FALCON

Medusa Series

USER MANUAL

Thermal Imaging Telescope



M1V2.0-650L

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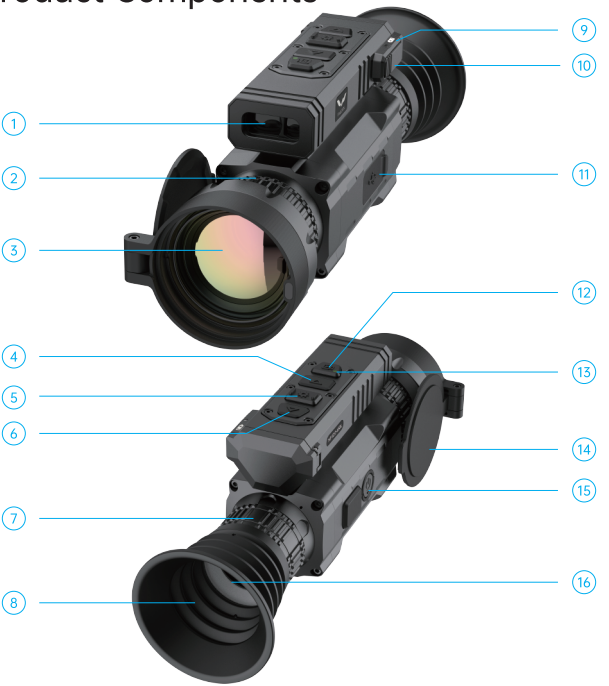
1. Product Overview

1.The M1V2.0-650L is an infrared thermal imaging telescope designed for observation and ranging at night and under adverse weather conditions.

2.This product detects the thermal radiation of target objects. The image signals captured by the thermal imaging module are processed and transmitted to the OLED display, allowing users to view clear, magnified images through the eyepiece. Users can also view and monitor images in real time via a mobile app, and adjust settings as needed.

3.The thermal imaging system features a high-resolution imaging module paired with a large-aperture infrared lens, delivering high-quality images. The eyepiece focus can be adjusted to maintain sharp focus on objects from 5 meters to infinity.

2. Product Components



1.Rangefinder	2.Objective Lens Focus Ring	3.Objective Lens
4.Up Navigation Button	5.Menu Button	6.Down Navigation Button
7.Eyepiece Focus Ring	8.Eyepiece Eyecup	9.Battery Polarity Indicator
10.Battery Compartment Latch	11.USB Cover	12.Photo/Video Button
13.Status Indicator	14.Lens Cap	15.Power Switch
16.Eyepiece		

3. Package Contents

- M1V2.0-650L Thermal Imaging Telescope
- Carrying Case
- User Manual
- Double-stud Clamp (with several screws, hex nuts, and wrenches)
- 18650 Battery
- Type-C Data Cable
- 5V2A Adapter

4. Operation and Usage

4.1. Warnings

(1) Do not point the thermal imaging telescope directly at the Sun, CO_2 lasers, welding machines, or any other high-intensity radiation sources.
(2) Allow an interval of at least 20 seconds between turning the device off and on.
(3) Handle with care during operation. Do not drop, strike, or subject the device to excessive vibration, as this may damage optical and electronic components or deform structural parts.
(4) Do not attempt to disassemble the thermal imaging telescope. If a malfunction occurs, contact the manufacturer immediately; otherwise, the warranty will be void.
(5) When not in use or during transportation, remove the battery and store the telescope in its protective carrying case.
(6) Replace the battery promptly when the power level runs low to prevent over-discharge and potential battery damage.
(7) Improper use may damage the thermal imaging telescope.
Note: Only charge with a 5V 2A charger.

4.2. Usage Method

(1) Remove the thermal imaging telescope from its packaging, install the battery, then press and hold the power button for 3 seconds to power on the device.

(2) Look through the eyecup to view the internal display, and turn the eyepiece focus ring until the on-screen icons and numerals are sharp and clearly visible.

(3) Point the telescope at the target object, and rotate the objective focus ring until the object comes into clear focus.

4.3. Notes

(1) The optical components (thermal imaging objective lens, eyepiece, and laser rangefinder lens) should only be cleaned when dirt degrades image quality. When cleaning, lightly moisten a lens cloth with alcohol and gently wipe the affected area to avoid damaging the Anti-Reflective Coating(AR Coating).

(2) Turn off the device promptly after use or if it will be idle for an extended period to maximize battery life.

(3) During operation, do not point the device directly at the sun or intense heat sources to avoid signal interference from excessive infrared radiation, which may cause image blur.

5. Button Functions



Power Button

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

Photo/Video

(1) Main Screen: Click to take a photo;
Press and hold to record a video.

Up Navigation Button

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

Menu Button

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

Down Navigation Button

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

6. Menu Functions

Icon	Main Menu	Function Description
	Color Temperature	Click 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	Click 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	Click 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	Click 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	Click the Menu button to enter the submenu, then select On or Off. Click 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	▸ Click 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: Click 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 click 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	Click 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 click 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 click the Menu button to save and exit.
	Multi-language	Click the Menu button to enter the language settings, use the Up/Down keys to select the desired language, and click the Menu button to confirm.
	Record Audio	After selecting "Record Audio" with the cursor, click 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, click the menu button to enter the submenu, and click 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 click the menu button to correct successfully and save.
	Image Calibration	Enter the Image Calibration menu and select Confirm. Close the lens cover, then click 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, click the menu button to enter the submenu, click the up/down keys to switch selections, and click 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	Options: 15 minutes, 30 minutes, 1 hour, 2 hours，Off (Default). After powering on, users can select either 15 minutes, 30 minutes, 1 hour, 2 hours， for automatic shutdown.
	Default Value	Under the advanced menu, use the up/down keys to select the "Restore Factory Settings" option. Switch selections by clicking the up/down keys, and click the menu button again to confirm the option. After confirmation, it will restore to the factory default settings. Please operate with caution.
	Factory Reset	Use the cursor to highlight "Factory Reset," then briefly press the Menu button to bring up the submenu. In the submenu, select "Confirm" or "Cancel." If confirmed, the device will be fully restored to its factory default settings (including crosshair/reticle settings and BC data). Please use with caution!
	Version Information	Move the cursor to select "Version", click the menu button to view the device software version information.

7.Device Connection

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

Android/iOS: Scan to download

Google Play

XVision

Search "XVision" on Google Play to Download.



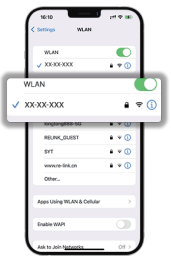
Download and install the app



Turn on the device and enable WiFi.I



Open the App



Select WiFi "xx." and connect

(Default WiFi password:12345678)

8. Specifications



75mm



235mm

M1V2.0-650L

Sensor	
Type	Uncooled Vanadium Oxide (VOx)
Resolution	640x512
Frame Rate	50 Hz
Pixel Size	12 μm
NETD	⩽15 mK
Optical Characteristics	
Objective Lens	50 mm/F1.0
Base Magnification	2.8X
Digital Zoom	1x / 1.5x / 2 x / 2.5x / 3 x / 4 x / 6 x / 8x
Exit Pupil Distance	50 mm
Diopter Adjustment	+5/-5 D
Focus Distance	5 m - ∞
Field of View	8.8°X6.6°
Detection Range (Target size: 1.7mX0.5m)	2500 m

Display	
Color Modes	White Hot , Black Hot , High Brightness , Low Light , Pseudocolor,Red Hot.
Type/Resolution	0.49 inch / OLED / 1920X1080
Power	
3D Gyroscope	Yes
Power Supply	3-4.2 V
Battery	18650 Lithium Battery / 3500 mAh
External Power	5V (USB)
Runtime	5 hours
Shock Resistance	10000 J
Waterproof Rating	IP67
Operating Temperature	-20°C~+50°C
Size	224x75x91 mm
Weight	650 g ±5 g
Recorder	
Video/Photo Resolution	1440X1080
Video/Photo Format	.mp4 / .jpg
Storage Card	Built-in 32GB memory card
Wireless Channel	
Frequency	2.4 GHz
Standard	802.11 b/g
WiFi Range	15 m
Rangefinder	
Wavelength	905 nm

Maximum Range	1000 m
Accuracy	+ /-1 m

9. Maintenance and Care

(1) The lens is a critical optical component. During installation and use, avoid contaminating or damaging the lens surface with oil, chemicals, or other substances. Always replace the lens cover after use.
(2) If the thermal imaging telescope is not in use or is being transported, remove the battery and keep the telescope in its packaging box.
(3) When the thermal imaging telescope is stored for a long time or not operating, it should be stored in a cool and dry environment if possible.
(4) Do not use chemical solvents, thinners, or similar agents to clean the casing. Wipe it with a clean, soft, dry cloth only.
(5) When not in use for a long time, it should be powered on to check and calibrate once 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 to 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 requirements. The device can be used in portable exposure conditions without restriction.

Setting Zeroing Profile

Press MENU — use the DOWN button to move to the item — 4th item “sighting” = select reticle (design)
5th item – reticle color
6th item – zeoring (this is the weapon memory and choice of zeroing profiles A, B, C (I would call it a “profile”). That means I can have up to 30 zeroings, e.g. for 10 different weapons and 3 different types of ammunition per weapon, etc.
7th item – zeroing = here you actually zero and change coordinates.
You will find preset magnification, image freeze (snowflake icon), weapon G1 (G2, G3 ...), variant A, B, C for each weapon (for example 3 types of ammunition or 3 different distances e.g. 50/100/200 m), Coordinates X: horizontal, Y: vertical, zeroing distance, unit of measure (meter/yard), save.
Navigation in this menu works as follows. The REC button (closest to the lens) cycles through the fields, the UP / DOWN buttons increase or decrease a value. The MENU button only functions for the Freeze Image and Save items (toggles On/Off). When pressed the image immediately freezes; if Save is active, all set values are saved. Zeroing can be done in two ways — with image freeze (I RECOMMEND) — the easiest method. Press REC to move to the Freeze item (snowflake icon), then place the reticle on the center of the target (the point you want to zero on) and press MENU. The image will freeze exactly where you need it; if not, press MENU again to unfreeze, make corrections, then press MENU again to freeze. Now press REC to select the X or Y coordinate as needed and use UP/DOWN to move the aiming reticle (I click the aiming reticle in the direction of the shot). When the aiming reticle reaches the point where my 1st shot landed, I can press REC to move to the Save item and press MENU to store that zero.Without image freeze — the procedure is the same, except that after bedding the rifle in, repeatedly clicking makes the reticle constantly move so you cannot be sure you are aiming at exactly the same point.

Practically this is the same zeroing process used with optical sights. You usually need to make fine corrections several times more often than when zeroing with image freeze.



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