

RovoControl

RovoCam Control Software



Installation and Operation Guide

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FAX	+1.530.271.3140
Web	https://www.aja.com
Support Email	support@aja.com
Sales Email	sales@aja.com

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Chapter 1 – RovoCam System Introduction



System Overview

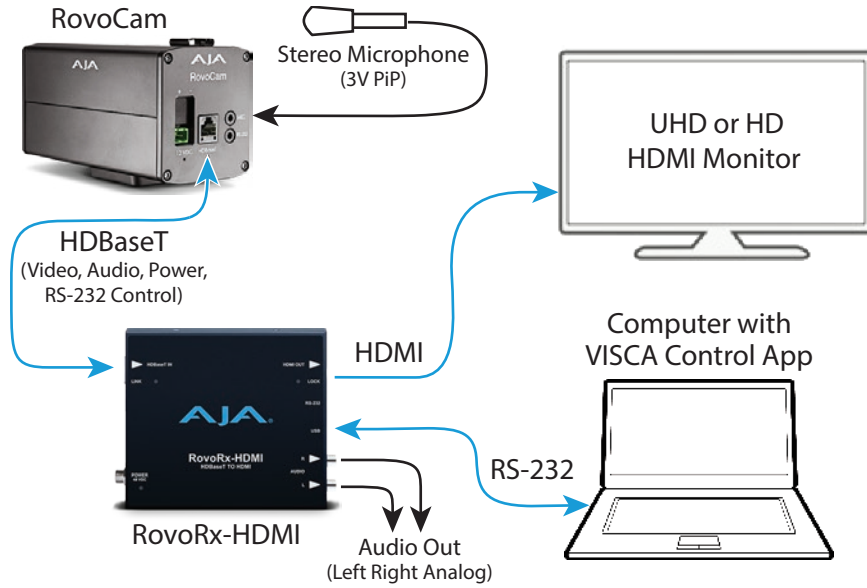
RovoCam is AJA's first compact block camera for industrial, corporate, security, ProAV and broadcast applications. Gorgeous UltraHD and HD imagery is obtained with superior Sony® optics with built-in 12x optical zoom and 20x digital zoom (with Sony's Super Resolution Zoom), auto and manual focus. Housed in a rugged machined aluminum case with multiple mounting options, RovoCam delivers the flexibility, power and feature set to accommodate a variety of applications.

A single Cat5e/6 cable carries all uncompressed video, two-channel audio, VISCA camera control, and power for the simplest installation ever due to RovoCam's integrated HDBaseT interface. Delivering this much functionality and power with single cable connectivity dramatically simplifies the installation, camera setup and footprint requirements.

RovoRx-HDMI and RovoRx-SDI are companion receiver units that offer the simplest reception option for RovoCam. They are UltraHD/HD HDBaseT Receivers with integrated HDMI or SDI video and audio outputs specifically designed to receive RovoCam's output and drive displays. This allows one to receive the RovoCam's output up to 100m (328') away from the camera itself and display the gorgeous output on a display wherever needed, greatly simplifying workflows and systems integration.

NOTE: The HDBaseT format uses RJ-45 connectors but does not support Ethernet. HDBaseT is point-to-point signal transport.

Figure 1. RovoCam System Diagram, with Audio and Computer



RovoCam can receive power from the RovoRx over a Cat5e/6 cable (Figure 1), or powered locally using its 12VDC connector (Figure 2).

Figure 2. RovoCam System Diagram, with Hardware Controller

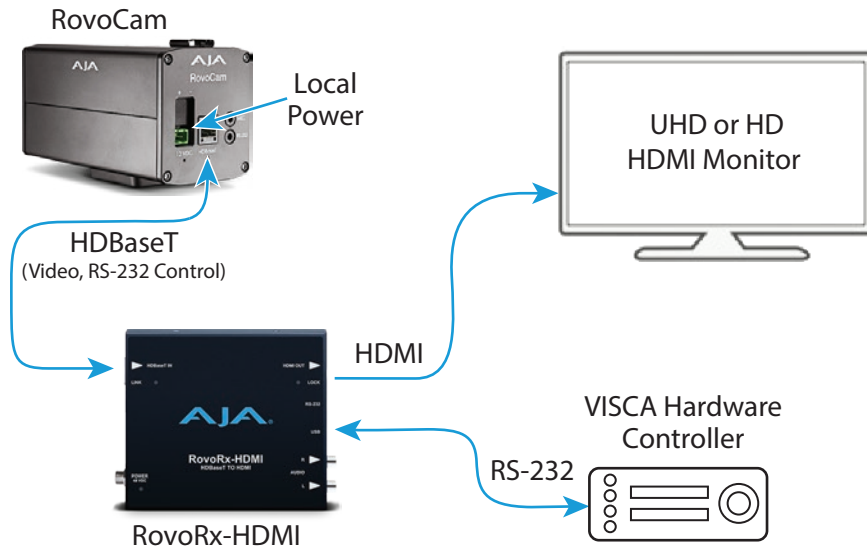
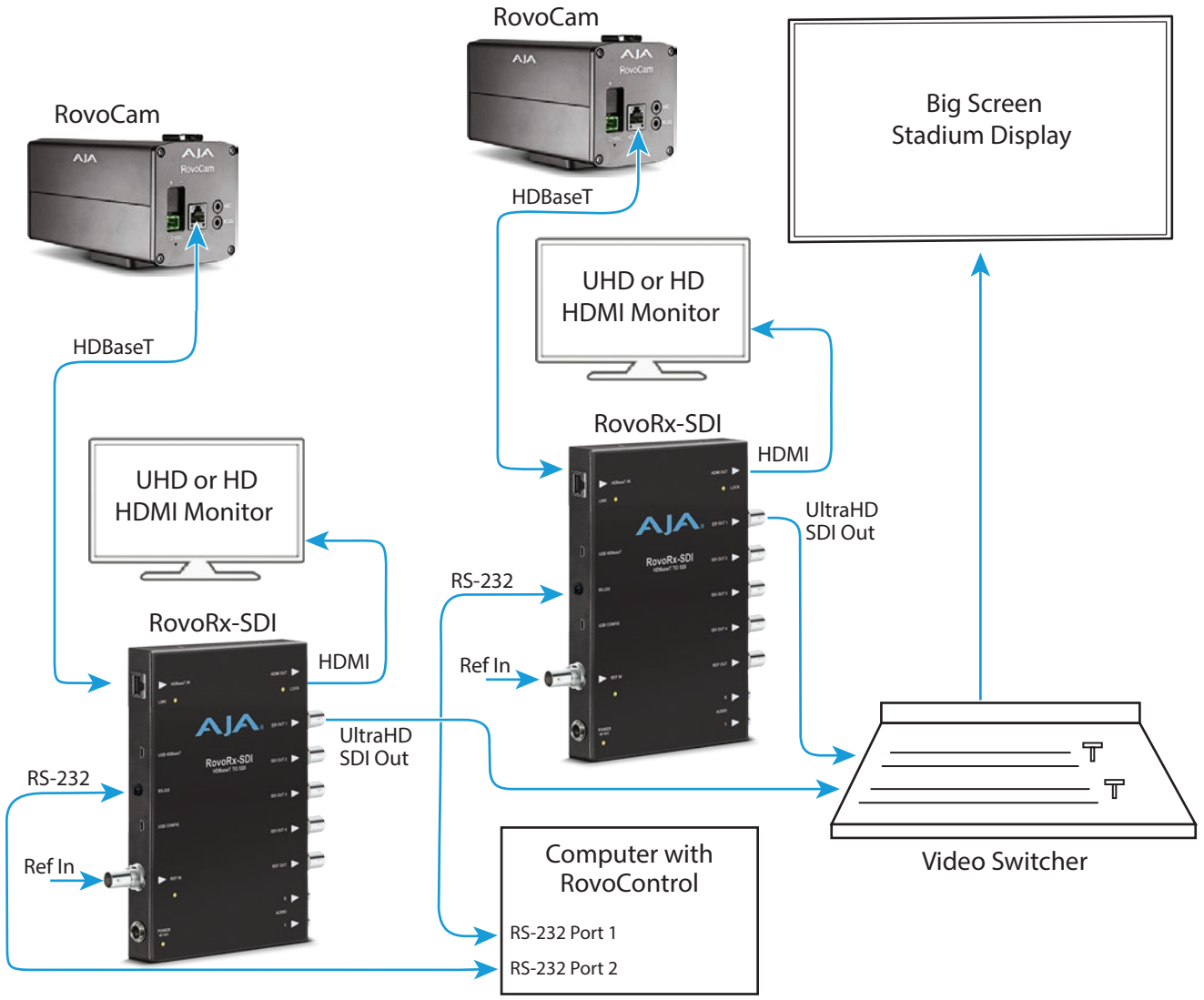


Figure 3. Two RovoCam System Diagram, with RovoRx-SDIs



Chapter 2 – Operation with RovoControl

Introduction

This chapter describes how to install and operate the RovoControl software available from AJA.

RovoControl Overview

RovoControl is a free application from AJA intended to allow easy configuration and Control for RovoCam.

RovoControl uniquely offers electronic PTZ for moving an HD 1080p box around the UltraHD frame, allowing Pan and Tilt for HD output.

RovoControl Features

RovoControl v2.0 software features include:

- Zoom, focus and iris control.
- Spot Focus and Spot Exposure control.
- Electronic PTZ to move a 1080p box around an UltraHD frame for Region of Interest (ROI) Pan and Tilt extraction for HD workflows.
- Change resolution dynamically between UltraHD and HD options.
- Windows and Mac OS X cross platform support.
- Improved Color control Gamma Offset modes.
- Improved Manual White Balance Mode with R and B Value manual controls.
- Improved support for 3rd party RS-232 adapters.

RovoControl Installation

1. Download from the AJA website the free RovoControl version of software for your computer operating system (.msi for Windows, .dmg for Mac).
2. Install the RovoControl software onto your computer, using the standard procedure for your operating system.
3. Connect the RovoRX-HDMI converter to RovoCam with an RJ-45 cable.
4. Connect the RovoCam HDMI Out port to an HDMI monitor using an HDMI cable.
5. Connect one of your computer's USB ports to the RovoRX-HDMI RS-232 port, using the provided 1/8 in. TRS adapter cable.

NOTE: If you use a 3rd party RS-232 adapter, be sure to install the manufacturer's drivers for the operating system you are using.

6. Connect the RovoRX-HDMI to a power source. This provides power to both the RovoRX-HDMI and RovoCam.
7. Under most circumstances, on power up the native Windows or Mac drivers will recognize the RovoRX-HDMI RS-232 connection.
8. Launch the RovoControl application.

NOTE: The RovoControl application needs to detect that a valid RovoCam is attached before it can complete its launch (Waiting for RovoCam connection... message).

9. When connected to RovoCam, a Camera Select button at the bottom of the screen will be colored blue (see [Figure 4 on page 8](#)).
10. The RovoControl application now gives you control of the RovoCam.

RovoControl General Operation

User Interface

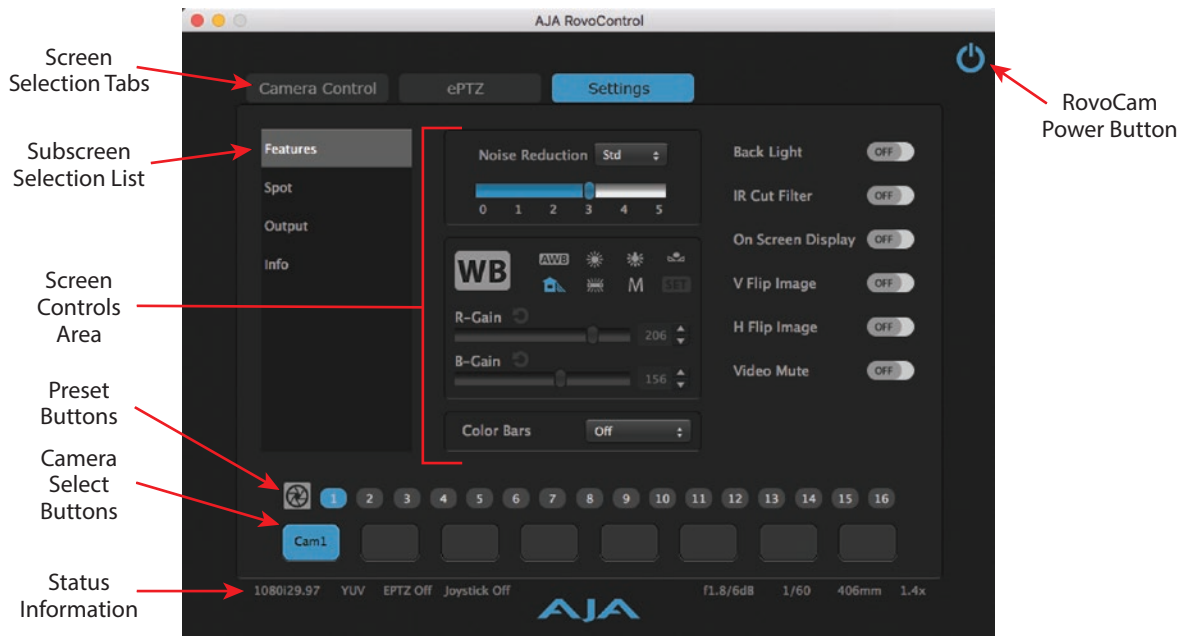
The RovoControl user interface has tabs at the top to select different control screens.

Various user controls are located in the center of each screen. On the Settings screen subscreens can be selected from the list on the left.

On the upper right is a Camera power button, which toggles power to the selected RovoCam on and off.

At the bottom of all the control screens are labeled Camera Select buttons and numbered Preset buttons.

Figure 4. RovoControl Example User Interface Screen



Screen Control Summary

Click on one of the upper tabs to go to that control screen. Click on a listed subscreen name to go to that subscreen.

Tooltips

Holding the cursor over a control icon brings up a tooltip explaining that feature.

Control Colors

- Controls that are colored blue are selected and active.
- Controls colored light gray are active but not selected.
- Controls colored dark gray are inactive. Another control setting is usually required to make a dark gray control operational.

Mouse and Keyboard Control

Various slider and on/off widgets are available for mouse control.

Some controls have drop-down lists for mouse selection, and some have numeric or text entry boxes for use with a keyboard or keypad.

Control Menus

Right clicking some controls can open a menu of selections for that control.

Right clicking on the background of a RovoControl screen brings up a menu of general functions.

- Refresh - Refreshes the UI screen display.
- Lens Initialize - Initializes the zoom and focus of the lens.
- Default controls (see below)

Presets

The 16 smaller buttons near the bottom of all the RovoControl screens can be used to set and recall Presets (see below).

Camera Select Buttons

When more than one RovoCam is connected, clicking on a different lit Camera Select button chooses that camera for RovoControl operation.

Status Information

The current camera settings (video format, controls, F stop, shutter speed, and zoom setting) are displayed at the bottom of the screen.

About RovoCam Defaults and Presets

A RovoCam Default consists of the settings that the camera will use when it is power cycled, when its output format is changed, or when Recall Default is selected. The user can configure the camera for baseline operation and then use Set Default to save those settings for reuse.

Table 1. Default Settings

Camera Control	Settings Features
Aperture	Back Light
Shutter speed	IR Filter
Priority	V-Flip
Focus	H-Flip
Zoom	Noise Reduction
	White Balance
	Gain
	On Screen Display (not in Presets)

Table 2. Settings Not Included in Defaults

Camera Control	Settings Features
Zoom Speed	Video Mute
	Color Bars

User and Factory Defaults

After right clicking on the background, default controls are available:

- Set Default - Saves the current settings as a Default.
- Recall Default - Recalls the last saved Default setting above.
- AJA Factory Default - Recalls AJA Factory Default settings.

RovoCam Presets

Sixteen different Preset buttons are available. When multiple RovoCams are connected, these presets can be used by different connected cameras, exactly how depending on the type of preset. RovoControl has three types of preset parameters, and the data for each preset type are saved to different locations, either to the PC running RovoCam, or to the currently controlled RovoCam itself.

The type of preset is selected by right clicking on a Preset button, and then clicking the checkmark next to the desired preset type on the list. This forces all the Preset buttons to control that type of preset. You cannot configure different types of presets onto different Preset buttons simultaneously. All 16 buttons will always control the same preset type. The currently selected Preset type is indicated by the button icon.

Figure 5. Preset Button Icons



The preset types are:

- **ePTZ** - This preset allows for quick and seamless switching between ePTZ positions. Only the ePTZ position parameter is saved and recalled, and this preset does not include the current ePTZ zoom setting. The ePTZ is saved to the PC running RovoControl, so if multiple RovoCams are being controlled, the same 16 ePTZ presets are shared by each camera.

NOTE: The first ten ePTZ presets are mapped to the computer keyboard 1-10 keys. This permits clean cutting between different ePTZ settings, similar to cutting between different cameras.

- **Global** - This preset includes all settings, including ePTZ, camera zoom, aperture, etc. Unlike ePTZ, this is not a seamless switch. The Global preset is saved to the PC running RovoCam, so if multiple RovoCams are being controlled, the same 16 Global presets are shared by all the cameras.
- **Camera** - This preset saves the current camera settings, and does not include ePTZ parameters. Unlike the presets above, these presets are saved to the currently selected camera (not to the PC). Each camera therefore has its own separate set of 16 Camera presets. This group of parameters is the same as what was saved by v1.0 RovoCam software.

After setting up the desired RovoControl parameters, check-mark the type of preset you want to save or recall, then use the Set and Recall buttons for that Preset button.

Set

Right click on one of the numbered Preset buttons and choose the **Set** option. The current settings for that type of preset are saved for later recall.

Recall

Left clicking on a Preset button that has been set recalls the saved settings for the currently selected preset type. Right clicking on a preset and selecting **Recall** also recalls that preset.

Restore Default To A Preset

To restore Default to a Preset, left click on the screen background, select Recall Default, then right click on the desired Preset and choose Set.

Default can be useful for initially setting up Presets. You can recall and save the Default to all the Presets, and then you can change those baseline settings as needed for each individual Preset.

Preset Keyboard Shortcuts

1 - recall preset 1

...

9 - recall preset 9

0 - recall preset 10

Shift 1 - recall preset 11

...

Shift 5 - recall preset 15

Shift 6 - recall preset 16

Camera Control Screen



Aperture Exposure Control Group

The top set of controls adjust RovoCam lens aperture and shutter speed.

AUTO Aperture Button

When On (right and colored blue) aperture and shutter speed is controlled automatically. The level for the entire scene is computed and the optimum level of Iris, Gain, etc. are determined.

NOTE: Auto Aperture must be On to use the Spot Exposure feature.

When Off (left and colored gray) other controls become active.

A - Aperture Priority - Selecting A allows you to select the aperture using the slider (f1.8 to f14 or closed). Shutter speed is set automatically.

S - Shutter Priority - Selecting S allows you to select the shutter speed from the drop-down list. Aperture is set automatically.

M - Full Manual - Selecting M gives you full control of both aperture and shutter speed.

B - Bright - Combines Aperture and Digital Gain.

Gain Slider Control

When Full Manual (**M**) is selected above, the Gain Slider is activated, allowing manual adjustment of camera gain.

Exposure Keyboard Shortcuts

Up Arrow - Increase Exposure (not in Auto or Shutter Speed modes)

Down Arrow - Decrease Exposure (not in Auto or Shutter Speed modes)

Focus Control Group

The center set of controls adjust focus.

AUTO Focus Button

When On (right and colored blue) focus is controlled automatically.

NOTE: Auto Focus must be On to use the Spot Focus feature.

When Off (left and colored gray) the manual focus slider becomes active.

Manual Focus Slider

Click and slide the control to change the focus.

Click anywhere on the slider to immediately go to that focus setting. Range is 10mm to 1500mm focal length.

Focus Keyboard Shortcuts

Space Bar - Push Focus, which quickly sets Auto focus and then returns to Manual focus on release to allow further adjustments (not in Auto Focus mode).

Zoom Control Group

The lower controls adjust zoom. These controls are always active on this screen.

NOTE: These zoom controls are shared with the ePTZ zoom slider.

Zoom Icons

Clicking on the left icon (Wide) moves the zoom from its current setting in the wide angle direction at the Zoom Speed selected below.

Clicking on the right icon (Tele) moves the zoom from its current setting in the telephoto direction at the Zoom Speed selected below.

NOTE: The + and - keyboard keys can also be used to start and stop a zoom. The + key zooms in, and the - key zooms out.

Zoom Slider

Click anywhere on the slider to quickly go to that zoom setting. Range is 1x to 144x, depending on type of zoom.

Zoom Speed

The left and right arrowheads below the Zoom Slider can be used to select different zoom speeds. Click an arrow near the center dial icon to zoom slowly, and click an arrow further out to zoom faster. Clicking and holding on a arrow and dragging left or right instigates a zoom with the speed of the currently selected arrow. Clicking on the center dial icon stops the zoom, as does clicking on the blue colored Wide or Tele icon.

Type of Zoom

Right clicking on a Zoom control brings up a list of types to zoom.

- Zoom Optical (12x) - Only optical zoom is used.
- Zoom Super (20x) - Uses Sony Super Resolution Zoom.
- Zoom Optical + Digital (144x) - Permits full zoom capabilities of the camera.

Image Stabilizer

Also included in Zoom Control list is an Image Stabilizer control (On or Off).

When set to On, the image will exhibit less screen blur caused by shaking. The image stabilizer function uses the digital zoom, with correction working at a vibration frequency of around 10 Hz. The image stabilizer function may not work with high frequency vibration. When using the camera in such an environment, set the image stabilizer function to Off.

Zoom Keyboard Shortcuts

Right Arrow - Start and increase zoom in speed (slow zoom out speed)

Left Arrow - Start and increase zoom out speed (slow zoom in speed)

J - Start and increase zoom out speed (slow zoom in speed)

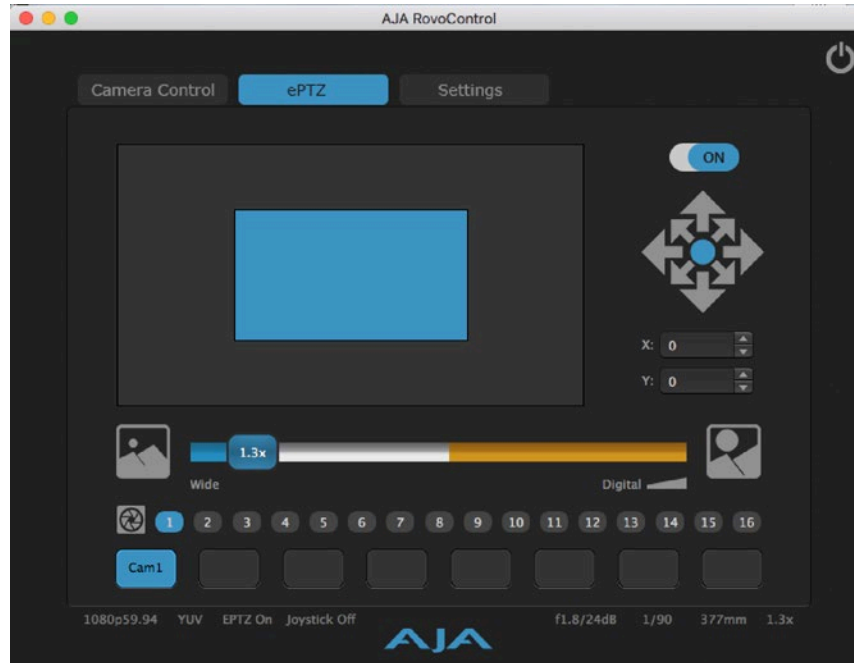
K - Stop zoom

L - Start and increase zoom in speed (slow zoom out speed)

+ (plus) - Start auto zoom in at slowest zoom speed (Stop zoom out)

- (minus) - Start auto zoom out at slowest zoom speed (Stop zoom in)

ePTZ Control Screen



NOTE: The ePTZ screen is only operational when an UltraHD (3840) format has been selected in the Settings/Output screen.

ON Button

With an UltraHD output selected, clicking the On button at the upper right activates and deactivates the ePTZ feature. When On, a HD resolution portion (Region of Interest) of the UltraHD signal is selected for display. A UltraHD monitor is not required to view this signal.

Region of Interest Screen

The blue box represents the region of the UltraHD screen currently being displayed. You can click and drag the box to virtually pan and tilt the image.

Pan Tilt Controls

The diamond shaped controls on the right allow you to click an arrow to move the region a few pixels in that direction. Clicking on the center circle moves the region to the exact center of the UltraHD image.

X Y Controls

You can also move the region by entering X and Y values in their numeric fields, and by clicking their up and down arrow buttons.

ePTZ Zoom Slider

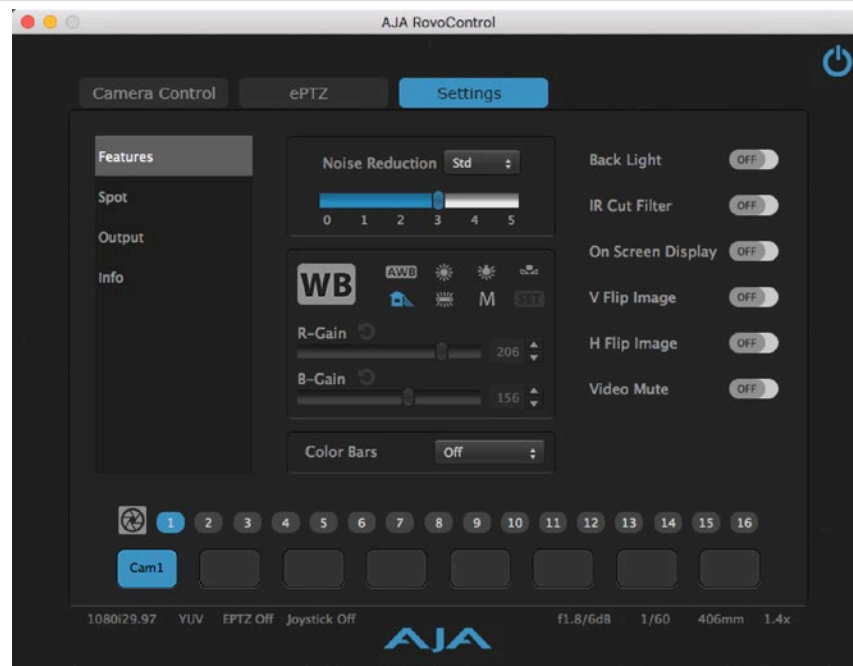
The Zoom slider on this screen works the same as the one on the Camera Control screen (see "[Zoom Control Group](#)" on page 12), and the ePTZ zoom controls are shared with the Camera Control screen zoom controls.

NOTE: The first ten ePTZ presets are mapped to the computer keyboard 1-10 keys. This permits clean cutting between different ePTZ settings, similar to cutting between different cameras.

Settings Control Screens

Four different control screens are available under Settings.

Features Screen



Noise Reduction

The Noise Reduction (NR) function removes noise (both random and non-random) to provide clearer images. This function has six steps: levels 1 to 5, plus 0 (off), controlled with a slider. The NR effect is applied in levels based on the gain, and this slider value determines the limit of the effect. In bright conditions, changing the NR level will not have an effect.

Type

- Std - Performs standard noise reduction at the selected level.
- 2D/3D - Performs 2D/3D noise reductions at the selected level, which can improve the clarity of moving images.

White Balance

The following White Balance setting buttons are available, arranged in this order.

AWB	Daylight	Indoor	One Push White Balance
Shade	Sodium	Manual	(Button for above)

AWB

Auto white balance is designed to dynamically shift in multiple lighting situations for both indoor and outdoor environments.

R-Gain/B-Gain

When Manual is selected above, the Red Gain and Blue Gain sliders become active, permitting control of the Red and Blue color balance (relative to fixed Green).

One Push White Balance

When the One Push White Balance control is selected above, pressing the button immediately below sets the white balance based on the current camera image, assuming that a white subject, in correct lighting conditions, and occupying more than 1/2 of the raster. One Push White Balance data is lost when the power is turned off. If the power is turned off, reset One Push White Balance.

Color Bars

Three different test signals are available:

- Off, no test signal, normal camera image output,
- 8 Bar 100% (color)
- 7 Bar 100% (color)
- Gray Scale (monochrome)

Gain

The Manual Gain Control slider affects the overall gain of the image. The current setting is displayed on the slider. Range is 0 to 33dB.

NOTE: The Gain control is only active when the Aperture Control Auto setting is Off and Manual is selected on the Camera Control Screen.

Other Features

On off buttons on the right activate and deactivate the following features:

Backlight

Backlight Compensation On or Off - When the background of the subject is too bright, or when the subject is too dark due to shooting in AE mode, back light compensation will make the subject appear clearer.

NOTE: Backlight only operates when the Camera Control Screen AUTO Aperture control is On.

IR Cut Filter

ICR (IR Cut-Removable) Mode On or Off - An infrared (IR) cut filter can be disengaged (On) from the image path for increased sensitivity in low light environments. When set to On the image becomes black and white.

NOTE: In Auto Exposure mode, the IR filter will automatically move into and out of the image path depending on the ambient light, allowing the camera to be effective in day/night environments.

On Screen Display

Text display, showing the current video format, region of interest, and various settings.

V Flip Image

Flips the image vertically.

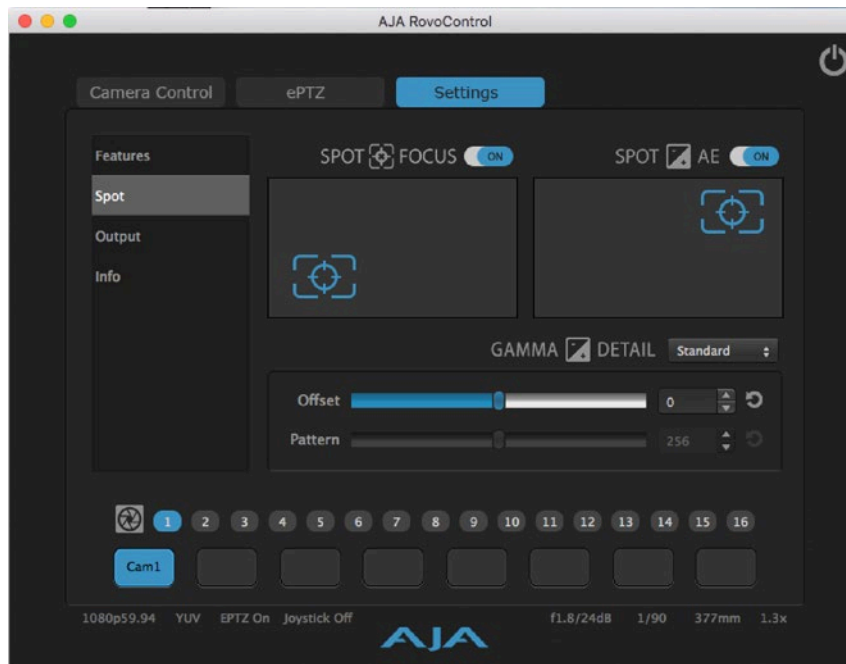
H Flip Image

Flips the image horizontally.

Video Mute

Blanks the Screen (blue) and sends out a synchronizing signal.

Spot Screen



The Spot screen has controls for Spot Auto Focus and Spot Auto Exposure that operate similarly. Turning a spot feature ON activates the blue selection box immediately below. You can move the box around the picture with your cursor to selectively auto focus or auto expose based on that portion of the raster. Right clicking on the box presents a Move to Center control.

NOTE: The Camera Control screen Auto Focus must be On for Spot Auto Focus to operate, and Auto Exposure must be On for Spot Auto Exposure to operate.

Gamma Detail

Standard, Straight, 512 Pattern

Offset

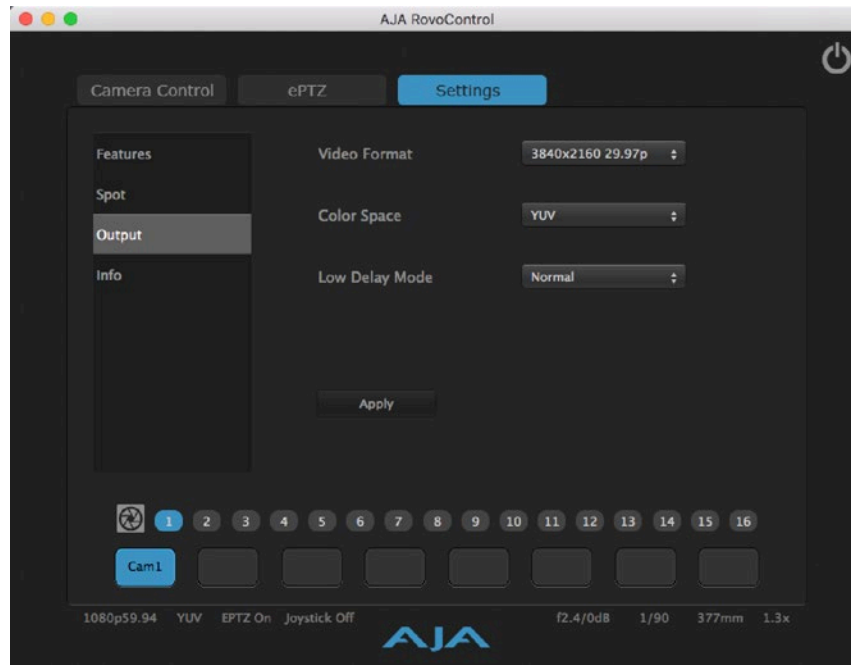
Polarity Offset

- Range -64 to +64

Pattern

- Range 1 to 512

Output Screen



Apply Button

Some settings selected on this screen are not applied until the Apply button is used and may require resetting RovoCam.

Video Format

Select the desired RovoCam format. Choosing a 3840 UltraHD format permits use of the ePTZ feature.

Color Space

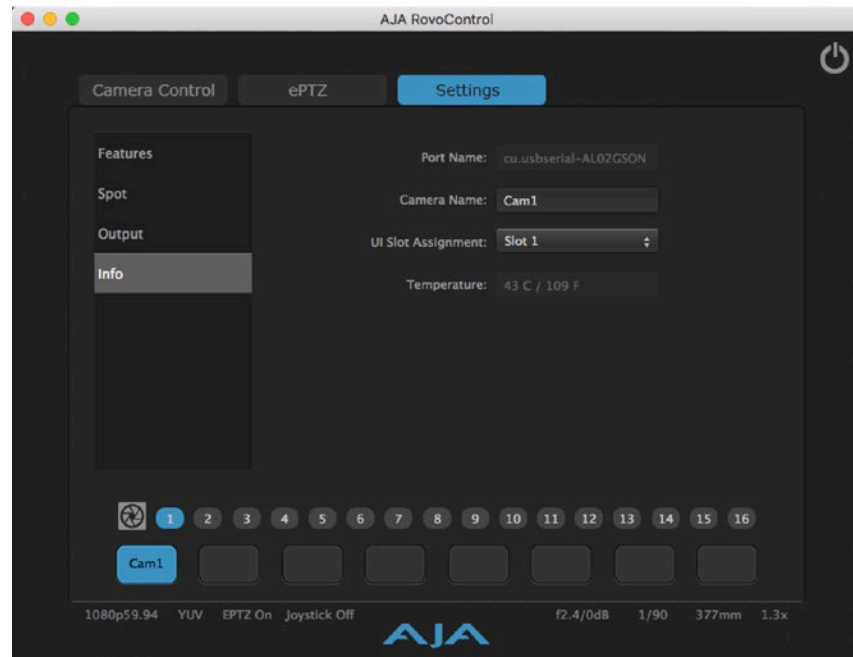
Select RGB or YUV.

Low Delay Mode

Reduces latency by removing digital image processing. When Low Delay Mode is On, the following features are disabled:

- Digital Zoom
- Distortion Correction
- Image Stabilizer
- Stable Zoom

Info Screen



This screen displays information about the connected RovoCam. Only the Camera Name and UI Slot Assignment controls are active.

Port Name

Serial number of the USB to RS-232 adapter being used with the currently selected RovoCam.

Camera Name

This control lets you assign a name to a camera for easy reference on the UI. The name appears on the blue camera button for that camera at the bottom of the screen. This setting is saved to the currently selected RovoCam.

UI Slot Assignment

This control lets you assign the currently selected camera to one of the eight different

UI slots (blue camera buttons) at the bottom of the screen. This setting is saved to the currently selected RovoCam.

Temperature

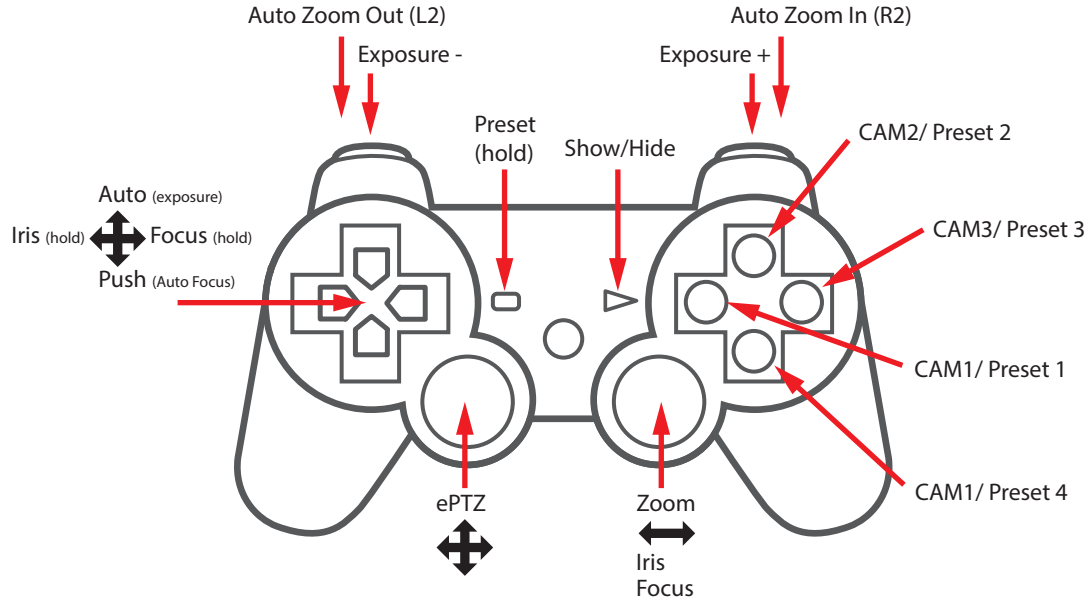
Reports the current internal temperature of the selected RovoCam.

Hardware Control Panel

Many RovoControl features can be controlled with a USB hardware control panel. RovoControl supports plug-and-play operation on both Mac and PC. Simply connect the controller to a USB port on the computer running RovoControl.

Function mapping to different model controllers can vary. A summary of functions for a PS3 style controller is show in [Figure 6](#).

Figure 6. PS3 Style Panel Control Functions



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