Xclip ——Thermal Imaging Attachment
User Manual

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Contents

1. Description 2
2. Components and Controls 2
2.1 Components 3
2.2 Controls 4
3. Menu/Status Bar Icons 5
4. Specifications 6
5. System Function 7
6. Operation System 8
6.1 Power on / Power off 8
6.2 Standby Mode 8
6.3 Status bar 8
6.4 Shortcut Menu 8
6.5 Advanced Menu 9
6.6 Blind Pixel Calibration 11
6.7 Compass Calibration 12
6.8 Image Calibration (Only for Attachment) 13
6.9 Stadiametric Rangefinder (Only for Monocular) 14
7. Preventative Maintenance 15
7.1 Battery Installation 15
7.2 Product Cleaning and Maintenance 16
7.3 Safety Regulation 16
8. General Trouble Shooting 17
9. Appendix 18
9.1 User Interface Description 18
9.2 Product Dimensions 18
9.2.1 Boundary Dimension 18
9.2.2 Bottom Mounting Hole Size 19

1. Description

Xclip is a multifunctional thermal imager device equipped with two kinds of eyepiece that can be used either as a monocular or a front attachment as the infrared expansion device of white light. Different from the night vision device based on image enhancement, Xclip 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. Xclip has a wide range application including night hunting, observation and terrain orientation, search and rescue operations.

Fig. 1-1 Xclip thermal imaging attachment

2. Components and Controls

Fig. 2.1 Function introduction

2.1 Components

No.	Name	Function description
①	Lens Cap	Protecting the lens and using for background correction
②	Objective Lens	——
③	Lens Focus Ring	It is used to adjust the focal length of objective lens to make the image to be the clearest when the image is indistinct.
④	Battery Compartment Cover	Using two batteries which are CR123, CR123A or 16340 to supply power.
⑤	Monocular Eyepiece Locking Ring	Fixing the monocular eyepiece on Xclip unit.
⑥	Eyepiece Adjustment	Adjusting the diopter of monocular eyepiece to suit different eyesight.
⑦	Eye Shade	——
⑧	Attachment’s Eyepiece	Eyepiece as the infrared expansion attachment of white light sight
⑨	Clamping Ring for Adapter Ring	Used to lock the adapter ring between the white light sight and the attachment
⑩	Locking Ring of Attachment’s Eyepiece	Locking the Attachment’s eyepiece to Xclip unit.
⑪	Type-C Interface	Used for data communication and external power supply
⑫	Power Button	Power on/Power off/Standby/Up/Left
⑬	Menu(M) Button	Entering menu/Parameter switch
⑭	Correction(C) Button	Shutter correction/Background correction /Down/Right

2.2 Controls

<table>
<tr><th colspan="3">Operation in normal display mode</th><th colspan="3">Operation in menu mode/calibration interface</th></tr>
<tr><td></td><td>Short Press</td><td>Long Press</td><td></td><td>Short Press</td><td>Long Press</td></tr>
<tr><td>Power (12)
Button</td><td>Standby/
Awaken</td><td>Power on /
Power off</td><td>Power (12)
Button</td><td>Adjust parameter
/Scroll up options</td><td>——</td></tr>
<tr><td>M (13)
Button</td><td>Enter the
shortcut menu</td><td>Enter the
advanced menu</td><td>M (13)
Button</td><td>Function
switch/Parameter
selection★</td><td>Save and exit
menu</td></tr>
<tr><td>C (14)
Button</td><td>Shutter
correction</td><td>Background
correction</td><td>C (14)
Button</td><td>Adjust
parameter/Scroll
down options</td><td>——</td></tr>
<tr><td rowspan="4">M (13)
Button
+ C (14)
Button</td><td rowspan="4">——</td><td rowspan="2">Attachment:
Enter image
calibration
interface</td><td>Power (12)
Button</td><td>Up/Left shift</td><td>Up/Left quick
shift</td></tr>
<tr><td>M (13)
Button</td><td>X/Y shift</td><td>Save and exit</td></tr>
<tr><td>C (14)
Button</td><td>Down/Right shift</td><td>Down/Right
quick shift</td></tr>
<tr><td rowspan="3">Monocular:
Enter
stadiametric
rangefinder
interface</td><td>Power (12)
Button</td><td>Increase the
distance between
measurement bars</td><td>Quickly
increase</td></tr>
<tr><td>M (13)
Button</td><td>——</td><td>Exit</td></tr>
<tr><td>C (14)
Button</td><td>Reduce the distance
between
measurement bars</td><td>Quickly reduce</td></tr>
<tr><td colspan="6">★Under the shortcut menu, short press to switch functions; Under the advanced menu, short press to switch the parameter options.</td></tr>
</table>

3. Menu/Status Bar Icons

	Screen lightness setup，four levels 
	Image mode: B(Black hot)、W（White hot）、R（Red hot）、C（Pseudo Color）
	E-zoom (Only for Monocular: ×1，×2，×4)
	Ultraclear mode
	Bluetooth option/ Bluetooth on
	Bluetooth connected
	Video out option
	Video out on
	Battery type selection
	Blind pixel correction option
	Factory reset
	Battery capacity indicator
	Type-C power supply
	Orientation shift

4. Specifications

Model	Xclip CL42
Detector Parameters	
Detector Type	VOx Uncooled
Resolution	384*288
Pixel Size	17um
NETD	≤50mk
Frame Rate	50Hz
Optics Parameters	
Objective Lens	42mm
Field of View	8.9 °×6.7 °
Magnification	Attachment: 1×; Monocular: 2.9×-11.6×
Diopter Adjustment	-5D～+5D
Detection Range (Target size：1.7m×1.2m)	Detection：2100m（2 pixels） Recognition：700m（6 pixels）
Display	
Type	OLED
Resolution	1024×768
Electrical Parameters	
Battery	CR123×2
Power Consumption	＜1500mW
Max. Battery Life	4hr
External Interface	
USB Interface	Type-C
Video Output	PAL (RCA Port)
External Power	Type-C

Functions	
Digital Compass	√
Motion Sensor	√
Remote Control	Bluetooth
Stadiametric Rangefinder	Only for Monocular
Replaceable Parts	M18 Monocular Eyepiece
Physic Parameters	
IP Rating	IP67
Weight (without batteries)	＜420g
Dimension	154mm×61mm×58mm
Adapter Ring	M52×0.75

5. System Function

- Quick conversion between attachment and monocular;
- Quick mounting and removal of attachment
- Detection range above 1.5km;
- 1024×768 high resolution OLED display;
- Bluetooth remote control;
- Four image modes – white hot, black hot, red hot, pseudo color;
- Monocular digital zoom： ×1、 ×2、 ×4;
- Type-C interface power supply and data transmission;
- Build-in Bluetooth, compass, motion sensor;
- IP67 protection level;
- Compact size;
- Light weight and high impact resistance;

6. Operation System

6.1 Power on / Power off

In shutdown mode, long press Power (4) button for 3s to start up Xclip and the startup image appears on the display screen at the same time. After 6s, the device is started.

Long press **Power (12)** button for about 5s to shut down the device.

6.2 Standby Mode

Enter/exit the standby mode with short pressing the **Power (12)** button for power saving.

6.3 Status bar

The status bar is located at the bottom of the screen, which shows information such as image mode, screen lightness level, bluetooth activated, E-zoom, video out activated, battery status.

6.4 Shortcut Menu

In the normal display mode, short press **M (13)** button to switch the order of "no menu - screen brightness - image mode - electronic zoom - exit shortcut menu", and by pressing **Power (12)** button and the **C (14)** key to adjust the parameters of each function. Shortcut menu interface is as shown in fig. 6-1.

- **Screen lightness：** 1~4 lightness level;
- **Image mode:** W (White hot), B (Black hot), R (Red hot), C (pseudo color);
- **E-zoom (only for monocular):** ×1、×2、×4.

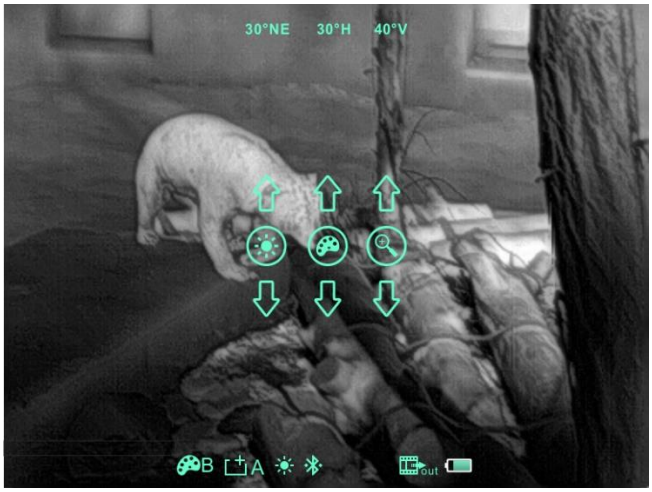


Fig. 6-1 Shortcut Menu

6.5 Advanced Menu

Long press the **M (13)** button for 3s to enter the advanced menu interface (fig. 6-2). From top to bottom the six function options are Ultraclear mode, Bluetooth, video out, buttery type, blind pixel correction, factory reset, referring to table 6-1 for details.

Operations:

- Under the advanced menu, short press **M (13)** button to adjust the parameters of present option or enter the secondary menu.
- **Power (12)** button is used to shift “up” or “left”, **C (14)** button is used to shift “down” or “right”;
- Long pressing **M (13)** button for 3s to exit advanced menu interface.

Fig. 6-2 Advanced menu interface

Table 6-1 Xclip advanced menu function description

Icon	Name	Function	Description	Status
	Ultraclear Mode	ON/OFF	In this mode, the image contrast is enhanced, which is suitable for cloudy, rainy, foggy and other harsh weather conditions	The icon displays on the status bar.
	Bluetooth	ON/OFF	When Bluetooth is on, it can be operated with the bluetooth remote control or mobile phone APP (please search for connection by mobile phone within 1 minute, otherwise, the bluetooth will be automatically turned off).	The icon displays on the status bar.
	Video Output	ON/OFF	Transfer the analog video in pal through the Type-C data cable.	The icon displays on the status bar.

	Battery Type	3V/3.7V	3.7v is selected for rechargeable batteries, and 3V is for normal dry batteries.	——
	Blind pixel correction	Calibrate the blind pixels on the image	Refer to 6.6	Blind pixel calibration interface（fig. 6-3）
	Factory reset	Restore factory state	Y: Confirm，N：Cancel Then long press M button to save and exit.	——

6.6 Blind Pixel Calibration

- Under the advanced menu, select the blind element calibration option and press **M (5)** button to enter the blind pixel correction interface (fig.6-3). A cross cursor will appear in the center of the screen.
- And then, move the cursor up-down or left-right to select the blind pixel through the **Power (4)** button and **C (6)** button. And press **M (5)** button to switch the orientation of X-axis (left-right) and Y-axis (up-down);
- After selecting the blind pixel, press **Power (4)** and **C (6)** button at the same time to correct the blind pixels;
- Repeat the above operations to continue selecting blind pixel, and the number of corrected blind pixel is shown on the status bar at the bottom of the screen;
- After the correction is completed, long press **M (5)** button to exit the blind pixel correction.

Fig. 6-3 Blind pixel correction interface

6.7 Compass Calibration

- Long press **M (13)** button to enter advanced menu;
- Under the advanced menu, rotate Xclip 360 °3 laps around the optical axis to enter the compass calibration interface, rotate direction as shown in fig. 6-4.

Fig. 6-4 Rotate direction

- And then, that a three-axis coordinate system (shown as fig. 6-5) will appear in the center of the screen, ten plane calibration method is used to rotate Xclip. It will automatically exit and complete compass calibration after 30s.
- During the calibration process, short press **Power (12)** button to exit the compass calibration interface at any time.

Fig. 6-5 Compass calibration interface

6.8 Image Calibration (Only for Attachment)

When Xclip is installed on the white light sighting tool as an infrared extension component, if the cross division of the white light sighting is not in the center of the infrared image, the image calibration function can be used to shift the infrared image to ensure the position consistency between the white light image and the infrared image.

Fig. 6-6 Image calibration interface

Operation:

- In normal display mode, press the **M (13)** button and **C (14)** button for 3s at the same time to enter the image calibration interface (fig. 6-6).

- Pressing **M (13)** button to switch the orientation of X-axis (left-right) and Y-axis (up-down);
- Short press **Power (12)** button or **C (14)** button to change the position of screen and long pressing to start quick shift.
- After completing calibration, long press **M (13)** button to save and exit the calibration interface.

6.9 Stadiametric Rangefinder (Only for Monocular)

Stadiametric rangefinder is only for monocular mode which allows the user to estimate approximate distance to an object of known size.

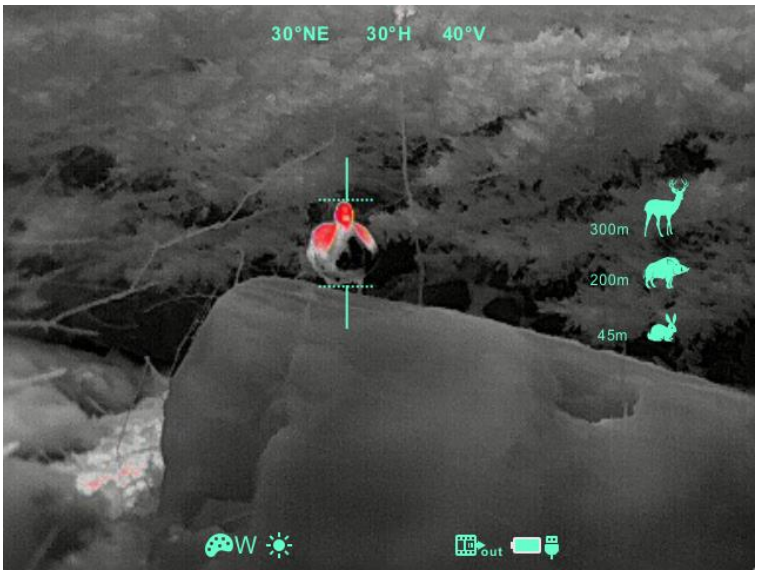


Fig. 6-7 Stadiametric rangefinder interface

- In normal display mode, press the **M (13)** button and **C (14)** button for 3s at the same time to enter the stadiametric rangefinder interface (fig. 6-7).
- You will see on the display: two measurement bars, icons of three reference objects and respective distances foe the three objects.
- There are three pre-set reference objects:
  - **Hare** - height 0.2m
  - **Wild boar** - height 0.8m
  - **Deer** - height 1.7m

- Aim at the target, and then adjust the distance between the measurement bars by pressing **Power (12)** button or **C (14)** button until the target matches entirely between the two bars. **Power (12)** button is used to increase the distance and **C (14)** 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 (13)** button.

7. Preventative Maintenance

7.1 Battery Installation

- The battery power icon is displayed on the status bar ( )and there are four levels of power;
- When the icon is appeared on the status bar, please change the battery in time so as not to affect the use;
- It is necessary to power off before replacing the batteries;
- Turn the **battery compartment knob (4)** counterclockwise until stop and remove it.
- Install two CR123 batteries according to electrode instructions on the label inside the battery compartment as shown in fig. 7-1, and inside it.
- Replace the battery cover and press it until it's clicking position - make sure the cover is closed on both sides.

Note:

- **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 (according to the instructions of the section 6.5), otherwise the battery level

indication will be inaccurate and may be interrupted during operation.

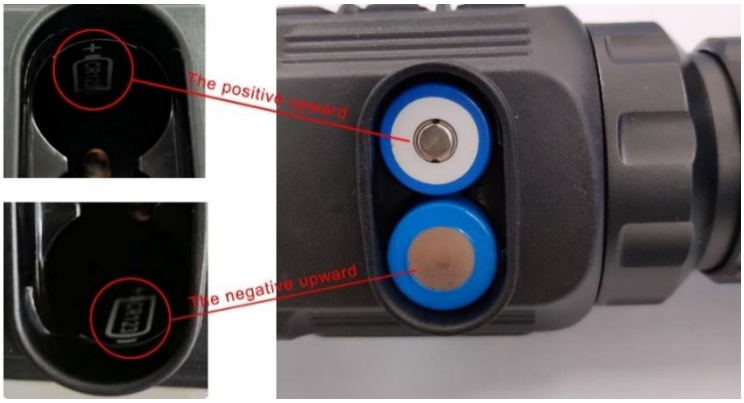


Fig. 7-1 Schematic diagram of battery installation

7.2 Product Cleaning and Maintenance

- It is prohibited to clean the product body with the cleaning product which is corroded or scratched to optical glass.
- The product body can be scrubbed with soft cloth dipping certain amount of alcohol.
- For optical glass devices such as eyepiece lens and objective lens, dust should be blown first, and then use charcoal pen or fat-free cotton dipping non-methylated alcohol to wipe slightly.

7.3 Safety Regulation

▸ Please use batteries regularly. Do not throw the batteries away or put them into fire after use;

▸ Please use standard charger to prevent the product from damages;

▸ No short circuit;

▸ It is prohibited to expose the product in the high temperature environment more than 60℃;

▸ It is prohibited to put the product into fire.

8. General Trouble Shooting

Table 8.1 Xclip general trouble shooting

Trouble description	Probable reason	Trouble shooting
Image blurring	The focal length of the objective lens does not meet;	Adjust the focal length of objective lens until the image becomes clear.
	No image correction for a long time.	Perform image correction.
Blurred vision	Eye relief doesn’t match;	Adjust the Eye relief until the image becomes clear.
No analog video output	Analog video doesn’t open;	Open analog video output.
	Data cable doesn’t support data transmission.	Replace data cable.
Fail to start up	Wrong battery installation or low power.	Check the battery installation and battery power.
	Insufficient external supply voltage.	Check the voltage of external power supply.
The attachment’s eyepiece is stuck during installation.	Eye relief mounting limit block isn’t placed parallel to the guide slot and the position is dislocation.	Loosen the eyepiece, push it back to square, and then rotate the mounting.
When aiming at the target, the reticle swings and cannot be aimed at the target.	The white light sight parameter is not the correction distance of 100 yards.	Replace the white light sight with a 100-yard sight.

※ ★Please contact with our company relevant personnel as soon as possible if

there are some abnormalities that cannot be ruled out. Private demolition is strictly prohibited.

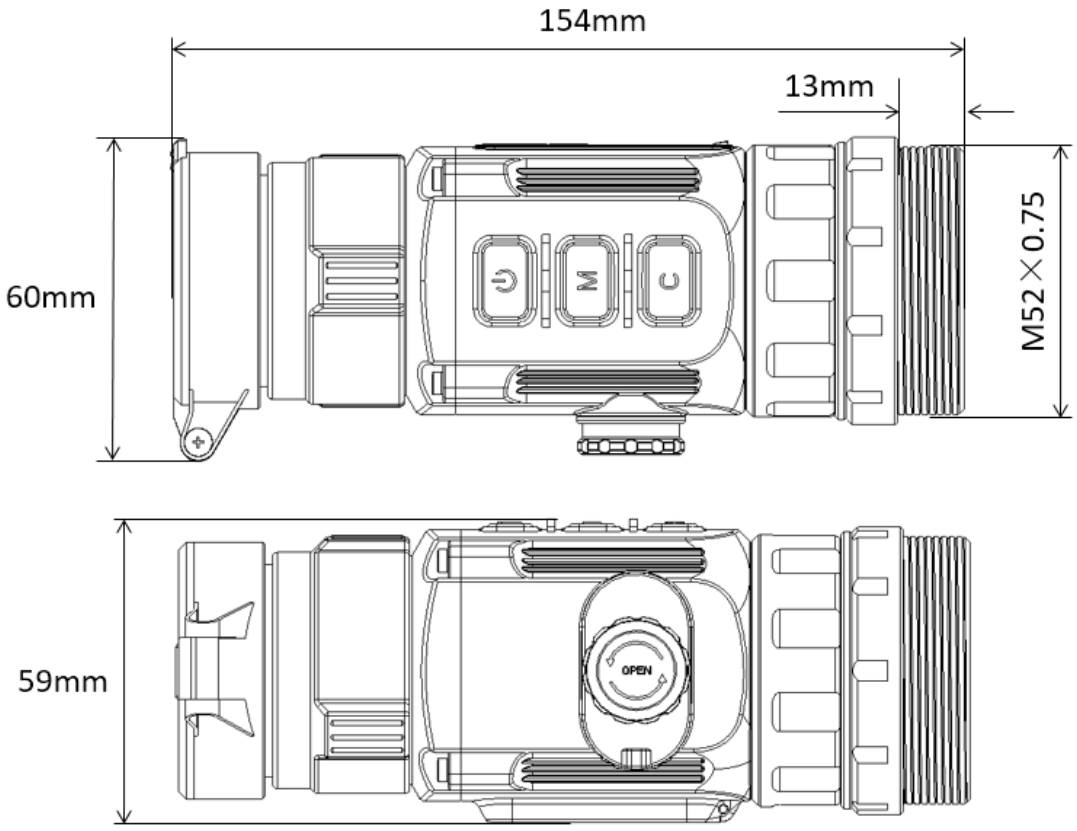
9. Appendix

9.1 User Interface Description

- Custom interface and data cable are adopted to support type-c power supply, serial port and PAL video;
- Support type-c and battery power supply, support over-voltage and under-voltage reverse connection protection.

9.2 Product Dimensions

9.2.1 Boundary Dimension



9.2.2 Bottom Mounting Hole Size