



# Vaddio™ Quick-Connect™ Universal Cat-5 CCU for WallVIEW HD-18, HD-19 & HD-20 Camera Packages

## WallVIEW Universal CCU HD-18 Cat-5 Version

### Part Numbers:

- 999-6907-100: North America (Black)
- 999-6907-100AW: North America - Arctic White
- 999-6907-101: International (Black)
- 999-6907-101AW: International - Arctic White

HD-18 with  
CONCEAL  
Mounts



Universal CCU for HD-18 (shown without Rack Ears)

## WallVIEW Universal CCU HD-19 Cat-5 Version

### Part Numbers:

- 999-6947-100: North America (Black)
- 999-6947-100AW: North America - Arctic White
- 999-6947-101: International (Black)
- 999-6947-101AW: International - Arctic White

HD-19 with  
CONCEAL  
Mounts



Universal CCU for HD-19 (shown without Rack Ears)

## WallVIEW Universal CCU HD-20 Cat-5 Version

### Part Numbers:

- 999-6957-100: North America
- 999-6957-101: North America

HD-20 &  
CONCEAL  
Mount



Universal CCU for HD-20 (shown without Rack Ears)

## EZIM Slot Card Interface

Part Number: 998-6700-006



*Inside Front Cover - Blank*

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## Overview:



The Universal CCU is the new Quick-Connect™ CCU for the WallVIEW HD-20, HD-19 and HD-18 Pan/Tilt/Zoom Camera Systems. The Universal CCU will have three (3) main models; Cat-5 version, Wireless version for the HD-20 and Optical version for all cameras. This manual covers the Cat-5 Universal CCUs.

The Cat-5 Universal CCU uses HSDS™ (high speed differential signaling), an active video transmission system, to deliver high quality HD video over standard Cat-5 cabling up to 500' (152.4m) with virtually no loss in video quality or an without latency. One of the most flexible attributes the Universal CCU has is at the outputs. It has HD-SDI or SDI outputs, HDMI and HD Analog component (YPbPr) outputs, all of which can be used concurrently. Resolution throughput ranges from 480i up to and including 1080p/60 on all outputs. The Universal CCU has a new industrial design that simplifies the operation of the CCU. The back-lit blue LED screen displays up to eight (8) parameters at a time and the camera's model number so the interrelationship of the controls can easily and quickly be read and understood.

The WallVIEW CCU series for ClearVIEW HD-20, HD-19 and HD-18 allows the user to adjust Red and Blue Gain, Iris functions, Chroma, Pedestal, Knee, Detail, Gamma and Gain on the cameras. These controls allow the camera to deliver a more accurate representation of the image that is being captured. Other added advantages include the ability to color match multiple cameras and eliminate the need to use automatic exposure and color settings. User-defined adjustments may be stored using three (3) Scene buttons. There are also six (6) preset lighting environment scenes available in the menus for quick basic set-up of the camera for the lighting used in the shooting environment.

Overall, any WallVIEW System using the Quick-Connect Universal CCU is superb for a wide range of high definition shooting applications. It is also great where adjusting the color and brightness levels of one or multiple cameras is critical, as in houses of worship, corporate boardrooms, live event production and distance-learning applications.

### 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. Do not connect Power over Ethernet (PoE) cables directly to the RJ-45 ports on the device as damage may result.



**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. For best results please use standard RJ-45 connectors and test all cables for proper pin-outs prior to use. Mark all cables to avoid errant connections.

### 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](http://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:

### WallVIEW Universal CCU HD-20, Cat-5

#### P/N: 999-6957-100, North America

- One (1) Vaddio HD-20 PTZ Camera (998-6950-000)
- One (1) Universal CCU for HD-20 or HD-18 (998-1105-027) with Rack Ears
- One (1) 36 VDC Switching power supply with power cord for North America
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector (For Tally LED)
- One (1) EZIM CCU Slot Card
- One (1) CONCEAL Mount in silver with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems



#### P/N: 999-6957-101, International

- One (1) Vaddio HD-20 PTZ Camera (998-6950-000)
- One (1) Universal CCU for HD-20 or HD-18 (998-1105-027) with Rack Ears
- One (1) 36 VDC Switching power supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector (For Tally LED)
- One (1) EZIM CCU Slot Card
- One (1) CONCEAL Mount in silver with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems

### WallVIEW Universal CCU HD-19, Cat-5

#### P/N: 999-6947-100, North America

- One (1) Vaddio HD-19 PTZ Camera 998-6940-000 (black)
- One (1) Universal CCU for the HD-19 (998-1105-034) with Rack Ears
- One (1) 36 VDC Switching power supply with power cord for North America
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Black with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems



#### P/N: 999-6947-100AW, North America, Arctic White Version

- One (1) White Vaddio HD-19 PTZ Camera 998-6940-000AW - Arctic White Version
- One (1) Universal CCU for the HD-19 (998-1105-034) with Rack Ears
- One (1) 36 VDC Switching power supply with power cord for North America
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Arctic White with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems



#### P/N: 999-6947-101, International

- One (1) Vaddio HD-19 PTZ Camera 998-6940-000 (black)
- One (1) Universal CCU for the HD-19 (998-1105-034) with Rack Ears
- One (1) 36 VDC Switching power supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Black with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems



**P/N: 999-6947-101AW, International, Arctic White Version**

- One (1) White Vaddio HD-19 PTZ Camera 998-6940-000AW - Arctic White Version
- One (1) Universal CCU for HD-19 (998-1105-034) with Rack Ears
- One (1) 36 VDC Switching power supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Arctic White with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems


**WallVIEW Universal CCU HD-18, Cat-5**
**P/N: 999-6907-100, North America**

- One (1) Vaddio HD-18 PTZ Camera 998-6900-000 (black)
- One (1) Universal CCU with Keypad for HD-18 and HD-20 (998-1105-027) with Rack Ears
- One (1) 36 VDC Switching power supply with power cord for North America
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Black with complete hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems


**P/N: 999-6907-100AW, North America, Arctic White Version**

- One (1) White Vaddio HD-18 PTZ Camera 998-6900-000AW - Arctic White Version
- One (1) Universal CCU for HD-18 and HD-20 (998-1105-027) with Rack Ears
- One (1) 36 VDC Switching power supply with power cord for North America
- One (1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Arctic White with complete Hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems


**P/N: 999-6907-101, International**

- One (1) Vaddio HD-18 PTZ Camera 998-6900-000 (black)
- One (1) Universal CCU for HD-18 and HD-20 (998-1105-027) with Rack Ears
- One (1) 802-2620, 36 VDC switching power supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One(1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Black with complete Hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems


**P/N: 999-6907-101AW, International, Arctic White Version**

- One (1) White Vaddio HD-18 PTZ Camera 998-6900-000AW - Arctic White Version
- One (1) Universal CCU for HD-18 and HD-20 (998-1105-027) with Rack Ears
- One (1) 36 VDC switching power supply
- One (1) Euro Power Cord
- One (1) UK Power Cord
- One( 1) 2-pin Phoenix-type (Molex 5.0mm Euro style) connector
- One (1) EZIM Slot Card
- One (1) CONCEAL Mount in Arctic White with complete Hardware kit
- One (1) 998-1001-232, DE-9F to RJ-45F EZCamera Control Adapter
- One (1) Manual for WallVIEW Universal CCU Systems



## Anatomy of the Universal CCU

There are two (2) Quick-Connect Universal CCU Cat-5 products at this time. One unit, 998-1105-027, works with the HD-20 and HD-18, which have very similar control protocols and share the same control keypad. The HD-19 offers a different set of controls and has a different control keypad. The Universal CCU will automatically sense the camera it is and initialize the firmware for that camera. The next section will look at the controls and how they are laid out for easy access.

### Image: Quick-Connect Universal CCU HD-20 and HD-18 Front Panel Controls



### Image: Quick-Connect Universal CCU HD-19 Front Panel Controls



### Front Panel Controls (left to right):

- **5-Line Blue Back-lit LED:** Displays up to 8 parameters at a time so the interrelationship of the controls can easily and quickly be read and understood.
- **Tally Light:** A contact closure on the back panel lights the blue LED on front panel indicating which Universal CCU and camera combination is the live Program in a multi-camera CCU installation. A tally command will also be sent to the camera via RS-232 to light the LED on cameras with on-board tally lights (Vaddio HD Series cameras).

### Image: Close up View of the Universal CCU HD-20 and HD-18 Control Panel



**HD-18/HD-20 Keypad Controls from (left to right):** Touch the button with the parameter to be controlled and adjust the value with the encoder (big rotary knob), then touch the cancel button to exit.

- **Scenes A, B & C:** Three camera adjustment scenes (A, B & C) can be stored into microprocessor memory. When lit (backlit blue SPDT switch), the scene is activated. To store a scene, the user adjusts the controls and touches and holds the scene button down until the button blinks. To erase a scene press and hold the scene button and the cancel button.
- **Auto White Balance:** The Automatic White Balance controls/adjusts the color levels automatically when engaged. Take it out of Auto to manually adjust the Red and Blue levels.
- **Knee:** Knee adjustment allows bright objects that are easily overexposed to be reproduced more accurately.
- **Red & Blue Gain Controls:** The Red and Blue Gain buttons in combination with the encoder adjust the red and blue gain of the signal when Auto white Balance is disengaged.
- **Chroma:** Chroma controls the overall color of the image being captured.
- **Pedestal:** The Pedestal adjustment controls the absolute black level of an image.
- **Gamma:** Gamma adjusts the overall brightness of an image.
- **Detail:** The Detail control sharpens or softens objects in the frame. Works well when looking at text.
- **IRIS - Auto or Manual:** The Auto Iris mode automatically adjusts the iris and gain of the camera. To manually adjust the iris or gain, turn off this control. The Manual Iris control allows the user to set the iris manually to one of the several settings available.
- **Gain:** The Gain control boosts the signal level when the iris is open all the way, and there is not enough lighting available. To manually adjust the Gain, Auto Iris must be off. Generally, try to avoid use of the Gain control.
- **Rotary Encoder:** Use the encoder to adjust values after the button is selected. This makes for very quick changes.
- **The Menu Buttons:** There are other screens to be accessed other than the camera control screen. Use the SELECT and CANCEL to enter other controls and exit other menus.

### Image: Close up View of the Universal CCU HD-19 Control Panel



**HD-18/HD-20 Keypad Controls from (left to right):** Touch the button with the parameter to be controlled and adjust the value with the encoder, then touch the cancel button to exit.

- **Scenes A, B & C:** Three camera adjustment scenes (A, B & C) can be stored into microprocessor memory. When lit (backlit blue button), the scene is activated. To store a scene, the user adjusts the controls and touches and holds the scene button down until the button blinks. To erase a scene press and hold the scene button and the cancel button.
- **Auto White Balance:** The Automatic White Balance controls/adjusts the color levels automatically when engaged. Take it out of Auto to manually adjust the Red and Blue levels.
- **OPWB (One Push White Balance):** When using OPWB, zoom in on a white subject, at least 60% of the image must be white, touch the OPWB button and the coloration of the image will adjust to the white used in this shot.
- **Red & Blue Gain Controls:** The Red and Blue Gain buttons in combination with the encoder adjust the red and blue gain of the signal when Auto White Balance is disengaged.
- **Chroma:** Chroma controls the overall color of the image being captured.
- **Bright:** This is the overall luminance control for the image.
- **Gamma:** Gamma adjusts the overall brightness of an image to compensate for the perception of luminance and chroma.
- **Detail:** The Detail control sharpens or softens objects in the frame. Works well when looking at text.
- **IRIS - Auto or Manual:** The Auto Iris mode automatically adjusts the iris and gain of the camera. To manually adjust the iris or gain, turn off this control. The Manual Iris control allows the user to set the iris manually to one of the several settings available
- **Gain:** The Gain control boosts the signal level when the iris is open all the way, and there is not enough lighting available. To manually adjust the Gain, Auto Iris must be off. Use the Gain last to enhance the image.
- **Rotary Encoder:** Use the encoder to adjust values after the button is selected. This makes for very quick changes.
- **The Menu Buttons:** There are other screens to be accessed other than the camera control screen. Use the SELECT and CANCEL to enter other controls and exit other menus.

### Image: Rear Panel Connection and Controls (left to right)



- **Power Supply Input:** The Universal CCU uses a 36VDC, 2.78 Amp power supply on a 5.5mm OD x 2.5mm ID coaxial connector.
- **36 VDC to Camera - RED RJ-45:** Power is provided on a Cat-5 cable to EZIM (EZCamera Interface Module) Slot Card. The power is regulated in the camera to 12 VDC.
- **RS-232 IN - GREEN RJ-45:** RS-232 Input from ProductionVIEW™ console, Precision Camera Controller or other PTZ controller. Daisy Chain control is not supported.
- **RS-232 to Camera - BLUE RJ-45:** RS-232 over Cat-5 provides control signals to the camera.
- **Tally on 2-pin Molex 5.0mm Euro-Style connector:** A contact closure lights the blue LED on front panel showing which Universal CCU and camera combination is the live Program in a multi-camera CCU installation. A tally command will also be sent to the camera via RS-232 to illuminate the LED on the cameras that have on-board tally lights.
- **Camera Feature Switches:** The CCU interface has an 8-position dip switch on the rear panel to allow for certain functionality. All switches should be in the down position for default.
  - **Dip Switch 1:** Put up to allow Scene A to load upon start-up or boot up.
  - **Dip Switch 5:** Put up to access LCD Display Menu settings including Display Mode, Bias and Contrast.
- **Video from Camera - YELLOW RJ-45:** The yellow RJ-45 receives the camera's four (4) differential video signals from the EZIM Slot Card to the Quick-Connect CCU on Video Cat-5 cable.
- **HD Video Outputs:** The Universal CCU has 3 (three) simultaneous video output formats that are the same resolution as the video inputs providing the ultimate in connectivity flexibility. The output formats include:
  - HD YPbPr on DE-15-F (HD15) - (supports up to/and including 1080p/60 - not limited at 1080i/59.94)
  - HDMI on HDMI-F (supports up to and including 1080p/60)
  - HD-SDI on Edge Mount Carrier Class, Gold BNC-F (supports 3Gb/s Single Link 1080p/60 HD-SDI)

The universal CCU supports all the resolutions of the HD-20, HD-19 and HD-18 PTZ cameras.



**Image: The EZIM Slot Card**

The EZIM Slot Card fits into the slot into the base of each of the HD-20/19/18 PTZ cameras and terminates the Power (red) Cat-5 cable and the Video (yellow) Cat-5 cable to the camera. Please remove power from the camera prior to insert, seating and screwing down the card with the attached thumb screws.



EZIM Slot Card (Side and ISO Views)



**The HD-20 and HD-18 Control Screens**

Each of the Cameras has individual firmware that auto loads when the camera is plugged in to the Universal CCU and the CCU is turned on (turn the camera on first). Since most cameras are a bit different, the menus will be slightly different. The control menus are organized as follows:

**Image: Menu Organization HD-18 and HD-20**

<p><b>Main Control Menu</b> 8-Most used Controls displayed</p>	<p><b>CAT-5 Adjust Menu</b> With Skew, Color Space Y-Gain and Six preset Scene Configurations</p>	<p><b>Camera Info Menu</b> Versions of camera hardware</p>	<p><b>LED Display Menu</b> For set up of front panel LED display</p>
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For this Menu, put  
Dip Switch 5 UP

**Image: Menu Organization HD-19**

<p><b>Main Control Menu</b> 8-Most used Controls displayed</p>	<p><b>2<sup>nd</sup> Control Menu</b> 3-More Controls displayed</p>	<p><b>CAT-5 Adjust Menu</b> With Skew, Color Space Y-Gain and Six preset Scene Configurations</p>	<p><b>Camera Info Menu</b> Versions of camera hardware</p>	<p><b>LED Display Menu</b> For set up of front panel LED display</p>
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For this Menu, put  
Dip Switch 5 UP

The HD-20 and HD-18 individual control screens are very similar, but the cameras differ greatly in performance. The HD-20 requires much more light and with a full HD image sensor and produces broadcast like video. The HD-18 is more of a conferencing camera and needs less light to perform well for conferencing applications.

The Main Menu screen shows eight (8) prominent parameters at a time. On both the HD-20 and HD-18, the Gamma control shares a place with the Knee control. Touch the gamma control and the knee control is replaced with the Gamma control and vice versa.

**Main Menu HD-20**

CAT-5 CCU		HD-20	
RED	-11	GAMMA	112
BLUE	81	DETAIL	09
CHROMA	20	IRIS	AUTO
PEDESTAL	24	GAIN	AUTO

**Main Menu HD-18**

CAT-5 CCU		HD-18	
RED	AUTO	KNEE	48
BLUE	AUTO	DETAIL	09
CHROMA	20	IRIS	AUTO
PEDESTAL	24	GAIN	AUTO

The Cat-5 Adjustment Menu allows the user to adjust the skew of the Cat-5 Cable (1 to 16), to compensate for differing Cat-5 cable lengths between camera and CCU. This setting will usually be best in the middle of the range of skew numbers which pass acceptable video. Set the HDMI Color Space to YCbCr for HDMI and to sRGB for DVI-D output. The Y-Gain is for adjusting the video  $\pm 10$  IRE at all outputs as needed for associated equipment. Preset Lighting Scene Configurations offer sample settings for fluorescent, incandescent and outdoor lighting environments. Choose the scene (shown in the Screen Config description below) which looks best for your situation and fine tune from there.

Cat-5 Adjustment Menu HD-20



Cat-5 Adjustment Menu HD-18



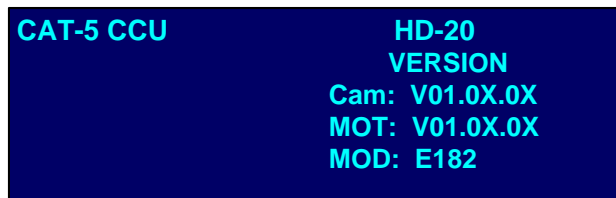
**Screen Config :**

Generalized Scene Configurations have been added to allow the user to quickly run through preset lighting environment scenes, and include the following presets:

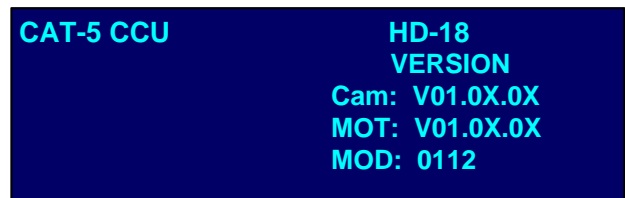
- 1) AUTO (full Auto)
- 2) Incand Lo (incandescent low)
- 3) Incand Hi (incandescent high)
- 4) Fluor Lo (fluorescent low)
- 5) Fluor Hi (fluorescent high)
- 6) Outdoor

The Version Menu screen displays the software versions of the Vaddio cameras attached as a convenience to the operator. The versions shown include the zoom module, the motors and the camera.

Version Display Menu

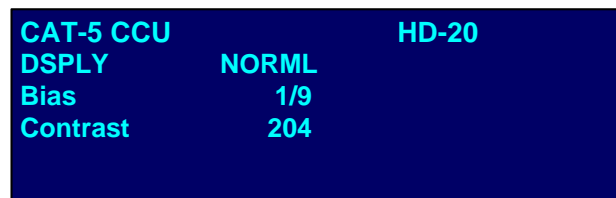


Version Display Menu

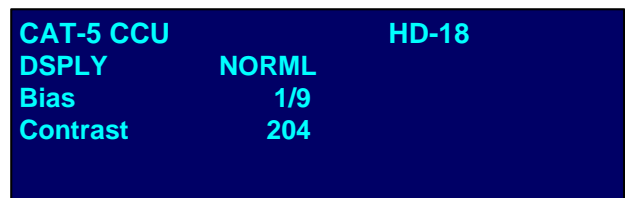


The Display Menu provides controls for the blue LED display, including Bias (brightness), Display Mode - Normal (negative mode) and Inverted (positive mode) and overall contrast are provided. Put dip switch #5 UP to access this menu, make the adjustment and it is recommended that dip switch #5 is returned to the DOWN position so this menu is no longer seen.

Display Menu



Display Menu



**Image: The HD-19 Universal CCU Control Screens**

The HD-19 Main Menu screens differ from the HD-20 and HD-18 in that there are two (2) camera pages of Menus that offer similar controls but also include Brightness and AGC on Page 1 with Shutter, Noise reduction and Image Stabilization on page 2. The Version Screen, Cat-5 Adjustment and Configurations and Display control menus are virtually identical as the HD-20 or HD-18 except for the numbers on the Version screen.

HD-19 Main Menu Screen #1

CAT-5 CCU		HD-19	
RED	407	GAMMA	101
BLUE	571	DETAIL	04
CHROMA	50	IRIS	AUTO
Bright	50	AGC	LOW

HD-19 Main Menu Screen #2

CAT-5 CCU		HD-19	
SHUTTER	AUTO		
SNR	ON		
DIS	OFF		

A few notes about Super Noise Reduction and Image Stabilization:

Use these features sparingly as there are performance trade-offs which are mostly, sort of, kind of well known, but here goes:

**Super Noise Reduction:** Please use the noise reduction, if needed, on the lower settings. Too much noise reduction will tend to blur images with a lot of movement. So consider the subject matter, if you are shooting a Roller Derby, use as little as possible, conversely a well framed shot of paint drying can use more noise reduction...as needed, of course.

**Image Stabilization:** It is great for a hand held camcorder, an operator with a tripod and on a mount on the front of a church balcony. But in the absence of shaking and vibration, try not to use image stabilization in general. Using a camera with image stabilization with a joystick can be frustrating as the image will not start or stop with the movements of the joystick because it is buffering frames to apply stabilization and there will be a difficult lag to anticipate. Anticipating for buffered frames isn't anything we like people to have to think about.

**Installation Basics:**

The WallVIEW CCU system was specifically designed for installation on a vertical wall surface with Cat-5 cable connectivity for Video, Power and Control signaling (three Cat-5 cables are required). Installation is simplified in that no custom 8-Pin mini-din cables or expensive plenum coax cables are needed and no power outlets are required near the camera bracket. All cabling is routed to the head-end using Cat-5 cables using standard straight through RJ-45 connectors (568B termination). "Pass-thru" type RJ-45 connectors should never be used.



**Mounting and Installation Instructions for the CONCEAL Wall Mounting System:**

**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 obstructions where the camera is to be mounted. Pick a mounting location to optimize the performance of the camera. After determining the optimum location of the camera system, route the required three (3) Cat-5 cables from the camera to the head-end. Mark the Cables: POWER, VIDEO and CONTROL.

The three (3) Cat-5 cables should feed-through a 1" (25.4mm) opening (circular or square shape) centered in the rectangular slot located on the rear flange of the CONCEAL Wall Mount Bracket.



**Note:** Do not cut out the entire rectangular slot opening in the wall! This will not allow the two lower wall anchors to correctly fasten the Conceal Wall Mount to the wall.

If the bracket is to be mounted on a 2-gang wall box, use the screws supplied with the wall box cover plate to attach the CONCEAL Wall Mount Bracket.

If mounting to drywall with wall anchors, use the four (4) quality wall anchors/screws provided

**Note:** The mounting holes are slotted and are at 90° opposing to provide easy leveling. Level the mount and tighten the mounting screws.



**Note:** Check all Cat-5 cables for continuity in advance of final connection. Plugging the POWER Cat-5 cable into the wrong RJ-45 may cause damage to the camera system and void the warranty!

### Step 2: System Wiring

Follow the sample wiring diagrams for connecting the Cat-5 cables to the camera and Quick-Connect Universal CCU Interface. Additional diagrams are available on the Vaddio website.

Connect the camera side as follows:

- Connect the POWER Cat-5 to the Power RJ-45 on the EZIM CCU Slot Card.
- Connect the VIDEO Cat-5 to the Video RJ-45 on the EZIM CCU Slot Card.
- Connect the RS-232 control Cat-5 to the "RS-232 IN" RJ-45 on the top row of connectors on the camera.

Connect the Universal CCU side as follows:

- Connect the VIDEO Cat-5 cable to the VIDEO FROM CAMERA RJ-45 jack (yellow) on the Universal CCU.
- Connect the RS-232 Cat-5 cable to the RS-232 TO CAMERA RJ-45 (Blue) on the Universal CCU.
- Wait to connect the POWER Cat-5 cable until later.

### Step 3: Secure the Camera To the CONCEAL Wall Mount Bracket

After all cables are attached to the camera, place the camera onto the camera mount and insert the two 1/4"-20 screws into the camera through the two-screw holes in the bottom of the mount. **Note:** Be sure to align each side of the camera evenly to all sides of the CONCEAL Wall Mount Bracket before final tightening of the mounting screws.

### Step 4: Install the CONCEAL Lower Cover Plate

Attach the CONCEAL lower cover plate. Slide lower cover plate from front of the mounting bracket toward the rear of the bracket. The two (2) rear locking tabs will need to be guided into position first and will lock in place as the lower cover plate is pushed toward the rear of the mounting bracket and the front two (2) tabs are inserted.



**Step 5: Install the CONCEAL Rear Camera Cover**

After successful testing of the camera, install the CONCEAL rear camera cover on the mounting bracket with the supplied screw (see Fig. 5 and 6).

CONCEAL Rear Camera Cover



Completed CONCEAL Wall Mount Camera Bracket Installation



**NOTE (One more time!):** Check all Cat-5 cables for continuity in advance of the final connection. Label the Cat-5 cables. Plugging the POWER cable into the wrong RJ-45 may cause damage to the camera system and void the warranty.

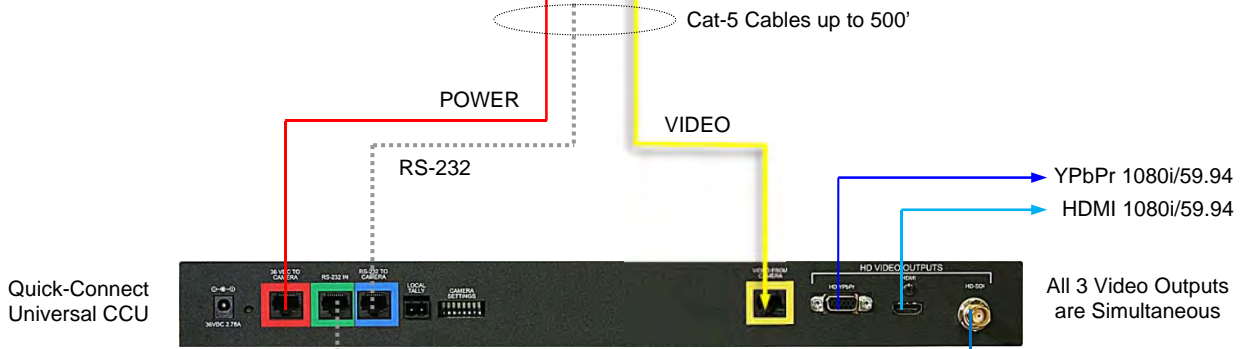
**Step 6: Connect System Power**

Connect the Vaddio 36 VDC power supply to the Quick-Connect Universal CCU Interface and an AC outlet. The CCU will power the camera via the Cat-5 cable. The camera will “Home” to a centered position ready for control information from the Universal CCU. To ensure proper continuity of control and operation of the cameras, the RS-232 controller (control system or joystick) should be powered on after the camera.

**Drawing: Basic System Connectivity**  
**Wiring Diagram Example:**

Back Panel of HD-19 with EZIM CCU Slot Card installed in the bottom row slot. All Universal CCU camera packages are shipped with the EZIM CCU Slot Card.

Please see the manuals for each of the cameras for specifics regarding set-up and switch settings.



Program Output  
 Simulated Video Feed



Multi-viewer Output  
 Simulated Video Feeds

**System Configuration Notes:**

The Quick-Connect Universal CCU System uses a Cat-5 (all 4-pairs) for POWER to ensure the motors of the camera receive the required current to operate properly. The VIDEO Cat-5 cable uses all four pairs for video. The RS-232 Cat-5 provides communication to the camera for CCU and PTZ control. These Cat. 5 cables can be run up to 500' (152.4m). See Appendix 1 for wiring and pin-out information. **NOTE:** Daisy-Chain configurations are not supported.

### Optimizing System Performance:

Optimizing the CCU settings will help achieve maximum performance from the system. Difficult lighting is one of the most challenging problems video system integrators face. The Vaddio CCU will provide the flexibility to fine tune for variables such as cable length, day/night lighting transitions and lighting color temperature.



- **Set skew control:** Adjust to afford the best picture brightness, quality and clarity. The range is 0-16. There will typically be a range of values where the video will output a valid image. The best setting is usually achieved with a number roughly in the middle of this valid video range.
- **Adjust Y Gain:** Allows for the adjustment of luminance gain up to +/- 10% as needed to compensate for a too light or too dark image in downstream equipment.
- **Adjust Iris and Digital Gain Settings:** Disable Auto Iris. Set the Iris to its largest aperture (lowest 'f' number). Adjust the Gain until the image is too dark and then bring it back until it is properly exposed. Exposures that require high gain settings will have a grainy video image. Adjust the detail settings for a smoother image.
- **Adjust Color to Taste:** Required adjustments will vary based on the environment. The CCU allows the set-up of three (3) scenes so settings are available for a variety of conditions. Adjust the Chroma level to taste. Adjust Red/Blue levels next. Adjusting for skin tones or using a color chart is an easy way to find a good baseline setup.

### General Specifications

• Universal CCU Interface	
<b>Connectors</b>	<ul style="list-style-type: none"> <li>• Power Connector: 5.5mm OD x 2.5mm ID</li> <li>• Power RJ-45: Supplies 36V to EZIM Slot Card</li> <li>• RS-232 IN RJ-45: Accepts RS-232 from ProductionVIEW or other non-daisy-chain control systems</li> <li>• RS-232 OUT RJ-45: Passes RS-232 and Sync video feed to camera EZIM</li> <li>• Tally: 2-Pin Phoenix type spring cage connector</li> <li>• Video From Camera RJ-45: Accept differential video from EZIM Slot Card</li> </ul> <b>Video Outputs:</b> <ul style="list-style-type: none"> <li>• HD-YPbPr on DE-15-F connector</li> <li>• HDMI on HDMI-F connector</li> <li>• HD-SDI on Edge Mount Carrier Class, Gold BNC-F (supports 3Gb/s Single Link 1080p/60 HD-SDI)</li> </ul>
<b>Camera Settings Switch</b>	All switches should be in the down position for default. <ul style="list-style-type: none"> <li>• <b>Dip Switch 1:</b> Put up to allow Scene A to load upon start-up or boot up.</li> <li>• <b>Dip Switch 5:</b> Put up to access LCD Display Menu settings including Display Mode (Negative Mode-Default or Positive Mode), Bias (Brightness) and Contrast.</li> <li>• <b>Dip Switches 2, 3, 4, 6, 7 &amp; 8:</b> NA for HD-20, HD-19 and HD-18</li> </ul>
<b>Video Adjustments</b>	Y-Gain (luminance gain) for fine tuning over longer cable distances Skew for distance compensation:
<b>CAT-5 Cable Maximum Distance</b>	Up to 500' (152.4m)
<b>Power Supply</b>	36 VDC, 2.78 Amp
<b>Dimensions</b>	1-RU Rack Mount - 1.72" H x 18.93" W x 7" D (43.7mm x 480.1mm x 177.8mm) Rack Ears Included
• EZIM (EZCamera Interface Module) Slot Card	
<b>Connectors</b>	Two (2) RJ-45 Connectors For Power and HSDS Video

**Note:** Specifications and pricing are subject to change without prior notice or obligation.

## Warranty Information:

(See Vaddio Warranty, Service and Return Policies posted on [vaddio.com](http://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 products and 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](mailto:support@vaddio.com) or online at [www.vaddio.com](http://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 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.

**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 Swimming pools or the chlorine factory
- In inclement weather
- Dry environments with an excess of static discharge
- In the Bering Straits (on deck in winter)
- Under severe vibration



## Compliance and CE Declaration of Conformity - Universal CCU and EZIM CCU



### Compliance testing was performed to the following regulations:

- FCC Part 15, Subpart B
- ICES-003, Issue 4: 2004
- European Standard EN 55022 A: October 2007
- European Standard EN 55024/A2 January 2003
- IEC 60950-1:2005 (Second Edition); Am 1:2009
- EN 60950-1:2006+A11:2009+A1:2010+A12:2011
- EMC Directive 89/336/EC

- Class A
- Class A
- Class A
- Class A
- Safety
- Safety
- 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 89/336/EC

#### EN 55022 A: 1998 + A1: 2000

Conducted and Radiated Emissions

#### EN 55024: 1998 + Amendments A1: 2001 + A2: 2002

Immunity

- EN 61000-4-2:

Electrostatic Discharge

- EN 61000-4-3:

Radiated Immunity

- EN 61000-4-4:

Electrical Fast Transients

- EN 61000-4-5:

Surge Immunity

- EN 61000-4-6:

Conducted Immunity

- EN 61000-4-8:

Power Frequency Magnetic Field

- EN 61000-4-11

Voltage Dips, Interrupts and Fluctuations

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

Safety

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

Safety

## Appendix 1: Cable Pin-outs for the Quick-Connect CCU System

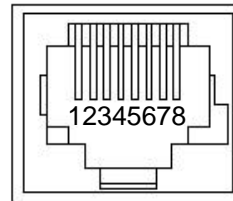
### Quick-Connect CCU Pin-out Assignments:



#### Power Connector RJ-45 (Red)

Pin #	Function	Pairs
Pin - 1	Power +	1
Pin - 2	Power -	1
Pin - 3	Power +	2
Pin - 4	Power -	3
Pin - 5	Power +	3
Pin - 6	Power -	2
Pin - 7	Power +	4
Pin - 8	Power -	4

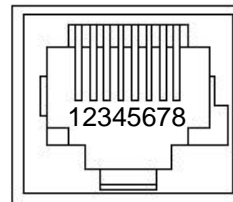
#### 36 VDC TO CAMERA



#### RS-232 IN RJ-45 (Green)

Pin #	Function	Pairs
Pin - 1	N/A	Not Used
Pin - 2	N/A	Not Used
Pin - 3	N/A	Not Used
Pin - 4	N/A	Not Used
Pin - 5	N/A	Not Used
Pin - 6	Digital GND	
Pin - 7	RXD (from TXD of control source)	4
Pin - 8	TXD (to RXD of control source)	4

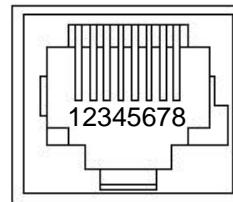
#### RS-232 IN



#### RS-232 OUT RJ-45 (Blue)

Pin #	Function	Pairs
Pin - 1	N/A	Not Used
Pin - 2	N/A	Not Used
Pin - 3	N/A	Not Used
Pin - 4	N/A	Not Used
Pin - 5	N/A	Not Used
Pin - 6	Digital GND	
Pin - 7	TXD (to RXD of control source)	4
Pin - 8	RXD (from TXD of control source)	4

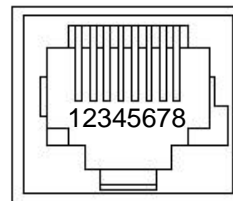
#### RS-232 OUT



#### Video (HSDS-differential) RJ-45 (Yellow)

Pin #	Function	Pairs
Pin - 1	N/A	Not Used
Pin - 2	N/A	Not Used
Pin - 3	Y+	2
Pin - 4	PB+	33
Pin - 5	PB GND	3
Pin - 6	Y GND	2
Pin - 7	PR+	4
Pin - 8	PR-	4

#### VIDEO FROM CAMERA

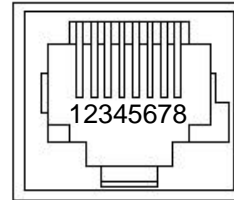


**Appendix 1 (continued)  
EZIM Slot Card Pin-out Assignments**



**Power Connector RJ-45 (Red)**

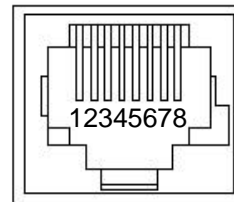
Pin #	Function	Pairs
Pin - 1	Power +	1
Pin - 2	Power -	1
Pin - 3	Power +	2
Pin - 4	Power -	3
Pin - 5	Power +	3
Pin - 6	Power -	2
Pin - 7	Power +	4
Pin - 8	Power -	4



**POWER**

**Video (HSDS-differential) RJ-45**

Pin #	Function	Pairs
Pin - 1	N/A	Not Used
Pin - 2	N/A	Not Used
Pin - 3	Y+	2
Pin - 4	PB+	3
Pin - 5	PB GND	3
Pin - 6	Y GND	2
Pin - 7	PR+	4
Pin - 8	PR-	4



**VIDEO**

**Appendix 2: New Commands for the CCU Scene Selection**

Command Set	Command	Command Packet	Comments
QCCU_Scenes	Reset	8x 01 04 3F 00 7p FF	p: Scene Number =1, 2 or 3
	Set	8x 01 04 3F 01 7p FF	
	Recall	8x 01 04 3F 02 7p FF	

**Notes:**

For use with Quick-Connect Universal CCU (QCCU), which no daisy-chain operation is allowed, the Command packet will be **81 01 043F 00 7p FF** (where the p is scene 1, 2 or 3.)

A Vaddio PTZ camera must be connected to the QCCU for the scene Set, Recall, and Reset to operate correctly. This command set communicates with the QCCU and the camera simultaneously.



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