AVMATRIX



Eagle T10-4K

4K 10X Zoom TOF Autofocus Live Streaming Camera

USING THE UNIT SAFELY

Before using this unit, please read below warning and precautions which provide important information concerning the proper operation of the unit. Besides, to assure that you have gained a good grasp of every feature of your new unit, read below manual. This manual should be saved and kept on hand for further convenient reference.



Warning And Cautions

※ To avoid falling or damage, please do not place this unit on an unstable cart, stand, or table.

※ Operate unit only on the specified supply voltage.

※ Disconnect power cord by connector only. Do not pull-on cable portion.

※ Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.

※ Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.

※ Do not use this unit in or near water.

※ Do not allow liquids, metal pieces, or other foreign materials to enter the unit.

※ Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials or alternate adequate packing.

※ Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.

※ Turn off the unit if an abnormality or malfunction occurs. Disconnect everything before moving the unit.

Note: due to constant effort to improve products and product features, specifications may change without notice.

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1. BRIEF INTRODUCTION

1.1. Overview

Featuring TOF autofocus technology, the camera is equipped with a 1/2.8-inch high-quality CMOS sensor and a 10x optical zoom lens with 8.29 megapixels of effective pixels for fast and accurate focusing and capturing clear, high-resolution images in low-light conditions or when photographing moving objects. This powerful professional camera is ideal for a variety of live streaming applications.



1.2. Main Features

- 10X Optical Zoom Lens
- Fast and accurate autofocus with ToF ranging technology
- High quality 1/2.8“ 8M CMOS Sensor
- Auto focus/exposure/white balance
- HDMI output video up to 2160p30Hz
- Capture compatible with major operating systems like Windows, Mac, and Android
- A variety of preset styles: meeting, beauty, jewel, fashion, custom
- Landscape and portrait installation, Image mirror and flip
- Flexible control with menu buttons & IR remote control
- Aluminum alloy body with excellent heat dissipation for 24/7 operation

2. INTERFACES

2.1. Interfaces



1	HDMI Out
2	RS485 Serial Port
3	USB Capture/ Power In
4	Audio Input
5	Rear Infrared Receiver
6	Menu Buttons
7	10x Optical Zoom Lens
8	Front IR receiver
9	ToF module

2.2. Specification

SENSOR	Sensor	1/2.8" 8MP CMOS Sensor
	Max Frame Rate	3840H x 2160V @30fps
LENS	Optical Zoom	10X
	Focusing mode	ToF Auto Focus & Digital Focus
	Focal Length	F=4.32~40.9mm

	Aperture Value	F1.76 ~ F3.0
	Focus Distance	Wide: 30cm, Tele: 150cm
	Field of View	75.4°(Max)
INTERFACES	Video Output	HDMI, USB(UVC)
	USB Capture Format	MJPG 30P: 3840×2160 MJPG 60P: 1920×1080/1280×960/1280×720/1024×768/800×600/720×576/640×480 YUY2 60P: 1920×1080/1280×960/1280×720/1024×768/800×600/720×576/640×480
	HDMI Format	2160p30, 1080p/720p 60/50/30/25
	Audio Input	3.5mm Audio In
	Control Port	RS485 Serial
FUNCTIONS	Exposure Mode	AE/ AE Lock/ Custom
	White Balance Mode	AWB/ AWB Lock/ Custom/ VAR
	Focus Mode	AF/ AF Lock/ Manual
	Preset Image Styles	Meeting/ Beauty/ Jewel/ Fashion/ Custom
	Control Methods	IR Remote Control & Buttons
	Backlight Compensation	Support
	Anti-Flicker	50Hz/60Hz
	Noise Reduction	2D NR & 3D NR
	Video Adjustment	Sharpness, Contrast, Color Saturation, Brightness, Hue, Color Temp, Gamma
	Image Flip	H Flip,V Flip, H&V Flip
OTHERS	Power Consumption	<5W
	USB Supply Voltage Range	5V±5%: 4.75~5.25V
	Operation Temperature Range	0-50℃

	Dimension (LWD)	78×78×154.5mm
	Weight	Net weight: 686.7g, Gross weight: 1064g
	Installation	Landscape & Portrait Orientation
	Warranty	1 year

2.3. Remote Controller



CAM1 CAM2	Configure the camera ID via menu, and then press the button to select the desired CAM1 or CAM2 directly.
MENU	Press the button to enter/exit the camera menu.
	Zoom in/ Zoom out. In menu mode, press the button to select the parameter to be set.
	Manual Focus. In menu mode, press the button to set the parameter.
AE	Select the Exposure Mode: AE, AE Lock, Custom
AF	Focus Mode: AF, AF Lock, Manual
AWB	Select white balance mode: AWB, AWB Lock, Custom, VAR
STYLE	Select the image style from Meeting, Jewel, Beauty, Fashion and Custom
FN	Long press 3s to set preset position, short press to return to preset position.

2.4. Menu Buttons



1	Press the button to enter/exit the camera menu.
2/3	Press the button to control Zoom in/ Zoom out. In menu mode, press to control the menu.
4/5	Press the button to manual focus. In menu mode, press to control the menu.

3. MEMU SETTINGS

3.1. Exposure

In the exposure settings, users can set exposure mode, shutter speed, iris, gain, gain limit, DRC, anti-flicker, and BLC. Users can adjust these settings using either the camera's buttons or the IR remote controller. To access the exposure settings, navigate to the EXPOSURE option in the Main Menu.

3.1.1. Exposure Mode

Exposure mode determines how the camera automatically adjusts exposure. Available exposure modes include AE, AE lock, custom:

- **AE:** The camera automatically adjusts exposure based on the surrounding lighting conditions.
- **AE Lock:** It is similar to auto mode, but it will lock in the exposure settings that you have chosen.
- **Custom:** Users can save custom exposure settings for specific situations.

3.1.2. Shutter Speed

Shutter speed controls the duration for which the camera's shutter remains open, affecting the amount of light captured. A faster shutter speed freezes motion, while a slower shutter speed allows more light in, creating blur effects.

3.1.3. Iris

The iris controls the aperture of the lens, regulating the amount of light entering the camera. A wider aperture (lower f-number) allows more light in, while a narrower aperture (higher f-number) restricts light entry.

3.1.4. Gain

Gain amplifies the camera's sensor signal, enhancing brightness in low-light conditions. However, higher gain settings can introduce noise into the image.

3.1.5. Gain Limit

The gain limit sets the maximum gain level to prevent over amplification of the sensor signal, which can introduce excessive noise.

3.1.6. DRC

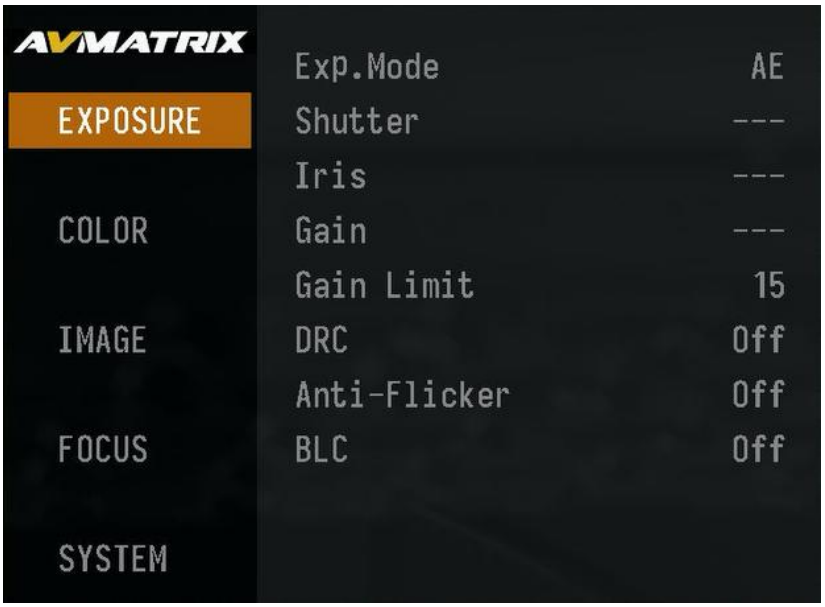
Dynamic Range Compression, compresses the range of brightness in the image, enhancing contrast.

3.1.7. Anti-Flicker

Anti-flicker helps to reduce or eliminate flickering in images caused by artificial light sources, such as fluorescent lights and LED lights.

3.1.8. BLC

Backlight compensation adjusts exposure to prevent backlight subjects from appearing too dark. This setting is particularly useful when shooting portraits or scenes with strong backlight.



3.2. Color

The color settings allow users to fine-tune the camera's color rendition and image processing to achieve their desired look. These settings include white balance mode, red and blue gain, color temperature, hue, and black and white mode. Users can adjust these settings using either the camera's buttons or the IR remote controller. To access the color settings, navigate to the COLOR option in the Main Menu.

3.2.1. WB Mode

White balance ensures that colors appear natural and accurate under different lighting conditions. Available white balance modes include:

- **AWB:** The camera automatically adjusts white balance based on the surrounding lighting conditions.
- **AWB Lock:** This mode locks in the white balance that the camera has set for the current scene.
- **Custom:** Users can manually set the white balance using a white balance card or by selecting a specific color temperature.
- **VAR:** Users can fine-tune the white balance by adjusting the color temperature and other settings.

3.2.2. Red & Blue Gain

Red and blue gain allows users to fine-tune the intensity of red and blue colors in the image. This can be useful for correcting color casts or achieving a specific color palette.

3.2.3. Color Temp.

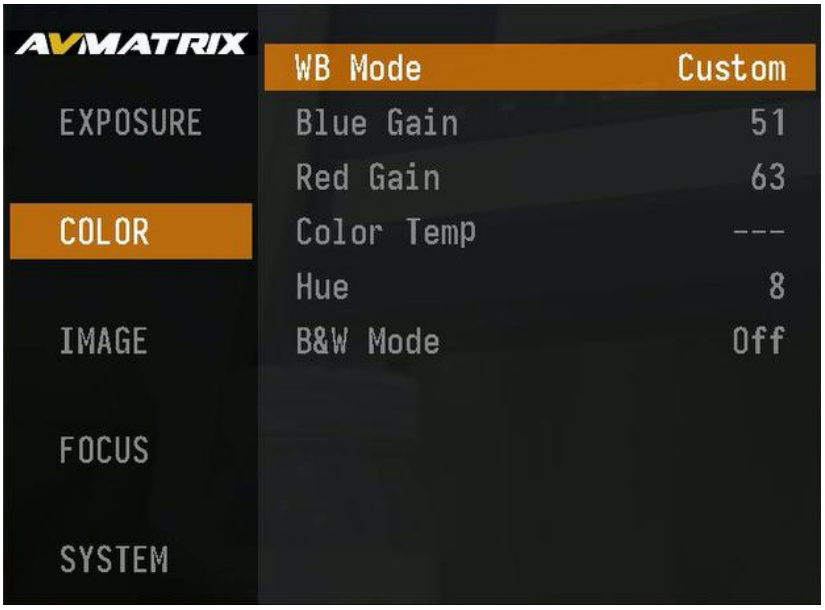
Color temperature refers to the overall warmth or coolness of the image. A higher color temperature creates a cooler, bluer image, while a lower color temperature creates a warmer, redder image. Users can adjust the color temperature to achieve their desired look.

3.2.4. Hue

Hue controls the overall color tone of the image. It represents the dominant color that appears in the image. Adjusting the hue can shift the colors in the image, creating a specific mood or atmosphere.

3.2.5. B&W Mode

Black and white mode converts the image to grayscale, removing all color information. Users can adjust the contrast and sharpness of the black and white image.



3.3. Image

The image settings allow users to fine-tune the appearance of the live stream to match their desired visual style. These settings include style selection, contrast adjustment, saturation control, brightness modification, gamma correction, and image mirroring or flipping, dehaze, 2D and 3D noise reduction. Users can adjust image settings using either the camera's buttons or the IR remote controller. To access the image settings, navigate to the IMAGE option in the Main Menu.

3.3.1. Style Selection

Predefined styles offer tailored adjustments to enhance specific types of live streams. Available styles include:

- **Meeting:** This style is designed for shooting presentations and other formal events. It has a neutral color tone and a high contrast ratio to ensure that the subject is well-defined.
- **Beauty:** This style is designed to enhance the natural beauty of the subject. It has a soft color tone and a smooth skin tone to make the subject look more attractive.
- **Jewel:** This style is designed to highlight the beauty of jewel. It has a saturated color tone and a high contrast ratio to make the jewel stand out.
- **Fashion:** This style is designed to capture the latest fashion trends. It has a vibrant color tone and a creative composition to make the photos look stylish.
- **Custom:** This style allows users to create their own custom look. Users can adjust the color tone, contrast, saturation, and sharpness to create a unique look that suits their needs.

3.3.2. Image Parameters

Users can manually adjust various image parameters to further refine the visual appearance of the live stream:

- **Sharpness**: Controls the clarity and crispness of the image. Increasing sharpness can make details appear more defined, while decreasing sharpness can create a softer, more diffused look.
- **Contrast**: Controls the difference between the brightest and darkest parts of the image. Adjusting contrast can make the image appear more or less defined.
- **Saturation**: Determines the intensity of colors in the image. Increasing saturation can make colors appear more vibrant, while decreasing saturation can create a more muted or washed-out look.
- **Brightness**: Adjusts the overall brightness of the image. Increasing brightness can make the image appear lighter, while decreasing brightness can make it appear darker.
- **Gamma**: Controls the overall tonal range of the image, affecting the mid-tones and highlights. Adjusting gamma can make the image appear more or less contrasty.

3.3.3. Image Mirroring and Flipping

Users can choose to mirror or flip the image horizontally or vertically. Mirroring creates a reflection of the image, while flipping reverses the image. These options can be useful for adjusting the camera's perspective or creating specific visual effects.

3.3.4. Dehaze

Dehaze function can reduce haze and improves visibility in foggy or misty conditions. It works by analyzing the image and identifying areas of low contrast, which are often characteristic of haze. The dehaze algorithm then selectively brightens these areas to make the image appear clearer.

3.3.5. 2D & 3D NR

Noise reduction reduces noise, which is the grainy appearance that can occur in low-light images. 2D noise reduction applies noise reduction to the entire image, while 3D noise reduction also considers temporal information to reduce noise while preserving fine details.



3.4. Focus

The focus settings enable users to refine the camera's focus behavior and enhance the sharpness of the live stream. These settings include focus mode selection, zoom speed adjustment, TOF focus activation, and magnification display control. To access the focus settings, navigate to the FOCUS option in the Main Menu.

3.4.1. Focus Mode Selection

Users can choose from various focus modes to optimize the camera's ability to maintain focus on the desired subject:

- **AF:** The camera automatically adjusts focus based on the detected subject or movement.
- **AF Lock:** This mode locks in the focus that the camera has set for the current subject.
- **Manual:** Users can manually focus the camera using the focus buttons.

3.4.2. Zoom Speed

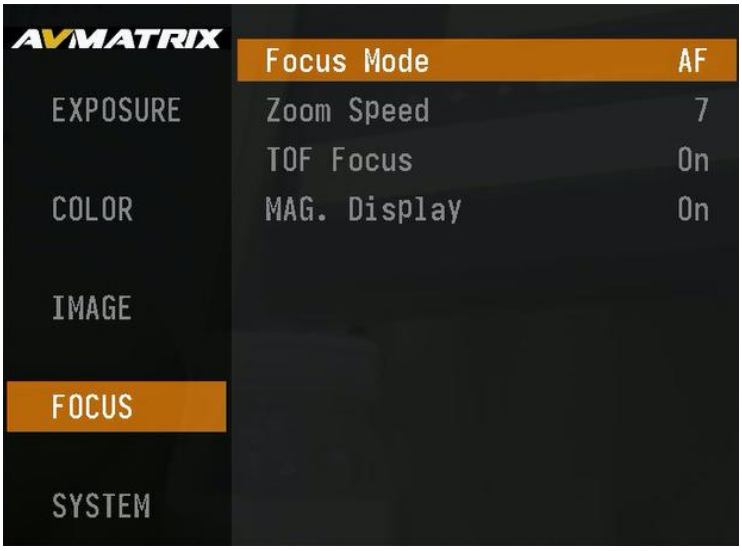
Users can adjust the zoom speed to control how quickly the camera zooms in or out. This allows for precise framing and focus adjustments during the live stream.

3.4.3. ToF Focus

Users can active the ToF focus sensor to enhance focusing accuracy in low-light conditions or when shooting moving subjects. It projects an infrared laser beam onto the subject, allowing the camera to precisely determine the distance and achieve sharp focus.

3.4.4. MAG. Display

Magnification display provides a zoomed-in view of the selected area, enabling precise manual focus adjustments. Users can toggle the magnification display on or off as needed.



3.5. System

The system settings allow users to customize the camera's language, video format, camera ID, OSD direction, preset position, OSD hints, and perform reset operations. Additionally, users can check the device's firmware version.

3.5.1. Language

Users can select the language of English or Chinese for camera's menus and on-screen displays.

3.5.2. Video Format

Users can choose the video output format, including 2160p30Hz, 1080p and 720p 60/50/30/25Hz. The appropriate video format ensures compatibility with the intended broadcasting or recording equipment.

3.5.3. Camera ID

The camera can be controlled by a remote controller. Users can set the camera ID to establish a unique connection between the camera and the remote controller.

3.5.4. OSD Direction

The orientation of the on-screen displays can be adjusted to match the camera's mounting position and the user's preference. Users can choose Landscape, Portrait 1 or Portrait 2 as desired.

3.5.5. Preset Position

The camera's remote controller features a FN button that allows users to define a preset position for the camera's focus, zoom, and other image settings. This preset position can be quickly recalled using the FN button, enabling users to swiftly restore the camera to a frequently used framing and focus configuration. However, activating the Clear of Preset Position will erase the saved preset position.

3.5.6. OSD Hints

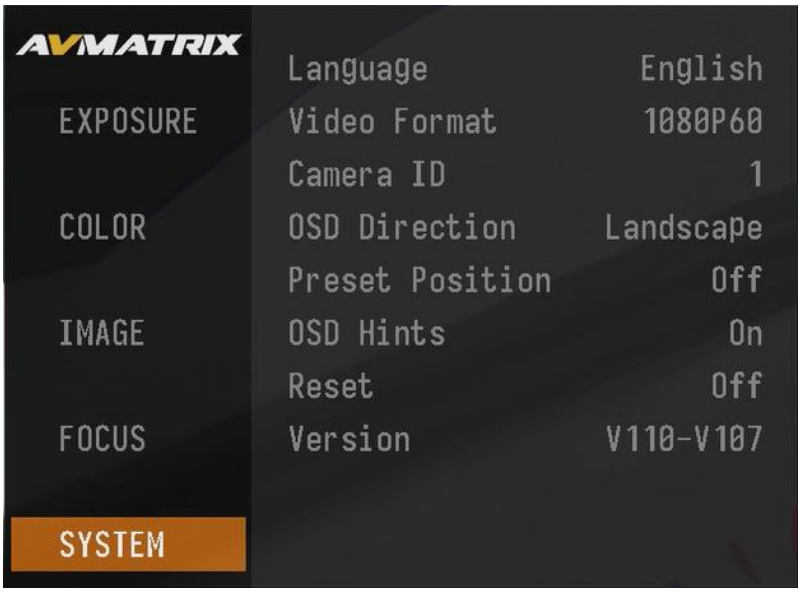
OSD hints are on-screen prompts that provide information about the camera's current settings and operations. These prompts and hints are easily accessible and can be enabled or disabled based on the user's proficiency with the camera.

3.5.7. Reset

The reset option allows users to restore the camera's settings to factory defaults.

3.5.8. Version Number

The version number indicates the current firmware version installed on the camera.



4. VIDEO OUTPUTS

The camera has HDMI and USB Type-C dual outputs that users can connect it to a professional video switcher or an additional monitor via HDMI port for a live stream. Or users can capture the video through Type-C to a computer directly for a live stream.

4.1. HDMI Output

The camera can output HDMI video out that can meet HDMI-complaint devices applications. The resolution up to 2160p30Hz.

4.2. USB-C Output

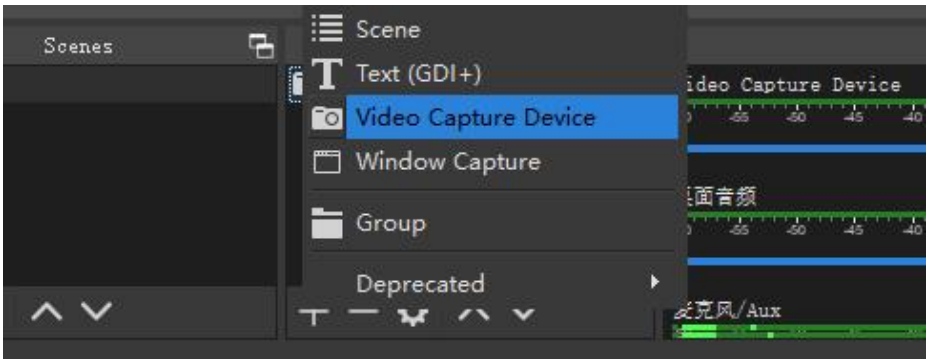
Eagle T10 is based on UVC (USB video class). No additional drivers need to be installed. Connecting the USB Type-C output to a PC, user can use software like OBS, PotPlayer, vMIX, etc. to play or store the captured USB Out video on live streaming platforms like YouTube, Facebook, Zoom, Teams, etc. The relevant video and audio devices will be detected in the Windows Device Manager as below:

- **Under Camera:** USB TOF CAMERA

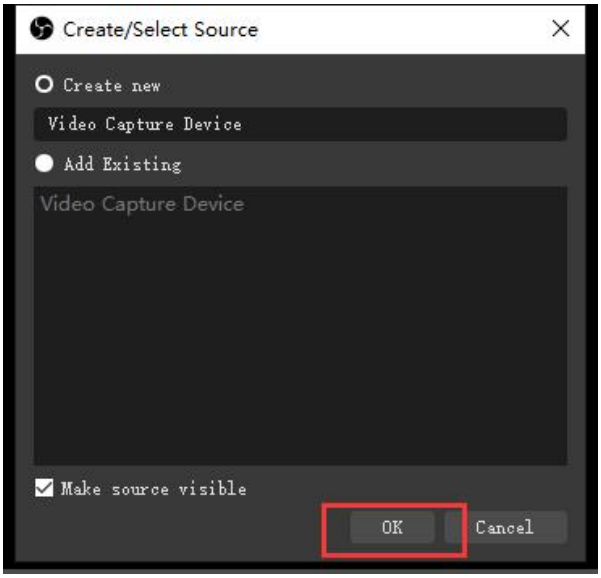
Example: Work with OBS

OBS studio software Settings:

Step1. Open OBS Studio , click ”+” and select ”Video Capture Device”.



Rename the name of the signal source and click OK.



Step2. Right-click "Video Capture Device" and select properties, enter the properties interface, and select the signal source as your device. Users can set other parameter setting in the properties pages and then click OK.

