ThermTec

ORYX-L

Thermal Imaging Scope
Oryx-L SERIES
User Manual

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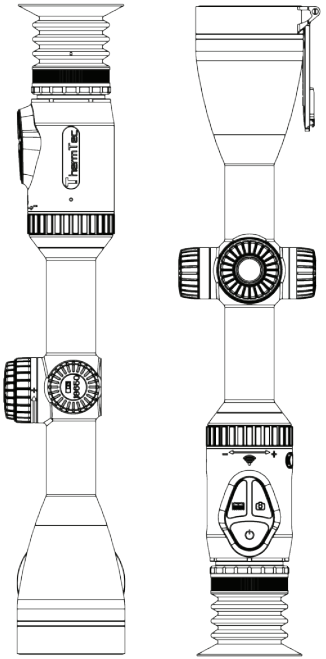

RoHS

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This Manual is applicable to Thermal Imaging Scope.

The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons.

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1 Introduction

1.1 Device Description

ORYX-L Series thermal imaging scope is equipped with 15mK high-sensitivity detector with the resolution up to 640×512, which features a inbuilt LRF module in the lens for perfect using for laser ranging up to 1200m , a 2560×2560 high-definition OLED display, providing a clear view over long distances in harsh environments, poor visibility, or even total darkness. Oryx-L series allows users to see through obstacles that hinder the detected target, and accurately measure the actual distance to the target. In addition, it' s easy to connect to our mobile application to achieve live view and share your findings.

Oryx-L Series thermal imaging scope facilitates applications in a wide range of fields, including observation, night hunting, rescue operations, hiking, traveling, etc.

1.2 Features

Ballistic calculator

Due to our advanced algorithms, POA suggestions will be provided to help users overcome the impact of bullet drop during long-distance shooting, further improving the shooting accuracy.

Great visual and high definition experience

A larger OLED viewing screen with the 1.03 inch, in addition, the resolution up to 2560×2560 is to excellently define how the visual experience should be, and as this large OLED that hunter will never feel eyestrain in all days.

Picture-in-Picture Function

In picture-in-picture mode, it displays a magnified image at the top-center of the overall field of view with aligned crosshairs and ½ mil FFP reticle when zooming on an object of interest.

Ultra sensitive thermal image sight

With the constant technology improvement from the ThermTec, Oryx-L sight is an integrated ultra sensitive VOx sensor, NETD less than 15mK, which can allow Oryx-L to capture more defined image quality and the best target detail in any different surroundings.

Recoil Activated Video (RAV)

With RAV, it records videos of before, during and after your shot, and captures the footage of your hunting moments.

Inbuilt LRF module

There is an innovative integrated design for the laser ranging module to be inbuilt the lens, for more convenient carry without the annoying obstruction anywhere, Oryx-L not only remains the traditional day scope shape but it makes laser module ability to up to 1200m.

Upgraded appearance and structure

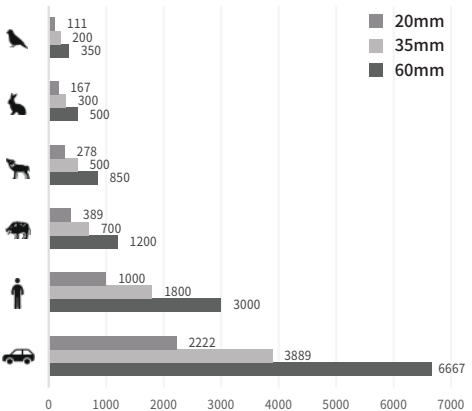
Oryx-L is the high end sight, which is completely approached for traditional day sight with the classical style design, battery slot with horizontal installation, focusing knob is designed at the middle of tube for user-friendly operation.

Thermtec Auto Sight System

TASS function always ensures a perfectly observational experience from high digital zoom back to the minimum zoom automatically when shooting moment, and TASS requires RAV enabled at first.

1.3 Detection Range

The illustration below shows the comparative range performance of the device with different lens configurations. The data is based on detecting a car of 4m, a man of 1.8m tall, a wild boar of 0.7m tall, a wolf of 0.5m tall, a rabbit of 0.3m tall and a bird of 0.2m tall.



1.4 Cautions

CAUTION

Avoid hard objects.

Do not aim the lens directly at the sun or high-temperature light sources.

Do not use the device in extremely cold or hot environment.

Charge the battery once every three months when it is not used for a long period of time.

Do not irradiate the laser indicator of the device to human eyes.

Never disassemble or modify the device on your own.

2 Packing List – Oryx-L

Scope (x1)

Bag (x1)

Charger (x1)

Lithium battery (x2)

USB cable (x1)

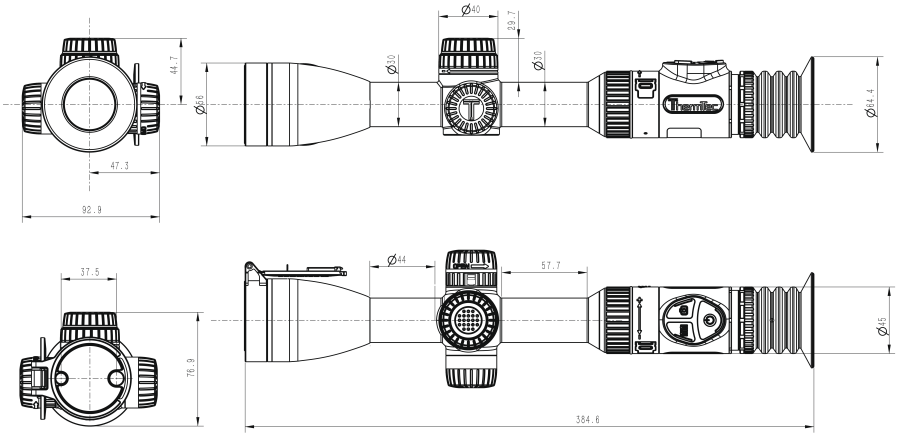
Lens cloth (x1)

3 Specifications
Oryx-L Series

Model	Oryx-L 635	Oryx-L 650
Microbolometer		
Type	Uncooled	
Resolution	640×512	
Pixel pitch	12μm	
NETD	⩽15mK	
Spectral range	8-14μm	
Frame rate	50Hz	
Detection Range	1800m	2600m
Optics		
Objective lens	35mm, F0.8	50mm, F0.9
Field of view	12.5°×10°	8.8°×7.0°
m@100m	21.9×17.6	15.4×12.3
Magnification	2.6X	3.7X
Digital zoom	1.0-4.0X zoom	
Eye relief	60mm	
Exit pupil	6mm	
Diopter	±5D	
Aiming Reticle		
Reticle	8	
Reticle color	5	
Display		
Type	AMOLED	
Resolution	2560×2560	
Display size	1.03 inch	
Color palette	6	

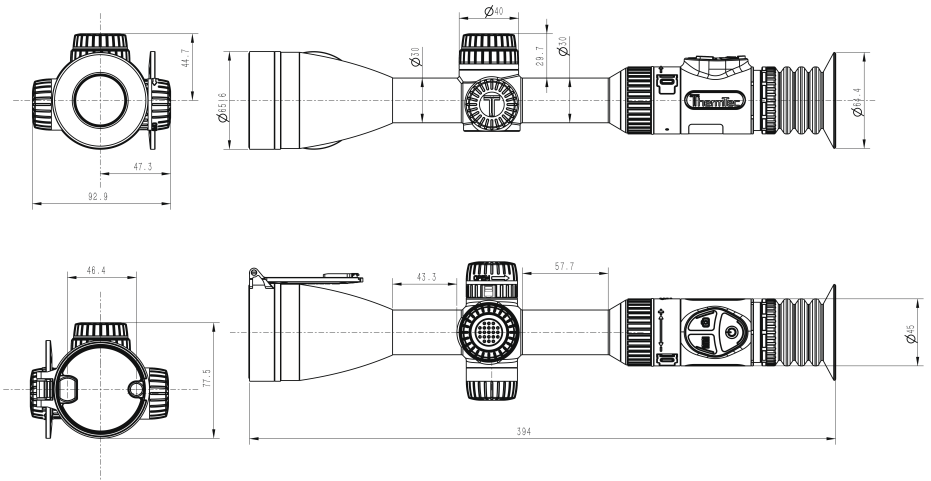
Function		
Max. recoil power on rifled weapon	6000J	
Mounting brackets on weapon	Standard 30mm rings	
RAV	Yes	
Audio Recording	Yes	
Manual zeroing	Yes	
Zeroing profiles	6	
Freeze Zeroing	Yes	
Picture-in-picture	Yes	
Laser ranging	1200m	
Ballistic Calculator	Yes	
Image calibration	Manual/Auto	
Video Recorder		
Photo/video playback	Yes, 1280×1024	
Inbuilt memory	64GB	
Interface		
Type C	Data transfer, charging	
Hotspot	Yes	
Battery		
Battery type	Replaceable, 1*21700, 6000mAh	
Battery life	8h	
Environment		
Operating temperature	-20- +50°C	
IP rating	IP67	
Weight, g	1050±5	1100±5
Size, mm	385(L)×93(W)×77(H)±5	397(L)×87(W)×74(H)
Accessories		
External cable	USB data cable	

4 Appearance
4.1 Dimensions



Oryx-L 635 reference only.

4 Appearance
4.1 Dimensions



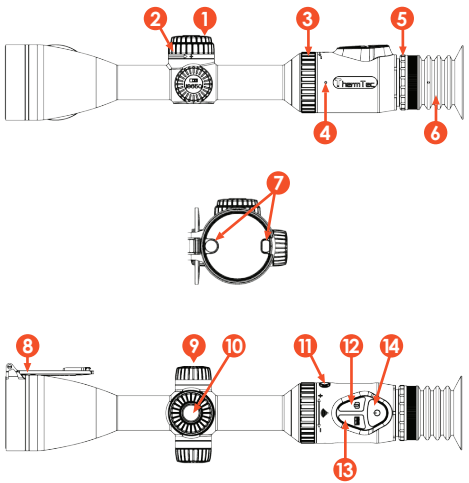
Oryx-L 650 reference only.

4.2 Buttons and Controls

Before the entry of main menu					
Icon	**Annotation**	**Rotation**	**Short Press**	**Long Press**	**Double Press**
	Power button	/	Entry Standby Mode	ON/OFF	Image calibration
	Laser Rangefinder	/	LRF Function On/OFF	Outline mode	Color Palettes Shift
	Capture/Record	/	Take photos	Take videos	PIP on/off
	Rotating knob A	Brightness/ sharpness	Shortcut menu	Entry/Exit shortcut or main menu	/
	Rotating knob B	Digital zoom	/	/	/

	After the Entry of Main Menu				
	Rotating Knob A	Rotation	Short Press	Long Press	Double Press
		Switching for selected item	OK	Exit	/

4.2 Buttons and Controls



NO.	Comments
1	Rotary knob for menu
2	Focusing knob
3	Digital zoom knob
4	MIC port
5	Diopter adjustment
6	Rubber eyeshade
7	Laser ranging module
8	Lens cap
9	Battery slot with 21700
10	“OK” button
11	USB interface
12	Photo/Record button
13	Laser rangefinder button
14	Power on/off button

5 Operation Guide

5.1 Battery Installation

Oryx-L series with one battery can be installed in the lateral battery holder, and there is negative polarity of battery that must be towards outside. Please refer to the following figure for the installation of the replaceable battery.

Note:

Oryx-L can be charged by the Type-C immediately.

5.2 Power-on the Device

Power button

Users could long press the power button to power on/off the device.
In addition, it is available to short press the power button to enter device' s standby mode to keep the screen locked.

5.3 Main Menu

Long press the middle of the rotary knob-A (NO.1 above 4.2) to enter the main menu. After the entry of Main Menu, short press the button for the operation of "Confirmation", and long press the button for the operation of "Exit". Rotating the knob is the operation of moving the cursor.

5.4 Lens Adjustment

5.4.1Diopter Adjustment

Slowly rotate the diopter adjustment ring to adjust the position of diopter level to optimize the image sharpness on the OLED display.

Main Menu

5.4.2 Objective Lens Focusing

Objective lens rotating knob is on the right above of installed battery holder, please manually adjust the focusing knob when necessary.

Aim at the target and rotate the focusing knob until the image of object is clear.

Both clockwise and anticlockwise rotation of the focusing knob are allowed.

Focus on the Selected Target

Focusing Finished(reference only)

5.4.3 Digital Adjustment of Focus Distance

On the main screen, rotate the knob-B (NO.3 above4.2) to digitally adjust the focus distance, and digital zoom icon shown as below.

Clockwise rotation the knob-B for zooming in (up to 4x) digital image, and vise versa.

5.4.4 Image mode

Here includes two kinds of image modes which are respectively Forest and Rainy could be selected by user.

5.5 Shortcut Menu

5.5.1 Taking photos/videos

Take photos - short press the Capture/Record button; Take videos - long press the Capture/ Record button.

5.5.2 Laser Ranging

Laser Rangefinder - short press the Laser Range- finder button to turn on/off the laser rangefinder.

5.5.3 Pseudo Color Switch

Pseudo color switch - double press the button to switch the pseudo colors.

5.5.4 Target Outline Mode

Outline mode(picture reference only)

Target Outline Mode - long press the Rangefinder button to turn on/off the Outline Mode of the target.

5.5.5 Standby Mode

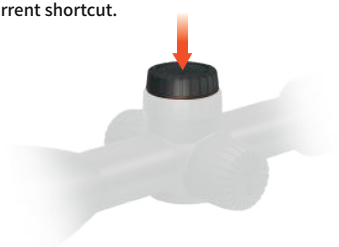
Standby Mode - short press the Power button

5.5.6 Contrast Adjustment (shortcut menu)

1.Short press the middle of the rotary knob-A (NO.1 above4.2) to enter the Contrast screen in the observing mode.

2. Enter the screen of Contrast Adjustment by clicking the shortcut button of knob-A. In this case, brief press knob-A (NO.1) for switching other options between brightness and contrast.

3. Long press rotary knob-A (NO.1 above4.2) for exiting current shortcut.



3. Rotate the knob-A (NO.1 above4.2) to increase or decrease the contrast level.

Note: Successively press knob-A (NO.1 above4.2) for exit shortcut menu.

5.5.7 Brightness Adjustment (shortcut menu)

1.Shortcut Button: short press the rotary knob-A (NO.1above4.2) to enter the Brightness screen.

2.Enter the screen of Brightness Adjustment by clicking the shortcut button.

3.Rotate the knob to increase or decrease the brightness degree.

5.6 Entry of the Main Menu

Long press the middle of the rotary knob-A (NO.1 above4.2) to enter the main menu. After the entry of Main Menu, short press the button for the operation of “Confirmation”, and long press the button for the operation of “Exit”. Rotating the knob-A (NO.1
above4.2) is the operation of moving the cursor.

Color Plate

Noted: Above picture is just for reference, please find it based on practice.

Color Palettes

White

Black

Red

Green

Golden

Violet

5.7 Image Settings

There are four sub-menus for image settings, which are “Brightness”, “Contrast”, “Sharpness” and “Denoise”. Long press the rotary knob-A (NO.1 above4.2) to enter these sub-menus under the image menu, then rotate the knob-A (NO.1 above4.2) to adjust the related image parameters.

Image Setting Sub-menus		
Brightness ☼	1-10	Adjust the image brightness to make the image brighter. The recommended value is 5. 
Contrast ◐	1-10	Adjust the image contrast to make the object more prominent in the image. The recommended value is 5. 
Sharpness △	1-10	Adjust the image sharpness to make the edges of the image sharper. The recommended value is 5. 
Denoise ▥	0-10	Adjust the image noise to make the image cleaner. The recommended value is 5. 

5.8 Settings

Short press the rotary knob-A (NO.1 above4.2) to enter the sub-menus of Settings, and rotate the knob-A (NO.1 above4.2) to adjust the parameters accordingly.

Sub-menus of Settings		
Zeroing profiles	A-F	There are five zeroing profiles from "A-F" in the file folder, which contain the distance, type of bullet, and the coordinates of the crosshairs after zeroing. 
Picture -in- Picture		The image is enlarged by 2x as centered by the crosshairs. Picture-in-picture occupies 10% of the entire image. 

Files	RAV-recording	Open the sub-menu of Video, and rotary the knob to select the RAV recording. 
	Picture	Open the sub-menu of Picture, and rotary the knob to select the images. 

Files	Record	Open the sub-menu of Video, and rotary the knob to select the videos. 
Setting	Audio	Turn on/off audio function to record the related voice in the video before user takes the recording. 

Setting	Correc-tion	The image correction mode could be set to Auto or Manual. 
	Tracking	Turn on heat tracking function to mark the hottest target on the screen in real time. 

Setting	RAV	After turning on the RAV, the scope will record videos before, during and after your shot. The threshold can be modified manually for different weapons and ammunitions. 
	Blind Pixel	User can operate blind spot replaced function when pups up blindness. 

Setting	OLED (bright-ness)	The bright level of OLED can be selected on this sub-menu. 
	OLED (color)	The background color of the OLED can be selected on this sub-menu. 

Setting	Logo	Show or hide the Logo in the captured images or videos. 
	Smooth	Smooth: The speed of zooming is more even. Rapid: Integer zooming, suitable for fast moving target tracking. 

Setting	**TASS**	On:The current digital zooming can get back to minimum zooming level automatically while the shooting, exactly TASS depends on activate rav function as the priority. TASS means that user can be always more rapid locking the target instead of traditional knob via the manual. 
System	Lan-guage	Choose the language which is necessary. 

System	Date	Adjust the local date manually. 
	Time	Adjust the local date manually. 

System	Shut-down	Turn on the Auto Shutdown if needed to avoid prolonged standby of device. Three options: 30 mins, 60 mins, 90mins, or even OFF state. 
	yd/m	Change the distance measurement unit between yard and meter as you want. 

System	Version	View the SN number and firmware version of the device. 
	Reset	After resetting, the configuration parameters are restored to the factory state. 

System	Update	The system of the device can be updated and upgraded. 

5.9 Zeroing

Enter the Main Menu, rotate the knob-A (NO.1 above4.2) and short press the rotary knob-A (NO.1 above4.2) to enter the sub-menu of Zeroing.
①Rotation and short pressing rotary knob-A (NO.1 above4.2) for selecting Zeroing menu.
② Short press the rotary knob-A (NO.1 above4.2) one more time. Rotate and short press the knob-A (NO.1 above4.2) to select and confirm the zeroing distance (e.g. 25m or 35m).
③After that, move the cursor and short press the rotary knob-A (NO.1 above4.2) to enter the Gun Type screen.
Short press the rotary knob-A (NO.1 above4.2) to add the Gun Type (customizable; press “Enter” on keyboard to add the Gun Type). Long press the rotary knob-A (NO.1 above4.2) to return to the previous screen.

5.9 ①

5.9 ②

5.9 ③

Notes:

It is recommended to do Zeroing at a temperature that close to the scope’ s operating temperature.

5.9.1 Manual Zeroing

① Rotate the knob-A (NO.1 above4.2) anticlockwise, and move the cursor to finding Manual zeroing menu.

② Short press the rotary knob-A (NO.1 above4.2) to enter the Manual Zeroing screen, confirm the zeroing distance, and short press “OK” to enter the next step.

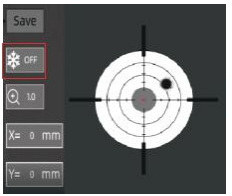
③ After your first shooting is completed, align the reticle with point of aiming, and rotate the knob-A (NO.1 above4.2) to turn on the Freeze function. ※ After that, A screenshot will be taken. (The Freeze function allows you to freely move or manipulate the scope without losing reticle placement on the point of aim during adjustments.)

④ Rotate the knob-A (NO.1 above4.2) to change the magnification if necessary, which helps to improve the accuracy of zeroing.
⑤ Adjust the coordinates (X, Y) of the reticle by rotating the knob-A (NO.1 above4.2) , and move the reticle from the original position to the bullet hole position manually.
After pressing the Save button, the values of X and Y will change according to the magnification.
e.g. X: -20mm, Y: -20mm (1x); X: -10mm, Y: -10mm (2x); X: -4mm, Y: -4mm (5x).

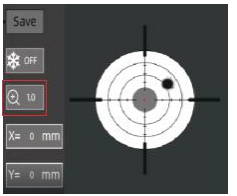
Short press the rotary knob-A (NO.1 above4.2) to save the zeroing data to any profile (A, B, C, D, E, F). Finally, long press the rotary knob-A (NO.1 above4.2) to exit.
⑥ The entire zeroing data can be manually saved in a profile of six shown as below.

5.9.1 ①

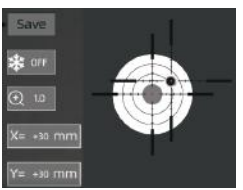
5.9.1 ②



5.9.1 ③



5.9.1 ④



5.9.1 ⑤

Notice: About the steps of zeroing with number ③④⑤ for reference only.

5.9.1 ⑥

Notes:

1.The changes will always be saved based on your last calibration, e.g. the first saved coordinate is (-20mm, 35mm) in Profile A and you may want a tiny change like (-5mm,5mm), so the device finally displays (-25mm, 40mm). If you put the same weapon name and the same distance, it takes data from the previous profile.

2.Please get back to the main menu to choose other profiles if you would like to save new data for another gun. It is suggested to save the subsequent changes where you first time saved for the same gun. It is not recommended to save a change in Profile A firstly then another change saved in Profile B or C.

5.9.2 Ballistic Calculator

① Rotate the rotary knob A to move the cursor to the menu of ballistic calculator, then short press the knob to the third-level menu.
② Rotate the knob A (NO.1 above4.2) again to move the cursor to Setting, and short press the knob-A (NO.1 above4.2). There you can configure the parameters as your need, including Scope Ht, Wind Velocity, Bullet Wt, Muzzle Velocity, BC, Wind Direction, Temperature, and Pressure.
③ When any parameter is selected for modification, the cursor would automatically move to the keyboard section at the right side of the screen.
④ Click Enter and the cursor will return to left side of the screen.
⑤ Move the cursor and click the Back section to return to the previous screen.

5.9.2 ①

5.9.2 ②

Auxiliary line of trajectory

- Users first need to move the cursor to “ON” to turn on the ballistic calculator function.
- After activation, here are totally icon will appear in the center of the screen. When the icon doesn’ t match the coordinates after zeroing, users should aim it at the certain target, then fill in the actual parameters into the “Setting” interface.

Attention:

1.The indicating cursor types of ballistic calculator have four different styles, user can get it in the mode menu.
2.Ballistic calculator function needs to be carried out after zeroing, otherwise there is no practical significance.
3.When ballistic calculator is turned on, the device will automatically switch to single ranging mode.

5.10 Reticles

Type	1-8	Rotate the knob to select the type of reticles. There are 8 types of reticles set for selection. 
Color	5 Colors	Rotate the knob to select the color of reticles. There are 5 options: Black, White, Red, Green, and Blue. 

Bright-ness	3	Rotate the knob to select the brightness of reticles. There are 3 degrees of brightness set for selection. 
Dot	5 Colors	Rotate the knob to adjust the color of the Dot. There are 3 options: White, Black, Red, Blue, and Green. 

Location	Move/ Center	Rotate the knob to select the location of reticles. There are 2 options: “Move” and “Center”. Move: Under 1x magnification, the location of the reticle keeps the same as the zeroing coordinates. The reticle will be returned to the center of the screen when image is zooming in. Center: When zeroing is finished, the screen will be slightly enlarged based on the zeroing coordinates. The reticle will be returned to the center of the screen. When zooming in or out, the reticle will always enlarge at the center of the screen. 

Mode	FFP/SFP	FFP: The reticle changes as zooming in; SFP: The reticle doesn’t change as the zooming in. 

Reversal	ON/OFF	Reticle polarity reverse helps find and lock small target. (Only for Black & White Reverse)  Notice: Totally three icons (crosshairs under the black & white,laser icon, ballistic calculation icon) can be automatical switching the color while enabling Reversal function.

5.11 Blind Pixel

①Short press the rotary knob-A (NO.1 above4.2) to enter the sub-menu of Blind Pixel, figure shown as below.

② There are three options (cancel, save and replace). Replace: the blind pixel on the screen can be replaced. When finished, long press the middle of the rotary knob to exit, figure shown as below.

6 Network Connection

6.1 App Download

Users could download our mobile APP named “ThermTEC Outdoor” in Apple Store and Google Play, or through the QR code shown on the packing box or user manual.

Download on the App Store

GET IT ON Google Play

6.2 Connect via Hotspot

① Turn on the device' s Hotspot.

② Connect your mobile phone to device' s Hotspot via WLAN. To input default password of device (1 to 8).
③ After successful connection, you can control devices via APP.
Notice: All devices are same password (1 to 8) when out of factory , which means, user can' t set password type by manual operation.

7 Firmware Upgrade

7.1 Upgrade via PC

①Users could download corresponding upgrading package from our website. After that, connect your device to PC via Type-C cable, and copy the firmware to device' s file folder.

7.1 ①

② Enter the Settings menu, and select Update, then there will be a pop-up window prompting “Program Updating”.
③ When the update is completed, the device will automatically restart.

7.1 ②

7.1 ③

7.2 Upgrade via Mobile Application

Oryx-L series thermal imaging sight could be interconnected with “ThermTec Outdoor” APP, which allows users to transfer files from device to smartphone or tablet via Hotspot, easily achieving remote control.

Users could refer to the following steps to realize device firmware upgrade via our mobile APP:

① Open the ThermTec Outdoor APP.

② Turn on the Hotspot of the device, and connect your mobile phone to device’ Hotspot.

③ Select Update on the menu options.

④ It will take a continuous period of time for downloading and upgrading if a new version of firmware is detected, so please be patient.

⑤ Once the upgrade is complete, the device will reboot automatically.

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