CLIP

Thermal Imaging Attachment

User Manual

CL42

V1.0

IMPORTANT SAFETY INFORMATION

Environmental influences

WARNING! Never point the lens of the device directly at intense heat sources such as the sun or laser equipment. The objective lens and eyepiece can function as a burning glass and damage the interior components. The warranty does not cover damage caused by improper operation.

Ergonomics notes

Caution: Take breaks after longer periods of use to avoid wrist pain.

Risk of swallowing

Caution: Do not place this device in the hands of small children. Incorrect handling can cause small parts to come loose which may be swallowed.

Safety instructions for use

- Handle the device with care: rough handling may damage the internal battery.

- Do not expose the device to fire or high temperatures.

- The battery capacity decreases when operated in a cold ambient temperature. This is not a fault and occurs for technical reasons.

- The recommended temperature for using this product is -20°C to +50°C. Otherwise, it will affect the service life of the product.

- Do not store the device for long periods at temperatures below -20°C or above 50°C.

- Always store the device in a dry, well-ventilated space. For prolonged storage, remove the batteries.

- If the device has been damaged, send the device to our after-sales service for repair and prohibit unauthorized disassembly and assembly.

- Before using this product in an environment with water, ensure

that the Type C cover is tightly covered.

User information on the disposal of electrical and electronic devices (private households)

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, please return this product to your local supplier when purchasing a new equivalent product, or send it to a designated collection point. For more information, visit www.recyclethis.info.

For business customers within the European Union

Please contact your dealer or supplier regarding the disposal of electrical and electronic devices. He will provide you with further information.

Information on disposal in other countries outside of the European Union

This symbol is only applicable in the European Union. Please contact your local authority or dealer if you wish to dispose of this product and ask for a disposal option.

Intended use

The device is intended for displaying heat signatures during nature observation, remote hunting observations and for civil use. This device is not a toy for children.

Use the device only as described in this operating manual. The manufacturer and the dealer accept no liability for damages which arise due to non-intended or incorrect use.

Function test

- Before use, please ensure that your device has no visible damage.

- Test to see if the device displays a clear, undisturbed image.

- Check that the settings for the device are correct. See the notes in the section Operation.

Installing/removing the battery

The Clip series thermal imaging attachment needs to install two

CR123 batteries for use. Refer to the Section **Battery**

Installation for details.

Legal and Regulatory Information

We, IRay Technology Co., Ltd., hereby declares that

the radio equipment Clip series is in compliance with

Directive 2014/30/EU and 2011/65/EU.

1 Specifications

Model	CL42
Detector Parameters	
Detector Type	VOx Uncooled
Resolution	384 × 288
Pixel Size, um	17
NETD, mk	≤ 25
Frame Rate, Hz	50
Optics Parameters	
Objective Lens, mm	42
Field of View, °	8.9 × 6.7
Magnification, ×	Handheld mode on: 1.6 - 6.4 Handheld mode off: 1
Detection Range, m (Target size: 1.7m×0.5m, P(n)=99%)	1540
Display Parameters	
Type	OLED
Resolution	1024×768

Electrical Parameters	
Battery	CR123×2
Max. Battery Life, h	4
External Power Supply, V	5 (Type-C)
Physic Parameters	
IP Rating	IP66
Stadiametric Rangefinder	Only for Handheld mode
Weight (without batteries), g	＜ 450
Dimension, mm	154 × 61 × 58
Adapter Ring	M52×0.75

➢ Improvements may be made to the design and software of this product to enhance its useful features without prior notice of the users.

2 Description

Clip CL42 is a multifunctional thermal imager device that can be used either as a monocular (Handheld mode on) or a front attachment (Handheld mode off) as the infrared expansion device of day light. Different from the night vision device based on image enhancement, Clip CL42 doesn't need external light source and isn't influenced by strong light exposure. It can be used in the night or bad weather conditions such as fog, rain, smog and can detect the objects through obstacles such as branch, tall grass, dense bushes and so on. Clip CL42 has a wide range application including night hunting, observation and terrain orientation, search and rescue operations.
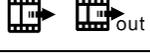
3 Components and Controls

1. Eyepiece

2. Bayonet ring of attachment's eyepiece

3. C (Calibration) button

4. M (Menu) button

5. P (Power) button

6. Type C interface

7. Battery compartment cover

8. Lens focus ring

9. Lens cap

10. Objective Lens

4 Features

- Quick conversion between attachment and monocular
- Quick mounting and removal of attachment
- Detection range beyond 1.5km
- 1024×768 high resolution OLED display
- Four image modes – white hot, black hot, red hot, pseudo color
- Monocular digital zoom：×1、×2、×4 （Only for monocular）
- Type-C interface for data transmission
- IP66 protection level
- Compact size
- Light weight and great impact resistance

5 Icons Instructions

Icon	Description
☀	Screen brightness
🎨	Image mode: B (Black hot)、W （White hot）、R（Red hot）、C（Pseudo Color）
🔍	E-zoom (Only for Monocular)
👁	Ultraclear mode
	Video output
✋	Handheld mode
🔋	Battery type
	Reticle
⊞	Blind pixel correction
↺	Factory reset
	Battery capacity indicator
	Type C connection
	Orientation shift

6 Description of Controls

Button	Current Status	Short Press	Long Press
P button	Home screen interface	Standby/ Waken	Power on / Power off
	Menu interface	Adjust parameter /Scroll up options	——
	Image calibration interface / stadiametric rangefinder interface	Up / Left shift	Up / Left quick shift
M button	Home screen interface	Enter the shortcut menu	Enter the main menu
	Menu interface	Function switch/Parameter selection	Save and exit menu
	Image calibration interface	X/Y shift	Save and exit
	Stadiametric rangefinder interface	——	Exit stadiametric rangefinder function
C button	Home screen interface	Shutter correction	Background correction
	Menu interface	Adjust parameter/Scroll down options	——
	Image calibration interface	Down/Right shift	Down/Right quick shift
	Stadiametric rangefinder interface	Reduce the distance between measurement bars	Quickly zoom out
M + C button	Home screen interface	——	**Attachment:** Enter image calibration interface

			Monocular: Turn the stadiametric rangefinder function on/off

7 Installation

Clip series can be used as a monocular or front attachment for day device. Original design allows the attachment to be quickly converted into monocular and vice versa. The factory default is as a front attachment.

As a front attachment

As a front attachment, it is designed to use with a day device both in the

nighttime and daytime in inclement weather (fog, smog, rain etc.).

To mount it on a day device, please follow instructions as follows:

- Please make sure that the day device is zeroed before installation.

- Measure the outer diameter of the housing of the lens of your day device.

- Select an adapter ring with the internal thread M52*0.75 (bought separately) of the required diameter depending on the outer diameter of your day device.

- Install firmly the adapter onto the objective lens of your day device.

- Mount the Clip CL42 with attachment's eyepiece onto the adapter by the thread M52*0.75.

- After adjusting Clip to the appropriate position, turn the bayonet ring of attachment's eyepiece **(2)** counterclockwise to lock the eyepiece.

- When use as a front attachment, please ensure that the

Handheld Mode is off in main menu interface.

- **Note:** It is recommended that you decrease the objective

  lens of your day device and the inner side of the insert

  before installing the cover adapter.

As a monocular

- The Clip CL42 can be directly used as a monocular device.

- When used as a monocular, it needs to turn on the handheld

  mode as follows.

- Press and hold down the **M (4)** button to enter the main menu

  interface.

- Select the **Handheld mode** option with the **P (5) / C (3)**

  button.

- Turn the Handheld mode on with a short press of the **M (4)**

  button.

- Then you can use the CL42 as a monocular.

- When use as a monocular, the function about zeroing will be
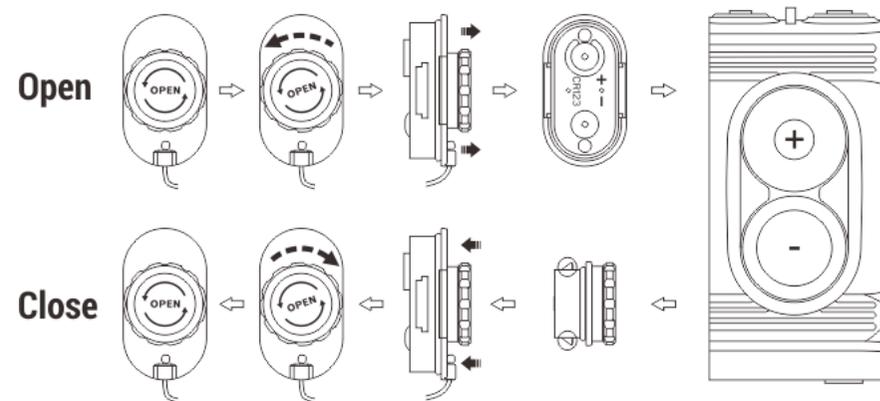
unable, such as the image calibration and zeroing type.

- To switch to the attachment, just turn off the Handheld mode.

8 Battery Installation

The installation of CR123 batteries

- Rorate the battery compartment cover **(7)** anticlockwise

  according to the prompt identification on the cover.

- Install two CR123 batteries correctly according to the marking

  on the battery cover and inside it.

- When done, replace the battery cover the latches from both

sides of the cover will pull out (see the drawing above), press it until its clicking position - make sure the cover is closed on both sides correctly.

● During operation, when the icon ▭ is appeared on the status bar, please replace the new battery to supply.

● It is necessary to power off before replacing the batteries.

The installation of 16650 batteries

● When using the 16650 batteries, the IEB-2 Extended Battery Compartment **(11)** is needed to replace the original battery cover **(7)**.

● Remove the battery compartment cover **(7)** and install the two 16650 batteries correctly according to the marking on the battery cover and inside it.

● Place the IEB-2 Extended Battery Compartment **(11)** on the battery compartment and press it until its clicking position.

● After installation, install the original battery cover **(7)** on the

IEB-2 Extended Battery Compartment **(11)** as shown below.

● Press down the elastic blocks on both sides at the same time to remove the IEB-2 Extended Battery Compartment **(11)**.
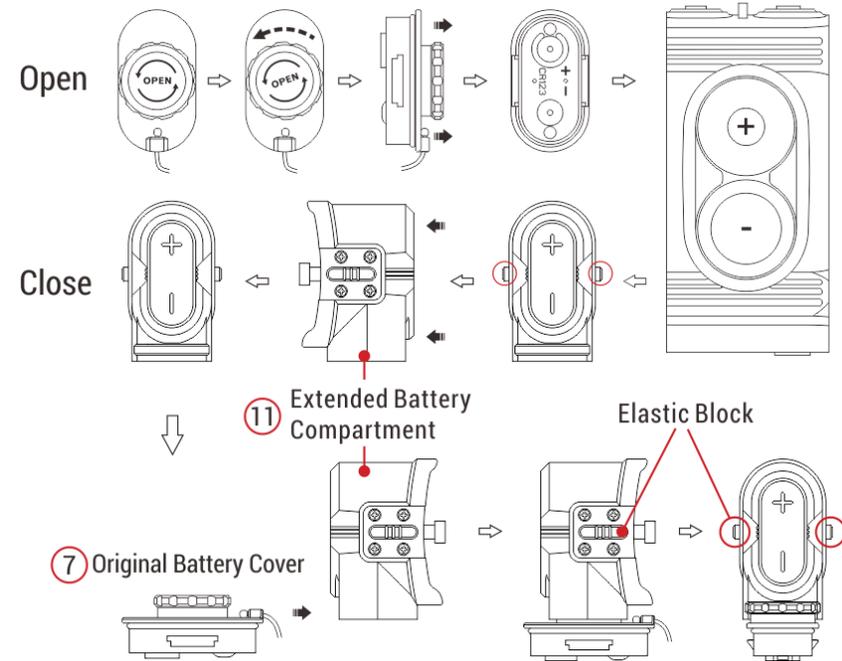
Attention

- **Disposable batteries are ONLY suggested!** Risks are existing to use rechargeable batteries due to nonstandard quality.

- Please do not use batteries of different types or batteries with various charge levels.

- After installation, please set the battery type in the advanced menu for the first starting up--choosing 3.7V for rechargeable battery and 3V for ordinary battery (referring to the section **Main Menu- Battery Type**), otherwise the battery level indication will be inaccurate and may be interrupted during operation.

Safety Regulation

- Please use standard batteries. Do not throw the batteries away or put them into fire after usage.

- Please use standard charger to prevent the product from damage.

- Short circuit products are prohibited.

- It is prohibited to expose the product in the high temperature environment more than 50 °C.

- It is prohibited to put the product into fire.

9 Operation

- Open the lens cover **(9)**.

- Press and hold down the **P (5) button** for 3s to power the device on. Wait for 6s until thermal image appears on the display.

- Rotate the lens focus ring **(8)** to focus on the object being observed.

- **Calibration:**

  - **Shutter correction**：On the home screen, short press of the **C (3)** button to preform shutter correction.

  - **Background correction:** On the home screen, long press the **C (3)** button to complete background correction. It needs to close the lens cap before calibration.

- **Image Settings:** Adjust the image mode, display brightness in the shortcut menu (for more details, see the **Shortcut**

Menu section).

- **Power Off:** To power off the riflescope, long press **P (5) button** for 5s until the shutdown option menu appears, select the "√" to shut down and "×" to cancel. Then short press the **M (4)** button to confirm the selection.

- **Standby Mode:** During use, pressing the **P (5) button** briefly can make the device to enter the standby mode for power saving. And press the **P (5) button** again to wake up your device.

10 Zeroing (Only for Attachment)

When the device is installed on the day light scope as an infrared extension component, if the reticle of the day light scope is not in the center of the infrared image that the image calibration function can be used to shift the infrared image to ensure the position consistency between the day light image

and the infrared image.

- Please finish the calibration of the day light scope before mounting Clip.

- Installing Clip Series on the day light scope and turn off the handheld mode.

- Select a Zeroing Type in the main menu (refer to **Main Menu - Zeroing type** for details).

- Then aim at the target at 50 meters and shoot. Measure the horizontal distance and vertical distance between the bullet hitting point and the aiming point afterwards.

- On the home screen, press the **M (4) + C (3)** buttons for 3s at the same time to enter the Zeroing interface, as shown in the figure.

- Press **P (5) / C (3)** button briefly to move the position of infrared image and press the **M (4)** button to switch the

orientation between X-axis (left-right) and Y-axis (up-down) while the moving distance is displayed synchronously above the icon.

● When the calibration is done, long press **M (4)** button to save and exit the calibration interface.

11 Stadiametric Rangefinder (Only for Handheld Mode)

Stadiametric rangefinder is only for monocular mode that can estimate approximate distance to an object of known size.

● In the home screen, press and hold the **M (4) + C (3)** buttons for 3s at the same time to enter the stadiametric rangefinder interface, as shown in the figure.

● You will see the following on the display: two measurement bars, icons of three reference objects and respective distances of each.

● There are three pre-set reference objects:

- **Hare:** height 0.2m

- **Wild boar**: height 0.9m

- **Deer**: height 1.7m

● Aiming at the target, and then adjust the distance between the measurement bars by pressing **P (5) / C (3)** button until the target matches entirely between the two bars. **P (5) button** is used to increase the distance and **C (3)** button to reduce the distance.

● The distance to the object is automatically recalculated while moving the measurement bars and displayed on the left of the three reference objects.

● Exit rangefinder mode with a long press of the **M (4)** button.

12 Shortcut Menu

image mode and electronic zoom (only for monocular).

- In the home screen, press **M (4)** button briefly to enter the shortcut menu interface.

- There are three functions in order of screen brightness,

- Press the **P (5) / C (3)** button briefly to set the parameter of each function.

- Press the **M (4)** button briefly to switch to the next function.

Times of pressing the M (4) button	Function and Operation	Interface
1 time	**Adjust the screen brightness** ● There are four levels for selection. ● Short press the **P (5) button** to increase the image brightness level. ● Short press the **C (3) button** to reduce the image brightness level.	

2 times	**Select the image mode** ● There are four modes for selection, in order of White hot (W), Black hot (B), Red hot (R), Pseudo Color (C). ● Short press the **P (5) button** to select the image mode clockwise. ● Short press the **C (3) button** to select the image mode counterclockwise.	
3 times	**Set the electronic zoom** (only for monocular) ● This function is only visible when the Clip C is as a monocular. ● This function can enlarge the image by 1x, 2x, or 4x. ● Short press the **P (5) button** to E-zoom the image clockwise. ● Short press the **C (3) button** to E-zoom the image counterclockwise.	
4 times	Exit to the home screen from Shortcut Menu	——

13 Main Menu

In the home screen, press and hold down the **M (4)** button for three seconds to enter the main menu interface. The six functional options from top to bottom are Ultraclear mode, video out, buttery type, blind pixel correction, and factory reset.

➢ In the main menu, press **M (4)** button briefly to adjust the parameters of present option or enter the secondary menu.

➢ **P (5) button** is used to shift "up" or "left". **C (3)** button is used to shift "down" or "right".

➢ Press and hold down **M (4)** button for three seconds to exit advanced menu interface.

Advanced menu function description

Ultraclear Mode 👁	**Turn Ultraclear mode on/off** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Ultraclear** menu option with the **P (5) / C (3)** button. ● Turn Ultraclear mode on /off with a short press of **M (4)** button, along with the sound of shutter calibration. ● The icon will be displayed on the bottom of the screen when the Ultraclear mode is on. ● Ultraclear Mode will show more image details under the cloudy, rainy, foggy and other harsh weather conditions

Video Output ▤▶	**Turn video output on/off** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Video Output** option with the **P (5) / C (3)** button. ● Briefly press of the **M (4)** button to turn video out on/off. ● The icon will be displayed on the bottom of the screen when the video output is on. ● Video out function enable connectivity with an eternal display or recording device.
Handheld mode ✋	**Turn the handheld mode on/off** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Handheld mode** option with the **P (5) / C (3)** button. ● Briefly press of the **M (4)** button to set the Handheld mode on / off. ● When the handheld mode is turned on, the display area of the screen will become larger and the Image Calibration function will be hidden.
Battery Type ▬▬	**Select the battery voltage** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Battery Type** option with the **P (5) / C (3)** button. ● Briefly press of the **M (4)** button to select 3V or 3.7V according the battery voltage.

	● 3V is selected for dischargeable battery and 3.7V is for chargeable battery. ● Since chargeable batteries are of varying quality, we prefer to use dischargeable batteries.
Zeroing Type	**Select the zeroing type (only for Attachment)** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Zeroing Type** option with the **P (5) / C (3)** button. ● There are four types for selection G1/G2/G3/G4. ● Briefly press of the **M (4)** button to select one zeroing type. ● The selected type will be displayed on the bottom of the screen.
Blind Pixel Calibration	**Calibrate the blind pixels on the image** ● Press and hold down the **M (4)** button to enter the Main Menu. ● Select the **Blind Pixel Calibration** option with the **P (5) / C (3)** button. ● Briefly press of the **M (4)** button to enter the blind pixel calibration interface. ● A reticle will appear in the center of the screen. ● And then, moving the reticle up-down or left-right to select the blind pixel by pressing the **P (5) button** and **C (3)** button. ● Press the **M (4)** button briefly to switch the orientation of X-axis (left-right) and Y-axis (up-down).

	• After selecting the blind pixel, press **P (5) / C (3)** button at the same time to correct the blind pixels. • Repeat the above operations to continue selecting blind pixel, and the status bar at the bottom of the screen will display the number of corrected blind pixel. • When the correction is done, press and hold **M (4)** button to exit the blind pixel correction.
Factory Reset ↺	**Reset to the Factory Settings** • Press and hold down the **M (4)** button to enter the Main Menu. • Select the **Factory Reset** option with the **P (5) / C (3)** button. • Select **Y** or **N** with a briefly press of the **M (4)** button. The **"Y"** is to reset to the default, and the **"N"** is to cancel. • Short press the **M (4)** button to confirm the selection and exit to the home screen.

14 Technical Inspection

A technical inspection of the device is recommended before use.

• Check the external appearance of the device (there should be

no cracks in the casing).

• Check the condition of the lens and eyepiece (there should be

no cracks, greasy spots, dirt or other deposits)

• Check the condition of the rechargeable battery (this should be

charged) and the electrical contracts (there should be no presence of salts or oxidation).

15 Maintenance

Maintenance should be carried out at least twice a year and consist

of the following actions.

● Wipe the external surfaces of metal and plastic parts free of dust and dirt with a cotton cloth. Silicone grease maybe used for this.

● Clean the electrical contacts of the battery and battery slot on the unit using a non-greasy organic solvent.

● Check the glass surfaces of the eyepiece and the lens. If

necessary, remove dust and sand from the lenses (preferably using a non-contact method). Cleaning of the external surfaces of the optics should be done with substances designed especially for this purpose.

16 General Trouble Shooting

The table lists all the problems that may occur when operating the device. Carry out the recommended checks and troubleshooting steps in the order shown in the table. If there are defects that are not listed in the table or it is impossible to repair yourself, please contact with us as soon as possible. Private demolition is strictly prohibited.

Trouble description	Probable reason	Trouble shooting
Fail to start up	Wrong battery installation.	Reinstall the batteries observing polarity
	Batteries are fully exhausted or low power.	Change and install new batteries.

	Battery cover is not tightly closed.	Close tightly the battery cover.
Fail to work with an external power supply	Insufficient external supply voltage.	Check the voltage of external power supply.
Image is blurring, not clear, with vertical stripes and uneven background.	The objective lens is not focused.	Adjust the focal length of objective lens until the image becomes clear.
	No image correction for a long time.	Perform image correction.
No analog video output	The video out function is not turned on.	Turn the video out function in the Main Menu.
	Data cable doesn't support data transmission.	Replace a new data cable.
Point of impact does not match the aiming point.	Image calibration needs to be done.	Calibration the sensor.

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