

Medusa Series

USER MANUAL

Thermal Imaging Monocular



M2-650L

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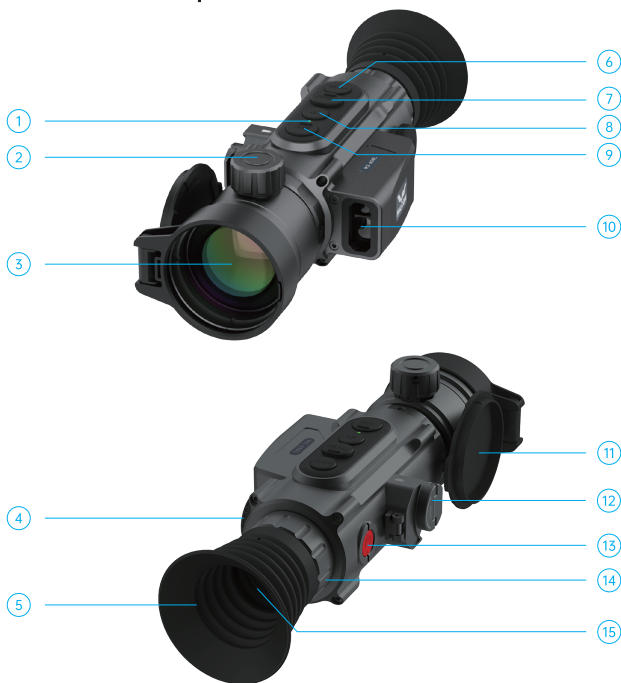
1. Product Overview

1. M2-650L is an infrared thermal imaging telescope designed for observation and rangefinding under nighttime or adverse weather conditions.

2. The infrared optical system captures the target's infrared radiation, which is then spectrally filtered to project the infrared energy distribution onto the photosensitive elements of the infrared detector array at the focal plane. The detector converts the infrared radiation into electrical signals. These signals are amplified by the input circuit of the detector bias and preamplifier, generating the required output, which is then fed into the readout circuit.

3. The core module digitizes the detector's output signals and processes the raw infrared image through corrections, dead pixel elimination, brightness and contrast control, pseudo-color rendering, and overlay interface and crosshair reticle integration. The processed signal is sent to the OLED display. The operator observes the target's thermal imaging image through a 12X eyepiece.

2.Product Components



1.Status Indicator	2.Objective Focus Ring	3.Objective Lens
4.Data Port Cover	5.Eyepiece Cup	6.Navigation Button(Down)
7.Menu Button	8.Navigation Button (Up)	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

- ▶ M2-650L 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.

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) Press and hold the power button for 1-3 seconds to enter sleep mode (sleep icon appears).
In sleep mode, press the power button briefly to wake up.
- (3) Short-press to toggle shutter.



Photo/Recording Button

- (1) Short-press: capture photo.
- (2) Long-press($\geq 1.5s$): start/stop recording.



Navigation Button(Up)

- (1) Short-press: Select previous item.
- (2) Press the Navigation Button(up) to switch the display mode(When no menu is displayed).
- (3) Long-press: Enable/disable picture-in-picture (PiP) mode.



Menu Button

- (1) Short-press: Open menu. Navigate with $\blacktriangle/\blacktriangledown$; short-press to enter submenu. Hold to exit.
- (2) While ranging is active, short-press the menu button to lock/unlock the measured value.



Navigation Button(Down)

- (1) Short-presses to select downwards. When there is no menu, it switches between magnification levels: 1x, 2x, 4x, and 8x.
- (2) Long-press: Toggle Rangefinder.

6.Menu Functions

Icon	Main Menu	Function Description
	Mode Select	Options: White Hot, High Light, Black Hot, Low Light, Fusion. Default mode is White Hot.      White Hot High Light Black Hot Low Light Fusion
	WIFI	1. Enable WiFi in the device menu. Open the mobile APP testing software and locate the WiFi MAC address "APPshow-XX-XXXXX". Connect using password "12345678". 2. After connection, real-time images captured by the device can be viewed on the mobile phone.
	Picture-in-Picture	Short-press the menu button to enter submenu. Press UP/DOWN navigation key to turn on or off. Short-press to confirm and return to main menu.
	Reticle Type	Options:OFF,and 10 reticle types available.
	Reticle Color	Options:Black,white,Gray,Red,Green.
	Zero Storage	Saves user-configured ballistic zeroing parameters.
	Zero Adjustment	▶ After entering the crosshair zeroing calibration interface, briefly press the record button to cycle through different function options. Use the up/down navigation buttons to adjust the function values. ▶ Image Freeze: Briefly press the menu button to toggle image freeze. ▶ Briefly press the record button to move to the X and Y axis values. Use the up and down navigation buttons to adjust the crosshair position until it aligns with the point of impact. Briefly press the record button to move to other options. After completing settings, move to the save option. Briefly press the menu button to save and exit; press and hold the menu button to cancel saving. ▶ The set distance is used as the zeroing point distance in Smart Ballistics and saved to the zeroing memory.
	Gyroscope	Short-press the menu button to access the submenu page, then toggle the gyroscope function ON/OFF via the directional keys.
	Auto Trajectory	Selecting On enables automatic trajectory. Selecting Off disables automatic trajectory. Selecting Settings allows you to adjust the trajectory parameters.
	Rangefinder Unit	Options: Meters/Yards.

	Screen Brightness	Short-press the menu button to enter the submenu. The screen brightness is divided into five levels: "Extra Dark, Dark, Normal, Bright, and Extra Bright.
	Contrast	Short-press menu button to access menu. 10 contrast options available; each selection adjusts imaging contrast accordingly. Higher values intensify contrast.
	Image Detail Enhancement	Short-press the menu button to enter the image detail enhancement option. The higher the number, the more details are enhanced.
	Advanced Settings	▶ Date & Time Select the Date/Time menu and short-press the Menu button to enter sub-options. short-press the capture actuator to move between options. short- press the Up/Down buttons to adjust values. Long-press the Menu button to save and exit after adjustment. ▶ Language Short-press the Menu button to enter the " Language setting " submenu. Make selections using the Up/Down navigation keys. After operation, short-press the Menu button to save and return to the previous menu level. Long-press the Menu button to save and exit. Factory default language is English. ▶ Recording Audio Short-press the Menu button when the cursor selects " Recording Audio" to access the submenu. In the submenu, select "on " or "off" to enable or disable audio recording with video. ▶ Format Short-press the Menu button when the cursor selects the " Format storage card" menu to enter the submenu. Toggle selections using the Up/Down navigation keys. Short-press the Menu button again to confirm the selection. Use caution when confirming , as data cannot be recovered after deletion. ▶ Auto Power Off After selecting "Auto Power Off" in the cursor menu, short-press the Menu button to bring up the sub-menu. In the sub-menu, select 3 minutes, 5 minutes, or Off. By default, the auto power off is set to Off. After powering on, you can choose 3 minutes, 5 minutes for automatic power off.

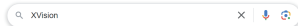
	Advanced Settings	► Default Setting In the advanced menu, use the Up/Down navigation keys to select "Restore Factory Settings". Short-press the menu button to proceed. Use the Up/Down navigation keys to switch and select the option. Short-press the menu button again to confirm the selection. Once confirmed, the device will restore to its factory default settings. Please proceed with caution. ► Pixel Fix Short- press the Menu button when the cursor selects the "Dead pixel correction" menu to enter the submenu. Toggle between "Auto correction" and " Manual correction" modes using the Up/Down navigation keys. To perform correction , cover the lens cap and follow the prompts. (1) select "Auto correction " and short-press the Menu button to complete the correction. (2) select "Manual correction" . Move the cursor using the Up/Down Navigation keys. Toggle pixel states using the capture actuator. short-press the Menu button to save. ► Image Adjustment Enter the Image calibration menu. To perform calibration, select "confirm" , then cover the lens cap. Short-press the Menu button to calibrate background image uniformity. Settings are automatically saved upon completion before exiting. ► Version Press the Menu button when the cursor selects "version"to view the device software version information.
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7.Device Connection

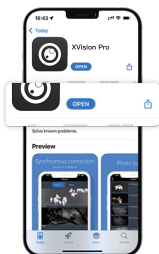
Download the dedicated app to connect the device to your mobile device via WiFi.



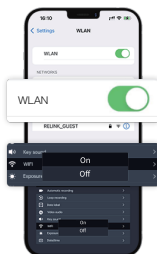
Android/iOS: Scan to download



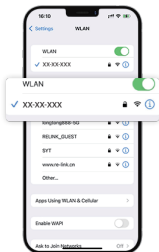
Search "XVision" on Google Play to Download.



Download and install the app



Turn on the device and enable WiFi



Select WiFi "xx." and connect
(Default WiFi password: [12345678](#))



Open the App

8.Specifications



M2-650L

Sensor	
Type	Uncooled Vanadium Oxide
Resolution	640x512
Frame Rate	50 Hz
Pixel Size	12 μ m
Sensitivity	≤ 18 mk
Optics	
Objective Lens	50mm/F1.0
Base Magnification	2.8X
Digital Zoom	1x / 2 x/ 4 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
Type/Res	0.39 inch / OLED / 1024X768
Power	
3D Gyroscope	Yes
Power Input	3-4.2 V
Battery	18650 Li-ion/ 3500mAh
External Power	5V (USB)
Runtime	5 hours
Shock Resistance	10000 J
Waterproof Rating	IP67
Operating Temp	-20°C~+50°C
Dimensions	241.1x90.8x71.95mm
Weight	695g ±5g
Recorder	
Video/Photo Res	1024x768
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.



Thermal Imaging & Night Vision
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