

Lilliput
Lilliput 10X TOF Autofocus Live
Stream Camera



Lilliput 10X TOF Autofocus Live Stream Camera User Guide

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Lilliput

Lilliput 10X TOF Autofocus Live Stream Camera



Specifications

- **Sensor:** 5M CMOS Sensor
- **Optical Format:** 1/2.8

- **Max Frame Rate:** 1920H x 1080V @60fps
- **Optical Zoom:** 10X
- **Focal Length:** F=4.32~40.9mm
- **Aperture Value:** F1.76 ~ F3.0
- **Focus Distance:** Wide: 30cm, Tele: 150cm

Product Usage Instructions

Overview

The camera uses TOF autofocus technology for fast and accurate focus in various conditions. It includes a 5-megapixel CMOS sensor and a 10x optical zoom lens for high-resolution images.

Main Features

This professional camera is suitable for live streaming applications with features like autofocus, optical zoom, and high-quality sensor.

Interfaces

- DC 12V In
- HDMI Out
- USB Capture Out
- Rear IR Receiver
- Menu Combination Buttons
- 10x Optical Zoom Lens
- Front IR Receiver
- ToF Module

Video Outputs

The camera offers HDMI and USB-C outputs for video transmission.

HDMI Output

The HDMI output allows you to connect the camera to external displays or recording devices for high-quality video output.

USB-C Output

The USB-C output provides flexibility in connecting the camera to various devices for video streaming or recording.

FAQ

- **Q: Can the camera be used for low-light conditions?**

A: Yes, the camera features TOF autofocus technology for accurate focus even in low-light situations.

- **Q: What are the available video adjustment settings?**

A: The camera offers settings for sharpness, contrast, color saturation, brightness, hue, color temperature, and gamma adjustment.

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.

BRIEF INTRODUCTION

Overview

This camera uses TOF autofocus technology to achieve fast and accurate focus, even in low-light conditions or when shooting moving objects. It also features a high-quality 5-megapixel CMOS sensor and a 1/2.8" 10x optical zoom lens to capture clear, high-resolution images. The powerful and professional camera that is ideal for a wide range of live streaming applications.



Main Features

- 10X Optical Zoom Lens
- Fast and accurate autofocus with ToF ranging technology
- High quality 1/2.8" 5M CMOS Sensor

- Auto focus/exposure/white balance
- HDMI and USB Type-C output video up to 1080p60Hz
- 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

INTERFACES

Interfaces

2.1. Interfaces



1	DC 12V In
2	HDMI Out
3	USB Capture Out
4	Rear IR Receiver
5	Menu Combination Buttons
6	10x Optical Zoom Lens
7	Front IR Receiver
8	ToF Module

Specification

SENSOR	Sensor	5M CMOS Sensor
	Optical Format	1/2.8"
	Max Frame Rate	1920H x 1080V @60fps
	Optical Zoom	10X
LENS	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
	USB Capture Format	MJPEG 60P: 1920×1080/ 1280×960/ 1280×720/ 1024×768/ 800×600/ 640×480/ 320×240
	HDMI Format	1080P 25/30/50/60, 720P 25/30/50/60
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
	Power Consumption	<4W

OTHERS	DC Port Voltage Range	12V±5%: 6~15V
	USB Supply Voltage Range	5V±5%: 4.75~5.25V
	Operation Temperature Range	0-50°C
	Dimension (LWD)	78×78×154.5mm
	Weight	Net weight: 686.7g, Gross weight: 1054g
	Installation Methods	Landscape & Portrait Orientation

Remote Controller



	Configure the camera ID via menu, and then press the button to select the desired CAM1 or CAM2 directly.
	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.
	Select the Exposure Mode: AE, AE Lock, Custom
	Focus Mode: AF, AF Lock, Manual
	Select white balance mode: AWB, AWB Lock, Custom, VAR
	Select the image style from Meeting, Jewel, Beauty, Fashion and Custom
	Long press 3s to set preset position, short press to return to preset position.

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.

MEMU SETTINGS

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.

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.

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.

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.

Gain

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

Gain Limit

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

DRC

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

Anti-Flicker

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

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.

LILLIPUT	Exp.Mode	AE
EXPOSURE	Shutter	---
	Iris	---
COLOR	Gain	---
	Gain Limit	15
IMAGE	DRC	Off
	Anti-Flicker	Off
FOCUS	BLC	Off
SYSTEM		

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.

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.

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.

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.

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.

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.

LILLIPUT		
EXPOSURE	WB Mode	AWB
	Blue Gain	---
	Red Gain	---
COLOR	Color Temp	---
	Hue	8
IMAGE	B&W Mode	Off
FOCUS		
SYSTEM		

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.

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.

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.

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.

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.

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.

LILLIPUT	Style	Default
EXPOSURE	Sharpness	8
	Contrast	8
COLOR	Saturation	8
	Brightness	7
IMAGE	Gamma	8
FOCUS	Flip	Off
	Dehaze	2
	2D NR	Off
SYSTEM	3D NR	Auto

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.

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.

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.

To F Focus

Users can active the To F 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.

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.

LILLIPUT	Style	Default
EXPOSURE	Sharpness	8
	Contrast	8
COLOR	Saturation	8
	Brightness	7
IMAGE	Gamma	8
FOCUS	Flip	Off
	Dehaze	2
	2D NR	Off
SYSTEM	3D NR	Auto

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.

Language

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

Video Format

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

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.

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.

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.

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.

Reset

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

Version Number

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

LILLIPUT	Language	English
EXPOSURE	Video Format	1080P60
	Camera ID	1
COLOR	OSD Direction	Landscape
	Preset Position	Off
IMAGE	OSD Hints	On
	Reset	Off
FOCUS	Version	V211-V107
SYSTEM		

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.

HDMI Output

The camera can output HDMI video out that can meet HDMI compliant devices applications. The resolution up to 1080p60Hz.

• 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, Pot Player, MIX, 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

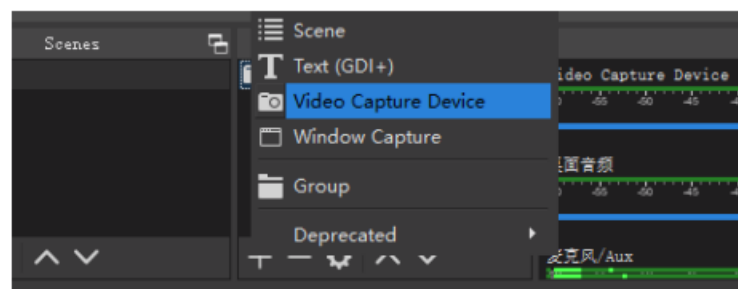
Under Camera: USB TOF CAMERA

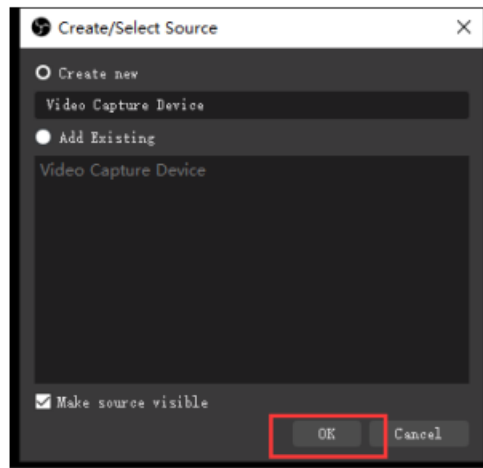
Example: Work with OBS

OBS studio software Settings:

1. Step1.

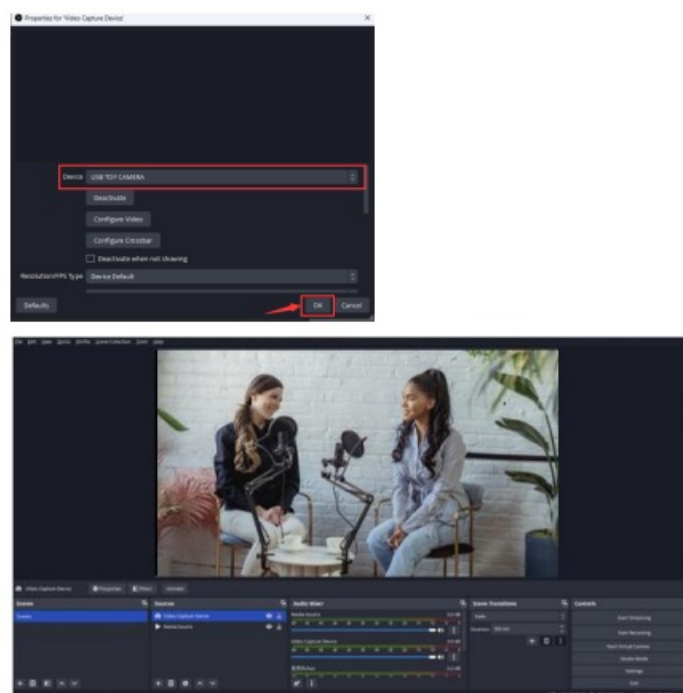
Open OBS Studio , click and select Video Capture Device "





2. 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.



Documents / Resources

	<p>Lilliput 10X TOF Autofocus Live Stream Camera [pdf] User Guide 10X TOF, Autofocus Live Stream Camera, Live Stream Camera, Stream Camera, Camera</p>
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References

- [User Manual](#)

