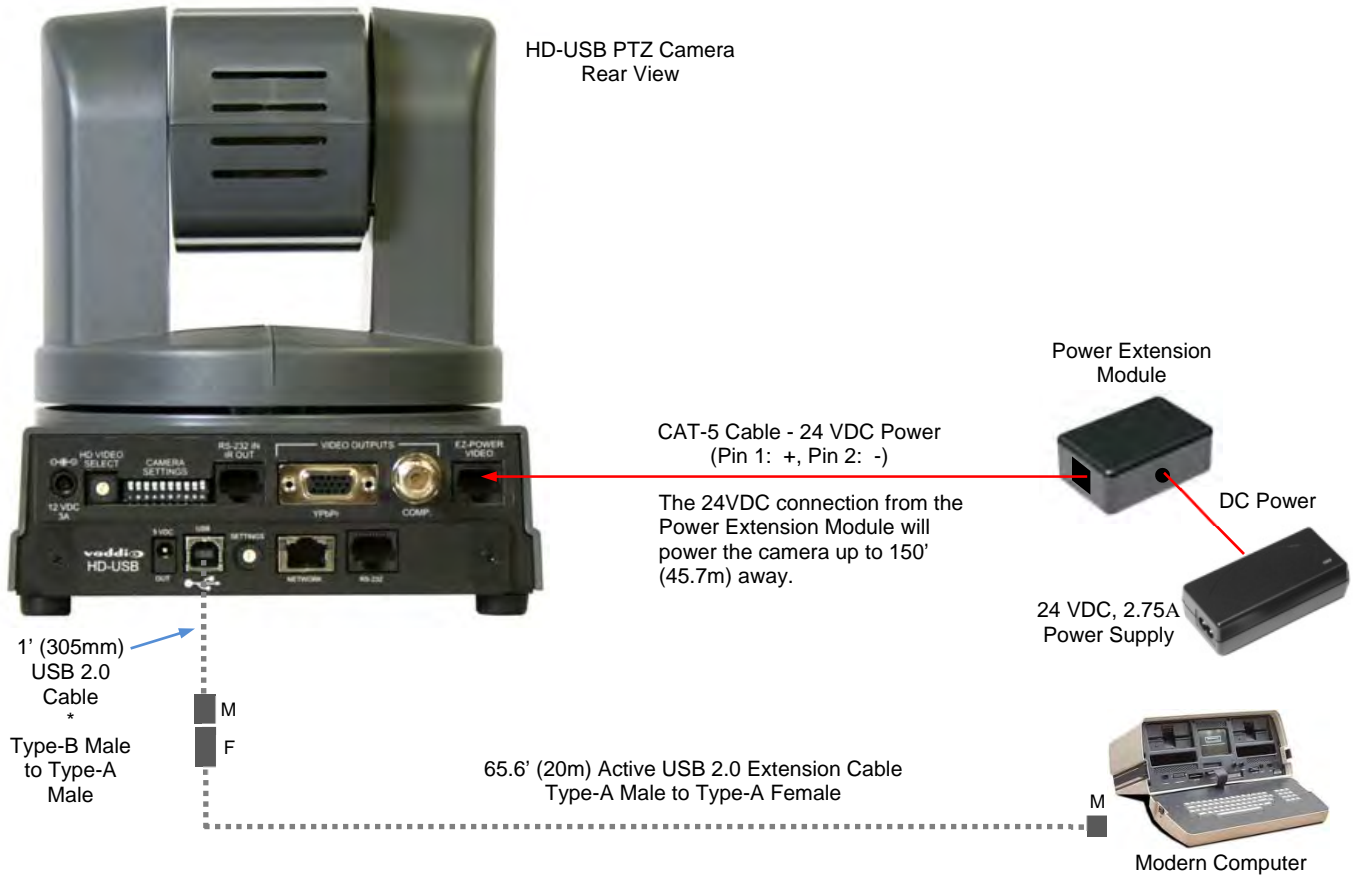
M

Modern Computer

Diagram: Connection Detail with Local Power to the Camera and the Active USB 2.0 Extension Cable
In this example the camera is powered by the provided 12 VDC, 3.0 Amp power supply.

PC Video Monitor - HD
Large Screen Format

Host Tower PC with
UC Application

Local Power

Provided
12 VDC Power
Supply

PC HD
Video

M
USB 2.0
Connector

1' (305mm)
USB 2.0 Cable

M
F

65.6' (20m) Active USB 2.0 Extension Cable
Type-A Male to Type-A Female

REFERENCE DIAGRAMS
Reference Diagram: Basic Connectivity Example
HD-USB Camera and a Soft-client videoconferencing system (audio is not included in this example).
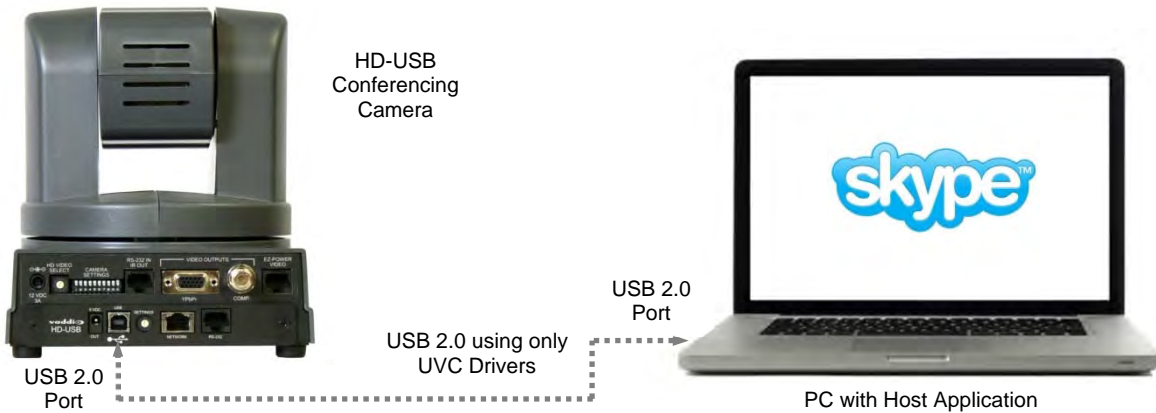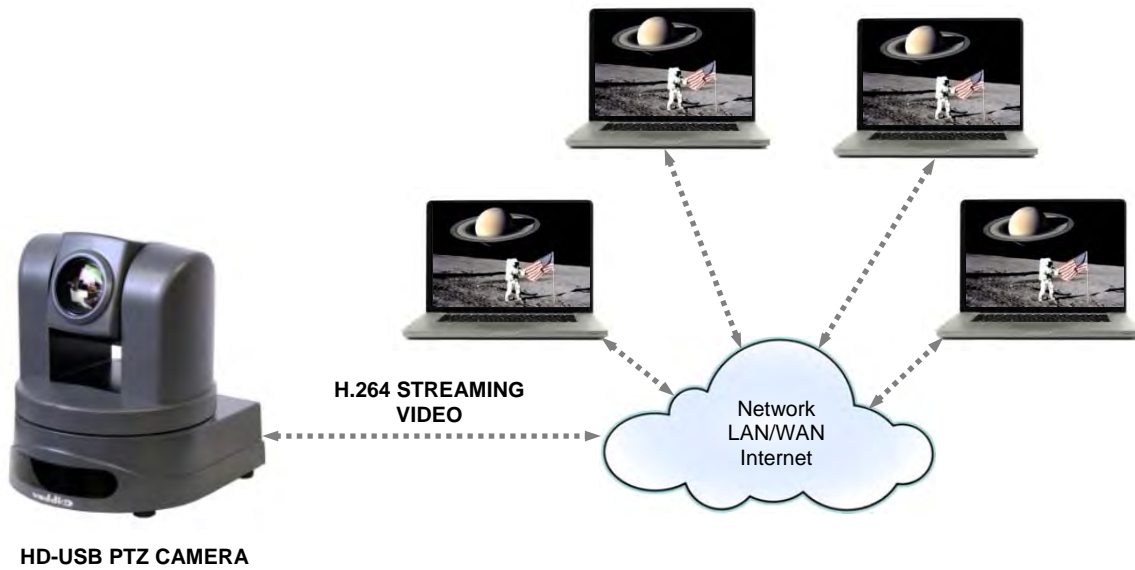

Reference Diagram: Connectivity Example 2 with Audio:
This example uses the HD-USB PTZ Camera and Vaddio's EasyUSB™ Mixer/Amp, two (2) Echo Cancelling EasyMic™ MicPODs and Two (2) Bose Ceiling Speakers to create a complete room system using programs such as Skype®, Jabber®, Google+®, Microsoft Lync® and others. This configuration features driverless USB 2.0 Video and Acoustic Echo Cancelled (AEC) Audio.
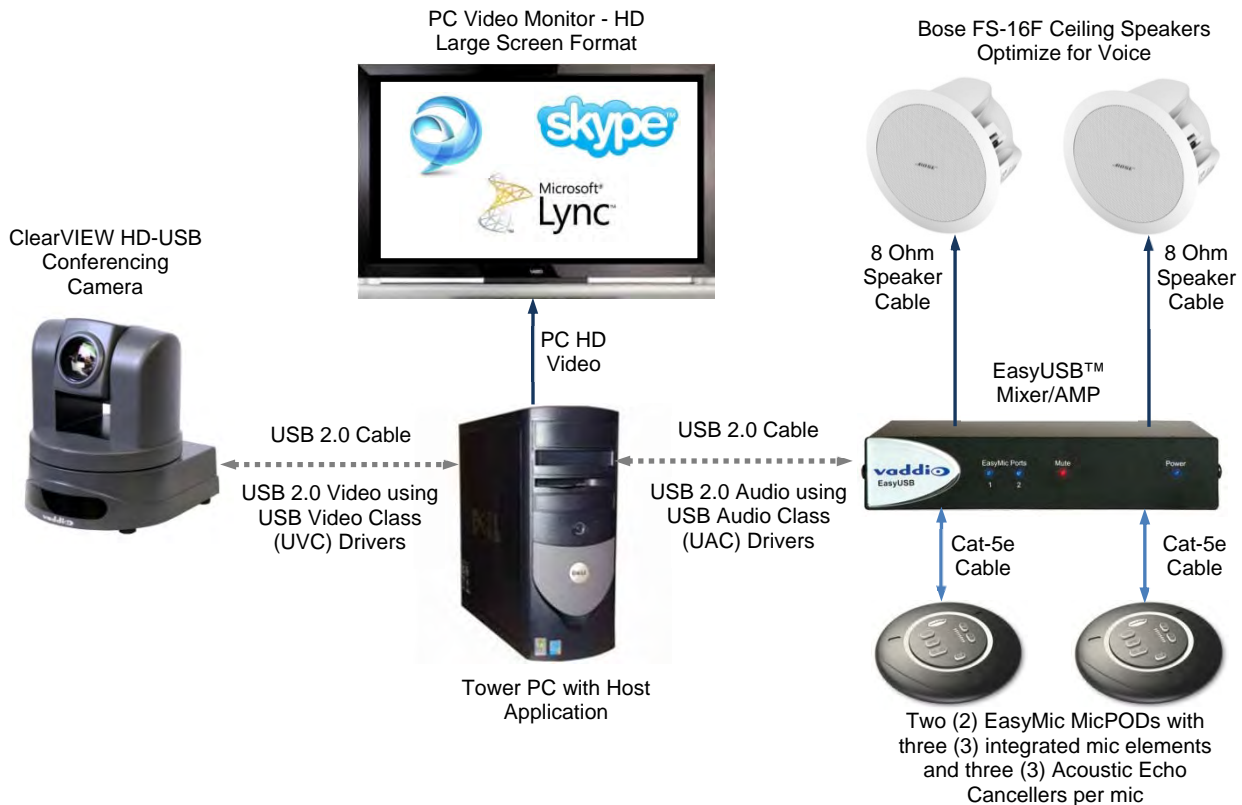
Reference Diagram: H.264 Streaming Connectivity (for Release 2.0 when IP Streaming is enabled):
The HD-USB Camera has a Unicast streaming output suitable for up to six (6) concurrent users (at lower resolutions). This configuration shows four (4) concurrent users.

Reference Diagram: Connection Diagram Example using A CDN (for release 2.0 when IP is enabled):
For a Large Number of Viewers - Use a CDN Content Distribution Network such as Wowza, Amazon or iCloud and more…
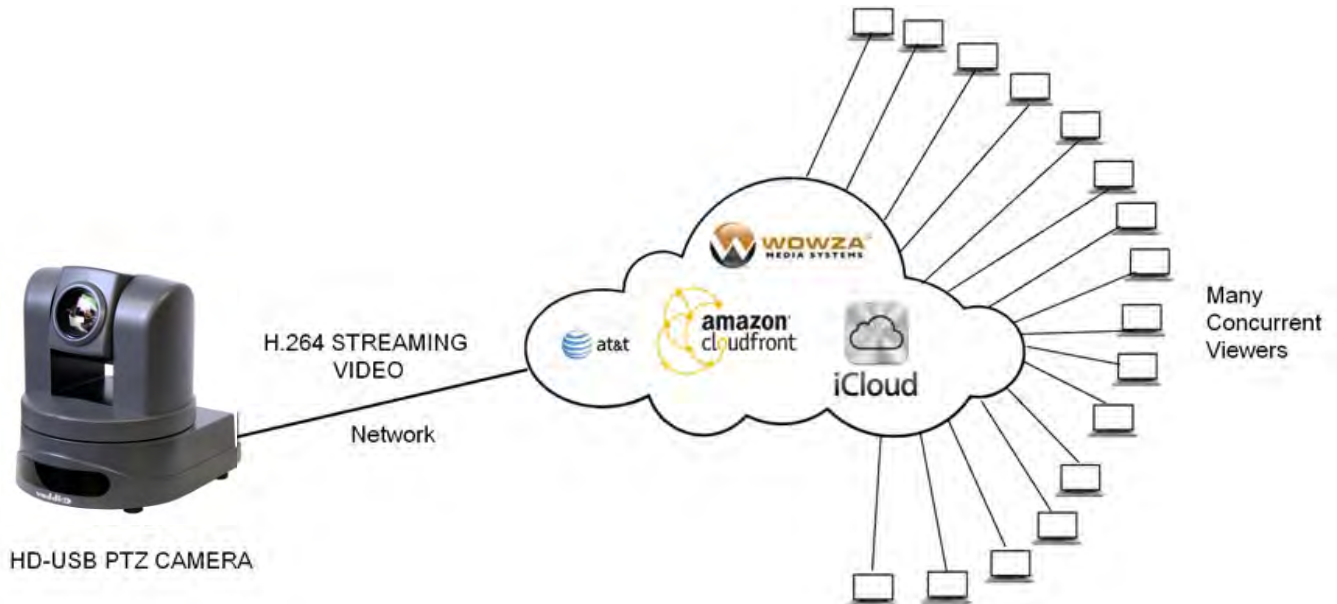
FIRST TIME SET-UP WITH THE CLEARVIEW HD-USB PTZ CAMERA

The ClearVIEW HD-USB PTZ Camera was designed to be exceptionally easy to use and operate. There is documentation at the back of the manual for pin-outs. These pin-outs are also available, along with application TechNotes, from the Vaddio website www.vaddio.com.

Getting Started

Step 1: Using the HD Video Select Rotary Switch and Camera Settings Dip Switch on the back of the camera, set up the camera's output resolution and functional preferences. There is a label on the bottom of the camera that identifies the choices.
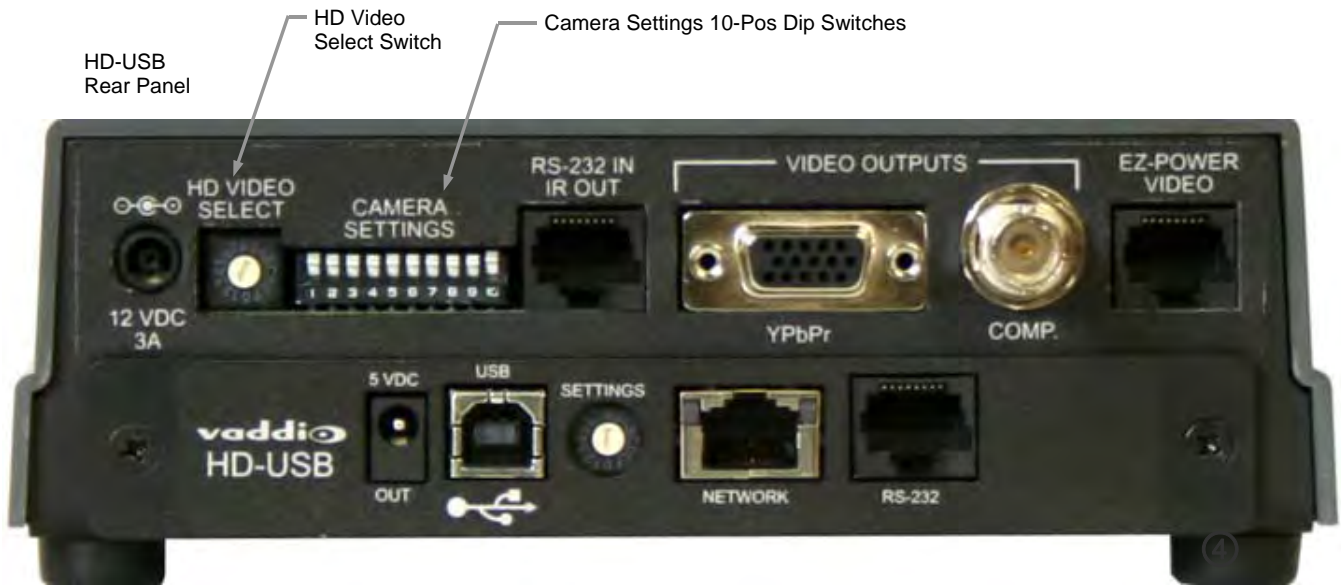

Table: Switch Setting Label on Bottom of the HD-USB Camera:

DIP SWITCH SETTINGS

IR 1 1 & 2 UP		IR OUT OFF	9600 bps	SD NTSC	SD 4:3 6 & 7 UP		IMAGE FLIP OFF	TEST BARS OFF	10 OFF
IR 2 ON	IR 3 ON	ON	38400 bps	SD PAL	SD SQ	SD LB	ON	ON	ON
1	2	3	4	5	6	7	8	9	10

HD VIDEO AND USB 2.0 SELECT

0	720p/59.94 - USB	8	576i/25
1	1080i/59.94 - USB	9	——
2	1080p/59.94	A	——
3	1080p/60	B	——
4	720p/50 - USB	C	——
5	1080i/50 - USB	D	——
6	1080p/50	E	1080p/30
7	480i/29.97	F	1080p/25
USE ROTARY SETTINGS 0, 1, 4 & 5 FOR USB 2.0 OUT			

Step 2: For USB 2.0 proper operation**,** set the HD VIDEO SELECT switch to "0" (720p/59.94), "1" (1080i/59.94), "4" (720p/50) or "5" on the HD-USB Camera. These are the only resolutions that the USB 2.0 and H.264 engines accept. From these four resolutions, all other USB 2.0 and H.264 resolutions are derived.

- For concurrent USB 2.0 and Analog Component (YPbPr), switch settings 0, 1, 4 and 5 are the four resolutions that can be both digital (USB 2.0 or H.264) and Analog (YPbPr). These resolutions, 720p/59.94, 1080i/59.94, 720p/50 & 1080i/59.94 are the most used resolutions for HD video and are broadcast standards.
- For Analog (YPbPr) output only, all HD VIDEO SELECT switch settings will operate.
- For Composite output on the BNC connector, this output is independent from the USB 2.0 resolutions and the SD settings and are formatted by dip switches 5, 6 and 7.

Step 3: Choose the IR frequency (1, 2 or 3) on the camera for use with the IR Remote Commander. Since only one USB camera can be plugged into a PC at a time, recommended default is Freq. 1 (dip switches 1 & 2 up).

Step 4: Leave the IR out OFF (up) as default.
Step 5: Use 9600bps for control speed as default.

• If the camera is mounted inverted, then set the Image Flip to ON, otherwise leave it off.
• The test bars are really, really non-standard (horizontal - just to mess with the old-timers) and will override the video output. These test bars are 75% IRE. Use the test bars for…testing.

The Settings Rotary Encoder

The settings encoder allows the user to easily access automatically negotiated USB or H.264 Preset and User configurations without having to plug in a computer to configure it. While a computer is recommended for set-up, this rotary allows for a quick set-up. In the first release of the camera, the USB 2.0 will be activated while the H.264 network streaming will not be activated until the 2nd software release. On the bottom of the camera, another label will be included to allow the user to quickly determine how the camera is going to be used and give access to presets (both hard and user configurable).

FUNCTIONS OF ROTARY SELECTION SWITCH ON USB RESOURCE CARD

SW. POS	ACTIVE PORT	FORMAT	PRESET #	Res/FPS/ Bit Rate	STREAMING PROTOCOL
0	USB	USB 2.0	UVC Auto-Negotiated with Host		
1	ETHERNET	H.264	PRESET 1	720p/30/4Mb	RTSP
2	ETHERNET	H.264	PRESET 2	720p/30/4Mb	HLS(HTTP)
3	ETHERNET	H.264	PRESET 3	480p/60/2Mb	RTSP
4	ETHERNET	H.264	PRESET 4	480p/60/2Mb	HLS(HTTP)
5	ETHERNET	H.264	USER 1	——	——
6	ETHERNET	H.264	USER 2	——	——
7	ETHERNET	H.264	USER 3	——	——

SW. POS	ACTIVE PORT	FORMAT	PRESET #	Res/FPS/ Bit Rate	STREAMING PROTOCOL
8	ETHERNET	H.264	USER 4	——	——
9	FUTURE				
A	WEB CTL.	DYMANIC CONTROL THOUGH WEB PAGE ONLY			
B	FUTURE				
C	RESET	——	RESTORES TO FACTORY DEFAULTS		
D	FUTURE				
E	FUTURE				
F	FUTURE				

NOTICE — THANK YOU FOR NOTICING THIS NEW NOTICE
Active Lines for Software Release 1.0 are shaded in yellow.
Software Release 2.0 adds H.264 over Ethernet to the HD-USB.

For the 1st Release of the Camera and Software, only the USB 2.0 Streaming Video is Active

The H.264 will follow in Release 2.0, so for now, put the Rotary Selection Switch on the USB Resource Card to position "0". The label will be on every camera, so when Release 2.0 is ready and upgraded in the field, the label will be ready to go. The documentation will be updated with the extra pages to explain the H.264 set-up in a reliably competent manner.

Position "0" will give the camera the ability to auto-negotiate with the host PC and automatically decide the highest resolution (MJPEG video up to and including 720p/30) that the camera and computer can display and process within the computer's software.

There will be a table on the profile page which reflects the data on the label above. For Release 2.0, this will be on a web page served up by the camera.

A Cautionary Note: In the event that the rotary switch was moved from "**0**" and left on **"C" - RESET - RESTORES TO FACTORY DEFAULTS,** and is power cycled, all data will be lost. Sometimes a RESET is required, but those occasions are generally few and far between. On the web pages, a warning dialog box was added to inform the administrator the state of the switch. If the factory reset is not desired, please move the switch back to "**0**" and do not power cycle the camera. The warning looks almost exactly like the warning below…

Warning! Your ClearVIEW HD-USB PTZ Camera is set to factory reset mode. Any changes made will be lost the next time it is rebooted.
Consult your user manual or the help page to disable factory reset mode.

STEP BY STEP INSTRUCTIONS TO INSTALL THE WALLVIEW HD-USB SR CAMERA SYSTEM

Step 1: Locating the Camera
Locate the camera mounting position while paying close attention to camera viewing angles, lighting conditions, possible line of site obstructions, and checking for in-wall obstructions where the camera is to be mounted. Pick a mounting location to optimize the performance of the camera.

Like all Vaddio WallVIEW systems, the WallVIEW HD-USB SR is easy to install and operate. The product was specifically designed with CAT-5 cable connectivity for the extension of power and an Active USB 2.0 Extension cable that is powered by the computer's USB port.

WallVIEW HD-USB
with CONCEAL Mount

Step 2:
After determining the optimum location of the camera system, run a CAT-5 cable and the Active USB 2.0 Extension Cable from the computer location to the camera location. Make sure to mark and test the CAT-5 cable and use real RJ-45 crimper and connectors using the 568B straight-through wiring standard. Please do not use the "feed-thru" type RJ-45 connectors for professional installations.

Step 3:
Using the CONCEAL wall mount directions, install the CONCEAL mount. If mounting to the drywall with wall anchors, use four (4) quality wall anchors. Make sure to level the mount and tighten the mounting screws.

Step 4:
Connect the CAT-5 cable to the EZ POWER VIDEO RJ-45 port on the back panel of the HD-USB camera. Connect 1' (305mm) USB 2.0 Cable Type-B Male into the USB Type-B Female on the back panel of the HD-USB camera. Connect the Active USB Extension Cable's Type-A Female to the 1' (305mm) USB cable's Type-A Male Connector. Field dress the cabling and tuck it back into the CONCEAL mount and place on the back cover to hide all the cabling.

 NOTE: Check all CAT-5 cables for continuity in advance of the connection. Do not plug the CAT-5 cable into any other RJ-45 port but the EZ POWER VIDEO port. There is 24 VDC Volts on Pins 1 & 2. Plugging into any other port may cause damage to the camera system and void the warranty.

Step 5: At the Head-End
Plug the Active USB Extension Cable Type-A Male directly into the computer. Plug the other end of the CAT-5 cable into the RJ-45 port of the Power Extension Module.

Step 6: Last Chance to check the wiring
After double checking the wiring, plug the 24 VDC power supply into the Power Extension Module and plug the power supply into the power outlet. The HD-USB camera should home and also should be sending USB 2.0 MJPEG video to the computer.

 Hint: It may be a good idea to set up the camera "on the ground" to ensure that it works properly and all the computer and camera settings are correct prior to installing it on the wall with the CONCEAL mount.

COMPATIBILITY
The HD-USB PTZ Camera will work with the following web browsers, soft codecs, computer operating systems and media players. Thorough testing has been performed by the technical staff at Vaddio to ensure that the HD-USB camera is compatible with the elements listed below.
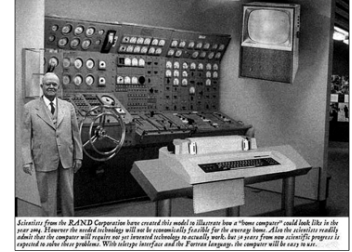
Compatibility - Web Browsers:
1) Internet Explorer (IE 8 and above)
2) Safari (Rev 4 and 5)
3) Safari/iOS (Rev 4 and 5)
4) Chrome (the latest and current release - auto updating)
5) FireFox (the latest and current release - auto updating)

Compatibility - Soft Codecs: HD-USB Camera shall be compatible with the following soft codecs:
Release 1.0:
1) Skype
2) MS Lync
3) Jabber
4) Polycom M100
5) Vidyo Desktop

Future Releases:
1) Google+
2) Adobe Connect
3) ClearSea
4) Web Ex
5) Apple FaceTime

3.4.3: Compatibility - Operating Systems
1) Apple OS X (10.7 and above)
2) Windows XP w/Service Pack 3 with known issues and errata
3) Windows 7
4) Linux

3.4.1: Compatibility - Media Players:
The UVC with MJPEG video shall be compatible with the industry leading PC media players.
1) Quick-Time
2) Windows Media Player (playback)
3) VLC Media Player

Other Compatibilities:
As more UC soft-client and lecture capture programs are released and gain popularity, Vaddio will provide a continuing research and development effort to ensure the camera's viability and compatibility with other manufacturer's products.

Internal Web Pages and Control

The internal web pages will allow control of the HD-USB and allow the user to control the camera via an internet connection. These web pages will allow the user or administrator to set security passwords, change the IP address if not dynamic, view diagnostics, access the firmware upgrade page and more.

To access the HD-USB's web pages, first include your Network Administrator for the network that the camera will be placed. Access to the internal web pages can be achieved three ways for set-up of the HD-USB's IP address and other administrative functions.

DHCP 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 HD-USB software is defaulted to DHCP. To find out the assigned IP address please have the network administrator provide the IP address and enter that into one of the approved browsers.

The HD-USB 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

It is highly recommended that the Network Administrator is involved on the Static IP set-up of the HD-USB camera…really.

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 connect to a computer.

Connect to the Local Area Network or to a computer with a Cross-over cable

The default address of the HD-USB camera is 169.254.1.1 and the Subnet mask is 255.255.0.0. Different computer OS types all have their way of doing things, but they are essentially doing the same thing, changing the IP address so the web pages of the HD-USB are accessible.

For Windows XP Pro, the routine to get to the network settings is fairly simple. Click on the Start button > Control Panels > Network Connections > Right Click Local Area Connection > click on Properties > click on Internet Protocol (TCP/IP) > click on Properties and IP Address and Subnet Mask numbers are displayed. It is best to record the addresses that are in the computer so they can be re-assigned when the operation is finished.

Enter 169.254.1.2 (which is the default address 169.254.1.1 plus 1) and Subnet mask is 255.255.0.0 and click OK > and then OK again. Bring up one of the approved web browsers (like Chrome) and enter http://169.254.1.1 and the Log-in page will appear.

With Apple OS X (10.7 and above), the steps are a bit different but essentially the same…Go to > System Preferences > Network > Ethernet > Configure IPv4: Manually > Enter in 169.254.1.2 and Subnet mask of 255.255.0.0 and click Apply. Bring up one of the approved web browsers (like Safari) and enter http://169.254.1.1 and the Log-in page will appear.

Windows 7 has its own set-up that is a bit different from Windows XP Pro, but similar in that the whole purpose of the first time set up is to give the HD-USB PTZ Camera an address that can be used over and over again by users or administrators to control the camera.

Whoops - Reset to Defaults: If for some reason the IP address was entered wrong or needs to be erased and re-entered, remember Rotary Switch position "C" on the lower USB resource card to RESET and RESTORE TO FACTORY DEFAULTS. Set the switch to "c" and is power cycle the camera to restore the default IP address. Move the switch back and start again.

SCREEN SHOT TOUR

Whether or not the network is DHCP and the Network Administrator has provided the DHCP address, or the Static IP routine is used, after entering the address on the address line the Camera Controls screen will come up. Below the functions and details are called out.

Store Preset pop-up menu dramatization

1) **Pan, Tilt and Home Controls:** These intuitive controls use the up/down arrows for camera tilt, the left/right arrows for camera pan and the center button to 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 "-" button to zoom out.

3) **Pan/Tilt and Zoom Speed Controls:** The speed for both the Pan/Tilt and Zoom controls can be sped up for longer shots with the two (2) buttons in this section. For tighter shots, it is recommended that the slower speed is used.

4) **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 6). The preset is stored and the dialog box closes.

5) **Camera Presets:** Six (6) presets can be recalled simply by clicking a preset number.

6) **Administration Menu:** Clicking on the Administration menu bar, the Admin Log-in screen will appear. Default Admin password is password.

7) **Vertical:** The vertical button will reduce the size of the window for the user controls and remove the menu tabs on the left side of the screen. The vertical sizing works well when using it with a soft-client codec. Examples of the vertical box are at the end of the tour.

Admin Pages

Clicking on the Admin link button will open the Log-in window. Enter the default password on this line and click on Log-in.

After Log-in, the Admin link buttons are exposed and include Networking, Security, Diagnostics, System, Help and Logout Admin.

By clicking on the **Networking** link button, 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.

By clicking on the **Security** link button, the Update Password screen is displayed. The default user password is blank and the Admin password is simply "password'. The user names are equally easy…user for User and admin for Admin (use lower case). The Network administrator can reassign the user password and the Admin password. There is only one User password and one Admin password.
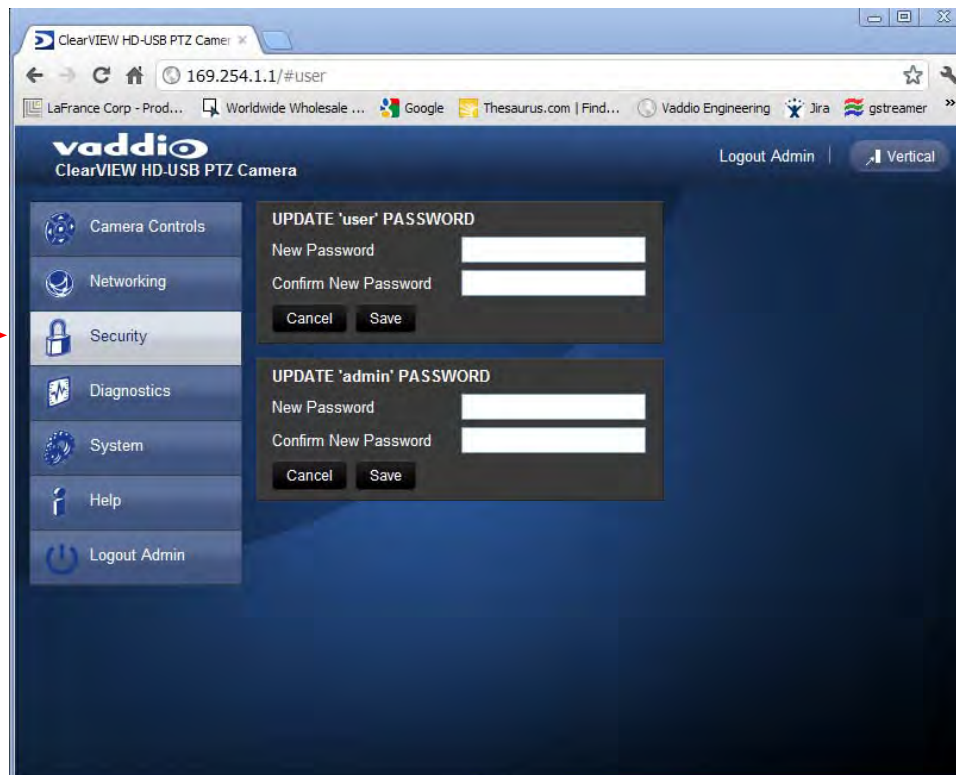
By clicking the **Diagnostics** link button, a set of self-diagnostics will be displayed. These diagnostics may help the Vaddio technical support team diagnose a problem with the HD-USB camera.
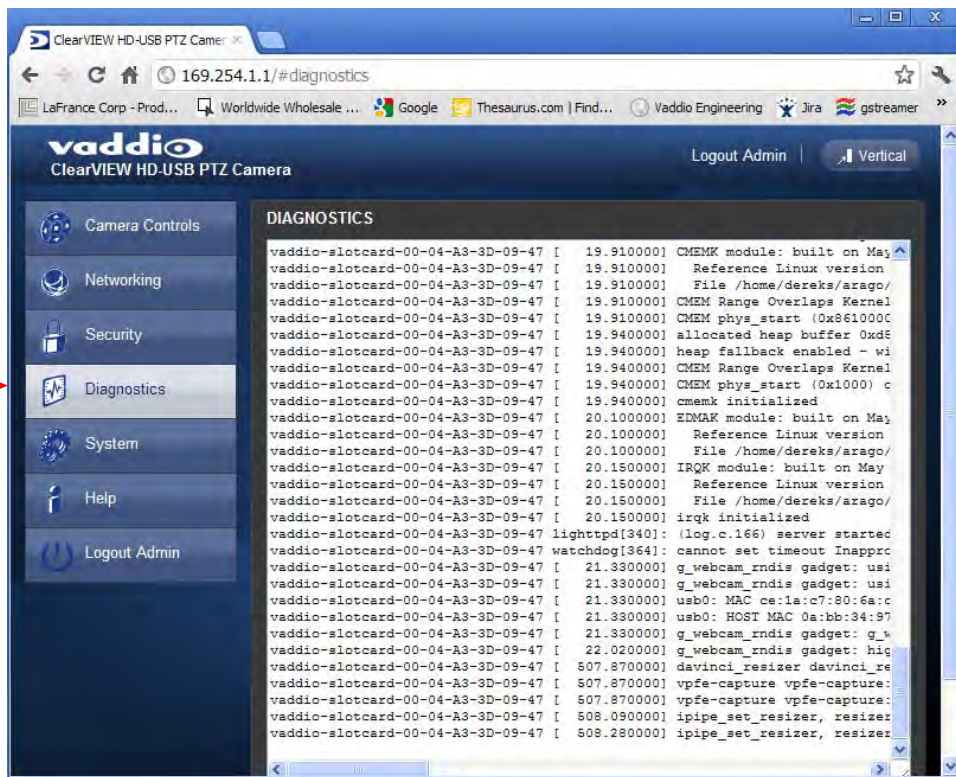
The **System** link button is where the Firmware Updates will be loaded. There will be several firmware updates and upgrades over the life of the camera.
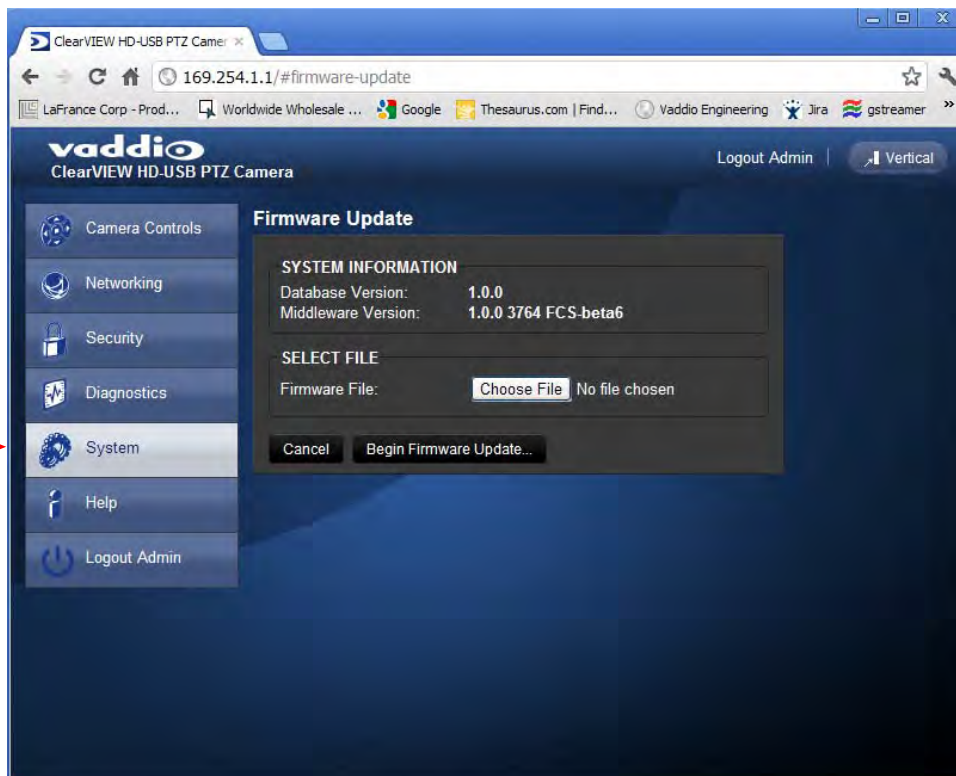
The **Help** link button informs the Administrator where to call or e-mail for Technical Support. One key part of this screen is the System Information. Please have the system information available when calling Tech Support

See Below for Vertical Effect on Menus

⚠	**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**.

Finally, the **Vertical** button at the top right of the camera control page reduces the size of the camera control window and drops the menu bars to allow the controls to be open and on screen along with any soft-codec application without taking up too much space. The Full button returns it to normal size.

CONNECTING THE CAMERA TO THE PROGRAM OF CHOICE:
The HD-USB PTZ Camera is compatible with many programs and media players. The following is an attempt to generally describe the steps to plug in the HD-USB camera and get an image.

Skype Example

1) First, with a quality USB 2.0 cable, plug the USB-B port of the camera to the USB-A port of the computer. A pop up window on the computer monitor will display the following:
   a. Found ClearVIEW HD-USB
   b. Found USB Composite Device
   c. Found USB Video Device

2) Open Skype and perform the following steps:
   a. Open the Tools Menu and drop down to Options
   b. Click on Video Settings and under Webcam choose USB Video Device

The systems will negotiate the highest resolutions possible, depending on the computer speed, network quality, cabling etc..., and display the video signal of the camera. The camera can be controlled with the supplied Vaddio IR Remote Commander or through IP as described earlier through the cameras web pages.

Make a test call to ensure the system is working properly.

VLC Media Player Example

1) Same first step as above.

2) Open VLC Media Player and perform the following steps:
   a. Click on the Media menu and drop down to Open Capture Device and click it.
   b. Under Device Name, go to the Video Device Name drop down and choose USB Video Device.
   c. Under Options, enter the Video Size as 1280x720
   d. Click on Play
   e. From there, VLC needs some instruction on the aspect ratio, so click on Tools and drop down to Aspect Ratio and drop down again to 16:9 for 720p (1280x720).

VLC is a powerful record/playback system and buffers the images so you will notice some delay in the way VLC displays the image.

With all the compatible software available, in general terms, the video device, aspect ratio, and resolution may need to be set manually the first time through initial set-up. Some systems are easier than others (like Skype) and others are more technical in nature and tend to do more stuff (like VLC).

TECHNICAL SPECIFICATIONS:

Part Numbers	999-6990-000 North America, 999-6990-001 International

Video Outputs	• USB 2.0 (MJPEG)
	     o Resolution up to 720p/30 USB 2.0 (MJPEG)
	     o Use "HD VIDEO AND USB 2.0 VIDEO SELECT" rotary positions 0, 1, 4 & 5 for USB.2.0 Video only
	 • H.264 (IP)
	     o Resolution up to 1080p/30 (H.264 over IP & USB 2.0 - Release 2.0)
	 • Analog Component (YPbPr),
	     o Analog resolutions up to and including 1080p/60 (YPbPr)
	 • CVBS - Analog only
	     o 480i and 576i (4:3, LB and SQ)

USB Interface	Connector: Type-B, USB 2.0 Compliant, Supported Drivers: Standard UVC device (no custom drivers)
Network Interface	Connector: RJ-45, 10/100 Base-T, Supported Protocols: RTSP Streaming, HLS Streaming (apple's variant of HTTP streaming) - Release 2
H.264 Resolutions (Release 2.0)	CIF, 640x480 (VGA), 480p, 720p/30 1080p/30 (1080p Ethernet only)
User Control	Vaddio IR Remote Commander, On Screen Display for camera set-up, RS-232, Ethernet (web page)
Supported Media Players	Windows Media Player, Apple Quick-Time and VLC Media Player
Supported Browsers	Internet Explorer 8 & 9, Safari 4 &5, Safari/iOS, Chrome, FireFox
Image Sensor	1/3-Type Exmor High-speed, Progressive Scan CMOS Sensor with 1.3 Megapixels
Minimum Illumination	0.7 LUX (F1.6, 50IRE)
Lens/ Focal Length	19X Optical Zoom, F=4.5mm wide to 85mm tele (F1.6-F2.9), Min. Focus Distance 1.0m
Horizontal Viewing Angle	58.1° Wide End to 3.2° Tele End - 16:9 Format
Pan Range	Pan: +170 degrees to -170 degrees, Tilt: +90 degrees to -30 degrees, Invertible for Ceiling Mount
Preset Positions	16 (internal), 6 recalled via IR Remote
Power Extension Module	
Includes	• Power Extension Module with 5.5mm OD x 2.5mm ID coax power connector • 24 VDC, 2.75 Amp switching power supply (100V-240V, 50 to 60 Hz) with power cable
Active USB 2.0 Extension Cable	
P/N: 440-1005-020	Jargy/Mobile Computing 20m (65.6') Port Powered USB 2.0 Extension Cable Connectors: Type-A Male for Host Side, Type-A Female for device side 1' (305mm) Type-B Male to Type-A Male USB 2.0 cable included (see Diagrams)
General Information	
Operating Temperature	32° to 104° F (0° to 40° C) / 20% to 80% Relative Humidity
Dimensions / Weight	7.81" (198.37mm) H x 6.67" (169.42mm) W x 7.057" (179.25. mm) D / 6.04 lbs. (2.7397kg.)
Software Release Information	**Release 1.0:** Includes USB 2.0 Outputs and Analog Outputs simultaneously on and ready to use. Ethernet control via an internal web page and upgrading software capability is active. **Release 2.0:** H.264 Streaming will be activated for Ethernet port.

COMPLIANCE AND CE DECLARATION OF CONFORMITY: CLEARVIEW HD-USB PTZ CAMERA
Compliance testing was performed to the following regulations:

- FCC Part15, Sections 15.107, 15.109 Subpart B   Class A
- ICES-003 ISSUE 4, 2004   Class A
- EN55022 A1 2007   Class A
- EMC Directive 2004/108/EC   Class A
- IEC 60950-1:2005 (2nd Edition); Am 1:2009   Class A
- EN 60950-1:2006+A11:2009+A1:2010+A12:2011   Class A

- **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
ICES-003, Issue 4: 2004
This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.
Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe B préscrites dans le Règlement sur le brouillage radioélectrique édicte 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

EN55024/A2:2003 Information Technology Equipment
Immunity Characteristics Limits and Methods of Measurement
- EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001   Electrostatic Discharge
- EN 61000-4-3: 2006 + A1: 2008   Radiated Immunity
- EN 61000-4-4: 2004 + Corrigendum 2006   Electrical Fast Transients
- EN 61000-4-5: 2006   Surge Immunity
- EN 61000-4-6: 2009   Conducted Immunity
- EN 61000-4-8: 2010   Power Frequency Magnetic Field
- EN 61000-4-11: Second Edition: 2004   Voltage Dips, Interrupts and Fluctuations
- IEC 60950-1:2005 (2nd Edition); Am 1:2009   Information technology equipment - Safety
- EN 60950-1:2006+A11:2009+A1:2010+A12:2011   Information technology equipment - Safety

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

Hardware* Warranty: One year limited warranty on all parts. Vaddio warrants this product against defects in materials and workmanship for a period of one year from the day of purchase from Vaddio. If Vaddio receives notice of such defects during the warranty period, they will, at their option, repair or replace products that prove to be defective. Please see Vaddio's Service Terms and Conditions at vaddio.com for specific details and policies.

Exclusions: The above warranty shall not apply to defects resulting from: improper or inadequate maintenance by the customer, customer applied software or interfacing, unauthorized modifications or misuse, operation outside the normal environmental specifications for the product, use of the incorrect power supply, improper installation (plugging things in wrong), improper extension of the power supply cable or improper site operation and maintenance.

Vaddio Customer Service: Vaddio will test, repair, or replace the product or products without charge if the unit is under warranty and is found to be defective. 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 will only advance replace out of box failures or random equipment failures up to 30 days after the purchase date (not the install date).

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 www.vaddio.com.

Return Material Authorization (RMA) Number: Before returning a product for repair or replacement, request an RMA from Vaddio's technical support. Provide a technician with a return phone number, e-mail address, shipping address, and product serial numbers and describe the reason for repairs or returns as well as the date of purchase and proof of purchase. Include your assigned RMA number in all correspondence with Vaddio. Write your assigned RMA number on the clearly on the shipping label when returning the product. All products returned for credit are subject to a restocking charge without exception.

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, or unauthorized repair. Cutting the power supply cable on the secondary side (low voltage side) to extend the power to the device voids the warranty for that device.

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.

*Vaddio manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry standard practices.

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
- Use a lens cleaner on the lens
- 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 swimming pools or grain elevators
- In inclement weather
- Dry environments with an excess of static discharge
- In a semi-tractor trailer or refrigerator truck
- Under severe vibration

APPENDIX 1: COMMUNICATION SPECIFICATION

Communication Speed: 9600 bps (default)
Start bit: 1
Stop bit: 1
Data bits: 8
Parity: None
No Flow control
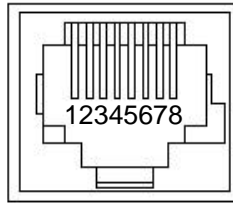
Pin #	RJ-45 RS-232 and IR Out Pins
1)	Unused
2)	Unused
3)	Unused
4)	Unused
5)	Unused
6)	GND (GND of IR Short Range - Pin 3)
7)	RXD (from TXD of control source)
8)	TXD (to RXD of control source)

12345678

NOTE: The Vaddio ClearVIEW HD-USB Control Protocol is similar, but not identical to the Sony® VISCA™ command set and is not compatible with Vaddio Joysticks. This is an abbreviated Command set intended to give external control systems basic control over the camera. This list is not the same list as found in the other ClearVIEW (HD-18, HD-19 and HD-20) cameras.

HD-USB Command List

Command Set	Command	Command Packet	Comments
Address Set	Broadcast	88 30 01 FF	Address Set (Daisy chain)
IF_Clear	Broadcast	88 01 00 01 FF	IF Clear
Command Cancel		8x 2p FF	p:socket number(1,2)
CAM_Power	On Off(Standby)	8x 01 04 00 02 FF 8x 01 04 00 03 FF	Power On/Off
CAM_Zoom	Stop Tele(Standard) Wide(Standard) Tele(Variable) Wide(Variable) Direct Direct(Variable)	8x 01 04 07 00 FF 8x 01 04 07 02 FF 8x 01 04 07 03 FF 8x 01 04 07 2p FF 8x 01 04 07 3p FF 8x 01 04 47 0p 0q 0r 0s FF 8x 01 7E 01 4A 0v 0p 0q 0r 0s FF	pqrs: Zoom Position* v:(Speed) 0-7
CAM_Focus	Stop Far(Standard) Near(Standard) Far(Variable) Near(Variable) AutoFocus ManualFocus Auto/Manual Direct	8x 01 04 08 00 FF 8x 01 04 08 02 FF 8x 01 04 08 03 FF 8x 01 04 08 2p FF 8x 01 04 08 3p FF 8x 01 04 38 02 FF 8x 01 04 38 03 FF 8x 01 04 38 10 FF 8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus position*
CAM_Backlight	On Off	8x 01 04 33 02 FF 8x 01 04 33 03 FF	
CAM_Memory	Reset Set Recall	8x 01 04 3F 00 0p FF 8x 01 04 3F 01 0p FF 8x 01 04 3F 02 0p FF	p:Memory No(=0-0xe)
Pan-tiltDrive	Up Down Left Right UpLeft UpRight DownLeft DownRight Stop Absolute Position Home Reset	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 81 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF 8x 01 06 04 FF 81 01 06 05 FF	WW: Pan Speed (0x01-0x18) VV:Tilt Speed(0x01-0x14) YYYY: Pan Position** ZZZZ: Tilt Position**
Tally	On Off	8x 01 7E 01 0A 00 02 FF 8x 01 7E 01 0A 00 03 FF	
Preset Pan Speed	Pan/Tilt/Zoom Speed	81 01 7E 01 0B WW SS ZZ FF	WW: Pan Speed (0x01-0x18) SS:Tilt Speed(0x01-0x14) ZZ:Zoom Speed(0-7);

***Zoom and Focus Data:**
CAM_Zoom: Range(0x000–0x6B3)
CAM_Focus: Range (0x000-0xC000) dependent on Zoom Position
****Additional Information:**
Pan Range: 8044 – 7FBC (-32,700 to +32,700)
Tilt Range: E891 – 4C2B (-5,999 to +19,499)

HD-USB Inquiry List

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	pqr: 0-0x6B3
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p:Preset 0-0xf
Pan-TiltMaxSpeedInq	8x 09 06 11 FF	y0 50 pp qq FF	pp:Pan 0x01-0x18 qq:Tilt 0x01-0x14
Pan-tiltPositionInq	8x 09 06 12 FF	FF y0 50 0p 0p 0p 0p 0q 0q 0q 0q FF	pppp: Pan 0x8044-0x7FB2 qqqq: Tilt 0xE890-0x4C2C
TallyInq	8x 09 7E 01 0A FF	y0 50 02 FF y0 50 03 FF	On Off
PresetSpeedInq	8x 09 7E 01 0B FF	y0 50 pp qq rr FF	pp:Pan 0x01-0x18 qq:Tilt 0x01-0x14 rr:Zoom 0x00-0x07
Motor Config	8x 09 7E 01 70 FF	y0 50 00 FF y0 50 01 FF	Hard Motor Stops Soft Motor Stops

A FINAL NOTE ABOUT SOFTWARE RELEASES:

Since there is better than 1/2 a page to fill up here, a note regarding the software releases and the intent of the product lifecycle of the HD-USB camera is included.

The intent of releasing the HD-USB camera with full USB 2.0 implementation and waiting for Release 2.0 for full H.264 implementation was to ensure that the H.264 streaming applications could all be adequately tested and confirmed 100% operational.

The USB 2.0 implementation is in high demand and we are ready for Release 1.0 of the camera strictly for USB 2.0 soft client conferencing programs.

While there is some rudimentary Ethernet functionality in Release 1.0, it was included mainly as a means to upgrade/update the software for future software releases and added functionality. In any case, it is recommended that anyone using the Ethernet connectivity use the Static IP addressing for now.

HD-USB System Notes:

vaddio

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