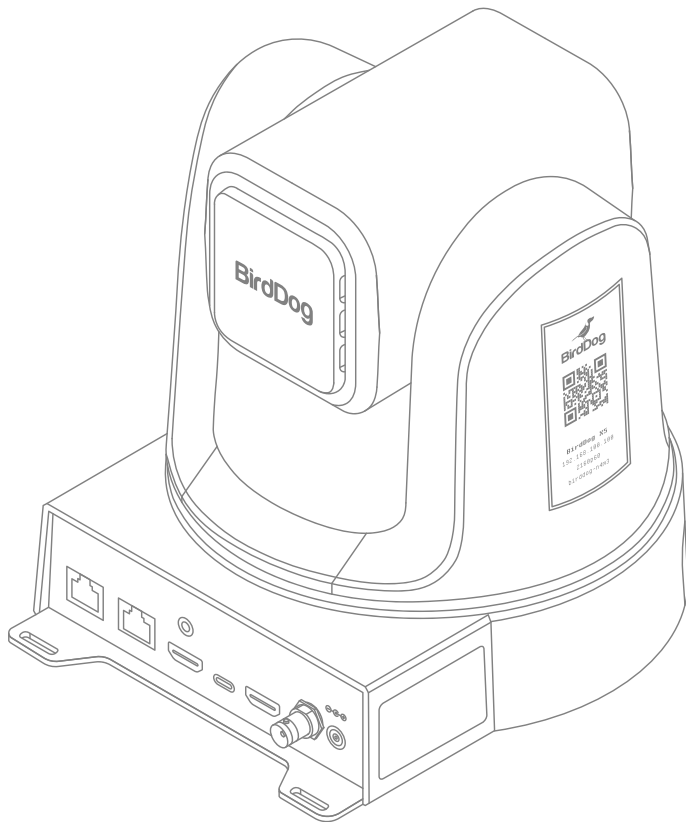
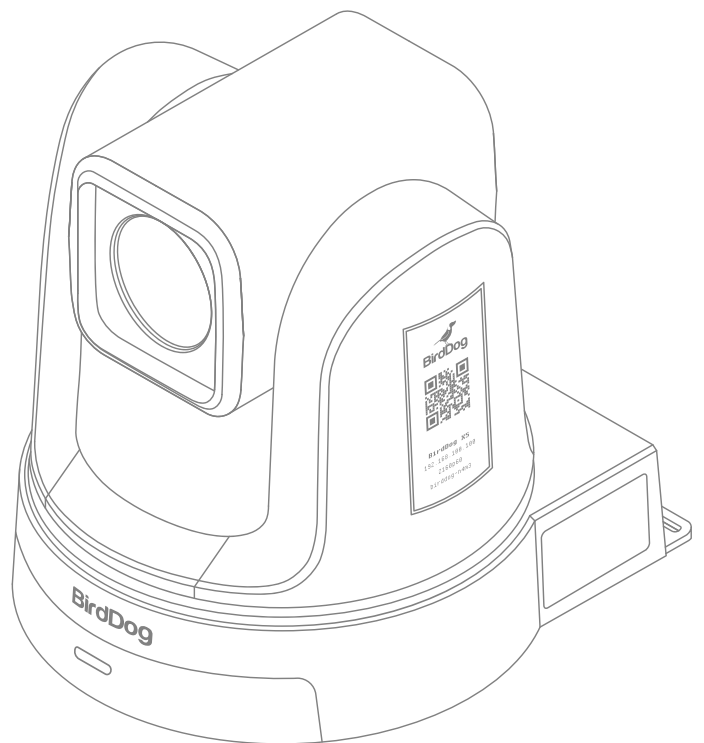




# X5 ULTRA



# X5 ULTRA



**4K PTZ Camera**

**USER MANUAL**



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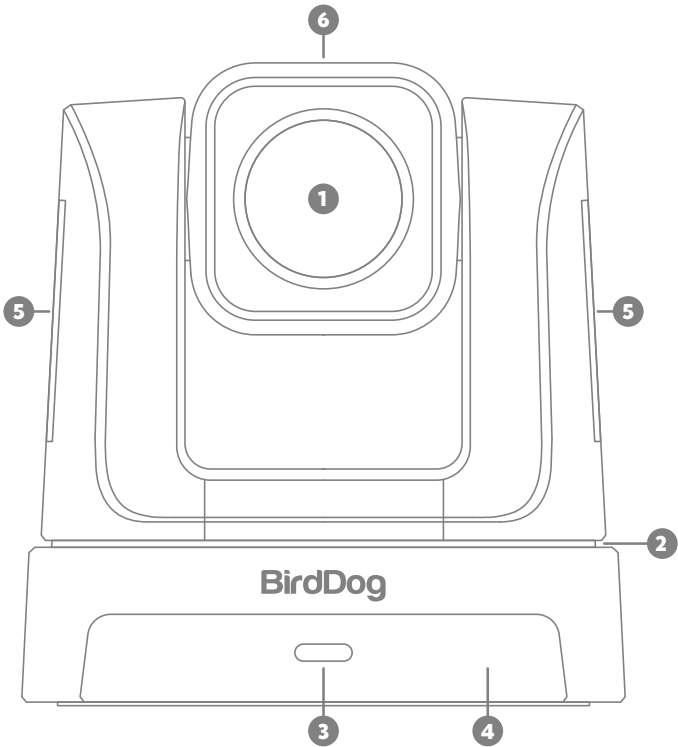
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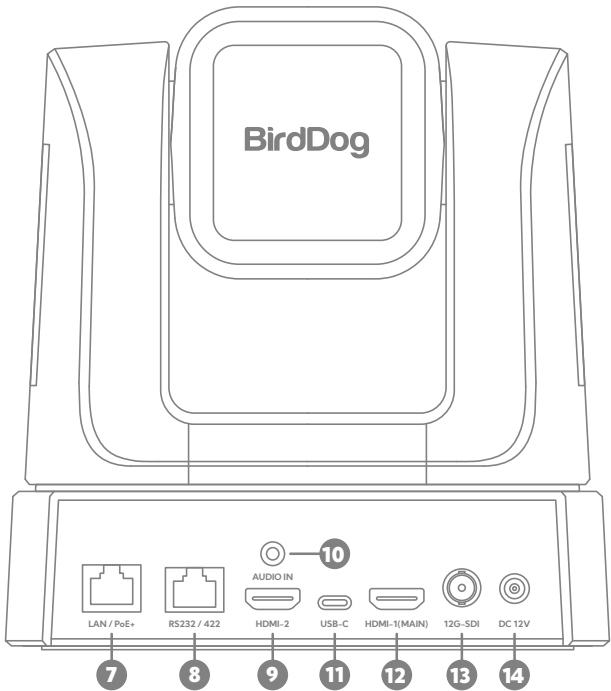
**NOTICE!**

Specific frequencies of electromagnetic field may affect the image of the camera!

1 PRODUCT DESCRIPTION



No.	Name
1	Lens
2	Pan & Tilt
3	Power & Standby indicator
4	IR Panel
5	2x Display (e-ink)
6	Halo Tally
7	LAN / PoE + <sup>(1)</sup>



No.	Name
8	RS 232 / 422
9	HDMI-2 <sup>(3)</sup>
10	Audio In <sup>(2)</sup>
11	USB-C <sup>(4)</sup>
12	HDMI-1 (Main) <sup>(5)</sup>
13	12G-SDI Connector <sup>(6)</sup>
14	DC 12V Power Input

<sup>(1)</sup> VISCA over IP control and NDI® output. Requires PoE+ (IEEE802.3at).

<sup>(2)</sup> Analogue 3.5mm Audio Input. Audio format is stereo, unbalanced line level.

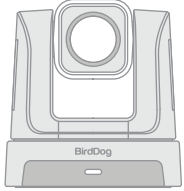
<sup>(3)</sup> NDI® Decoder.

<sup>(4)</sup> Camera video out streaming for UC communication software.

<sup>(5)</sup> Camera video out streaming for HDMI.

<sup>(6)</sup> Camera video out streaming for 12G-SDI.

## 2 WHAT'S IN THE BOX



1x PTZ Camera



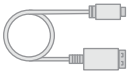
1x IR Remote Controller



1x DC 12V Power Supply



1x Welcome Pack



1x USB-C Cable (1.8m)

## 3 CAMERA FEATURES

- Resolution: Up to 2160P60
- Zoom: Optical 20X
- Video Output: NDI®, HDMI-1, 12G-SDI, HDMI-2 (NDI Decoder) <sup>1,2</sup>, USB UVC, SRT, RTSP, RTMP <sup>3</sup>
- Halo Tally Light
- Onboard E-Ink display: 2.9" E-paper White/Black
- ±170° continuous pan, +90° to -30° continuous tilt
- 128 presets, Speed up to 200°/sec
- Standard mounting and ceiling mounting with E-Flip function
- Supports NDI® Control, RS-232 / 422 / 485 control, VISCA-over-IP, IR Remote Controller
- Presets store camera directions and image parameters.
- Image parameter setting restore with presets and quick access operation.
- Power: DC 12V, PoE+(IEEE802.3at)

### Notes:

1. When the Stabilizer feature is enabled, the HDMI-2 NDI decoding output is not supported.
2. The frame rate for the camera encode and decode source must match.
3. RTMP streaming is not supported when H.265 (HEVC) compression is selected. To use RTMP, set the camera to H.264.

## 4 TECHNICAL SPECIFICATIONS

Feature	X5 Ultra
<b>IMAGING</b>	
Image Sensor	Sony 1/2.8" CMOS • ULTRA HD
Lens	f=5.4mm – 104mm
Optical Zoom	20x
Video Format	2160p @ 60, 59.94, 50, 30, 29.97, 25fps 1080p @ 60, 59.94, 50, 30, 29.97, 25fps 720p @ 60, 59.94, 50fps
Horizontal angle of view	56.6° (W) – 3° (T)
Vertical angle of view	32.5° (W) – 1.7° (T)
Diagonal angle of view	64.7° (W) – 3.5° (T)
Aperture	F1.6 ~ 3.6
Focus	Auto, Manual
Exposure	Auto, Shutter Priority, Iris Priority, Manual, BLC, WDR
Shutter Speed	1/1 – 1/10000s
Backlight Compensation	YES
Digital Noise Reduction	3D Noise Reduction
SNR	>50dB
Effective Pixels	8.46MP
Filter Ring	Ø 49mm
AI Tracking	Present
<b>MECHANICAL</b>	
Pan / Tilt Rotation	Pan ±170° • Tilt –30° ~ +90°
Pan / Tilt Control Speed	0.1 – 200°/sec
Preset Number	128 Presets, Speed Adjustable
Integrated Tally Light	Halo Style, RGB
Pan/Tilt Drive System	Ultra-fine Drive
Quietness	Max 28dB at full speed pan
<b>I/O INTERFACE</b>	
Video Output Interfaces	12G-SDI, HDMI 2.0, HDMI 1.4, USB-C UVC 1.1, 1Gb Network
Video Compression Formats	H.264, H.265
Network Interfaces	1GbE adaptive Ethernet port; PoE+ IEEE 802.3at
Encoder Network Protocols	NDI® HX2, NDI® HX3, SRT, RTSP, RTMP *
HDMI Decoder Network Protocols	NDI® HX2, NDI® HX3
Decoder Supported Resolutions	HDMI 1 – 2160p30, 1080p60, 1080p30, 720p60 • HDMI 2 – 1080p60, 1080p30, 720p60
Control Interfaces	1GbE Ethernet, RS232 (input & output), RS422, TYPE-C(UVC1.1)
Control Protocols	VISCA Baud Rate: 38400/9600/4800/2400, VISCA-IP, NDI®
Analogue Audio	3.5mm (1/4") Mic In / Line In (Stereo)
Digital Audio	Embedded with Main and Secondary HDMI, 12G-SDI, Network Video, USB (UVC)
<b>GENERAL PARAMETER</b>	
Environmental Operation	Indoor
Input Voltage	DC 12V, PoE+ IEEE802.3at
Input Current	2.0A (Max.)
Power Consumption	18W (Max.)
Working Temperature	0°C ~ +40°C
Working Humidity	20% ~ 80%
Dimension (W*H*D) mm	185.7*171.9*200.90mm/ 271*275*245mm (before / after packing)
Dimension (W*H*D) in	7.31*6.76*7.90in/ 10.6*10.8*9.6in (before / after packing)
Net and Gross Weight	2.31kg/3.76kg (Net/Gross weight)

\* RTMP streaming is not supported when H.265 (HEVC) compression is selected. To use RTMP, set the camera to H.264.

## 5 REMOTE CONTROL

### KEY DESCRIPTION

#### 1. Power

- Power ON the camera to set the camera to operational status. (In standby status, click to return to the position and status before standby.)
- Power OFF the camera to set the camera to standby status. (Press and hold for more than 3 seconds, enter standby status)
- When the camera is powered OFF, the camera turns to the rear.
- When the camera is powered ON, the camera turns to the front.

#### 2. Menu

Open and close the OSD menu during HDMI output.

#### 3. Camera Select

By default you do not need to specify a camera number to operate the IR remote control with your camera. You can set your camera to a specific number (1-3) in the OSD Menu (see section 9). Once you have selected a specific number cycle though on the remote with Camera select button to match.

#### 4. Number Pad

Press number button (0-9) to move the camera to pre-configured preset position 0-9.

#### 5. Preset

Press and hold Preset, then short press Number button (0-9) to save the preset position.

#### 6. Reset

Press and hold Reset, then short press Number button (0-9) to reset preset position.

#### 7. WDR

Turn Wide Dynamic Range on or off.

#### 8. BLC

Turn Backlight Compensation on or off.

#### 9. Directional Buttons

- Press once for incremental movement or press and hold for continuous pan or tilt.
- To move the camera diagonally, press the "◀ or ▶" button while holding down the "▲ or ▼" button.

#### 10. Enter

- Confirm a selection in the OSD menu.
- Short press to turn on One Push Focus.

#### 11. PT Reset

Return the Pan-Tilt position to the home position.

#### 12. Far / Near / Manual Focus

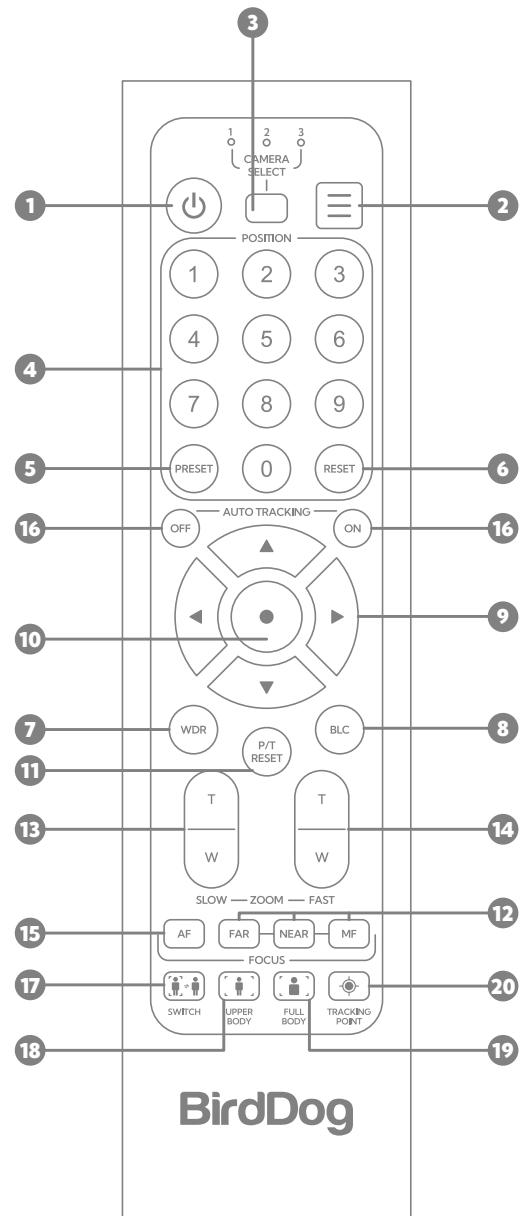
Enable manual focus. Use Far/Near to adjust the focus.

#### 13. Zoom Slow + / -

Zoom in or out slowly.

#### 14. Zoom Fast + / -

Zoom in or out fast.



#### 15. Auto Focus

Autofocus, Far, Near.

#### 16. Auto Tracking

Auto Tracking ON/OFF.

#### 17. Switch

Change presenter.

#### 18. Upper Body

Presenter's size on screen is upper body.

#### 19. Full Body

Presenter's size on screen is full body.

#### 20. Tracking Point

When presenter enters this area, the camera will start tracking.

Short press the button will recall preset 1.

## 6 CONNECTIONS & CONFIGURATION

### BASIC CONNECTIONS

#### Power

First off, you'll have to decide on how you are going to power the camera. You have two choices. You can use PoE+ (Power over Ethernet) or, if your network doesn't support PoE+, you can use the included 12VDC power adaptor. If available, PoE+ is the easier choice, since you can use the same Ethernet cable to power and control the camera, as well as send the video, audio and data. For the purposes of this quick start guide, we'll assume your network offers PoE+ (IEEE 802.3at).

#### Network

Connect your camera to a network switch with a Cat5/6 cable. By default, the camera is configured to automatically obtain an IP address via DHCP. Some standalone or private networks may not have a DHCP server. After 30 seconds of waiting for an automatically assigned IP address, your camera will fall back to a default address of 192.168.100.100. To ensure that you can always reach your camera, it is recommended that you don't change this default.

#### Power Up

When first powered up, the camera will perform its initialization routine by rotating to the left and then centering again.

### BASIC CONFIGURATION

#### NDI® Tools

NDI® Tools is a free suite of applications designed to introduce you to the world of IP video and is available at:

**<https://ndi.video/tools/>**

Once installed, launch the Studio Monitor (Video Monitor, if using a Mac) application. This simple application allows you to view all NDI® sources on your network. Right click on the Studio Monitor window to view your camera as an NDI® source. In the example to the right, three cameras and a desktop computer are shown as NDI® sources.

#### Tip

By default, the displayed sources have names that include the last five digits of your camera MAC address which is displayed on the bottom of the camera.

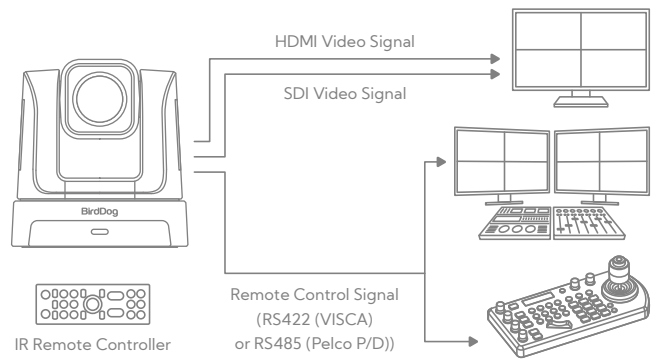
Clicking on your camera in the source list will display the image from your camera with the default automatic settings.



## 6.1 Using RS-232 (VISCA)

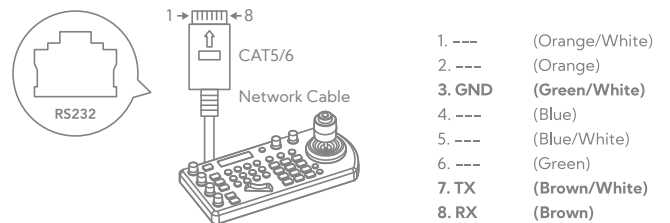
You can use the RS-232 port to connect to optional controllers, such as a joystick control keyboard, or control PC station, to operate the camera, perform pan, tilt and zoom operations and to use the Preset function using the control buttons.

An application software that supports this unit is needed if you use a PC station.

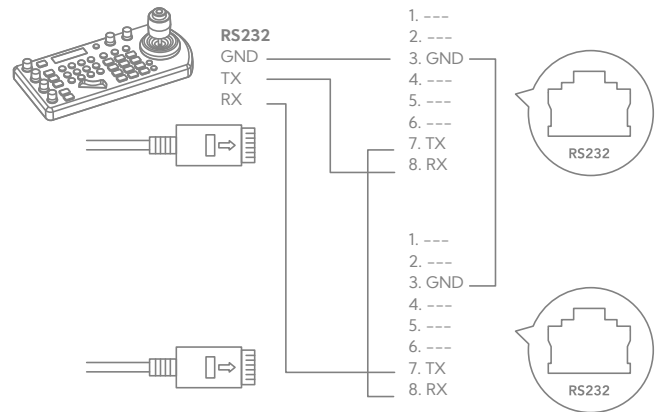


### RS232 Connection:

- In order to use a RJ45 to RS232 (VISCA) cable, the controller must be VISCA compatible.
- You can use CAT5/6 cable (T-568B standard pinout) to make an RS232 connection by following the pin definition here on the right side.
- You can use RS232 to daisy chain multiple camera connection with a standard RS232 serial port controller as on the right side.



RS232 Serial port connection on controller side.



## 7 WEB CONFIGURATION PANEL

BirdDog cameras have a web interface (also known as BirdUI) that is displayed by your computer browser and can be used to configure your camera remotely.

In order to access to the dedicated panel, you will need to scan the QR Code present on your camera e-ink screen, or via web browser by inserting the correct address IP as a web link.

An alternative way is through NDI Studio Monitor application:

1. Click on the gear icon on the bottom right of the Studio Monitor window.
2. In the displayed window, type the default password 'birddog' (all lower case) and click the OK button. The dashboard window is displayed.

The Dashboard shows important basic camera settings. For now, check that the displayed

Status is Active and take note of the frame rate that is currently output from the camera (displayed under NDI® connection info). In the example above, it is 60 fps. This frame rate should be set identically for all cameras according to the requirements of your production. Let's see how to change this and other important camera settings.

### Notes:

- NDI, SRT, RTSP, and RTMP streams share the same video format, compression type, GOP length, and bitrate settings. These are configured in the Primary Encoder Settings section of the WebUI.
- When the video format is changed, the RTSP stream may stop. To resume streaming, restart the RTSP session manually in the BirdUI.
- More BirdUI info available at [BirdDog.tv/downloads](https://BirdDog.tv/downloads), or, [BirdDog.tv/birdui-overview](https://BirdDog.tv/birdui-overview)

**BirdDog PTZ X5 Ultra**

**System Utilization:** 75%

**Device Mode:** Encode  
**Source Status:** Streaming NDI

**Network Bandwidth:** 15%

**Status**  
NDI Video Stream Name: CAM Video Format: 1080p60 Audio Status: Mute

**Stream Info**  
Video Resolution: 1920x1080 Video Frame Rate: 60.00 Video Sample Rate: 4:2:0  
Audio Channels: 2 Audio Sample Rate: 48000 Average Bitrate: 134Mbps  
Network Mode: TCP

**System Details**  
System Name: birddog-newHX-x5 Eth. IP Address: 192.168.100.100 Firmware Version: BirdDog\_X5.0.1  
MCU Version: 8 MAC address: e8:eb:1b:49:a6:75 Network Config Method: DHCP  
Status: Active Network Speed: 1000mbps

**Device Restart** [RESTART]

**System Reboot** [REBOOT]

Sidebar: Dashboard, Network, System, AV Setup, Cam Control, Logout. Social media icons: Facebook, X, Instagram, YouTube, LinkedIn. BirdDog.tv

## 8 NETWORK SETUP

BirdDog PTZ X5 Ultra		Device Mode: Encode Source Status: Streaming NDI
<b>Ethernet Network</b>		
Configuration Method	<input checked="" type="radio"/> STATIC <input type="radio"/> DHCP	DHCP Timeout: 20s
IP Address	192.168.100.100	DHCP Fallback IP Address: 192.168.100.100
Subnet Mask	255.255.255.0	DHCP Fallback Sub. Mask: 255.255.255.0
Gateway Address	192.168.100.1	BirdDog Name: BirdDog-X5-Ultra.local
<input type="button" value="APPLY"/>		

### 8.1 Ethernet Network Configuration

Most computer networks provide for both automatic and manual configuration of network devices and the X5 Ultra can accommodate both.

#### Static or DHCP

Here you can set the network configuration to either DHCP (default) or Static. DHCP simplifies the management of IP addresses on networks. No two hosts can have the same IP address, so assigning them manually can potentially lead to errors. If your network is set up for DHCP, this is generally the best configuration to choose.

If you do choose to go with a Static IP address, you'll need to add the IP Address, Subnet Mask and Gateway Address information according to the requirements of your network.

#### DHCP Timeout, Fallback IP address, Fallback Subnet Mask

You can set the timeout period during which the X5 Ultra will look for a DHCP IP address. After this period, the camera will default to the designated fallback IP address.

This can be useful if you use your camera in other network environments. For example, if a DHCP server is available in your normal office or studio application, the camera will use the DHCP supplied IP address. If you then use the camera in another application without a DHCP server, your camera will always default to the known fallback IP address.

#### BirdDog Name

You can give your camera a meaningful name to make identification easier when viewing NDI® sources on a receiver such as a TriCaster, vMix or Studio Monitor. Be sure to make the name unique, as no two devices on the network should have the same name. The name can be any combination of 'a-z, 0-9, and -'.

After renaming your camera, navigate back to the Dashboard and click REBOOT DEVICE. The camera will re-initialize and you'll be good to go.

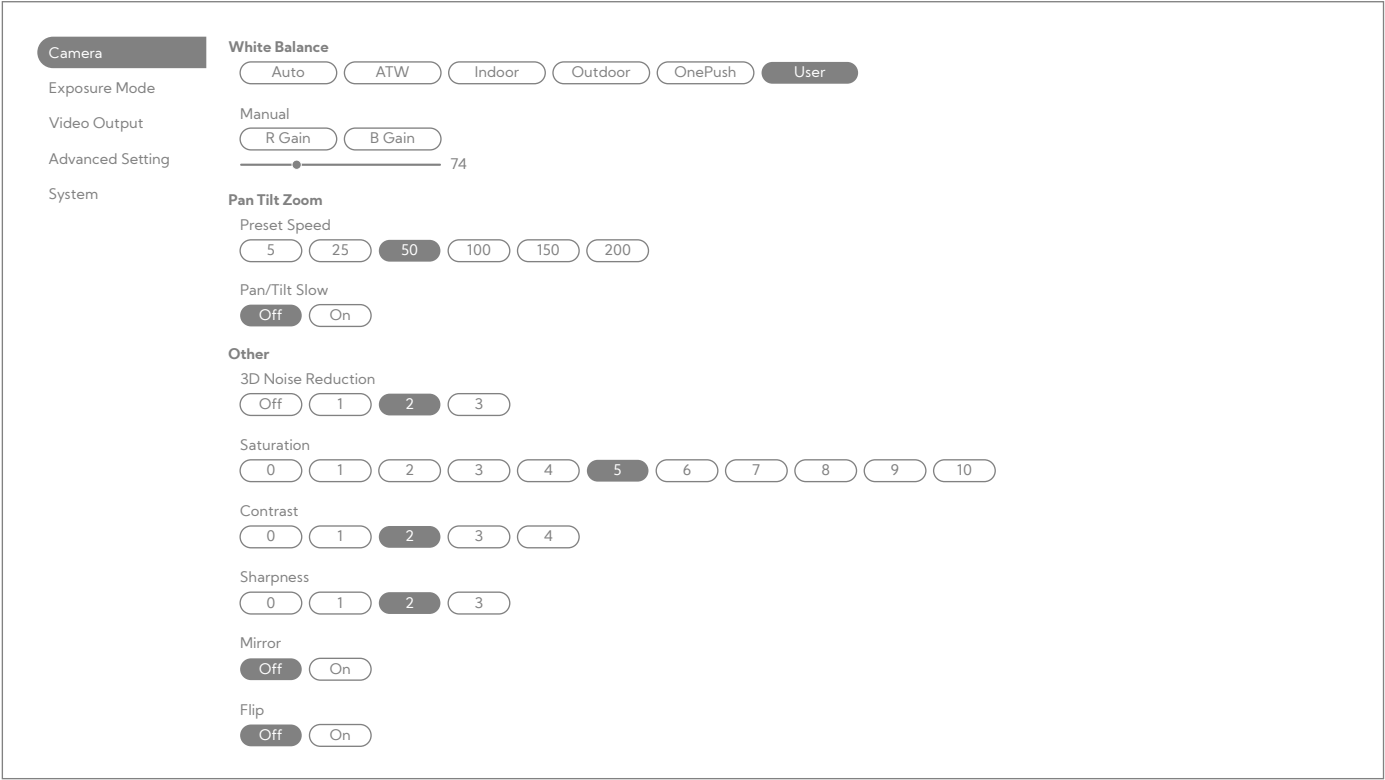
#### Note:

Your computer will need to have 'Bonjour' services loaded in order to access the unit via its user defined name. Apple devices come pre-installed with Bonjour, while Windows devices need a plugin.

## 9 OSD MENU

Please note that the OSD is only available on the HDMI and SDI outputs of the camera, it is not accessible via the NDI® or other video streams.

You can access this by pressing the green Menu button on the provided IR (Infrared) remote control.



**Note:** The OSD displayed over HDMI will appear blurred at 720p resolution. To improve clarity, press [Menu] on the IR remote and set the output resolution to 1080p.

### CAMERA SECTION

#### White Balance

White balance is a camera setting that adjusts the colors to ensure that whites appear neutral and other colors are rendered accurately under different lighting conditions.

#### Auto

Auto white balance (AWB) is a camera feature that automatically adjusts the white balance settings to adapt to different lighting conditions, ensuring accurate color reproduction without the need for manual adjustments.

#### ATW

ATW (Auto Tracing White Balance) mode in a camera continuously adjusts the white balance in real-time as the lighting conditions change, providing consistent color accuracy without manual intervention.

#### Indoor

Indoor white balance in a camera is a setting optimized for artificial lighting, such as tungsten or fluorescent lights, to ensure accurate color reproduction in indoor environments.

#### Outdoor

Outdoor white balance in a camera is a setting designed to correct colors under natural sunlight, ensuring that images taken in out-

door environments have accurate and lifelike color tones.

### **One Push**

One Push White Balance in a camera is a setting that allows you to manually calibrate the white balance by pressing a button, typically when pointing the camera at a neutral reference, to achieve accurate color reproduction in specific lighting conditions.

### **User**

Manual white balance in a camera with red and blue adjustments allows camera operators to fine-tune the color temperature to match specific lighting conditions. By manually adjusting the red and blue channels, users can compensate for color casts that are either too warm (red) or too cool (blue), achieving precise color accuracy in their images. This is particularly useful in challenging lighting scenarios where auto white balance may struggle, such as mixed lighting environments or when creative color control is desired. By manually controlling these adjustments, camera operators have greater flexibility in ensuring that the colors in their images are rendered exactly as intended.

### **Pan Tilt Zoom**

These settings control the robotic behaviour of the camera to ensure it performs movements in a way that match your production requirements.

### **Preset Speed**

PTZ (Pan-Tilt-Zoom) camera preset speeds typically range from 5 to 100, allowing camera operators to control the pace at which the camera moves to a preset position. Lower speeds, such as 5, provide slow and smooth transitions ideal for delicate or precise adjustments, while higher speeds, like 100, enable rapid repositioning for quickly capturing action or switching between scenes. This range of options ensures that camera movements can

be tailored to suit different production needs, from subtle, cinematic shifts to fast-paced, dynamic changes.

### **Pan/Tilt Slow**

As a PTZ camera zooms in, its movements become slower and more precise to allow for greater control over the shot. This adjustment ensures that even the smallest movements can be finely tuned, preventing abrupt shifts that could disrupt the framing of a close-up. By slowing down the pan, tilt, and zoom actions as the camera gets closer to the subject, operators can achieve smoother, more deliberate movements, essential for capturing detailed, high-quality footage without sacrificing accuracy.

### **Other**

This section adjusts other camera-related settings to ensure you get predictable and pleasing results when using your camera.

### **3D Noise Reduction**

Camera 3D noise reduction is a feature that reduces noise in images by analyzing multiple frames to distinguish and eliminate random noise while preserving fine details and textures.

### **Saturation**

Camera saturation refers to the intensity or vividness of colors in an image, with higher saturation resulting in more vibrant and intense colors, while lower saturation yields more muted and subdued tones.

### **Contrast**

Camera contrast refers to the difference between the lightest and darkest areas of an image, with higher contrast enhancing the distinction between these extremes to create a more dynamic and visually striking image, while lower contrast produces a more subtle and even tone.

**Sharpness**

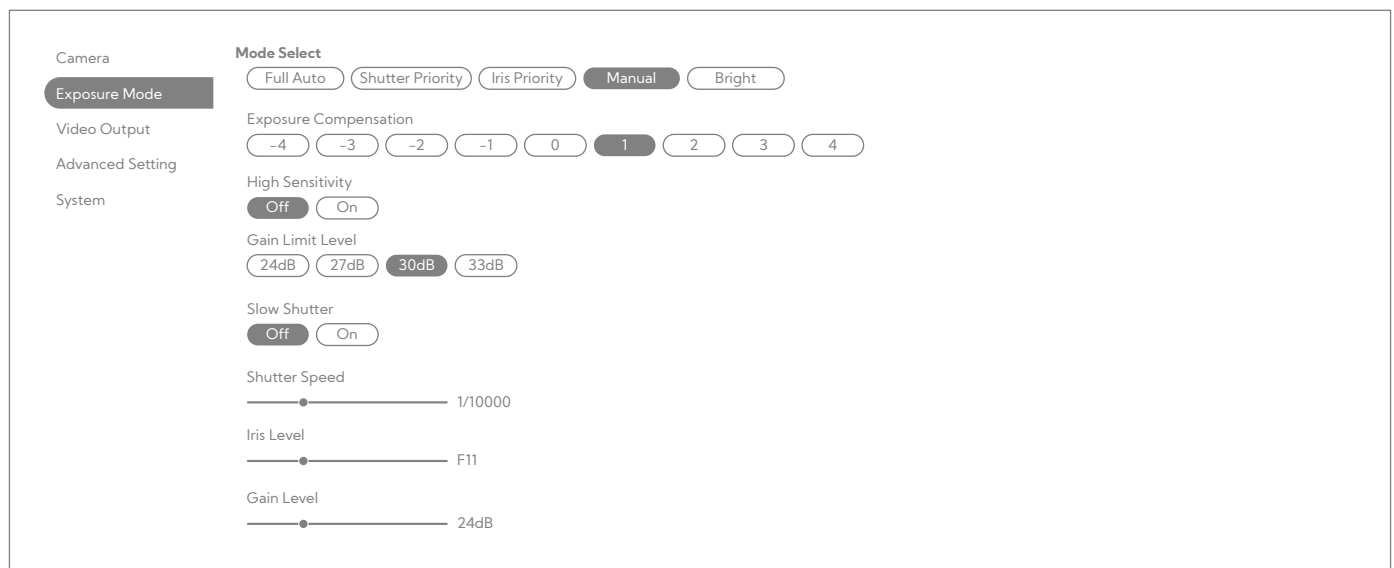
Camera sharpness refers to the level of detail and clarity in an image, with higher sharpness enhancing the definition of edges and fine details, making the image appear crisp and well-defined, while lower sharpness can result in a softer, more blurred appearance. However, if an image is over-sharpened, it can introduce unwanted artifacts such as halos or unnatural edges, leading to a distorted and less natural-looking result.

**Mirror**

The camera mirror option flips the image horizontally, creating a mirrored effect where the left and right sides of the image are swapped. This can be useful for correcting the orientation of images when the camera is positioned in a way that produces a reversed view, or for creating specific visual effects in live broadcasts or recordings.

**Flip**

The camera vertical flip option inverts the image along its horizontal axis, effectively flipping the image upside down. This feature is useful for correcting images when the camera is mounted in an inverted position or for specific creative effects that require an upside-down view.



## EXPOSURE MODE SECTION

### Mode Select

Camera exposure mode determines how the camera calculates and sets the exposure for an image, balancing the aperture, shutter speed, and ISO to achieve the desired brightness. It can be set to various modes, each offering different levels of control over the exposure settings.

#### Full auto

In full auto exposure mode, the camera automatically adjusts all exposure settings—aperture, shutter speed, and gain—to achieve a well-exposed image based on the current lighting conditions. This mode simplifies the shooting process by taking away the need for manual adjustments, allowing the camera to make real-time decisions for optimal brightness and exposure.

#### Shutter Priority

Shutter priority exposure mode allows the camera operator to set the desired shutter speed, while the camera automatically adjusts the aperture and gain to ensure proper exposure. This mode is useful for controlling motion blur or freezing fast action, as it prioritizes the speed at which the shutter opens and closes to capture the desired effect.

#### Iris Priority

Iris priority exposure mode lets the camera operator set the desired aperture (iris), while the camera automatically adjusts the shutter speed and gain to maintain proper exposure. This mode is useful for controlling the depth of field and ensuring that the image is correctly exposed based on the chosen aperture setting.

#### Manual

In manual exposure mode, the camera operator independently adjusts all exposure settings—gain, shutter speed, and iris (aperture)—to achieve the desired exposure. This mode provides full control over the image's brightness and depth of field, allowing the operator to precisely manage how much light reaches the sensor, how fast the shutter opens and closes, and the size of the aperture for creative and technical purposes.

#### Bright

Bright exposure mode is designed to automatically adjust the camera's settings to produce a well-exposed image in bright lighting conditions. This mode typically optimizes the aperture, shutter speed, and gain to prevent overexposure while maintaining sufficient detail and clarity in the highlights and shadows.

### Exposure Compensation

Camera exposure compensation allows the operator to adjust the exposure level of an image by a specific amount, within a range of -4 to +4. A negative value (e.g., -2) decreases the exposure, making the image darker to correct for overexposure, while a positive value (e.g., +2) increases the exposure, making the image brighter to correct for underexposure. This feature provides flexibility to fine-tune the exposure based on the scene's lighting conditions or creative intentions.

### High Sensitivity

Camera high sensitivity mode, often referred to as high gain mode, increases the sensor's sensitivity to light, allowing for better performance in low-light conditions. This mode adjusts the gain settings to amplify the signal from the sensor, which helps to capture more detail and reduce noise in dimly lit environments, although it may sometimes introduce a slight increase in image noise.

### Gain Limit Level

The gain limit level setting, ranging from 24dB to 33dB, controls the maximum amount of amplification applied to the camera sensor's signal. Setting the gain limit at 24dB provides a moderate increase in sensitivity, suitable for low-light conditions with less noise. Increasing the limit to 33dB boosts sensitivity further, allowing for better performance in darker environments but may introduce more noise or grain in the image. Note that this setting is not effective in full manual exposure mode, where gain is manually controlled and not limited by this range.

### Slow Shutter

Camera slow shutter exposure extends the duration the shutter remains open, allowing more light to reach the sensor. This technique is useful for capturing low-light scenes or creating motion blur effects to convey a sense of movement, but it can also result in

increased risk of image blur from camera shake or moving subjects.

### Shutter Speed

In video production, shutter speed ranges from 1/25 to 1/10,000 of a second control how quickly the camera captures each frame. A slower shutter speed, like 1/25, lets in more light and can create a motion blur effect, which is useful for achieving a natural look in low-light scenes or smoothing out movement. A faster shutter speed, such as 1/10,000, lets in less light and is ideal for capturing sharp, clear details in bright conditions.

### Iris Level

In video production, the iris level, ranging from f/1.6 to f/11, controls the size of the aperture opening in the lens. A lower f-stop, like f/1.6, means a wider aperture that allows more light to enter the camera, creating a shallower depth of field with a blurred background and foreground. Conversely, a higher f-stop, such as f/11, means a narrower aperture that lets in less light and increases the depth of field, bringing more of the scene into focus.

### Gain Level

Camera gain levels from 0 to 33dB adjust the sensor's sensitivity to light. A lower gain, such as 0dB, means the sensor is less sensitive, which is ideal for well-lit environments and results in clearer, less noisy images. Higher gain levels, like 33dB, increase the sensor's sensitivity, making it possible to capture more detail in low-light situations but may also introduce more noise or graininess in the image.



Camera

Exposure Mode

**Video Output**

Advanced Setting

System

Frequency

59.94Hz 50Hz 60Hz

Resolution 2160p

2160p/60 2160p/59 2160p/50 2160p/30 2160p/29 2160p/25

Resolution 1080p

1080p/60 1080p/59 1080p/50 1080p/30 1080p/29 1080p/25

Resolution 1080i

1080i/60 1080i/59 1080i/50

Resolution 720p

720p/60 720p/59 720p/50

## VIDEO OUTPUT SECTION

The video output section controls various aspects of the camera's connections, ensuring each output the camera is capable of is set to the desired format and functionality.

### Frequency

Video camera frequency settings such as 59.94Hz, 50Hz, and 60Hz refer to the refresh rates or frame rates at which the camera captures video, and they help ensure compatibility with different video standards and lighting conditions.

- **59.94Hz** is commonly used in regions with NTSC video standards, such as North America, and is close to the traditional 60Hz refresh rate but adjusted to avoid interference with the electrical grid's frequency.
- **50Hz** is used in regions with PAL or SECAM video standards, such as Europe, and aligns with the electrical grid frequency in these areas.
- **60Hz** is another standard used in regions with NTSC systems and is a common refresh rate for electronic displays in the United States and other regions.

Choosing the correct frequency to match the rest of your production equipment is recommended to prevent flicker and ensure smooth video playback.

### Note:

When the Stabilizer feature is enabled via the WebUI, the camera's maximum output resolution is limited to 2160p30 and the field of view will be reduced. If the Video Format is set to 2160p60, the camera will still output at 2160p30 while Stabilizer remains active. For details on accessing and using the BirdUI, see the BirdUI Overview Guide available at [BirdDog.tv/downloads](https://BirdDog.tv/downloads)

### Resolution 2160p

Select the desired frame rate for your production when operating the camera in 2160p (UHD/4K) Mode.

### Resolution 1080p

Select the desired frame rate for your production when operating the camera in 1080p (Full HD) Mode.

### Resolution 1080i

Select the desired frame rate for your production when operating the camera in 1080i (Interlaced) Mode.

### Resolution 720p

Select the desired frame rate for your production when operating the camera in 720p (HD) Mode.

### Note:

When the video format is changed, the RTSP stream may stop. To resume streaming, restart the RTSP session manually in the BirdUI.

Camera

Exposure Mode

Video Output

**Advanced Setting**

System

**White Balance**

Auto ATW Indoor Outdoor OnePush User

**Control**

Serial Port

RS-232 RS-422

74

Protocol

VISCA PELCO D PELCO P

Camera Address

1 2 3 4 5 6 7

Baud Rate

2400 4800 9600 38400

**Other**

Presenter Tracking

Off On

## ADVANCED SETTING SECTION

### Audio Input Type

When selecting an audio input type on a camera or audio device, you typically choose between "Line In" and "Mic In":

- **Line In** is used for connecting devices that output a line-level signal, such as mixers, audio interfaces, or playback devices. This input is designed to handle a stronger, consistent signal without amplification, which is ideal for integrating with professional audio equipment.
- **Mic In** is used for connecting microphones, which produce a lower-level signal that requires amplification. This input boosts the signal from a microphone to a level suitable for processing and recording. Choosing the appropriate input type ensures that the audio signal is properly matched and optimized for the equipment, providing clear and accurate sound.

### Control

This section allows you to configure the camera to react to serial control protocols to allow remote PTZ functions over non-network (IP) protocols

### Serial Port

The RS232/422 port on a camera is used for

serial communication, allowing the camera to interface with external devices or systems for control and data exchange:

- **RS232** is a standard serial communication protocol used for point-to-point connections and is commonly used for controlling camera settings and transmitting data over short distances.
- **RS422** is a more robust serial communication protocol designed for longer distances and higher speeds, providing improved noise resistance and reliability in environments with electrical interference.

Both ports enable remote control and integration with other equipment, such as production switchers, control panels, or automation systems.

### Protocol

The camera protocols VISCA, Pelco-D, and Pelco-P are used for controlling PTZ (Pan-Tilt-Zoom) cameras and other video equipment:

- **VISCA:** Developed by Sony, VISCA is a protocol for controlling PTZ cameras. It allows for detailed control over camera functions such as pan, tilt, zoom, focus, and preset positions. VISCA is widely used in broadcast, conference, and live production environments due to its versatility and ease of integration.

- **Pelco-D:** This protocol, developed by Pelco, is a widely used standard for controlling PTZ cameras. It allows for precise control of camera movements and settings, including pan, tilt, zoom, and presets. Pelco-D is known for its reliability and compatibility with many different camera models and control systems.
- **Pelco-P:** Similar to Pelco-D, Pelco-P is another protocol developed by Pelco for PTZ camera control. It provides similar functionality but with slight variations in command structures and communication methods. Pelco-P is used in various security and surveillance systems. These protocols enable seamless integration and remote operation of cameras, making them essential for managing complex video production and security systems.

### Camera Address

In the VISCA protocol, camera addresses are used to uniquely identify and control multiple PTZ cameras within a system. The camera addresses range from 1 to 7, allowing up to seven different cameras to be individually addressed and controlled from a single control unit. Each camera in the system is assigned a unique address within this range, enabling precise and independent control of each camera's pan, tilt, zoom, and other functions.

### Baud Rate

The serial camera control board can operate at baud rates ranging from 2400 to 33,400 bps (bits per second). The baud rate determines the speed of data transmission between the camera and the control system: lower rates, like 2400 bps, are suitable for simpler communication needs, while higher rates, like 33,400 bps, enable faster data transfer for more complex systems. It's crucial to ensure that both the camera and the controller are set to the same baud rate to avoid data transmission errors and ensure reliable communication and control.

### Other

#### Presenter Tracking

Camera presenter tracking AI (Artificial Intelligence) uses advanced machine learning algorithms to automatically detect and follow a presenter or speaker in real-time. The AI system analyzes the presenter's movements, gestures, and position to ensure they remain centered and in focus throughout the presentation. By continuously adjusting the camera's pan, tilt, and zoom functions, the AI provides smooth and accurate tracking, enhancing the viewer's experience and reducing the need for manual camera adjustments. This technology is particularly useful in environments like conferences, lectures, and live events where dynamic and hands-free camera control is essential.

The screenshot displays the camera's web interface with the following sections:

- Camera:** Camera Selector with buttons for 1, 2, 3, Manual (selected), and Bright.
- Exposure Mode:** (Empty field)
- Video Output:** Off (selected) and On.
- Advanced Setting:** System (selected).
- NDI:** Disable (selected) and Enable.
- Tally:** Disable (selected) and Enable.
- Information:**
  - Model Name: BirdDog X5
  - Firmware Version: 0.3.0003
  - IP Address: 192.168.5.5
  - MAC1: xx:xx:xx:xx:xx:xx
  - NDI Camera ID: CAM
- Slow Shutter:** Click.

## SYSTEM SECTION

This section allows you to change some base functions of the camera to either expand of limit the outputs are required.

### Camera Selector

When using a PTZ camera with IR (infrared) control, you can select a camera number from 1 to 3 to respond to commands transmitted via an IR remote control. Each camera is assigned a unique number within this range, allowing the IR remote to communicate with and control the specific camera you choose. This setup ensures that commands are sent to the correct camera, enabling precise control over each unit in a multi-camera system.

### NDI®

When you turn NDI® output on, the PTZ camera starts streaming video over the network, making it available for live production and integration with other NDI-compatible devices and software. When you turn NDI® output off, the camera stops streaming video over the network, which can help reduce network traffic or shift the camera's mode to a different function.

### Tally

In the camera's tally light function, also known as Halo Tally:

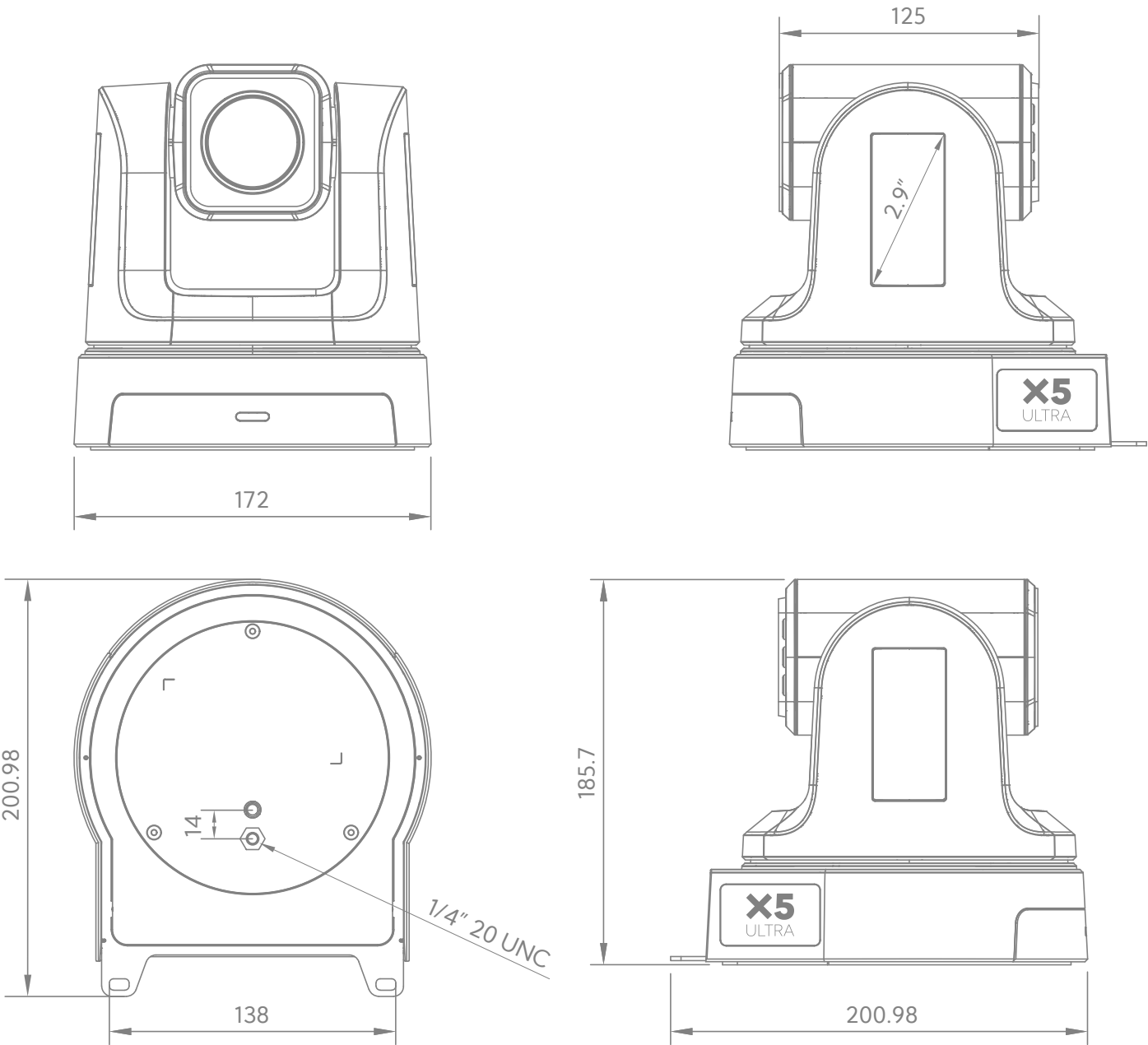
- **Program Tally Light:** This light is red and illuminates to indicate that the camera's feed is currently being broadcasted or recorded as part of the live program. It shows that the feed is live on-air.
- **Preview Tally Light:** This light is green and indicates that the camera's feed is being previewed on the production switcher or monitor but is not yet live on-air. It helps the camera operator prepare for when their feed will be switched live.

These colored lights help camera operators easily distinguish between live and preview statuses during a production.

### Tally Rest State

The rest state is indicated by a white border around the Halo Tally, showing that the camera is not in program or preview mode. If the Tally Rest State function is turned off, the light is completely disabled, and no indicators are displayed unless the camera is in Program or Preview Tally state.

10 CAMERA DIMENSIONS



## 11 WARRANTY

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### 5 Year Warranty

BirdDog X-series cameras feature a 5 year, global warranty. BirdDog prides itself on delivering the best possible products to customers, but if something was to go wrong, you can rest assured knowing that no matter where in the world you are, BirdDog has your back.

Read more at [BirdDog.tv/warranty-terms](https://BirdDog.tv/warranty-terms)





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