

Quick Start Guide

Handheld Thermal Imaging Monocular



– USER MANUAL –

FCC Statement

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

RF Exposure Information

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

Specific Absorption Rate (SAR) information:

This Communicator meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies.

The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. FCC RF Exposure Information and Statement the SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue.

Device types: Communicator has also been tested against this SAR limit. This device was tested for typical body-worn operations with the back of the Communicator kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain an 0mm separation distance between the user's body and the back of the Communicator. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.



Under no circumstances (on/off) do not look directly at high intensity radiation sources such as the sun



Do not touch the surface of the lens



Do not remove the battery cell



Do not touch the Type-C interface with wet hands



Do not bend or damage the connecting cables

Package Contents

Package Dimensions	Total Packaged Weight
220x120x75mm	≤ 520g



Main Unit (x1)



User Manual (x1)



Lens Cleaning Cloth (x1)



Hand Strap (x1)



Carry Bag (x1)

CATALOGUE

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Thank you for choosing us! To ensure you have the best user experience, we recommend reading this user manual carefully before use. If you have any questions, please feel free to contact us.

1 Product Overview

This product is a handheld high-performance infrared thermal imaging device that can help you observe target objects under various environmental conditions. The device is compact, featuring high sensitivity and high refresh rate for precise detection, with long-lasting battery life. It can be used in various scenarios such as security monitoring, search and rescue, outdoor exploration, and special missions.

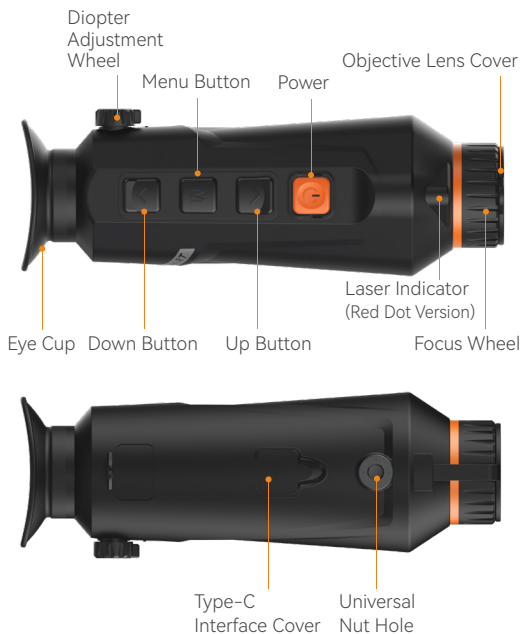
2 Functional Features

1. Real-time image noise reduction function;
2. Contrast, brightness, sharpness adjustable;
3. Pseudo-color modes: white hot, black hot, rainbow, iron red, red hot, bird observing;
4. Image output resolution: OLED: 1024×768; CVBS(PAL): 768×576;
5. Bad pixels correction;
6. Hot spot tracking function;
7. Wi-Fi image transmission, photo/video capture;
8. Picture-in-picture function;
9. Multiple reticles display;

10. Supports 1x, 2x, 4x digital zoom;

11. Default chinese and english language(customizable);

3 Product Appearance



1. Diopter Adjustment Wheel

Used to match the best viewing acuity of different users, with an adjustment range from -5 to +5. The adjustment would be fine when the date, battery level, Wi-Fi level or the sub-menu function icons display clearly on the main menu.

2. Universal Nut Hole

For securing equipment, such as mounting the equipment on a tripod or a Picatinny rail.

3. Type-C Interface

Used for picture and video data transmission and external analog display (PAL) output. Note: The external analog output display needs to be customized by the manufacturer.

4. Focus Wheel

After powering on the product, align it with the observation target. If the distance to the observation target changes and the image may becomes blurry, rotate the lens focus wheel to refocus until the target image is clear.

4 Button Definition

Button	Long Press	Short Press	Double Click
Power Button	Power On/ Power Off	Standby/ Wake-up Mode	/
Menu Button	Enter/ Exit Menu	Pseudo-color Mode Switch	Enter/ Exit Red Dot (Red Dot Version)
Up Button	Start/ Stop Recording and Save Video File	Move Upwards/ Capture and Save Photo	/
Down Button	Manual Shutter Calibration	Move Downwards/ Digital Zoom	/

5 Product Parameters

Model	SMART-310	SMART-319	SMART-325	SMART-619	SMART-625
Detector	Uncooled VOx Microbolometer				
Resolution/pixels	384×288/12μm			640×512/12μm	
Objective Lens (F1.0)	9.7mm	19mm	25mm	19mm	25mm
Field of View	26.7° ×20.2°	13.8° ×10.4°	10.5° ×7.9°	22.9° ×18.4°	17.5° ×14.0°
Visual Magnification	1~4	1.8~7.2	2.4~9.6	1.1~4.4	1.5~5.8
Laser Indicator	650nm Class II Range >100m				
Spectral Band	8~14μm				
Eyepiece Diopter	-5~+5				
Eye Relief	23mm				
NETD	≤ 35mk@300K				
Display	0.39"OLED 1024x768				
Digital Zoom	1x、2x、4x				
Frame Rate	50Hz				
Protection Rating	IP67				
Power Source	Built-in Li-ion Battery				
Operating Time	≥ 6h				
Interface	Type-C				
Weight (Including batteries)	≤ 251g			≤ 260g	
Dimensions	≤ 170×60×59mm				
Operating Temperature	-20℃ ~+55℃				
Detection Range (Human)	450m	900m	1200m	900m	1200m
Detection Range (Animal)	400m	800m	1000m	800m	1000m

Note: Due to continuous product improvements and upgrades, parameters in the table may be subject to modifications without further notification.

6 Main Interface



7 Menu Introduction

Icon	Name	Description
	Automatic Shutter Calibration	Open/Close Automatic Shutter
	PAL	Open/Close PAL
	Hot Point Tracking	Turn on/off Hot Point Tracking
	Wi-Fi	Turn on/off Wi-Fi
	Brightness	Brightness Adjustment
	Contrast	Contrast Adjustment
	Sharpness	Sharpness Adjustment
	Auto Power Off	Auto Power Off Settings
	Picture-in-Picture	Turn on/off Picture-in-Picture
	Date/Time	System Date and Time Settings
OSD	OSD	Open/Close Time、Date Information
	Restore Factory Settings	Restore Parameters to Default
	Language Selection	Select Menu Language
	Version Information	View Device Information
	Reticle	Reticle Settings
	Bad Pixels Correction	Bad pixels appear during use, adjust the threshold, save, the system will automatically eliminate bad dots
	Red Dot Setting (Red Dot Version)	Red Dot Voordinate Adjustment

8 Operation Introduction

8.1 Power On / Power Of / Standby

When powered off, long press the power button for 2 seconds to start the product, which will display the startup Logo.

When powered on, Press and hold the power button for 3 second, a 3-second countdown to shutdown will appear. Keep holding the button until the countdown ends to shut down the device; otherwise, the shutdown will be canceled.

When powered on, short press the power button to enter standby mode.

In standby mode, short press the power button again to wake up the device.

8.2 Menu

On the home screen, long press the M to enter the menu. Short press the up/down buttons. Short press the M to enter the sub-menu options, and long press the M button to return to the previous menu or exit the main menu.

8.3 Digital Zoom

When powered on, short press the down button on the main screen to cycle through digital zoom, with options for 1x, 2x, and 4x.



1x Image



2x Image



4x Image

8.4 Diopter Adjustment / Focus

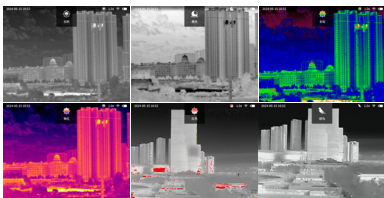
Adjust the objective lens using the focus wheel to observe distances from 0.5m (If lens different, the minimum imaging range is different, the larger the focal length, the farther the minimum imaging distance) to infinity. Rotate counter clockwise for distant focus and clockwise for near focus.

8.5 Picture and Video

When powered on, press the up button shortly, and the prompt "Image saved" appears. Long-press the up button to start recording a video. The status bar shows the recording time. Long press the Up button again, the prompt of "Video saved" appears, which means it is saved successfully.

8.6 Pseudo-color Mode

When powered on, short press the M button to switch pseudo-color: white hot, black hot, rainbow, Iron Red, Red hot, Bird Observing.



8.7 Automatic Shutter Calibration

Long press the M button to enter the menu, select automatic shutter calibration option. Short press the M button to turn it on or off.

After enabling automatic shutter calibration, the device will perform calibration once every minute (1-2 times per minute within the first 10 minutes of powering on).

8.8 PAL

Long press the M button to enter the menu, select the PAL option, and short press the M button to enable it. Before enabling PAL, make sure the external screen is connected via Type-C. After enabling PAL, the OLED screen will turn off. At this point, short pressing the power button will exit PAL output and turn the OLED screen back on.”

8.9 Hot Point Tracking

Long press the M button to enter the menu, select hot point tracking; short press the M button to toggle.

8.10 Wi-Fi

Long press the M button to enter the menu, short press the up/down button to switch to the Wi-Fi. Press the M button to switch.

8.11 Brightness Adjustment

Long press the M button to enter the menu, short press the up/down button to switch to the brightness then short press M button to adjust brightness. Brightness level: low, medium, high.

8.12 Contrast Adjustment

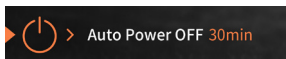
Long press the M button to enter the menu, short press the up/down button to switch to the contrast then short press M button to adjust contrast. Contrast level: low, medium, high.

8.13 Sharpness Adjustment

Long press the M button to enter the menu, short press the up/down button to switch to the sharpness then short press M button to adjust sharpness. Selectable level: 1, 2, 3, 4.

8.14 Auto Shutdown Settings

Long press the M button to enter the menu, short press the up/down button to switch to the auto power off then short press M button to switch options contrast. Optional items: Off, 30 min, 45 min.

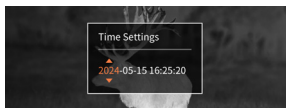


8.15 Picture-in-Picture Settings

Long press the M button to enter the menu, short press the up/down button to switch to the PIP then short press M button to turn on/off the PIP. In this mode, using digital zoom will only magnify the small window screen.

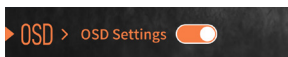
8.16 Time Settings

Long press the M button to enter the menu, short press the up/down button to switch to the time settings then short press M button to enter the sub-menu and change the time by up/down button.



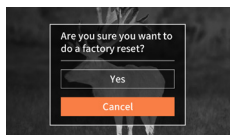
8.17 OSD Settings

Long press the M button to enter the menu, short press the up/down button to switch to the OSD settings then short press M button to turn on/off OSD.



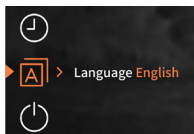
8.18 Restore Factory Settings

Long press the M button to enter the menu, short press the up/down button to switch to the Restore Factory Settings, short press M button to enter the sub-menu and follow the prompts to choose between restoring or canceling the factory settings using the up/down button.



8.19 Language Settings

Long press the M button to enter the menu, select language selection to enter the sub-menu, and choose different languages by short press M button.



8.20 Version Information

Long press the M button to enter the menu, short press the up/down button to switch to the version information, short press M button to enter the sub-menu for checking and long press M button for leaving.

8.21 Reticle Settings and Ranging

Long press the M button to enter the menu, switch to reticle settings by up/down button, and then short press M button to change the different reticle styles.



8.22 Bad Pixel Correction

Please make sure the lens cover is closed before using this function!

Long press the M button to enter the menu, short press the up/down button to switch to the bad pixel correction, short press the M button to enter the submenu, short press the up/down button to switch options, short press the M button to confirm or switch thresholds.

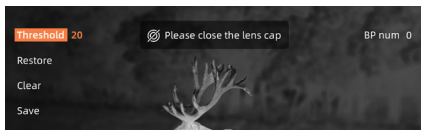
After entering this function, several options are displayed, including Threshold, Restore, Remove, Save, and Bad Pixel Number.

Threshold can be adjusted by up and down button, the threshold range is 20~32, the smaller the threshold, the more bad pixels can be cleared, it is recommended to set the threshold near 26.

When the option is on the Restore option, short press the Up or Down button to undo the last operation.

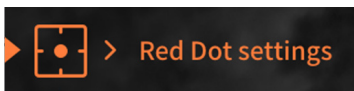
When the option is on the remove option, short press the Up or Down button, all the bad pixels of the screen will be eliminated. And the bad pixel number will show the bad pixel number corresponding to the current threshold value. when the bad pixel number is greater than 1000, it is considered to be an over-calibration behavior, at this time, you should restore first, then adjust the threshold value to a greater value, and continue to clear, if the bad pixel number is still greater than 1000, repeat the above steps until the number is less than 1000. Be careful to carry out the save operation when the bad pixel number is greater than 1000.

When the option is on the save option, short press the up or down button to save all previous operations.



8.23 Red Dot Settings (Red Dot Version)

Long press the M button to enter the menu, short press the up/down button to switch to the red dot settings, and adjust X/Y axis coordinates with the up/down buttons. Short press the up/down button to save all operations in the save option.



8.24 Read Data / Charging

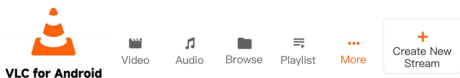
Insert the Type-C data cable into the bottom Type-C interface, connect the other end to the computer. Double-click "My Computer" on the desktop to access and manage the photos and videos stored on the SD card in the device.

When the thermal imager displays a battery level below 20%, you need to use a charger connected to the Type-C port to recharge. Open the Type-C port cover at the bottom, and connect it to a power source to charge.

8.25 Exploring Through the App

Enable the hotspot feature in the product's Wi-Fi menu, with the hotspot name set to IR-Camera. Turn on the Wi-Fi function on your phone and connect to IR-Camera, with the password 87654321.

Download a streaming player from the app store capable of creating streams. Taking VLC player APP as an example, open the VLC player APP, click on more options, and create a new stream (the software download can be found in the app store or browser).



Enter Stream URL

rtsp://11.1.1.1:554/live

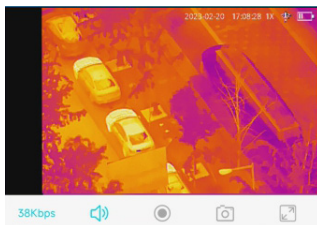
Transmission Protocol: ☐ TCP ☒ UDP

Send Keep Alive Packets: ☒

Cancel Confirm

The address is: `rtsp://11.1.1.1:554/live`

By entering the address and clicking confirm, live stream the image feed on to your smartphone with the app of the device.



9 Precautions

1. Avoid aiming the thermal imager directly at strong radiation sources such as sunlight or lasers to prevent irreversible damage.
2. The rated charging voltage for this product is 5V. Please avoid overcharging, which may affect the lifespan of the thermal imager. Charge the device promptly when the battery is low.
3. It is recommended to use this product within a temperature range of -20°C to $+55^{\circ}\text{C}$. Avoid extended use in high-temperature environments, as the thermal imager will enter a high-temperature protection mode and shut automatically. Do not charge the device in an environment exceeding 40°C .
4. When using this product in a humid environment, ensure that the Type-C interface cover is tightly closed.
5. Routine user maintenance involves cable inspection, periodic cleaning, and functional checks to keep the device in optimal condition.
6. During long periods of non-use, please recharge the device at least every two months and store it in a dry and well-ventilated environment.
7. If the device malfunctions, do not attempt to dismantle the module. Contact us for troubleshooting before taking any further action. Disassembling the device by yourself will cause damage and void the warranty.

10 Trouble Shooting

1. Device won't turn on

Solution: Press and hold the power button for 10 seconds to force a shutdown, then long press the power button again to turn it on.

2. Device can't take photos/record videos

Solution: Internal storage is full. Transfer data and format the memory.

3. Device displays incorrect time

Solution: Reset the product's time and date in the menu.

4. Screen turns off during use

Solution: Press the power button short to wake from sleep and light the screen.

5. Blurry imaging during use

Solution: Turn the view handwheel counterclockwise until you can clearly see the main interface date, time, Wi-Fi signal, battery level, or menu functions. Then manually turn the focus handwheel to focus until the target is displayed clearly.

11 Storage and Transport

Here are methods for the product storage and transportation. To prevent potential dangers and property loss, please read carefully before use.

Storage:

1. Store the device in an environment of -45°C to 60°C , with relative humidity not exceeding 95%, free from corrosive gases, and with good indoor ventilation.

Transport:

During transportation, avoid rain, water immersion, upside down positioning, and prevent severe vibration and impact. Handle with care during transportation, and strictly avoid dropping.

12 Service and Support

For more support or information, you can contact us at:

Website: <https://en.jpnavision.com/>

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