

VADDIO™ CLEARVIEW™ HD-19

High Definition Integrated Robotic PTZ Camera

Touchboards

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Arctic White Version
Part Number 999-6940-000AW (North America)
Part Number 999-6940-001AW (International)



Black Version
Part Number 999-6940-000 (North America)
Part Number 999-6940-001 (International)

Inside Front Cover - Blank

Overview:

The Vaddio™ ClearVIEW HD-19 high definition integrated robotic PTZ camera features a 19X optical zoom lens and is built around a 1/3-Type 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-19 uses an increased pixel aperture size, high signal to noise and column-parallel A/D conversion method to create images containing more detail than ever before. It combines the speed of the CMOS sensor with advanced-quality image sensor technologies amassed through the development of CCDs.

The HD-19 achieves improved picture quality even in low light environments requiring a minimum illumination rated at an astonishing 0.7 LUX (F1.6 - 50IRE).

The HD-19 is available in Black and in Arctic White and is equipped with a slip-clutch mechanism for smooth pan/tilt operation and control. The HD-Zoom lens allows HD-19 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 zoom range provides great flexibility for a wide variety of applications.

The HD-19 outputs HD video (YPbPr at 1080p/60/59.94/50/30/25, 1080i/59.94/50, 720p/59.94/50, 480i/30fps and 576i/25fps) and SD video (CVBS at NTSC and PAL) simultaneously. Overall, the HD-19 is an exceptional camera for a wide range of HD video applications such as houses of worship, videoconferencing, corporate boardrooms, live events and distance-learning.



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.

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.

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:

Carefully remove the device and all of the parts from the packaging.
Unpack and identify the following parts in 999-6940-000:

- One (1) ClearVIEW HD-19 HD Camera
- 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
- Documentation

(Note: The 999-6940-001 Int'l Version includes the Euro and UK power cables)

ClearVIEW HD-19 PTZ Camera, Front View with Feature Call-outs:



1) Zoom Lens on 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) Red Tally Light:

A red tally light is illuminated when the camera receives a VISCA command from an external control system.

3) IR Sensors:

IR sensors are built into the front of the ClearVIEW HD-19 to receive IR signals from the IR remote control supplied with the camera as well as other 3rd party remotes for the IR forwarding feature.

4) Blue Power Light:

A Vaddio blue power light is illuminated when the camera is turned on.

Compatible Switchers and Joystick Controllers:



ProductionVIEW™ HD MV
(999-5625-000)



AutoPresenter
(999-5675-000)



Precision Camera Controller
(999-5700-000)

ClearVIEW HD-19 PTZ Camera, Rear View with Feature Call-outs:



5) RS-232 IN & IR Out:

The RS-232 accepts modified VISCA protocol for camera control, as well as transmits IR signaling received by the IR receivers, which can be transmitted to third party devices.

6) Dip Switch Settings:

Settings for IR remote, baud rate, SD output format, and image flip can be configured on these switches. See page 5 for additional information on switch settings.

7) HD Video Select:

A rotary switch allows the user to choose the component HD output video resolution and format. See page 6 for additional information on switch settings.

8) 12 VDC Input:

Power input for the standard, ClearVIEW HD-19 camera power supply.

9) YPbPr Output:

Component HD video is fed through the DB-15 connector. YPbPr and Composite signals are simultaneous. This is an HD camera and the SD signals are down converted and are really not the sweet spot of this camera.

9) 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 dipperswitches 6&7).

11) EZ Power/Video Port:

This RJ-45 connector is only used with the Quick-Connect SR Interface and the Quick-Connect DVI-D/HDMI SR Interface to supply power and return HS-DS video from the camera.

12) Slot for Optional Cards:

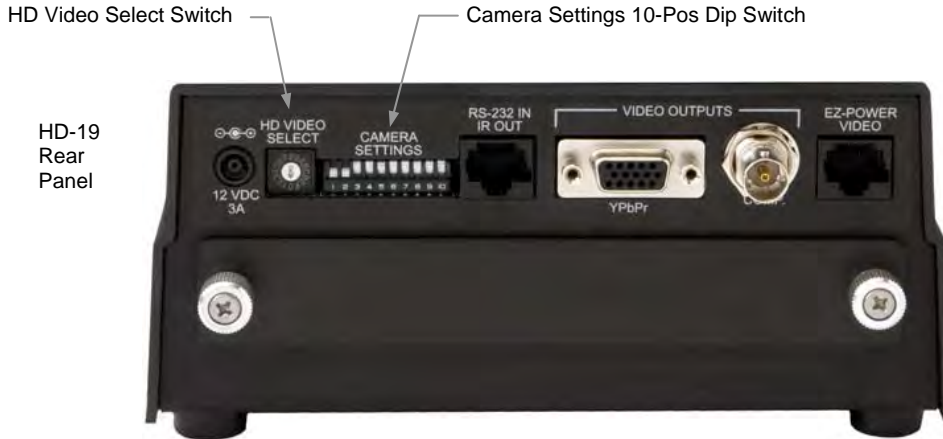
Optional slot cards can be plugged into the ClearVIEW HD-19 camera (the HD-SDI and the EZIM CCU Slot Cards are available).

First Time Set-up with the ClearVIEW HD-19:

The ClearVIEW HD-19 was designed to be exceptionally easy to use and operate. There is documentation at the back of the manual for pin-outs for all of the connectors on the ClearVIEW HD-19 camera.

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.



Label on Bottom of the HD-19

DIP SWITCH SETTINGS										HD VIDEO SELECT				
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		0	720p/59.94	8	576i/25
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	1080i/59.94	9	---	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	1080p/59.94	A	---	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	1080p/60	B	---	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	720p/50	C	---	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	1080i/50	D	---	
IR 2 ON	IR 3 ON	38400 bps	SD PAL	SD SQ	SD LB	ON	ON	ON	ON	6	1080p/50	E	1080p/30	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7	480i/29.97	F	1080p/25	
1	2	3	4	5	6	7	8	9	10					

- Set the HD output resolution for the camera with the Rotary Switch.
- Set the IR frequency of the camera if it is to respond to the IR remote control.
- If using RS-232 for control, leave the IR OUT OFF (SW3) and choose 9600bps for most applications.
- If using the IR forwarding feature, turn the IR OUT ON (SW3).
- If inverting the camera, turn the IMAGE FLIP ON (SW8).

Dip Switch Settings:

IR 1 & 2: The IR remote has the capability of operating up to three different PTZ cameras from one remote. Use the selector buttons at the top of the IR remote to select the frequency.

IR Out 3: The IR output is sent out on the RS-232 RJ-45 jack on the back of the camera. Turning on the IR output will allow IR signals to be transmitted over the CAT-5 cable to the head end. When using RS-232 control or Vaddio CCU controllers (also via RS-232), turn the IR OUT to OFF.

Baud Rate 4: The options for baud rate are either 9600 bps or 38,400 bps. Default is 9600 bps.

SD Format 5: Choose between NTSC or PAL formats

SD Configurations 6 & 7: SD video can be set to standard 4:3, squeeze mode or letterbox mode.

Image Flip 8: To invert the HD-19, turn the IMAGE FLIP ON (switch down).

Test Bars 9: Turning on the non-standard test bars will override the camera video output. These non-standard test bars are 75% IRE.

Switch 10: Leave up - or in the OFF position

Basic Connectivity Example of the HD-19 PTZ camera to a Vaddio Joystick Controller, Codec and Monitors:



Installation Basics:

Locate the camera mounting location 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 that will optimize the performance of the camera.

RS-232 Cabling:

For RS-232, use a standard Cat-5e cable (568B termination for RJ-45 connectors) from the RS-232 port on the back of a Vaddio ProductionVIEW camera controller or switcher. If the camera will be connected to a third-party control system (such as AMX® or Crestron®), a DB-9 to RJ-45 adapter is supplied with the camera for RS-232.

Videoconferencing Codecs and RS-232:

Depending on the codec that is used, and which RS-232 port is used with a codec, special DB-9 to RJ-45 adapters may sometimes be required. Refer to Vaddio's website, price list or on the ClearVIEW HD-19 web page on specific diagrams for wiring the camera to videoconferencing codecs.



Compliance and CE Declaration of Conformity - ClearVIEW HD-19

Compliance testing was performed to the following regulations:

- **FCC Part 15, Subpart B** Class A
- **ICES-003, Issue 4: 2004** Class A
- **EN 55022 A: 2006 + A1: 2007(CISPR 22:2005/A1:2005)** Class A
- **AS/NZS CISPR 22: 2009 + A1: 2010** Class A
- **VCCI V-3/2010.04** Class A
- **EMC Directive 2004/108/EC** 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

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 55024: 1998 + Amendments A1: 2001 + A2: 2003 Immunity
- EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001 Electrostatic Discharge
- EN 61000-4-3: 2006 + A1: 2008 Radiated Immunity
- EN 61000-4-4: 2004 + Corrigendum 2006 Electrical Fast Transients
- EN 61000-4-5: 2006 Surge Immunity
- EN 61000-4-6: 2009 Conducted Immunity
- EN 61000-4-8: 2010 Power Frequency Magnetic Field
- EN 61000-4-11: Second Edition: 2004 Voltage Dips, Interrupts and Fluctuations



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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 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 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 outside of the box 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 (camera or controller) 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:

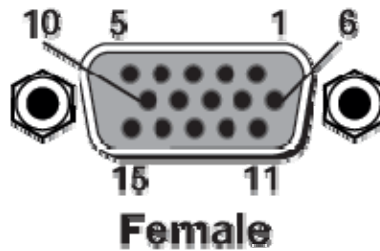
- Temperatures above 40°C (104°F) or temperatures below 0°C (32°F)
- High humidity, condensing or wet environments
- In inclement weather
- In swimming pools, bear caves or Panama Canal
- Dry environments with an excess of static discharge
- In outer space (re-entry not recommended)
- Under severe vibration

General Specifications:

ClearVIEW HD-19 High Definition PTZ Camera	
Part Numbers	ClearVIEW HD-19 North America 999-6940-000 (Black), 999-6940-000AW (Arctic White) ClearVIEW HD-19 International 999-6940-001(Black), 999-6940-001AW (Arctic White)
Image Sensor	1/3-Type Exmor High-speed, Progressive Scan CMOS Sensor with 1.3 Megapixels
Video Output Resolutions	HD: 1080p/60/59.94/50/30/25, 1080i/59.94/50, 720p/59.94/50 SD: 480i/NTSC & 576i/PAL (Crop, Squeeze or Letterbox mode)
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
Video S/N Ratio	>52 dB
Minimum Illumination	0.7 LUX (F1.6, 50IRE)
Serial Control Protocol	RS-232 (Modified VISCA)
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
Tally Light	Available through RS-232 Control
Connectors	<ul style="list-style-type: none"> 12 VDC Power Input: EIAJ-04 Coaxial Power Connector HD Video Outputs: YPbPr on DE-15 (D-Sub 15-pin HD) SD Video Output: BNC Connector RS-232/IR Out: RJ-45 Jack (RS-232 Communication and IR Out (with Quick-Connect -SR Interfaces) EZ Power HD Video: RJ-45 Jack, for use with Quick-Connect SR Interface or Quick-Connect DVI/HDMI SR Interface. Supplies power to the camera and returns HD video from the camera to the Quick-Connect - SR Systems.
HD Video Select	16-Position Rotary Switch: Used to set HD Video Resolution Output
Camera Settings	10-Position Dip Switch: Settings for IR Select, Baud Rate 9600, Image Flip, SD LB and SQ, Test Bars OSD (On Screen Display) for fine tuning
Accessories	Thin Profile Wall Mount 535-2000-230 (Black), 535-2000-230W (White) EZIM HD-SDI Slot Card PN# 998-6900-007 EZIM CCU Slot Card PN# 999-6900-006 - For Use with Quick-Connect CCU Only
General Information	
Operating Temperature	32° to 104° F (0° to 40° C) / 20% to 80% Relative Humidity
Dimensions (H x W x D)	8.5" (215.9mm) H x 6.75" (171.45mm) W x 7.7" (195.58mm) D
Weight	5.79 lbs. (2.625635463kg.)

Appendix 1: YPbPr Video Pin-Out for the HD-19 Camera

Pin	YPbPr
1	Pr
2	Y
3	Pb
4	-
5	-
6	Pr GND
7	Y GND
8	Pb GND
9	-
10	-
11	-
12	-
13	-
14	-
15	-



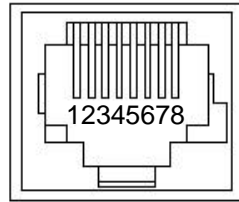


EZCamera Power & HD Video RJ-45 Connector Pin-outs

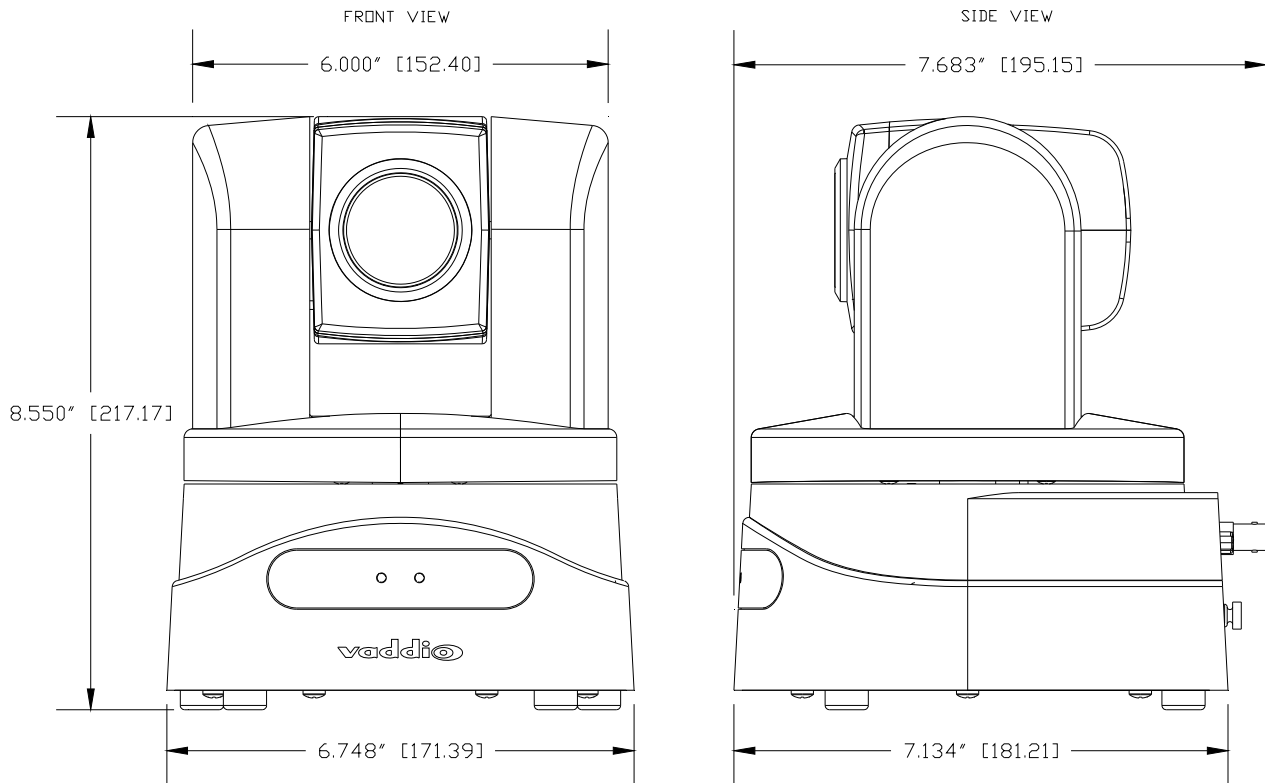
Important Note:

The EZCamera Power and HD Video RJ-45 Connector is for use with either the **Quick-Connect SR Interface** or the **Quick-Connect DVI/HDMI SR Interface ONLY** (568B Wiring Standard). The video signals are differential (HSDS™) and can only be received by the interfaces above.

Pin	YPbPr
1	Power+
2	Power-
3	Y+
4	PB+
5	PB GND
6	Y GND
7	PR+
8	PR-



Appendix 2: ClearVIEW HD-19 Dimensions



Optional Accessories:



- TANDBERG RS-232 Adapter**
998-1002-232
- Polycom RS-232 Adapter**
998-1003-232
- Polycom HDX 8000 Series Adapter**
998-1006-232



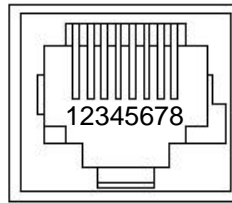
- Wall Mount Bracket**
535-2000-230



- 15-pin to Male BNC Output Cables**
- 440-5600-001 (3 ft.)
- 440-5600-002 (6 ft.)
- 440-5600-003 (7 inch.)

Appendix 3: 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)	IR Output (Diff Signal to Quick-Connect SR)
5)	IR Ground (Diff Signal to Quick-Connect SR)
6)	GND (GND of IR Short Range - Pin 3)
7)	RXD (from TXD of control source)
8)	TXD (to RXD of control source)

NOTE: The Vaddio ClearVIEW HD-19 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 HD-19 specific commands in the following Command and Inquiry Lists.

HD-19 Command List (1/2)

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	8x 01 04 00 02 FF	Power On/Off
	Off(Standby)	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	pqrs: Zoom Position* v:(Speed) 0-7
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	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_Focus	Direct(Variable)	8x 01 7E 01 4A 0v 0p 0q 0r 0s FF	pqrs: Focus position*
	Stop	8x 01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	
	Near(Variable)	8x 01 04 08 3p FF	
	AutoFocus	8x 01 04 38 02 FF	
	ManualFocus	8x 01 04 38 03 FF	
CAM_WB	Auto/Manual	8x 01 04 38 10 FF	pqrs: Focus position*
	Direct	8x 01 04 48 0p 0q 0r 0s FF	
	One Push WB	8x 01 04 35 03 FF	
CAM_RGain	Auto	8x 01 04 35 00 FF	pq:00-ff
	Manual	8x 01 04 35 05 FF	
	Reset	8x 01 04 03 00 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	
CAM_BGain	Up	8x 01 04 03 02 FF	pq:00-ff
	Down	8x 01 04 03 03 FF	
	Reset	8x 01 04 04 00 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	
CAM_AE	Full Auto	8x 01 04 04 02 FF	Auto Exposure Mode Manual Control Mode Shutter Priority Mode Exposure Priority Mode (default)
	Manual	8x 01 04 04 03 FF	
	Shutter Priority	8x 01 04 39 0A FF	
	Iris Priority	8x 01 04 39 0B FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	pq(0x00-0x11)
	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	pq(0x00-0x24)
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4C 00 00 0p 0q FF	
CAM_Bright	Reset	8x 01 04 0D 00 FF	pq(0x01-0x64)
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	

HD-19 Command List (2/2)

Command Set	Command	Command Packet	Comments
CAM_Backlight	On	8x 01 04 33 02 FF	
	Off	8x 01 04 33 03 FF	
CAM_Aperture	Reset	8x 01 04 02 00 FF	
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	pq(0x00-0x1F)
CAM_Memory	Reset	8x 01 04 3F 00 0p FF	
	Set	8x 01 04 3F 01 0p FF	
	Recall	8x01 04 3F 02 0p FF	p:Memory No(=0-0xe)
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs:0x0000 – 0xFFFF
IR_Receive	On	8x 01 06 08 02 FF	
	Off	8x 01 06 08 03 FF	
	On/Off	8x 01 06 08 10 FF	IR forwarding/Local IR
Pan-tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	WW: Pan Speed (0x01-0x18)
	Down	8x 01 06 01 VV WW 03 02 FF	VV:Tilt Speed(0x01-0x14)
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	
	UpLeft	8x 01 06 01 VV WW 01 01 FF	
	UpRight	8x 01 06 01 VV WW 02 01 FF	
	DownLeft	8x 01 06 01 VV WW 01 02 FF	
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	Absolute Position	81 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan Position** ZZZZ: Tilt Position**
	Home	8x 01 06 04 FF	
	Reset	81 01 06 05 FF	
	Tally	On	8x 01 7E 01 0A 00 02 FF
Off		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);
Motor Config	Hard Motor Stops	8x 01 7E 01 70 00 00 FF	
	Soft Motor Stops	8x 01 7E 01 70 00 01 FF	
BLK.Enhance	Pedestal	No Support	No Support
GMA.Enhance	Gamma	8x 01 7E 54 00 00 0p 0q FF	pq: Gamma (0x00-0x10)
CRM.Enhance	Chroma	8x 01 7E 55 00 00 0p 0q FF	pq: Chroma (0x00-0x64)
KNE.Enhance	Knee	No Support	No Support
DIS.Enhance	Digital Image Stabilizer	8x 01 7E 57 02 FF 8x 01 7E 57 03 FF	On Off
	SNR.Enhance	Super Noise Reduction	8x 01 7E 58 02 FF 8x 01 7E 58 03 FF
AGC.Enhance	AGC Mode	8x 01 7E 59 00 FF	Off
		8x 01 7E 59 01 FF	Low
		8x 01 7E 59 02 FF	Medium
		8x 01 7E 59 03 FF	High
CAM_Shutter	Reset	8x 01 04 0A 00 FF	
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq(0x00-0x23)
CAM_ExpComp	On	8x 01 04 3E 02 FF	AutoExposure Off
	Off	8x 01 04 3E 03 FF	AutoExposure On
	Reset	8x 01 04 0E 00 FF	
	Up	8x 01 04 0E02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	Pq: 0x00-0x24
CAM_ICR Cut Filter	ICR On	8x 01 04 01 02 FF	ICR On - Cut Filter Out
	ICR Off	8x 01 04 01 03 FF	ICR Off - Cut Filter In

*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)

Actual Pan/Tilt ranges defined in Inquiry list

HD-19 Inquiry List (1/1)

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_WBModelInq	81 09 04 35 FF	y0 50 00 FF y0 50 05 FF y0 50 03 FF	Auto Manual One Push WB
CAM_RGain	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq:000-0ff
CAM_BGain	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq:000-0ff
CAM_Iris	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq(0x00-0x11)
CAM_Gain	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq(0x00-0x24)
CAM_Bright	8x 01 04 4D FF	y0 50 00 00 0p 0q FF	pq(0x01-0x64)
CAM_BacklightModelInq	8x 09 04 33 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	Pq:x00-0x1F
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p:Preset 0-0xf
CAM_IDInq	8x 09 04 3F FF	y0 50 0p 0q 0r 0s FF	pqrs:0x0000 – 0xFFFF
CAM_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF y0 50 03 FF	On Off
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
BLK.Enhance	No support	No Support	Pedestal
GMA.Enhance	8x 09 7E 54 FF	y0 50 00 00 0p 0q FF	pq: Gamma (0x00-0x10)
CRM.Enhance	8x 09 7E 55 FF	y0 50 00 00 0p 0q FF	pq: Chroma (0x00-0x64)
KNE.Enhance	No support	No Support	Knee
DIS.Enhance	8x 09 7E 57 FF	y0 50 02 FF y0 50 03 FF	On Off
SNR.Enhance	8x 09 7E 58 FF	y0 50 02 FF y0 50 03 FF	On Off
AGC.Enhance	8x 09 7e 59 FF	y0 50 00 FF y0 50 01 FF y0 50 02 FF y0 50 03 FF y0 50 04 FF	Off Low Medium High Manual AGC
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF y0 50 03 FF y0 50 0A FF y0 50 0B FF	Auto Exposure Mode Manual Control Mode Shutter Priority Mode Exposure Priority Mode
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: 0x0-0x23
CAM_ExpCompModelInq	8x 09 04 3E FF	y0 50 02 FF y0 50 03 FF	On - AE Mode Off Off – AE Mode On
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Pos
CAM_ICRModelInq	8x 09 04 01 FF	y0 50 02 FF y0 50 03 FF	On - ICR filter Out Off – ICR filter In

Appendix 3 (continued):

Iris Position:

Index	F-Stop (Iris Position)
0x11	F1.6
0x10	F2.0
0x0F	F2.4
0x0E	F2.8
0x0D	F3.4
0x0C	F4.0
0x0B	F4.8
0x0A	F5.6
0x09	F6.8
0x08	F8.0
0x07	F9.6
0x06	F11.0
0x05	F14.0
0x04	F16.0
0x03	F19.0
0x02	F22.0
0x01	F28.0
0x00	Close

Gamma Position:

Index	Gamma value
0x10	1.00
0xF	0.95
0xE	0.90
0xD	0.85
0xC	0.80
0xB	0.75
0xA	0.70
0x9	0.65
0x8	0.60
0x7	0.55
0x6	0.50
0x5	0.45
0x4	0.40
0x3	0.35 (Default)
0x2	0.30
0x1	0.25
0x0	0.20

Shutter Position(Speed):

Index	Shutter (Speed)
0x23	1/30000
0x22	1/10000
0x21	1/5000
0x20	1/2500
0x1F	1/1500
0x1E	1/1000
0x1D	1/700
0x1C	1/600
0x1B	1/500
0x1A	1/480
0x19	1/360
0x18	1/300
0x17	1/250
0x16	1/240
0x15	1/200
0x14	1/180
0x13	1/150
0x12	1/120
0x11	1/100
0x10	1/60
0x0F	1/50
0x0E	1/30
0x0D	x2
0x0C	x4
0x0B	x6
0x0A	x8
0x09	x10
0x08	x12
0x07	x14
0x06	x16
0x05	x20
0x04	x24
0x03	x32
0x02	x40
0x01	x48
0x00	x60

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