

Medusa Series

USER MANUAL

Thermal Imaging Monocular



M2V2.0-650L

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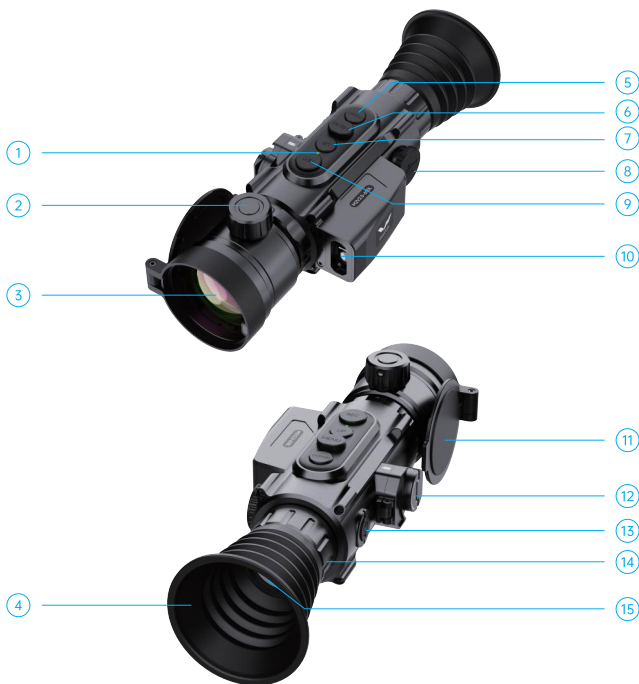
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1. Product Overview

1. M2V2.0-650L is an infrared thermal imaging telescope designed for observation and rangefinding at night and under adverse weather conditions.
2. The product identifies the thermal radiation of target objects. The image signals, captured by the thermal imaging module, are processed and transmitted to an OLED display. Users obtain clear and visible images through eyepiece magnification. Simultaneously, users can conduct real-time image observation and monitoring via a mobile app, as well as perform related settings and operations.
3. The thermal imaging system utilizes a high-pixel thermal imaging module paired with a large-aperture thermal lens to output high-quality thermal images. Additionally, the eyepiece lens can be adjusted for focus, allowing for clarity adjustment of observed objects at distances ranging from 5m to infinity.

2.Product Components



1.Status Indicator	2.Objective Focus Ring	3.Objective Lens
4.Eyepiece Cup	5.Navigation Button(Down)	6.Menu Button
7.Navigation Button (Up)	8.Data Port Cover	9.Photo/Recording Button
10.Rangefinding Module	11 .Lens Cap	12.Battery Compartment Cover
13.Power Button	14.Eyepiece Focus Ring	15.Eyepiece

3.Package Contents

- ▶ M2V2.0-650L Thermal Imaging Monocular
- ▶ 18650 Battery
- ▶ Type-C Data Cable
- ▶ Carrying Case
- ▶ User Manual
- ▶ 5V/2A Power Adapter
- ▶ Dual-Pin Mount(with screws,hex nuts,and wrench)

4.Operation Guide

4.1.Warnings

- (1) Do not point the thermal imaging telescope directly at intense radiation sources such as the sun, CO₂ lasers, or welding machines.
- (2) Ensure the interval between power cycles (on/off) is greater than 20 seconds.
- (3) The thermal imaging telescope combines precision optics and ESD-sensitive (electrostatic discharge-sensitive) electronics. Do not drop, strike, or vibrate the device or its accessories to avoid structural damage or dimensional deformation.
- (4) Do not disassemble the thermal imaging telescope yourself. Contact the manufacturer immediately if a malfunction occurs; otherwise, the warranty will be void.
- (5) When the device is not in use or during transportation, remove the battery and store the thermal imaging telescope in a protective packaging box.
- (6) Replace the battery promptly when low power is indicated to prevent over-discharge damage to the battery.
- (7) Using the device beyond the specified operating environment in this manual may cause damage to the thermal imaging telescope.

Note: Only charge with a 5V 2A charger.

4.2.Precautions

- (1) When cleaning non-optical surfaces of the thermal imaging telescope, do not use chemical solvents or diluents. Use a clean, soft, dry lint-free cloth to wipe the exterior.
- (2) The infrared lens of the thermal imaging telescope is coated with an anti-reflective (AR) coating. Clean the lens only when visibly dirty, as frequent wiping may damage the coating. Avoid touching the lens surface, as acidic residues from fingerprints can harm the coating and lens. Use only dedicated lens cleaning tissue for lens maintenance.
- (3) After observation or during extended periods of non-use, turn off the device promptly to extend the thermal imaging telescope's effective operating time.

5.Key Functions



Power Button

- (1) Press and hold the power button for 3 seconds to turn the device on or off.
- (2) Main Screen: Tap once to turn the screen on or off;
Double-tap to take a photo manually.
- (3) Menu Mode: Press briefly to exit Menu Mode.



Photo/Recording Button

- (1) Main Screen: Tap briefly to take a photo;
press and hold to record a video.



Navigation Button(Up)

- (1) Menu Mode: Press briefly to move up.
- (2) Main Screen: Tap briefly to switch modes; press and hold to turn Picture-in-Picture on or off.



Menu Button

- (1) Main Screen: Press briefly to enter the menu.
With ranging active, briefly press to lock the distance.
- (2) Menu Mode: Press and hold to return to the previous menu or exit the menu.



Navigation Button(Down)

- (1) Menu Mode: Press briefly to move down.
- (2) Main Screen: Tap briefly to change the magnification;
Press and hold to turn the rangefinder on or off.

6.Menu Functions

Icon	Main Menu	Function Description
	Color Temperature	Short press the menu button to enter the menu. There are 2 options in color temperature. Selecting "Cool Color" or "Warm Color" will change the imaging screen accordingly.
	Screen Brightness	Short press the menu button to enter the menu. There are 10 options for screen brightness. The screen image will change accordingly based on your selection, allowing you to choose the appropriate level according to your usage habits.
	Contrast	Short press the menu button to enter the menu. There are 10 options for contrast. The imaging screen will change accordingly based on your selection. The higher the value, the stronger the imaging contrast.
	Image Detail Enhancement	Short press the menu button to enter the image detail enhancement option. The higher the number, the more details are displayed.
	Advanced Settings	Function Description
	WiFi	1. Turn on WiFi in the device menu, then enable WiFi on your phone and open the Falcon Outdoor app. Find the MAC address name "APPshow-XX-XXXXX" on the phone's WiFi list and enter the password "12345678" to connect the device. 2. After the device is connected to the phone via WiFi, real-time captured images can be observed.
	Picture-in-Picture	Short press the Menu button to enter the submenu, then select On or Off. Short press the Menu button again to confirm and return to the main menu.
	Reticle Type	Options: Off, and 10 types of reticles are available.
	Reticle Color	Options: Black, White, Gray, Red, Green.
	Zeroing Storage	Used to save the user's ballistic zeroing point parameters.
	Reticle Zeroing Adjustment	▶ Short press the Menu button to enter the reticle zeroing calibration interface. Press the Video button to switch between function options, and use the Up/Down buttons to adjust values. Image Freeze: Short press the Menu button to enable or disable screen freeze. Press the Video button to select the X and Y axis values, then use the Up/Down buttons to adjust the reticle position until it aligns with the point of impact. Press the Video button again to move to other options. After adjustment, select Save and short press the Menu button to save and exit, or long press the Menu button to exit without saving. The selected distance is used as the zeroing distance for smart ballistics and is saved to the zeroing memory.

	Auto NUC	When enabled, the shutter speed will automatically adjust based on time and temperature to optimize image quality; when disabled, the shutter speed will not adjust based on time and temperature, and you will need to manually adjust the shutter speed to correct image quality. Please use this feature with caution;
	Auto Ballistics	There are three modes for auto ballistics: Off disables the feature, On enables automatic ballistic calculation, and Settings allows you to manually adjust the ballistic parameters.
	Gyroscope	Short press the Menu button to enter the submenu, then select On or Off to enable or disable the gyroscope.
	Range Unit Selection	There are two options for range unit selection: Meter / Yard.
	Date & Time	Select the "Date/Time" menu and short press the Menu button to enter the sub-options. Press the Video button to navigate through options, use the Up/Down keys to adjust values, and short press the Menu button to save and exit.
	Multi-language	Short press the Menu button to enter the language settings, use the Up/Down keys to select the desired language, and short press the Menu button to confirm.
	Record Audio	After selecting "Record Audio" with the cursor, short press the menu button to bring up the submenu. Select "On" or "Off" in the submenu to determine whether video recording includes audio input.
	Defective Pixel Correction	Move the cursor to select the "Defective Pixel Correction" menu, short press the menu button to enter the submenu, and short press the up/down keys to switch between "Auto Correction" and "Manual Correction" modes. If correction is needed, you must close the lens cover and follow the prompts to perform the defective pixel correction operation. (1) Select "Auto Correction" and short press the menu button to correct successfully. (2) Select "Manual Correction", move the cursor through the power button, and short press the menu button to correct successfully and save.
	Image Calibration	Enter the Image Calibration menu and select Confirm. Close the lens cover, then short press the Menu button to perform background uniformity calibration. Settings are saved automatically when calibration is complete.
	Format	Move the cursor to select the "Format Memory Card" menu, short press the menu button to enter the submenu, short press the up/down keys to switch selections, and short press the menu button again to confirm the option. Please choose and confirm cautiously, as data cannot be recovered after deletion.

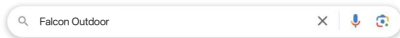
	Custom Pseudo-Color Mode	Available modes: White Hot, Black Hot, High Brightness, Low Light, Pseudocolor and Red Hot. Select the appropriate mode based on your needs, or cycle through them using the Up/Down buttons.
	Zoom Select	Move the cursor to the Zoom option and press the Menu button to open the submenu. Use the Up/Down keys to select the desired zoom level, then press the Menu button to confirm.
	Auto Power Off	Move the cursor to select "Auto Power Off Settings" and short press the menu button to bring up the submenu. Select "3 minutes, 5 minutes, Off" in the submenu. The default is Off. After power-on, you can select 3 minutes or 5 minutes for auto power off.
	Default Value	Under the advanced menu, use the up/down keys to select the "Restore Factory Settings" option. Switch selections by short pressing the up/down keys, and short press the menu button again to confirm the option. After confirmation, it will restore to the factory default settings. Please operate with caution.
	Version Information	Move the cursor to select "Version", short press the menu button to view the device software version information.

7. Device Connection

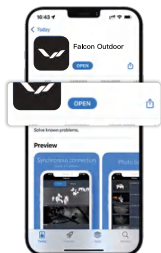
Download the dedicated app to connect to mobile devices via Wi-Fi.



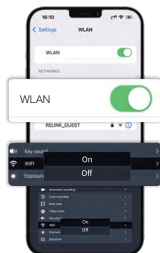
Scan for Android/iOS download



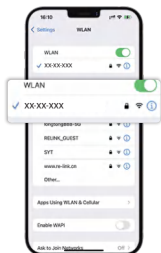
Google Play Store search "Falcon Outdoor" to download



Download and install the APP



Turn on WIFI on both the phone and the device



Select wifi "XX..." and connect
(WIFI default password: **12345678**)



Open the APP

8.Specifications



M2V2.0-650L

Sensor	
Type	Uncooled Vanadium Oxide
Resolution	640x512
Frame Rate	50 Hz
Pixel Size	12μm
Sensitivity	≤18mk
Optics	
Objective Lens	50mm/F1.0
Base Magnification	2.8X
Digital Zoom	1x / 1.5x / 2 x / 2.5x / 3 x / 4 x / 6 x / 8x
Eye Relief	50 mm
Diopter Adjustment	+5/-5 D
Focus Range	5m - ∞
FOV	8.8°X6.6°
Detection Range (Target size:1.7mX0.5m)	2500m

Display	
Color Modes	White Hot, High Light, Black Hot, Low Light, Fusion, Red Hot
Type/Res	0.49 inch / OLED / 1920X1080
Power	
3D Gyroscope	Yes
Power Input	3-4.2 V
Battery	18650 Li-ion/ 3500mAh
External Power	5V (USB)
Runtime	5 hours
Shock Resistance	10000J
Waterproof Rating	IP67
Operating Temp	-20°C~+50°C
Dimensions	253.5x89.8x75.4mm
Weight	695g ±5g
Recorder	
Video/Photo Res	1440X1080
Formats	.mp4 / .jpg
Storage	32 GB built-in
Wireless	
Frequency	2.4GHz
Standard	802.11 b/g
WiFi Range	15m
Rangefinder	
Wavelength	905nm

Max Range	1000m
Accuracy	+ /-1m

9.Maintenance

- (1) Power off the thermal imaging telescope promptly after observation or when targets are not viewed for extended periods after startup to prolong its operational lifespan.
- (2) The thermal imaging telescope lens is an important optical component. During installation and use, avoid contamination and damage to the lens surface from oil stains and various chemicals. After use, please cover the lens with the lens cap.
- (3) Remove batteries and store the device in its carrying case during non-use or transportation.
- (4) For long-term storage or inactivity, keep the thermal imaging telescope in a cool and dry environment.
- (5) Do not clean the housing with chemical solvents or thinners. use only a clean, soft, dry microfiber cloth.
- (6) Clean the lens only when visibly soiled. Avoid touching the lens surface- acid-ic residues from fingerprints may damage coatings. clean exclusively with a dedicated lens cloth.
- (7) During prolonged storage, power on the device for inspection and calibration every six months.

FCC Caution:

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.
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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.

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



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