OWL Series

User Manual

Thermal Imaging Camera

OW6-50L

CONTENTS

1. Product Overview

1. The OW6-50L is an infrared thermal imaging camera designed for observation and rangefinding in nighttime and adverse weather conditions.

2.The infrared optical system captures the infrared radiation emitted by the target. Through spectral filtering, the distribution of the target's infrared radiation energy is projected onto the focal plane array (FPA) of the infrared detector. The detector converts the infrared radiation into electrical signals, which are then processed by the detector bias and preamplification input circuit to generate the required amplified signal, subsequently injected into the readout circuit.

3. The thermal imaging core module digitizes the detector's output signal and processes the initial infrared image, including image calibration, bad pixel correction, brightness and contrast adjustment, fusion rendering, overlay interface, and reticle display. The processed signal is transmitted to the OLED display, allowing the operator to observe the infrared thermal image of the target through the 14x eyepiece.

2. Product Components Introduction
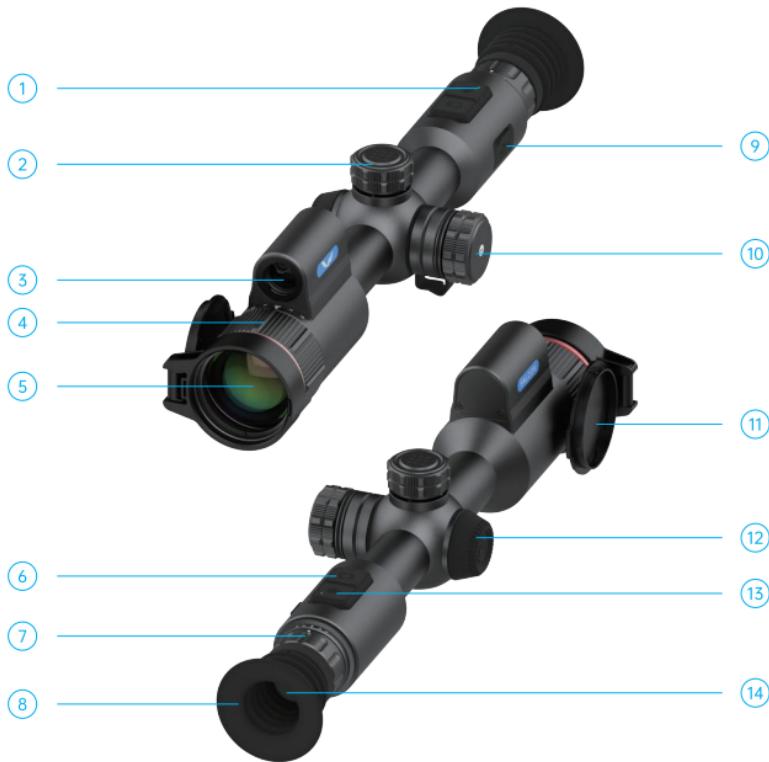
1.Device Indicator Light	2.Rotary Encoder	3.Rangefinding Module
4.Objective Lens Focus Ring	5.Objective Lens	6.Photo/Video Recording Button (REC)
7.Eyepiece Focus Ring	8.Eyepiece Rubber Cap	9.Data Compartment Cover
10.Battery Compartment Cover	11.Lens Cover	12.Power Button
13.Laser Rangefinder Button	14.Eyepiece	

3. Packaging Accessories

- ▶ OW6-50L Thermal Imaging Camera
- ▶ Protective Carrying Case
- ▶ User Manual
- ▶ 18650 Rechargeable Battery
- ▶ Type-C Data Cable
- ▶ 5V 2A Power Adapter
- ▶ Mounting Brackets (includes screws, hex nuts, and wrenches)

4. Operation Instructions

4.1. Warnings

(1) Do not point the thermal imaging camera directly at the sun, CO_2 lasers, welding machines, or other high-intensity radiation sources.

(2) The interval between two power cycles should be at least 20 seconds.

(3) The thermal imaging camera incorporate precision optical components and electrostatic-sensitive electronic devices. Avoid dropping, striking, or subjecting the device and its accessories to excessive vibration to prevent structural deformation or misalignment of mounting surfaces.

(4) Do not disassemble the thermal imaging camera. In case of malfunction, contact the manufacturer immediately. Unauthorized disassembly will void the warranty.

(5) When not in use or during transportation, remove the battery and store the thermal imaging camera in a protective carrying case.

(6) Replace the battery promptly when the battery level is low to prevent deep discharge, which may damage the battery.

(7) Using the device outside the specified operating conditions may cause damage to the thermal imaging camera.

4.2. Cautions

(1) When cleaning non-optical surfaces of the thermal imaging camera, do not use chemical solvents or thinners. Use a clean, soft, and dry microfiber cloth to wipe the exterior.

(2) The infrared lens is coated with an anti-reflective layer to enhance transmission. Clean the lens only when visibly dirty, as frequent cleaning may wear down the coating. Avoid touching the lens surface, as acids and oils from fingerprints may damage the coating and lens. Use only a specialized lens cloth for cleaning.

(3) After completing observations or if the device is not in use for an extended period while powered on, turn it off promptly to extend its operational lifespan.

5. Button Functions

⊚ Power Button

(1) Press and hold the power button for 3 seconds to turn on the device. In the powered-on state, press and hold the power button for 3 seconds to initiate the shutdown countdown. While powered on, press and hold the power button to enter sleep mode, indicated by a sleep icon on the screen. A short press in sleep mode will wake the device.

(2) In the observation interface, a short press initiates shutter calibration. After entering the menu, a short press returns to the main interface.

▢ Photo/Video Button

(1) Press and hold to start recording; press briefly to take a photo.

✳ Rangefinder Button

(1) Short press to lock the rangefinding value.
(2) Long press to enable/disable rangefinding.

⊚ Rotary Encoder

(1) Short press to activate Picture-in-Picture mode; long press to enter the menu.
(2) Rotate clockwise to switch modes; in the menu, rotate up.
(3) Rotate counterclockwise to adjust digital zoom; in the menu, rotate down.

6. Menu Functions

ICON	MENU	Functions Description
⊞	Mode Selection	There are 5 mode options: White Hot, High Contrast, Black Hot, Low Light, and Fusion. The default mode is White Hot. White Hot High Contrast Black Hot Low Light Fusion
TV	Video Output	Enable/disable CVBS video output function.
📶	WIFI	1.Enable WIFI in the device menu, then open the mobile phone's WIFI and the testing software's APP. Find the MAC address of the mobile WIFI, which will appear as "*-**", and enter the password "12345678" to connect the device. 2.Once the device is connected to the mobile phone via WIFI, you can view the live image captured by the device.
⊡	Picture-in-Picture	Press the rotary encoder briefly to enter the submenu. Rotate the encoder to select either "ON" or "OFF" and press briefly to confirm the selection and return to the main menu.
┼	Reticle Type	Options: OFF and 10 types of reticles to choose from.
⊕	Reticle Color	Options: Black, White, Gray, Red, Green.
≡	Zeroing Memory	Used to save the ballistic zeroing parameters set by the user.
⊕	Reticle Zeroing Adjustment	After selecting Reticle Zeroing Calibration, short press the rotary encoder to enter the submenu. Choose the desired zeroing calibration mode, then short press the rotary encoder again to freeze the image. Short press the photo button to navigate to the X, Y axis values, and rotate the encoder to adjust the Reticle position until it aligns with the point of impact. Short press the photo button to navigate to other options. Once the settings are complete, navigate to the Save option and short press the rotary encoder to save and exit. Long press the rotary encoder to exit without saving. The configured distance will be saved as the zeroing point name in the zeroing storage menu.
⊘	Gyroscope	Short press the rotary encoder to enter the submenu. Rotate the encoder to toggle the Gyroscope function On or Off.

	Rangefinding Unit Selection	The rangefinding unit can be set to either Meters or Yards.
	Rangefinder Settings	Enable or disable the Rangefinder Module, with selectable time-out options of 5 minutes, 10 minutes, or 20 minutes.
	Screen Brightness	Short press the rotary encoder to access the Brightness Menu, which offers 10 levels of adjustment. Selecting different levels will modify the display accordingly. Adjust the setting based on personal preference.
	Brightness	Short press the rotary encoder to enter the Brightness Menu, where 10 levels of brightness adjustment are available. Each selection alters the image brightness.
	Contrast	Short press the rotary encoder to enter the Contrast Menu, which provides 10 levels of adjustment. Higher values enhance image contrast.
	Image Detail Enhancement	Short press the rotary encoder to enter the Image Detail Enhancement menu. Higher values provide more detailed imagery.
	Date/Time	Select the Date/Time menu and short press the rotary encoder to access the submenu. Short press the rotary encoder again to navigate between options, then rotate the encoder to adjust the values. Once adjustments are complete, long press the rotary encoder to save and exit.
	Language Settings	Short press the rotary encoder to enter the Language Settings menu. Rotate the encoder to select the desired language, then short press the rotary encoder to confirm.
	Video Audio Recording	After selecting Video Audio Recording, press the rotary encoder to open the submenu. Choose On or Off to enable or disable audio recording during video capture.
	Formatting	Enter the Format submenu, then rotate the rotary encoder to select Confirm or Cancel. Warning: Formatting will permanently erase all data and cannot be undone. Proceed with caution!
	Auto Power Off	Selectable options: 3 minutes, 5 minutes, Off (default setting: Off). After powering on, users can choose between 3-minute or 5-minute auto power-off.
	Default Settings	Short press the rotary encoder to enter the submenu. Rotate the encoder to navigate through the options, then short press the encoder again to confirm your selection. Once confirmed, the device will be restored to factory default settings. Proceed with caution.

⊞	Defective Pixel Correction	Select Defective Pixel Correction, then short press the rotary encoder to enter the submenu. To perform correction, cover the lens cap and follow the on-screen instructions. After correction, saving is required. Rotate the encoder to move the cursor, use the power button to switch options, and short press the rotary encoder to save.
🖼	Image Calibration	Short press the rotary encoder to enter the submenu. To calibrate the image, select Confirm, then cover the lens cap. Short press the rotary encoder to perform background image uniformity correction. The system will automatically save and exit after calibration.
🚀	Automatic Ballistics	Options: On, Off, Settings. On: Enables the automatic ballistics function. Off: Disables automatic ballistics. Settings: Adjust ballistic parameters as needed.
ⓘ	Version	Select Version and short press the rotary encoder to view the device's software version information.

7. Device Connection

Connect your mobile device via Wi-Fi using the dedicated app.

Scan the QR code to download the app for Android/iOS.
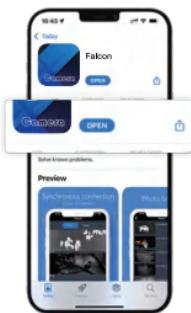
Download and install the app.
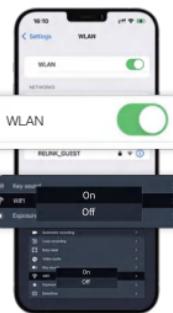
Enable Wi-Fi on both your smartphone and the device.

Select the Wi-Fi network "xx..." and connect
(default password: 12345678).

Open the app.

8. Specifications

85.6mm

95.4mm

408.3mm
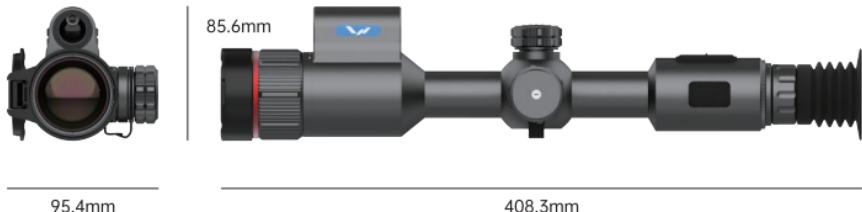
OW6-50L

Sensor	
Type	uncooled VOx
Resolution, pixels	640x512
Frame rate	50 Hz
Pixel size	12μm
NETD	≤18mk
Optical characteristics	
Objective lens	50mm/F1.0
Basic Magnification	2.8X
Continuous digital zoom	1x / 2 x/ 4 x/ 8x
Eye relief	50 mm
Dioptre adjustment	+5/-5 D
Focus range	5m - ∞
Field of view	8.8°X6.6°
Detection distance (1.7m high 0.5m wide)	2500m

Display	
Colour Palettes	White Hot, High Contrast, Black Hot, Low Light, Fusion
Type / Resolution	0.39 inch / OLED / 1024X768
Operational characteristics	
3D Gyroscope	Yes
Power supply	3-4.2 V
Battery	18650/26650
External power supply	5V (USB)
Operating time	6 hours
Max. recoil power, Joules	10000 J
Waterproof rating	IP67
Operating temperature	-20℃~+50℃
Dimensions	408.3x95.4x85.6mm
Weight	1055g
Video recorder	
Video / photo resolution	1024x768
Video / photo format	.mp4 / .jpg
Memory card	Built-in 32G memory card
Wifi channel	
Frequency	2.4GHz
Standard	802.11 b/g
WiFi reception range	15m
Rangefinder	
Wavelength	905nm

Max. measuring range	1000m
Measuring accuracy	+ /-1m

9. Maintenance and Care

(1) After observation or if the thermal imaging camera is left on for an extended period without use, turn it off promptly to extend its operational lifespan.

(2) The lens of thermal imaging camera is a critical optical component. During installation and use, avoid contact with oil, chemicals, or other contaminants that may damage the lens surface. Always cover the lens with the lens cap after use.

(3) When not in use or during transportation, remove the battery and store the thermal imaging camera in its protective case.

(4) For long-term storage or periods of inactivity, keep the thermal imaging camera in a cool, dry environment.

(5) Do not clean the housing of the thermal imaging camera with chemical solvents or thinners. Instead, use a clean, soft, and dry lint-free cloth.

(6) Clean the lens only when visibly dirty. Avoid touching the lens surface, as acids from fingerprints can damage the coating and the lens itself. Use only a specialized lens cloth for cleaning.

(7) If the device is not used for an extended period, power it on and perform a calibration check at least once every six months.

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FCC Warning Statement: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**

- **Increase the separation between the equipment and receiver.**

- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**

- **Consult the dealer or an experienced radio/TV technician for help.**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.