

User's Manual

RUGGED INFRARED COMPACT OPTIC

RICO ALPHA

— S E R I E S —



***IRAY*USA**

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WARNING! ITAR REQUIREMENTS

These products may be subject to export and foreign trade control laws of the United States and may not be exported without prior approval of the U.S. Department of State. Learn more at irayusa.com/ITAR.

FCC ID 2AYGT-RICO

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.

CAUTION: Changes or modifications not expressly approved by iRayUSA 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.

This device was tested for typical body-supported operations and use. To comply with RF exposure requirements, a minimum separation distance of 0.5cm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.

1. OVERVIEW

Rugged Infrared Compact Optic

The RICO ALPHA is the culmination of decades of user feedback, research, development, and American engineering all embedded in a thermal weapon sight that is purpose-built for the discerning night hunter. From the Autoloading Guarded Power Connector (AGPC), the battery latch design, and the RQD Quick Release Mount, to the ultra-rigid housing with Tactile Ridge Positioning and Single Finger Focus (SFF) design, the ALPHA was developed by hunters for absolute performance in every way. Additional performance-based features of the ALPHA include image and video capture, multiple dynamic reticles, and wireless connectivity. To top all that off, the ALPHA is proudly designed, machined, assembled, and serviced right here in the great state of Texas.

Before using the RICO ALPHA, please read and follow all operation information carefully—especially the details regarding the battery pack and power modes. It is important to understand and follow all battery and power information and guidelines so your riflescope functions properly and provides the best thermal imaging results. When not in use, be certain to power off, remove the battery pack, and close the protective lens cover on the front of the riflescope.

2. FEATURES

- 12µm high-resolution thermal detector
- High image quality
- Ultra-rigid, glass-filled polymer
- Maximum detection range 2400 yards
- Quick-change rechargeable battery pack
- HD AMOLED display: 1024×768
- High frame frequency: 50Hz
- Multiple zero profiles and ranges
- Digital Zoom: 1×, 2×, 3×, 4×
- Built-in 32 GB storage to support image capture and video recording
- Built-in Wi-Fi module
- Mobile App compatible
- Built-in digital compass and gravity sensor
- Multiple reticle types and color options
- Ultra-clear mode for advanced image detail
- Picture in Picture (PIP) window
- User-friendly interface
- Pixel calibration functions



3. TECH SPECIFICATIONS

ALPHA SERIES		ALPHA 640 50mm
SENSOR		
Resolution	640×512	
Pixel Size	12 µm	
Frame Rate	50hz	
Image Processing	MATRIX III	
Core	iRay Micro II 640	
OPTICS		
Objective Lens	50 mm f/1.1	
Magnification	3×	
Digital Zoom	4×	
FOV	8.8° × 6.6°	
Detection Range	2400 Yards	
Display Type	AMOLED	
Display Resolution	1024×768	
Imaging Modes	White Hot, Black Hot, Red Hot, Color, Highlight	
Reticle Types	7 (2 Dynamic, 5 Static)	
Reticle Colors	Black, White, Red, Green	
Mounting System	Picatinny, MIL-STD 1913 / ADM RQD Mount	
P.I.P.	Yes	
Eye Relief	55 mm	
Diopter Range	-4 to +4	
ELECTRONICS		
Onboard Recording	Video and Image	
Onboard Storage	32 GB	
Wireless Connectivity	Video and Image via App.	
Data Connector	Autoloading Guarded Power Connector (AGPC)	
Power Supply	Li-Ion Battery Pack	
Start Up Time	< 10 Seconds, Instant from Standby	
PHYSICAL		
Size	9.84"×2.40"×2.28"	
Weight	33.68 ounces	
ENVIRONMENTAL/WARRANTY		
Warranty	5 Years	
Housing Material	Ultra-Rigid, Glass-Filled Polymer	
Ingress Protection	IP67	
Operation Temp.	-4°F~122°F	
Max. Recoil	1000 g/s ² (300 Win./7mm Mag)	

4. ACCESSORIES

The RICO ALPHA Series Thermal Riflescope ships with everything you need to get out and hunt:

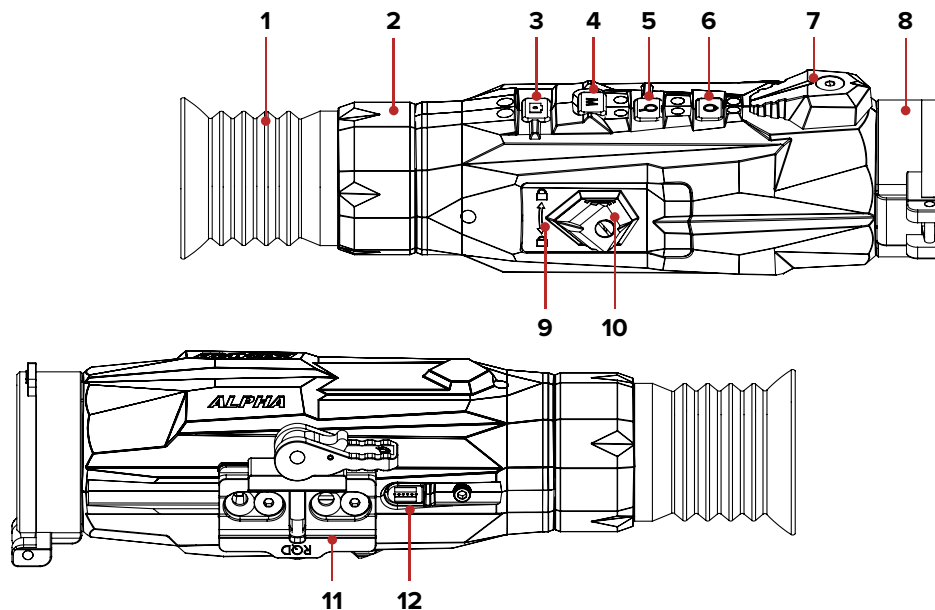
PART NUMBER	DESCRIPTION
IRAY-AC01	Hard Case for RICO ALPHA
IRAY-AC03	ADM RICO RQD Quick Release Mount
IRAY-AC08	USB-C Charging Cable
IRAY-AC12	Objective Lens Cap for 50mm RICO Mk1/BOLT/ALPHA
IRAY-AC15	Standard Rubber Eyeguard for RICO Mk1/ALPHA
IRAY-AC19	6-Pin Autoloading Magnetic Cable for RICO ALPHA
IRAY-AC28	IBP-1 Battery 4400 mAh for RICO ALPHA
IRAY-AC29	IBC-1 Battery Charger for RICO Mk1/ALPHA
IRAY-AC50	RICO ALPHA Picatinny Cable Grip
IRAY-AC51	RICO ALPHA Buffer Tube Cable Grip
---	Lens Cloth
---	User Manual



Optional Accessories

Optional accessories are available for the RICO ALPHA series, including:


- Replacement USB cables
- Additional IBP-1 batteries
- Replacement factory mounts




5. COMPONENTS AND CONTROLS


- 1 Rubber Eyecup
- 2 Eyepiece/Diopter Adjustment Ring
- 3 Photo / Down Button
- 4 Menu Button
- 5 Zoom / Up Button
- 6 Power Button
- 7 Single Finger Focus (SFF) Lever
- 8 Objective Lens Cover
- 9 Battery Pack
- 10 Battery Pack Locking Lever
- 11 ADM RICO RQD Quick Release Mount
- 12 Autoloading Guarded Power Connector
- 13 6-Pin Autoloading Magnetic Cable (not pictured)
- 14 Battery Pack Charger (not pictured)
- 15 USB-C Charging Cable (not pictured)

6. DESCRIPTION OF CONTROL BUTTONS AND SHORTCUTS

Power Button 		
Current Screen / Menu or Device Status	Short Press	Long Press
Device off	---	Power on the device
Home screen	Perform a non-uniformity correction (NUC)	Power off the device
Automatic standby mode	Wake device from automatic standby mode	---
Main menu	Exit menu without saving changes	---
Defective pixel correction interface	Add or remove defective pixel from the "to be corrected list"	---
Reticle zeroing interface	Clear position of selected axis and return to last saved position	---

Power + Zoom Button  + 		
Current Screen / Menu	Short Press	Long Press
Home screen	Activate / deactivate manual standby mode	---

Zoom / Up Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Adjust digital zoom	Turn PIP window on / off
Main menu & quick menu	Move cursor up	---
Defective pixel correction & reticle zeroing interfaces	Move cursor 1 pixel in the positive direction	Move cursor 10 pixels in the positive direction

Zoom + Photo Button  + 		
Current Screen / Menu	Short Press	Long Press
Reticle zeroing interface	---	Freeze image to keep reticle centered on aiming point



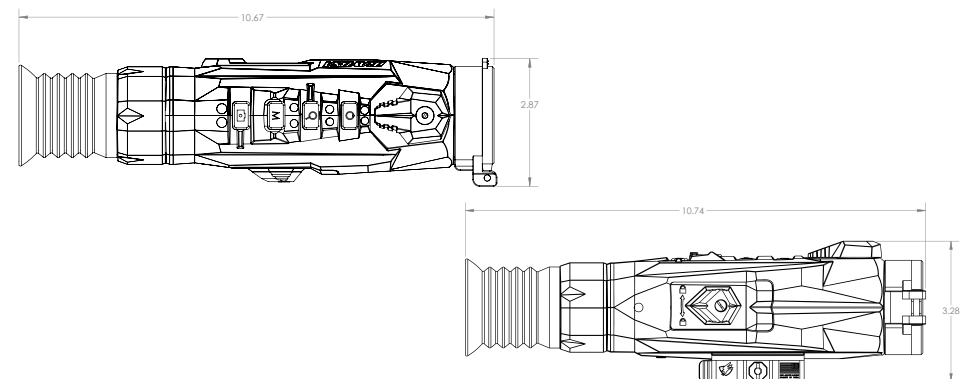
Menu Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Enter quick menu	Enter / exit main menu
Main menu	Change menu options; enter submenu; or confirm submenu changes and return	Save and return to previous menu
Quick menu	Toggle through menu options	Exit quick menu
Defective pixel correction interface	Select / deselect axis of movement (X or Y)	Correct selected defective pixel(s), save, and return.
Reticle zeroing interface	Select / deselect axis of movement (X or Y)	Save new reticle position

Photo / Down Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Take photo	Start / stop recording video
Quick menu & main menu	Move cursor down	---
Defective pixel correction & reticle zeroing interfaces	Move cursor 1 pixel in the negative direction	Move cursor 10 pixels in the negative direction

Zoom + Menu + Photo Button  +  + 		
Current Screen / Menu	Short Press	Long Press
Home screen	---	Activate / deactivate the reticle (press and hold for 10 seconds)

7. PRODUCT DIMENSIONS



8. QUICK START GUIDE

Step 1: Unbox the RICO ALPHA Series

1. Compare the box contents to the accessories list and examine each for any shipping damage. See **Accessories** on page 4.
2. Check the lens to ensure there are no smudges or dirt present. Clean with the included lens cloth, if necessary.

Step 2: Charge and Install the Battery Pack

1. Charge the battery pack (9) using the included battery pack charger (14) before using the ALPHA for the first time. See **Charging the Battery Pack** on page 10.
2. Insert the battery pack (9) into the battery compartment and secure the locking lever. See **Installing the Battery Pack** on page 11.

Step 3: Mount the ALPHA (Optional)

1. Mount the ALPHA to the weapon. See **Mounting the ALPHA** on page 14.

Step 4: Turn On the ALPHA and Adjust the Focus

1. Open the lens cover (8).
2. Long press **Power** (⏻) button for 3 seconds to power on the ALPHA. The iRayUSA logo will appear.
3. Rotate the diopter adjustment ring (2) of the eyepiece until the interface icons are clearly visible. See **Adjusting the Focus** on page 16.

WARNING: Do not point the objective lens toward intense energy sources, such as the sun. This may render the electronic components inoperative. The warranty does not cover damage caused by improper operation.

Step 5: Adjust Image Settings in the Quick Menu

Short press the **Menu** (M) Button to enter the quick menu to adjust the following settings (see **Using the Quick Menu** on page 19):

1. Select the imaging mode, white hot, black hot, red hot, color, or highlight. The default is white hot.
2. Select the display brightness, from 1–5. The default is 3.
3. Select the image sharpness, from 1–5. The default is 3.

Step 6: Adjust Device Settings in the Main Menu (Optional)

Long press the **Menu** (M) Button to enter the quick menu to adjust the following settings:

1. Select the desired non-uniformity correction (NUC) mode: automatic, manual, or background. The default is automatic. See **Main Menu > Calibration** on page 30.
2. Turn on the digital compass, if desired. See **Main Menu > Compass** on page 30.
3. Turn on the gravity sensor, if desired. See **Main Menu > Gravity Sensor** on page 31.
4. Calibrate the digital compass, if necessary. See **Main Menu > Compass Calibration** on page 40.
5. Turn on the microphone, if desired. See **Main Menu > Microphone** on page 37.
6. In the settings submenu:
 - a. Set the date and time. See **Settings Menu > Date** and **Settings Menu > Time** on page 41.
 - b. Select the units of measure, meters or yards. The default is meters. See **Settings Menu > Units of Measure** on page 42.

Step 7: Adjust Digital Zoom and PIP Settings (Optional)

1. From the home screen, short press the **Zoom** (Q) Button to toggle through the four zoom options, 1×, 2×, 3×, and 4×, if desired. The real-time amplification number (3×, 6×, 9×, 12×) appears in the status bar. See **Digital Zoom** on page 27.
2. From the home screen, long press the **Zoom** (Q) Button to turn on the PIP window, if desired. A 2× zoomed image (2× that of the total zoom shown in the status bar) will appear in the top of the screen. See **Picture in Picture (PIP)** on page 28.

Step 8: Customize the Reticle and Zero the ALPHA

1. From the home screen, press and hold the **Zoom** (Q), **Menu** (M), and **Photo** (⊞) Buttons simultaneously for 10 seconds to activate the reticle for the first time.
2. Select the zeroing profile, A, B, or C. See **Reticle Menu > Zeroing Profile** on page 32.
3. Select the reticle type, 1–7. The default is type 2. See **Reticle Type** on page 32.
4. Select the reticle color, white, black, red, or green. The default is white. See **Reticle Color** on page 33.
5. Select, or customize, a preset zero distance that matches the target distance. See **Zeroing Menu > Zero Distance Submenu** on page 34.
6. Zero the reticle, if desired. See **Zeroing Menu > Reticle Zeroing** on page 34.

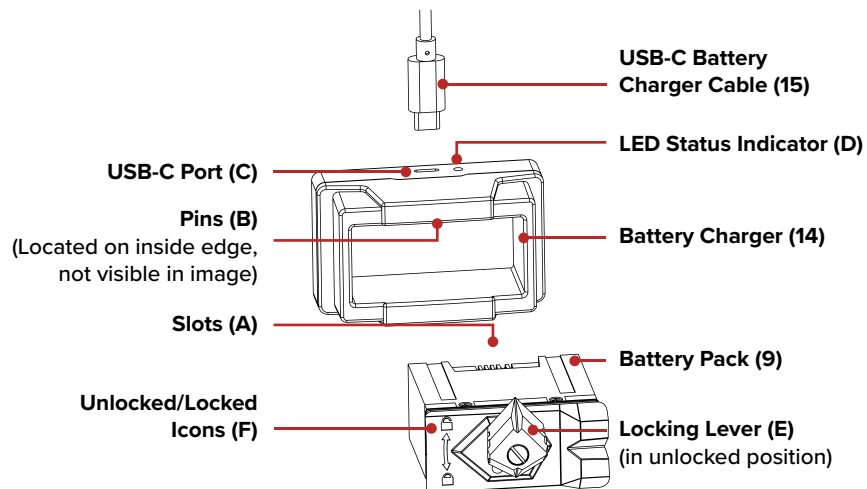
9. CHARGING THE BATTERY PACK

The RICO ALPHA series comes with an iRay IBP-1, a long-lasting rechargeable lithium-ion battery pack, which allows for 6–8 hours of operation. The IBP-1 uses a cam-locking mechanism to ensure quick and secure battery changes in the field.

Fully charge the battery pack before using the ALPHA for the first time. To charge the battery pack:

1. Insert the battery pack (9) into the battery charger (14). Align the slots (A) on the inner-edge of the battery pack with the pins (B) on the inside of the charger.
2. Plug the USB-C end of the battery charger cable (15) into the USB-C port (C) on the battery pack charger.
3. Plug the standard USB end of the battery charger cable into:
 - a. The included 5V–2A USB charging adapter; **OR**
 - b. Any standard USB 3.0 port on a laptop/computer.
4. When fully charged, remove the battery from the charger. See **LED Status Indicator** on the next page.
 - a. It takes about 5 hours to fully charge the battery. Do not overcharge.
 - b. See **Battery Status** on page 18 for additional battery information.

WARNING: Never use the battery pack charger with a USB adapter that is greater than 5V–2A.



LED Status Indicator

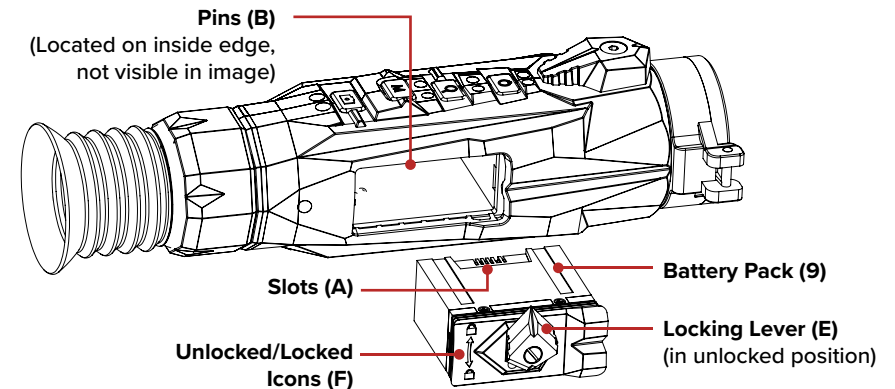
The LED indicator (D) on the battery pack charger (14) indicates the current status:

LED STATUS INDICATOR	BATTERY PACK STATUS
Solid Red	Charging
Solid Green	Battery pack fully charged
Flashing Red	Charger is connected to power supply, but battery pack is not installed

10. INSTALLING THE BATTERY PACK

To install the battery pack (9) into the ALPHA thermal imaging scope:

1. Turn the diamond-shaped battery-locking lever (E) on the outside of the battery pack (9) clockwise 90-degrees, so that it is pointing UP. This is the unlocked position. Note the unlocked icon (F) on the battery pack.
2. Insert the battery pack into the battery compartment in the side of the ALPHA. Align the slots (A) on the battery pack with the pins (B) inside the battery compartment.
 - a. Ensure the ALPHA is right-side up.
 - b. Ensure the six small slots on the inside edge of the battery pack face UP.
3. When the battery pack is fully inserted, turn the locking lever (E) counterclockwise 90-degrees to lock it in place. Note the locked icon (F) on the battery pack.
 - a. Ensure the tan surface exterior of the battery pack is flush with the outer housing of the ALPHA.



11. REMOVING THE BATTERY PACK

To remove the battery pack from the ALPHA:

1. Turn the diamond-shaped battery-locking lever **(E)** on the outside of the battery pack **(9)** clockwise 90-degrees to unlock the battery pack. Note the unlocked icon **(F)** on the battery pack.
2. Pull the battery pack out.

12. BATTERY SAFETY PRECAUTIONS

Only use the included battery charger **(14)** to charge the battery pack **(9)**. The use of any other charger may damage the battery pack or the charger and may cause a fire.

WARNINGS:

- Do not charge an extremely cold battery. Let the battery pack warm up to room temperature for at least 45 minutes before charging.
- Keep the battery pack out of the reach of children.
- Do not leave the battery charger unattended during charging.
- Never use a damaged or modified charger.
- Charge the battery pack at room temperature, otherwise the battery life will be reduced significantly.
- Do not leave the battery pack in the charger for an extended period of time after full charge is reached.
- If a battery has been used, stored, or charged for a long period of time it can begin to deteriorate. Stop using and remove the battery pack immediately with any battery discoloration or deformation, overheating, strange odors, or other unusual states.
- Avoid using the battery pack at temperatures above 122°F as this may decrease the battery life.
- Do not expose the battery pack to high temperature or flame.
- Do not submerge the battery pack in water.
- Do not open, dismantle, deform, hit, or drop the battery pack. When operating the ALPHA at subzero temperatures, the capacity of the battery may decrease. This is considered normal operation and should not be considered a defect.
- The battery pack is short-circuit protected. However, any situation that may cause short-circuiting should be avoided.
- If the rifle scope will be stored for an extended period, remove the battery from the ALPHA and store separately in a cool, dry location. Avoid storing a fully charged or discharged battery.
- Remove and store the battery pack separately in the soft-sided case for protection during transport.

13. EXTERNAL POWER SUPPLY

The RICO ALPHA supports the use of an external power supply, such as a 5V–3A mobile power bank. The external power supply may be used with or without the rechargeable battery pack installed.

To use the ALPHA with an external power supply:


1. Connect the 6-pin Autoloading Magnetic Cable **(13)** to the magnetic Autoloading Guarded Power Connector **(12)** on the underside of the ALPHA.
2. Plug the USB end of the cable into the external power supply.
3. When done using, disconnect the external power supply. The ALPHA will automatically switch back to the internal battery pack without powering off.

NOTE: When the external power supply is connected to the ALPHA **without** the battery pack, do not cut off the power supply when saving data, otherwise the data may be lost.


NOTE: Do not connect the ALPHA to an external device with a power supply that exceeds the 3.0 USB cable.

If the Battery Pack is Installed

The ALPHA will automatically switch to operation from the external power supply, and the battery pack will begin slowly charging.

The battery status icon in the status bar will change to a charging battery  icon, with the battery color indicating the current charge level (green, yellow, red). See **Battery Status** on page 18 for additional information.

If the Battery Pack is Not Installed

If an external power supply is connected to the ALPHA when the battery pack is NOT installed, the battery status icon in the status bar is replaced by a USB  icon.

14. MOUNTING THE ALPHA

The RICO ALPHA series thermal imaging scope includes a RQD Quick Release Mount (11), which is precision-machined from 6061-T6 aluminum and finished in hard coat T3 Mil-Spec anodize. The RQD will work on any standard MIL-STD-1913 rail for mounting and use.

Adjusting the RQD does not require proprietary tools for adjustment, it can be done with your fingers. The locking lever can be configured to lock to the front or the rear.

To mount the ALPHA:

1. Install the ALPHA riflescope on the rifle's rail.
2. Adjust its position so that it produces a clear image and is comfortable to the shooter.

NOTE: The tension of the RQD locking lever is adjustable for in- or out-of-spec rails. When the lever reaches a 45-degree angle to the rail, the lever should start to require more force to close and lock. Proper adjustment should be snug but still allow the mount to be applied and removed easily by hand.

To adjust the locking lever tension:

1. Move the lever to the open position and push the lever toward the base. This will make the adjustment nut protrude on the opposite side of the base.
2. With the nut protruding, it may be turned to the right or the left to make the necessary adjustment. You will need NO tools for this step.

NOTE: The amount of tension you set will depend on your personal preference. You should not have to fight to open or close the tension lever; you should be able to move it easily with one hand.

The ALPHA is now ready to be zeroed to your rifle. See **Zeroing the ALPHA** on page 17.

15. OPERATING INSTRUCTIONS

Shortcut Buttons


The RICO ALPHA Series has four control buttons which can be used to perform shortcut operations from the home screen, the main menu, and full-screen interfaces. See **Description of Control Buttons and Shortcuts** on page 6 for shortcut button details.

Powering On/Off and Standby Mode

WARNING!

Do not point the objective lens toward intense energy sources, such the sun. This may render the electronic components inoperative. The product warranty does not cover damage caused by improper operation.



STARTING/POWERING ON


1. Open the lens cover (8).
2. Press and hold the **Power**  button for 3 seconds to turn on the ALPHA. During start up, a red and white iRayUSA logo will appear on the screen.

To determine the current battery charge, check the battery icon on the right side of the status bar at the top of the viewscreen. See **Battery Status** on page 18.

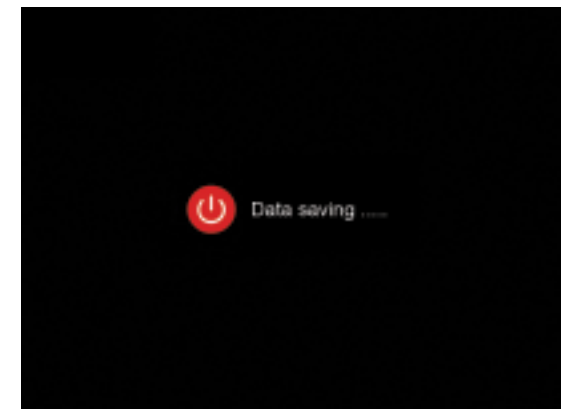
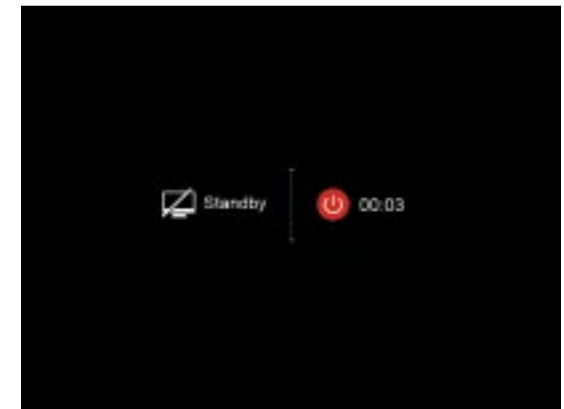
STOPPING/POWERING OFF

To power off the ALPHA:

1. Press and hold the **Power**  button. The standby screen will open, showing a three-second countdown.
2. Continue holding the **Power**  button until the three-second countdown completes.
3. After the countdown completes, "Data saving..." appears on screen and the ALPHA will shut down automatically after saving.

NOTE: Releasing the **Power**  button at any time during this shutdown cycle will stop the shutdown process and the riflescope will resume its normal operation.

WARNING: If using an external power supply, do not remove the power supply when saving data, otherwise the data may not be saved.





STANDBY MODE

Standby mode may be activated either manually or automatically to conserve battery life.

Automatic Standby Mode

In the main menu, the ALPHA may be set to automatically enter standby mode after a specified time with no operation (2, 4, or 6 minutes). See **Main Menu > Standby** on page 37 for detailed instructions.

1. Long press the Menu **[M]** Button to enter the main menu.
2. Short press the **Menu [M] Button** to select the standby  menu item and enter the standby submenu.
3. Choose from the standby options: 2min, 4min, 6min, and off. Standby is off by default.
4. Long press the **Menu [M] Button** to confirm your selection and return.
5. The standby icon  and status (2min, 4min, 6min, or off) appear on the right side of the status bar.
6. Once set, the ALPHA will automatically enter standby mode, after the set number of minutes of activity, to conserve battery life.
7. When in automatic standby mode, short press the **Power [P] Button** to exit standby and return to the home screen.

Manual Standby Mode

Manual standby mode may be activated from the home screen at any time.

1. Short press the **Power [P] Button** and **Zoom [Q] Button** simultaneously to activate / deactivate manual standby mode.

Adjusting the Focus

ADJUSTING THE DIOPTER/EYEPIECE

1. Rotate the eyepiece diopter adjustment ring **(2)** at the rear of the riflescope right or left until the user interface on the screen is clear.
2. Look closely to ensure all screen symbols, the status bar at the top, and the reticle appear sharp and in focus. No additional diopter adjustments are required unless the user wishes to make changes.

NOTES:

- After this initial adjustment, there is no need to rotate the eyepiece adjustment ring **(2)** for long distances or any other conditions.
- If necessary during standard use, you may rotate the Single Finger Focus Lever **(7)** to adjust fine focus on the target object being observed. See **Focusing the Objective Lens** on the next page.

FOCUSING THE OBJECTIVE LENS

To adjust the focus on the target object:

1. Rotate the Single Finger Focus Lever **(7)** left or right to adjust fine focus on the target object being observed.

NOTE: Re-adjusting the focus will be needed if the distance to your target changes.

Activate / Deactivate the Reticle

The reticle is inactive when the ALPHA is powered on for the first time. To activate the reticle, or to deactivate it at a later time:

1. From the home screen, press and hold the **Zoom [Q]**, **Menu [M]**, and **Photo [G]** Buttons simultaneously for 10 seconds to activate the reticle.

16. ZEROING THE ALPHA

The RICO ALPHA series features the “Freeze” zeroing method. To zero the ALPHA:

1. Set a suitable target at the desired zero distance.
2. Confirm that the rifle is empty, safe, and pointed in a safe direction, with no ammunition near the weapon.
3. Adjust the image and device settings, if necessary. See **Quick Start Guide** on page 8.
4. Select the zeroing profile, A, B, or C. See **Reticle Menu > Zeroing Profile** on page 32.
5. Based on the distance to the target you wish to zero, select a preset zero distance (100m, 200m, 300m, or 109y, 219y, 328y), **OR** customize one of the preset zero distances to match. The ALPHA supports custom zeroing distances of 1 to 999 meters or 1 to 999 yards. See **Zeroing Menu > Zero Distance Submenu** on page 34.
6. Ensure a stable platform and natural shooting position is achieved behind the rifle.
7. Load ammunition, aim, and take one good shot at the target.
8. Make your rifle safe, and observe the location of impact on the target.
9. If the point of impact does not match the point of aim (the center of the reticle):
 - a. In the Reticle Zeroing interface, keep the reticle centered on the point of aim, and long press the **Zoom [Q]** and **Photo [G]** Buttons at the same time until the freeze ❄️ icon appears on the left side of the screen. The image is now frozen. See **Zeroing Menu > Reticle Zero Setting** on page 34.
 - b. In the Reticle Zeroing interface, adjust the X/Y position of the reticle. See **Zeroing Menu > Reticle Zero Setting** on page 34.
10. Take a confirmation shot—the point of impact should now match the point of aim. If not, adjust the X/Y position of the reticle again.

Status Bar Overview



The status bar at the top of the screen shows information on the operating status of the RICO ALPHA series:

- 1 **Imaging Mode:** Shows the current imaging mode, white hot (W), black hot (B), red hot (R), color (C), or highlight (H). White hot is the default
- 2 **Zeroing Profile & Distance:** Shows the selected zero profile (A, B, or C) and the zero distance. A100m is the default.
- 3 **Ultra-clear Mode:** Shows the Ultra-clear mode status, on or off . Ultra-clear mode is off by default
- 4 **Total Magnification:** Shows the total magnification, 3×, 6×, 9×, 12×. 3× is the default.
- 5 **Non-Uniformity Correction (NUC) Mode:** Shows the selected non-uniformity correction (NUC) mode, automatic (A), manual (M), and background (B). A countdown timer icon will appear instead of the calibration mode when 5 seconds remain until an automatic NUC.
- 6 **Digital Compass:** Displays when the compass is turned on. Compass is off by default.
- 7 **Standby:** Shows standby time (2, 4, 6 min) or off. Standby is off by default.
- 8 **Microphone:** Shows the microphone status, on or off . Microphone is off by default.
- 9 **Wi-Fi:** Shows the Wi-Fi status, on or off . Wi-Fi is off by default.
- 10 **Clock:** Shows the current time.
- 11 **Battery:** Shows the current battery status. See **Battery Status** below.

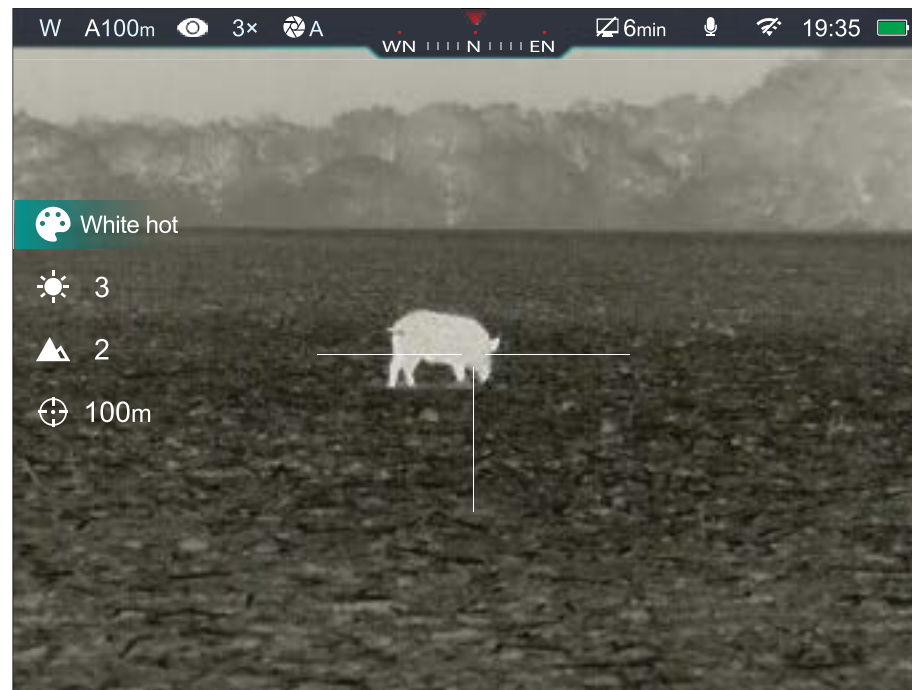
BATTERY STATUS

Battery icon color indicates the current battery status. The battery icon is replaced by the charging battery icon or the USB icon when an external power supply is connected.

COLOR / ICON	BATTERY STATUS
Green Battery	41% – 100%
Yellow Battery	20% – 40%
Red Battery	<20%; charge the battery pack right away.
Charging Battery	Battery pack is charging; external power supply or computer is connected via the Autoloading Magnetic Cable.
USB Icon	External power supply is connected; battery pack is not installed.

Using the Quick Menu

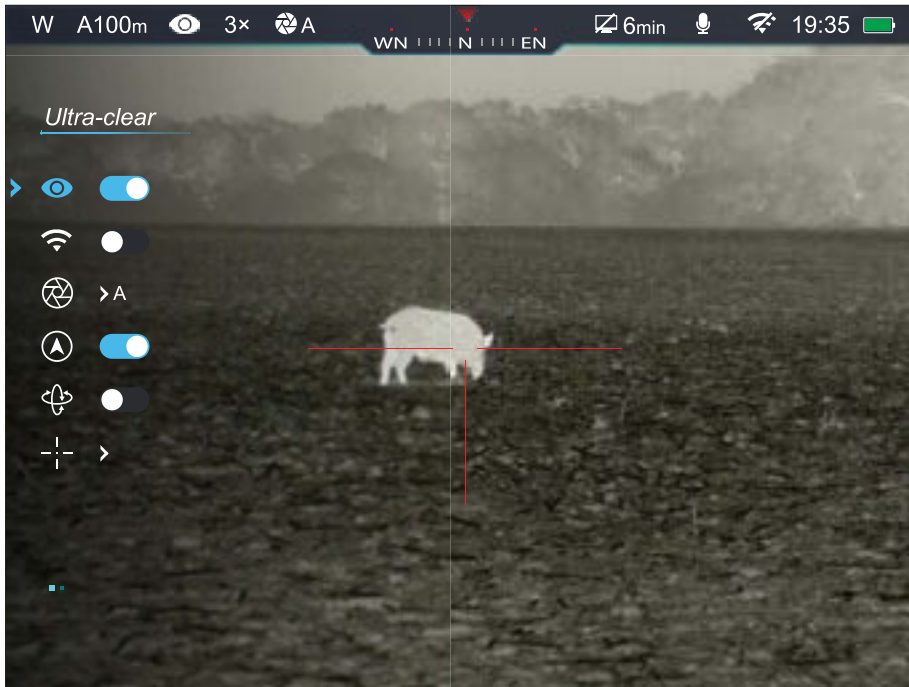
Imaging mode, display brightness, image sharpness, and zeroing distance can be changed in the quick menu.



1. From the home screen, short press the **Menu** **Button** to enter the quick menu.
2. Short press the **Up / Zoom** **Button** or **Down / Photo** **Button** to switch between the quick menu items, described below. The selected menu item is highlighted blue.
 - a. **Imaging Mode:** Short press the **Menu** **Button** to change imaging mode, white hot (W), black hot (B), red hot (R), color (C), and highlight (H). The selected imaging mode, W, B, R, C, H, appears on the left side of the status bar.
 - b. **Display Brightness:** Short press the **Menu** **Button** to change the display brightness level, from 1–5.
 - c. **Image Sharpness:** Short press the **Menu** **Button** to change the image sharpness level, from 1–5.
 - d. **Zeroing Distance:** Short press the **Menu** **Button** to change the selected zeroing distance within the currently selected zeroing profile. Only the zero distances in the selected profile will be available for selection. The selected zeroing distance appears on the left side of the status bar.
3. Long press the **Menu** **Button** to save changes and exit the menu or wait 5 seconds to save and exit automatically.

Navigating the Main Menu

From the home screen, long press the **Menu** **(M)** Button to enter the main menu.



In all menu interfaces:

- Short press the **Up / Zoom** **(Q)** Button or **Down / Photo** **(C)** Button to move up and down through the menu to switch between the main menu options.
- A blue cursor indicates the current position in the menu.
- Short press the **Menu** **(M)** Button to change the current parameters for the selected menu option, enter the submenu, or confirm submenu changes.
- Long press the **Menu** **(M)** Button to save any modifications and exit to the home screen.
- Short press the **Power** **(P)** button to return to the previous menu without saving.
- After 15 seconds of inactivity, the menu will automatically close and the interface will return to the home screen. Changes—except changes to toggle on / off menu items, such as Ultra-clear and Wi-Fi—are not saved automatically.
- Upon exiting from the main menu the cursor location is stored for a single working session (until the ALPHA is turned off). After restarting the ALPHA and entering the menu, the cursor position will be at the first menu item.

17. NON-UNIFORMITY CORRECTION

A non-uniformity correction (NUC) allows a thermal imager's sensors to correct its pixels and eliminate any image defects caused by pixel drift. A NUC will be performed automatically each time the ALPHA is powered on.

The RICO ALPHA Series has three NUC modes, automatic **(A)**, manual **(M)**, and background **(B)**. The selected NUC mode **(A, M, or B)** appears on the left side of the status bar. For instructions on selecting the desired NUC mode in the main menu, see **Main Menu > Calibration** on page 30.

Automatic Mode

In automatic mode **(A)**, the ALPHA will perform a NUC automatically according to the internal software algorithm. There is no need to close the lens cover **(8)** as the ALPHA's internal shutter covers the sensor.

A countdown timer will appear in the status bar instead of the calibration mode when 5 seconds remain until an automatic NUC is performed. Pressing the **Power** **(P)** Button during the 5-second countdown will interrupt a pending NUC for approximately 20 seconds. The timer will appear only after the microbolometer temperature has stabilized—after approximately 10 minutes of continuous operation of the ALPHA.

NOTE: A manual NUC (see below) may be performed at any time while in Automatic **(A)** mode.

Manual Mode

In manual mode **(M)**, the user independently determines the need to perform a NUC based on the quality of the observed image. It is not necessary to close the lens cover **(8)** during a manual NUC, as the internal shutter covers the sensor.

To perform a manual NUC while in manual mode (or automatic mode):

1. From the home screen, short press the **Power** **(P)** button.
2. A manual NUC is performed instantly.

Background NUC

In background mode **(B)**, the user independently determines the need to perform a background NUC based on the quality of the observed image. A background NUC uses less power than an automatic or manual NUC because it does not use the imager shutter to cover the sensor; instead, the user must close the lens cover **(8)**.

To perform a background NUC while in background mode:

1. Close the lens cover **(8)**.
2. From the home screen, short press the **Power** **(P)** button.
3. A prompt to close the lens cover **(8)** appears onscreen. The background NUC starts after about 4 seconds.

NOTE: If the lens is not properly covered, a temporary “image burn” will remain in the image until the next non-uniformity correction. This “image burn” is temporary and is not a defect or sign of permanent damage.



18. PHOTOGRAPHY AND VIDEO RECORDING

The RICO ALPHA series is equipped with video recording and image capture. Images and videos are automatically saved on the ALPHA's internal 32 GB memory storage.

Photo and video files are named with the time and date; therefore, it is recommended to set the date and time before using the photo and video functions. See **Settings Menu > Date** and **Settings Menu > Time** on page 41. Alternately, the date and time may be synchronized with one button in the InfiRay Outdoor App. See **Using the InfiRay Outdoor App** on page 27.

Photography





To take a photo:

1. From the home screen, short press the **Photo  Button**.
2. The image will freeze for 0.5 seconds and the camera  icon will appear in the upper-left corner of screen.

NOTE: Photos are automatically stored in the internal memory storage.

Video Recording

To record video:

1. From the home screen, long press the **Photo  Button** to start video recording.
2. When the video recording starts, the video  icon and the video recording timer, in HH:MM:SS (hour: minute: second) format, appear in the upper-left corner of the screen.
3. When recording, short press the **Photo  Button** to take a photo.
4. Long press the **Photo  Button** to stop and save the video recording.

NOTE: All videos and photos will automatically be saved to the internal storage.

Video and Photography Tips

- You may enter and navigate the menu as normal during video recording. The user interface (the status bar, icons, and menu) is not captured in recorded video or photo files.
- Recorded photos are saved to the internal memory card of the in .jpg format, videos are saved in .mp4 format.
- The counter used for the names of multimedia files cannot be reset.
- If a file is deleted from the list, its number is not taken by another file.

CAUTION:

- The maximum duration of a recorded video file is 5 minutes. After this time, video recording will begin a new file automatically.
- The number of the recorded files is limited only by the capacity of the internal memory.
- Check the available space of the internal storage card regularly and move video footage and images to other storage media to free up space on the memory card.
- Graphic data (icons and menu) are not displayed in recorded video and photo files.

19. ACCESSING THE INTERNAL MEMORY

When the device is turned on and connected to a computer via the included 6-pin Autoloading Magnetic Cable (13), it is recognized by the computer as a USB drive. This allows the user to access the saved multimedia files and copy or delete any desired files.







To access the internal memory:

1. Turn on the ALPHA.
2. Connect the 6-pin Autoloading Magnetic Cable (13) to the magnetic Autoloading Guarded Power Connector (12) on the underside of the ALPHA.
3. Plug the USB end of the cable into your computer.
4. Double-click **My Computer** on the computer desktop.
5. Double-click to open the USB drive named **Infiray**.
6. Double-click to open the folder named **Internal Storage** to access the built-in memory.
 - a. Recorded photos and videos are separated by date into folders.
 - b. Folders are named by date.
7. Select the desired files or folders to copy or delete.


20. CONNECTING TO WI-FI

The ALPHA has a function for wireless communication with a mobile device (smartphone or tablet) via Wi-Fi.

To enable the wireless module:

1. From the home screen, long press the **Menu**  **Button** to enter the main menu.
2. Select the Wi-Fi  menu option.
3. Short press the **Menu**  **Button** to turn on Wi-Fi.
4. Long press the **Menu**  **Button** to save the selection and return.
5. When Wi-Fi is on, the Wi-Fi on  icon displays on the right side of the status bar. The Wi-Fi off  icon appears when Wi-Fi is off.

In the InfiRay Outdoor App:

1. Scan one of the QR codes in **Using the InfiRay Outdoor App** on page 27 to download the InfiRay Outdoor App from the App Store or Google Play.
2. Open the app and press the **ViewFinder** icon  at the bottom of the screen.
3. The ViewFinder screen will prompt the user to: Open the mobile device > Go to device settings > Turn on device Wi-Fi > Connect to Wi-Fi.
4. Click the **Connect Device WiFi** button.

On the mobile device:

1. Go to **Settings > Wi-Fi**.
2. Select the ALPHA from the list of Wi-Fi networks. The ALPHA will appear in the list as “IRUS-RA50_XXXXXX”, where XXXXXX is the device serial number. See **Settings Menu > Info** on page 44 for serial number (SN).
3. Enter the Wi-Fi password. The default password is 12345678.

When Wi-Fi is successfully connected, the user may manipulate the ALPHA via the InfiRay Outdoor App. See **Using the InfiRay Outdoor App** on page 27.

Firmware Upgrade

When a firmware update is available, it may be sent to the ALPHA through Wi-Fi connection.



To check for and download an available firmware update:

1. On your mobile device, go to irayusa.com/fwpc.
2. If an update is available for the RICO ALPHA Series, it will be listed at the top of the screen (look for your model number: RA50).
3. Click the available update to download it.
4. Confirm you wish to download the file and select where to save the .img file on your mobile device.



IRAYUSA

To upgrade the ALPHA:



1. On the ALPHA, turn on Wi-Fi to connect to the App. See **Connecting to Wi-Fi** on page 24.
2. Open the InfiRay Outdoor App.
3. In the App, press the **ViewFinder icon**  at the bottom of the screen.
4. Press the **Settings icon**  at top-right.
5. Press the **WiFi Firmware Upgrade button** at the bottom of the screen.
6. Press the **Choose Firmware button** to browse for the saved .img file on your mobile device.
7. Press the **Start Upgrading button**. The app will display the current upload progress. The ALPHA will automatically reboot when the upgrade has completed.



Set New Wi-Fi Password and SSID

The Wi-Fi SSID and password for the RICO ALPHA Series can be reset in the InfiRay Outdoor App. The default password is: 12345678.

After connecting with a mobile device:

1. Open the InfiRay Outdoor App.
2. Press the **ViewFinder icon**  at the bottom of the screen.
3. Press the **Settings icon** .
4. In the password field, enter the new Wi-Fi password and tap the **Submit button**. The password must be 8–16 numbers/letters.
5. If you also wish to reset the SSID, enter a new Wi-Fi name in the SSID field.
6. Turn off the ALPHA to put the new password (and SSID, if changed) into effect.
7. Wait at least 30 seconds before restarting the device.
8. On the mobile device, go to **Settings > Wi-Fi**, enter the new password, and press the **Join button**.



NOTE: When a factory reset is performed, the Wi-Fi password and SSID are reset to the defaults, 12345678 and IRUS-RA50_XXXXXX. See **Settings Menu > Factory Reset** on page 43.




21. USING THE INFIRAY OUTDOOR APP

The ALPHA Series thermal scope supports operation via the InfiRay Outdoor App when the ALPHA is connected via Wi-Fi to a smartphone or tablet. See **Connecting to Wi-Fi** below.

You can download and install the InfiRay Outdoor App for free via any app store, or by scanning one of the QR codes at right to download the InfiRay Outdoor App from the App Store or Google Play.




When Wi-Fi is connected, users can manipulate the ALPHA via the InfiRay Outdoor App, including:

- Take real-time photos and videos.
 - Photos and videos taken via the app are saved to the mobile device, instead of the ALPHA's internal storage. Once connected, you can access files saved to the mobile device by going to:
 - In the App, press the **ViewFinder icon**  at the bottom of the screen.
 - Press the photo or video icon at the bottom of the screen to share, delete, or download files.
- Change the Wi-Fi password and SSID. See **Set New Wi-Fi Password and SSID** on page 26.
- Synchronize date and time from the mobile device with the ALPHA:
 - In the App, press the **ViewFinder icon**  at the bottom of the screen.
 - Press the **Settings icon**  at top-right.
 - Click the **Synchronize Time button**.
- Upgrade the firmware. See **Firmware Upgrade** on page 24.

22. DIGITAL ZOOM

The RICO ALPHA series will quickly increase the base magnification from 3× by enlarging the image from 1 to 4 times digitally.



To use digital zoom:

1. From the home screen, short press the **Zoom**  **Button** to toggle through the four zoom options, 1×, 2×, 3×, and 4×.
2. The real-time amplification number (3×, 6×, 9×, 12×) appears on the left side of the status bar.

23. PICTURE IN PICTURE (PIP)

The PIP (Picture in Picture) function opens a small window with a magnified image-view at the top of the screen. PIP allows for improved aiming while still being able to see the wide field of view in the main body of the screen.

To activate Picture in Picture (PIP) mode:

1. From the home screen, long press the **Zoom**  **Button**. A 2× zoomed image (2× that of the total zoom shown in the status bar) will appear at the top of the screen.
2. To exit PIP mode, long press the **Zoom**  **Button** again.

24. ULTRA-CLEAR MODE

Ultra-clear mode improves the image quality in inclement weather conditions such as rain or fog.

High humidity, high temperature, and high-density water droplets can all result in poor thermal image quality. Ultra-clear mode enhances the NETD value of the thermal sensor and improves the sensor's response rate to the environment conditions.

Ultra-clear mode provides:

- Improved image quality and clarity; images are crisper and sharper.
- Richer image detail.
- Improved recognition of observed targets.

25. MAIN MENU OPTIONS AND DESCRIPTIONS

Menu, and submenu, options, from top to bottom are:

- **Main Menu:** Ultra-clear, Wi-Fi, Calibration, Compass, Gravity Sensor, Reticle, Zeroing, Microphone, Standby, Pixel Defect Correction, Compass Calibration, and Settings.
 - **Reticle Menu:** Zeroing Profile, Reticle Type, and Reticle Color.
 - **Zeroing Menu:** The three preset Zeroing Distance options (100m, 200m, and 300m or 109y, 219y, 328y).
 - **Zeroing Distance Submenu:** Reticle Zeroing and Custom Zero Distance.
 - **Settings Menu:** Date, Time, Units of Measure, Status Auto Hiding, Factory Reset, and Info.







Menu option details, descriptions and navigation instructions are listed in order on the following pages.

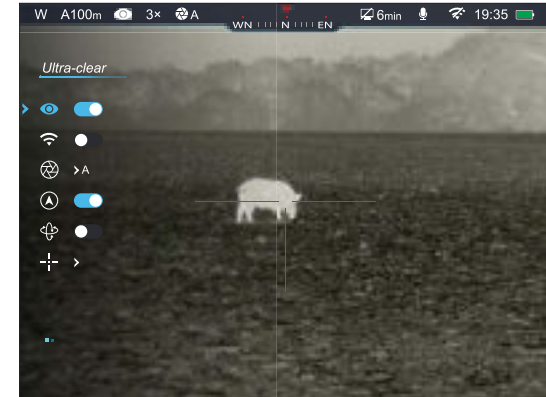
Main Menu Options and Descriptions

Ultra-clear

Turn Ultra-clear mode on/off

Ultra-clear mode improves the image quality in inclement weather conditions such as rain or fog. See **Ultra-clear Mode** on page 28.









1. Long press the **Menu**  **Button** to enter the main menu.
2. The Ultra-clear  menu item is selected by default.
3. Short press the **Menu**  **Button** to toggle Ultra-clear mode on / off. Ultra-clear mode is off by default.
4. The Ultra-clear status, on  or off , appears on the left side of the status bar.
5. Long press the **Menu**  **Button** to save and return to the home screen.

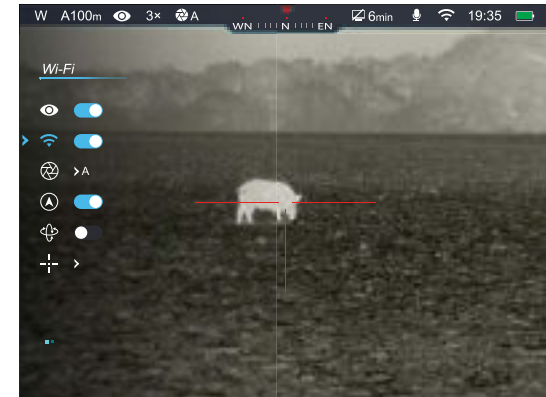


Wi-Fi

Turn Wi-Fi on/off

Turn on Wi-Fi to manipulate the ALPHA via the InfiRay Outdoor App. See **Connecting to Wi-Fi** on page 24.

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the Wi-Fi  menu item.
3. Short press the **Menu**  **Button** to toggle Wi-Fi on / off. Wi-Fi is off by default.
4. The Wi-Fi status, on  or off , appears on the right side the status bar.
5. Long press the **Menu**  **Button** to save and return to the home screen.












Calibration

Select the non-uniformity correction (NUC) mode







There are three non-uniformity correction (NUC) modes: Automatic, Manual, and Background. See **Non-Uniformity Correction** on page 21 for details about each mode.



1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the calibration  menu item.
3. Short press the **Menu**  **Button** to enter the calibration submenu.
4. Short press the **Up**  or **Down**  **Button** to move through the calibration submenu options: Automatic (A), Manual (M), and Background (B). Automatic (A) is selected by default.
5. The selected NUC mode, **A**, **M**, or **B**, appears on the left side of the status bar.
6. Short press the **Menu**  **Button** to confirm the selection and return to the previous menu; **OR**
7. Long press the **Menu**  **Button** to save and return to the home screen.

Compass







Turn the compass on/off

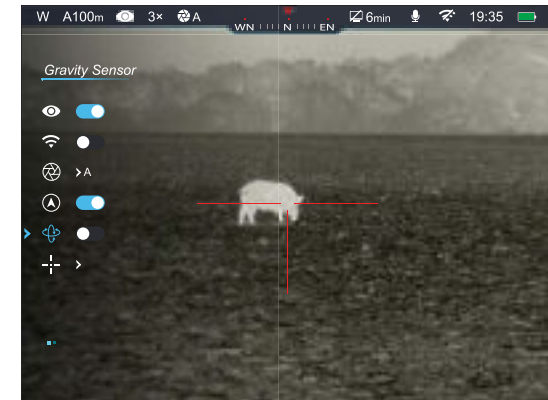
1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the compass  menu item.
3. Short press the **Menu**  **Button** to toggle the compass on / off. The compass is off by default.
4. When the compass is on, it appears in the center of the status bar.
5. Long press the **Menu**  **Button** to save and return to the home screen.



Gravity Sensor






Turn the gravity sensor on/off

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the gravity sensor  menu item.
3. Short press the **Menu**  **Button** to toggle the gravity sensor on / off. The gravity sensor is off by default.
4. When the gravity sensor is on, the tilt angle appears on the left side of the screen and the pitch angle appears on the right side of the screen.
5. Long press the **Menu**  **Button** to save and return to the home screen.



Reticle







Select the zeroing profile, reticle type, and reticle color

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the reticle  menu item.
3. Short press the **Menu**  **Button** to enter the reticle submenu.
4. There are three submenu items: zeroing profile, reticle type, and reticle color.



RETICLE MENU > ZEROING PROFILE









Select the zeroing profile

1. In the reticle submenu, the zeroing profile  menu item is selected by default.
2. Short press the **Menu**  **Button** to enter the zeroing profile submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the zeroing profile options, A, B, or C.
4. The selected zeroing profile, A, B, or C, appears on the left side of the status bar.
5. Short press the **Menu**  **Button** to confirm the selection and return to the reticle submenu; **OR**
6. Long press the **Menu**  **Button** to save and return to the home screen.



RETICLE MENU > RETICLE COLOR









Select reticle color

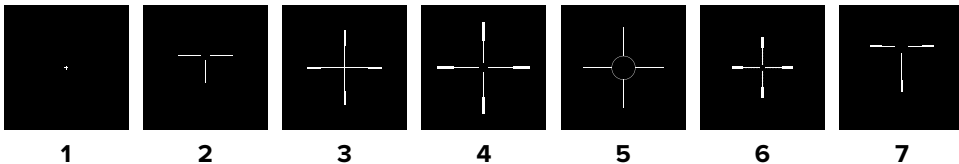
1. In the reticle submenu, short press the **Up**  or **Down**  **Button** to select the reticle color  menu item.
2. Short press the **Menu**  **Button** to enter the reticle color submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the color options, black, white, red, or green.
4. The reticle color changes as the cursor goes down the color option list.
5. Short press the **Menu**  **Button** to confirm the selection and return to the reticle submenu; **OR**
6. Long press the **Menu**  **Button** to save and return to the home screen.



RETICLE MENU > RETICLE TYPE

Select the reticle type

1. In the reticle submenu, short press the **Up**  or **Down**  **Button** to select the reticle type  menu item.
2. Short press the **Menu**  **Button** to enter the reticle type submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the reticle types, 1–7 (see below).
4. The reticle changes as the cursor goes down the reticle list.
5. Short press the **Menu**  **Button** to confirm the selection and return to the reticle submenu; **OR**
6. Long press the **Menu**  **Button** to save and return to the home screen.








Zeroing

Select or customize zero distance

In the zeroing submenus, you can select a preset zero distance, customize a preset zero distance, and adjust the reticle position for the selected zero distance.

Before selecting or customizing a zero distance, you must set a zeroing profile (A, B, or C). Each zero profile has three zero distances. See **Reticle Menu > Zeroing Profile** on page 32.






The RICO ALPHA series supports custom zeroing distances of 1 to 999 yards or 1 to 999 meters.

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the zeroing  menu item.
3. Short press the **Menu**  **Button** to enter the zeroing menu.



ZEROING MENU > ZERO DISTANCE SUBMENU

Select, or customize, a preset zero distance



- In the Zeroing Menu, short press the **Up**  or **Down**  **Button** to select a zero distance option. The preset zero distance options are 100m, 200m, and 300m (109y, 219y, 328y). 100m (109y) is selected by default.
- Short press the **Menu**  **Button** to enter the submenu for the selected zero distance.
- In the submenu for the selected zero distance, you may:
 - Enter the reticle zeroing interface  to adjust the X/Y position of the reticle at the selected zero distance. See **Reticle Zeroing** below.
 - Customize the selected preset zero distance  , if desired. See **Customize Zero Distance** on page 36.



ZEROING MENU > ZERO DISTANCE SUBMENU > RETICLE ZEROING

Adjust the reticle position of the selected zero distance.

In the reticle zeroing interface, the X/Y position of the reticle may be adjusted to match the point of impact. See **Zeroing the ALPHA** on page 17 for more information.













- In the submenu for the selected zero distance, short press the **Menu**  **Button** to select and enter the reticle zeroing interface. The reticle zeroing interface  menu item is selected by default.



- The reticle zeroing interface has the following features:
 - X:** Horizontal point of impact change (in cm or in).
 - Y:** Vertical point of impact change (in cm or in).
 - Freeze Icon:** Indicates that the image is frozen.
 - Reticle:** Shows the new reticle position.
 - White Dot:** Indicates center of initial reticle position.



To zero your ALPHA, either with a preset zero distance or a customized zero distance (see next section for instructions):

- Aim and shoot at your target.
- Keep the reticle centered on the aiming point and long press **Up**  and **Down**  **Buttons** simultaneously to freeze the image. The image freeze  icon will appear below the X/Y coordinates.
- Select the axis (X or Y) along which to move the reticle:
 - Short press the **Up**  or **Down**  **Button** to move between X and Y. The cursor position is indicated by a blue arrow and blue font.
 - Short press **Menu**  **Button** to select X or Y. The selected axis will flash continuously.
 - Short press **Menu**  **Button** a second time to save the reticle position along the selected axis and deselect it.
 - Short press the **Power**  **button** to clear the reticle position along the selected axis, returning the reticle to the original position for that axis.
- Adjust the X/Y position of the reticle until the reticle matches the point of impact.
 - X (horizontal) is the windage and Y (vertical) is the elevation.
 - Use the **Up**  **Button** to move in the positive direction: X= Right and Y= Up.
 - Use the **Down**  **Button** to move in the negative direction: X= Left and Y= Down.
 - Short press **Up**  or **Down**  to move the reticle in the corresponding direction by 1 pixel; long press to move 10 pixels.
 - When adjusting your zero at a distance of 50 yards, short press will change the impact point by 0.27" and long press moves 2.71" as shown in the X and Y coordinate displays. At 100 yards that same short press moves 0.54" and long press moves 5.42". At 200 yards short press moves 1.08" and long press moves 10.84".

- f. Changing your zero distance will change the distance of your X/Y adjustments automatically. If your selected zero distance has a correction of 1.08" at 100 yards, it will automatically change to 2.17" if you change the zero distance to 200 yards.

5. Long press **Menu** **[M]** **Button** to save the reticle position and return to the home screen.
 - a. A 5-second countdown appears on the screen, followed by "Saved Successfully."

ZEROING MENU > ZERO DISTANCE SUBMENU > CUSTOMIZE ZERO DISTANCE $\overset{0}{0}00\text{m}$

Customize a preset zero distance

The RICO ALPHA series supports custom zeroing distances of 1 to 999 yards or 1 to 999 meters.




1. In the submenu for the selected zero distance, short press the **Up** **[Q]** or **Down** **[K]** **Button** to select the customization $\overset{0}{0}00\text{m}$ menu item (the selected zero distance will appear instead of "000m").

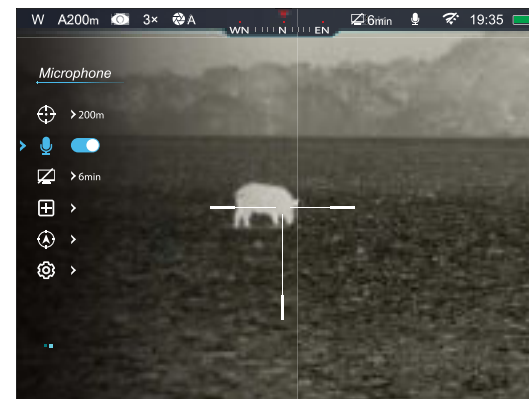


2. Short press the **Menu** **[M]** **Button** to customize the selected preset zero distance. Blue triangle icons will appear above and below the selected digit to mark the cursor location. The far-left digit is selected by default.
3. Short press the **Up** **[Q]** or **Down** **[K]** **Button** to increase or decrease the value of the selected digit, from 0–9.
4. Short press the **Menu** **[M]** **Button** to switch between the three digits. The two triangle icons will indicate the selected digit.
5. Long press the **Menu** **[M]** **Button** to save the custom zero distance and return to the Zero Distance submenu.
6. The new zeroing distance appears on the left side of the status bar.

Microphone

Turn microphone on/off



1. Long press the **Menu** **[M]** **Button** to enter the main menu.
2. Short press the **Up** **[Q]** or **Down** **[K]** **Button** to move through the menu to select the microphone  menu item.
3. Short press the **Menu** **[M]** **Button** to toggle the microphone on / off. The microphone is off by default.
4. The microphone status, on  or off , appears on the right side the status bar.
5. Long press the **Menu** **[M]** **Button** to save and return to the home screen.



Standby

Set automatic standby status and time

To conserve battery, the ALPHA may be set to automatically enter standby mode after a specified number of minutes of inactivity (2, 4, or 6 minutes).

1. Long press the **Menu** **[M]** **Button** to enter the main menu.
2. Short press the **Up** **[Q]** or **Down** **[K]** **Button** to move through the menu to select the standby  menu item.
3. Short press the **Menu** **[M]** **Button** to enter the standby submenu.
4. Short press the **Up** **[Q]** or **Down** **[K]** **Button** to move through the standby submenu options: 2min, 4min, 6min, and off. Standby is off by default.
5. The standby icon  and status (2min, 4min, 6min, or off) appear on the right side of the status bar.
6. Short press the **Menu** **[M]** **Button** to confirm the selection and return to the previous menu; **OR**
7. Long press the **Menu** **[M]** **Button** to save and return to the home screen.
8. When in automatic standby mode, short press the **Power** **[P]** **Button** to exit standby and return to the home screen.








NOTE: The ALPHA has both automatic and manual standby options. Manual standby mode may be activated / deactivated from the home screen at any time by short pressing the **Power** **[P]** **Button** and **Up / Zoom** **[Q]** **Button** simultaneously.


Pixel Defect Correction

Select and correct defective pixels






Defect pixels are pixels that do not change correctly compared to the other image pixels—they are either brighter or darker than surrounding pixels. The RICO ALPHA Series has a tool for correcting any defective pixels on the sensor using its internal software.






1. Long press the **Menu ** Button to enter the main menu.
2. Short press the **Up ** or **Down ** Button to move through the menu to select the pixel defect correction  menu option.
3. Short press the **Menu ** Button to enter the defective pixel correction interface.
4. The pixel correction interface has the following features:

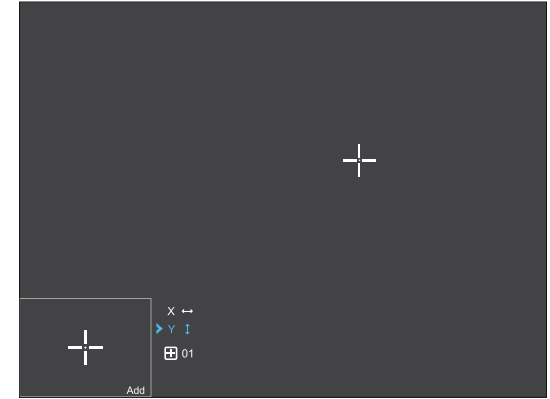
- 1 Cursor:** Move the cursor to the position of the defective pixel. Cursor appears in the center of the screen in place of the reticle.
- 2 X:** Select to move the cursor horizontally.
- 3 Y:** Select to move the cursor vertically
- 4 PIP Window:** Picture in Picture window appears in the lower-left corner.
- 5  00:** Shows the number of defective pixels in the “to be corrected” list.





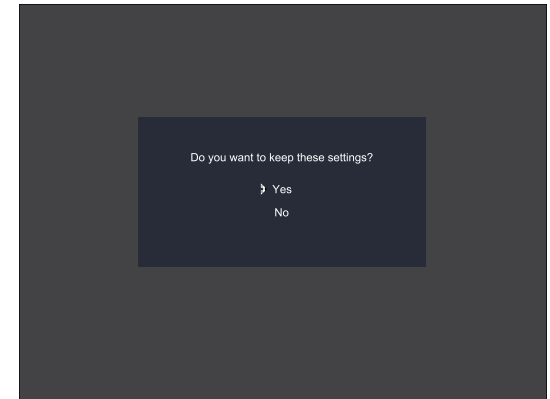
5. Select the axis (X or Y) along which to move the cursor:
 - a. Short press **Up ** or **Down ** to move up and down between **X** and **Y**. The cursor position is indicated by a blue arrow and blue font.
 - b. Short press the **Menu ** Button to select or deselect **X** or **Y**. The selected axis will flash continuously.
6. Move the cursor to the location of the defective pixel:
 - a. Use the **Up ** Button to move in the positive direction: X= Right and Y= Up.
 - b. Use the **Down ** Button to move in the negative direction: X= Left and Y= Down.
 - c. Short press to move the reticle in the corresponding direction by 1 pixel; long press to move 10 pixels.




7. With the cursor in position and the X or Y axis still selected, short press the **Power ** Button to add the defective pixel to the “to be corrected list.”

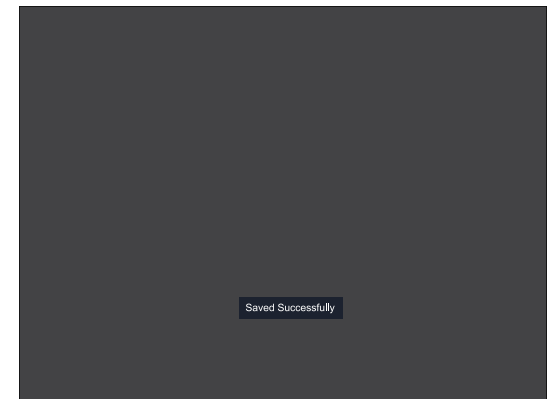
- a. “Add” will briefly appear in the bottom-right corner of the PIP window.
- b.  00 will change to  01 to indicate that one pixel has been added to the correction list.



8. If the defective pixel has been added in error, short press the **Power ** Button a second time from the same X/Y coordinates (do not move the cursor) to remove the pixel from the “to be corrected list.” “Del” will briefly appear in the PIP window.
9. Repeat the steps above to add additional defective pixels, if desired.
10. When all defective pixels have been added to the list, long press the **Menu ** Button.
11. A popup window shows the message “Do you want to keep these settings?” and two options, yes and no. Yes is selected by default.








12. Short press the **Menu ** Button to select **Yes** to correct the defective pixels and save; **OR**
 - a. A 5-second countdown appears on the screen, followed by “Saved Successfully” and the device returns to the home screen.
13. Short press the **Up ** or **Down ** Button to select **No** to exit to the main menu without saving (no defective pixels will be corrected).



NOTE: The PIP window and interface controls will move to the upper-left corner of the screen when cursor moves into the lower-left corner.

Compass Calibration






Calibrate the digital compass

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the compass calibration  menu item.
3. Short press the **Menu**  **Button** to begin compass calibration.
4. A triaxial coordinate icon will appear on the screen.
5. Follow the prompt to rotate the ALPHA at least 360 degrees along each axis, X, Y, and Z. Rotations must be completed within the 20-second calibration time.
6. After 20 seconds, the calibration is finished and ALPHA will automatically exit to the home screen.



Settings







Set general settings

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to move through the menu to select the settings  menu item.
3. Short press the **Menu**  **Button** to enter the settings submenu.
4. There are six submenu items: date, time, units of measure, status auto hiding, factory reset, and info.



SETTINGS MENU > DATE









Set the date

1. In the settings submenu, the date  menu item is selected by default.
2. Short press the **Menu**  **Button** to edit the date. Blue triangle icons will appear above and below the selected date value. The year value is selected by default. The date is displayed in YYYY.MM.DD format (2020.01.01).
3. Short press the **Up**  or **Down**  **Button** to select the correct value for the year, month, and day.
4. Short press the **Menu**  **Button** to switch between digits. The two triangle icons indicate the current selected digit.
5. Long press the **Menu**  **Button** to save the date and return to the home screen.



SETTINGS MENU > TIME









Set the time

1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the time  menu item.
2. Short press the **Menu**  **Button** to edit the time. Blue triangle icons will appear above and below the selected time value. The hour value is selected by default. The time is displayed as HH:MM, in 24-hour format (14:48).
3. Short press the **Up**  or **Down**  **Button** to select the correct value for the hour and minute.
4. Short press the **Menu**  **Button** to switch between digits. The two triangle icons indicate the current selected digit.
5. Long press the **Menu**  **Button** to save the date and return to the home screen.



SETTINGS MENU > UNITS OF MEASURE

Select the units of measure

1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the units of measure  menu item.
2. Short press the **Menu**  **Button** to enter the units of measure submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the units options, meters and yards. Meters are selected by default.
4. The selected units of measure (**m** or **y**) will display, along with the selected zero profile and distance, on the left side of the status bar.
5. Short press the **Menu**  **Button** to confirm the selection and return to the settings submenu; **OR**
6. Long press the **Menu**  **Button** to save and return to the home screen.



SETTINGS MENU > STATUS AUTO HIDING




Turn auto hiding on/off

This function enables automatic hiding of all interface information, aside from the reticle, for unobstructed image-view.






When auto-hide is turned on, after 8 seconds of inactivity the status bar, digital compass, and all interface icons will be automatically hidden. Shortcut buttons and the menu are disabled until the entire interface is again displayed. Press any button to show all interface information again.

When auto-hide is turned off, the status bar and digital compass (if turned on) will not hide after 8 seconds of inactivity.

NOTE: When auto-hide is on, the main menu, when open, will hide after 15 seconds of inactivity and the rest of the ALPHA interface will hide after an additional 8 seconds.








1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the status auto hiding  menu item.



2. Short press the **Menu**  **Button** to enter the status auto hiding submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the options, on or off. Auto hiding is on by default.
4. Short press the **Menu**  **Button** to confirm the selection and return to the settings submenu; **OR**
5. Long press the **Menu**  **Button** to save and return to the home screen.

SETTINGS MENU > FACTORY RESET

Reset to Factory Settings

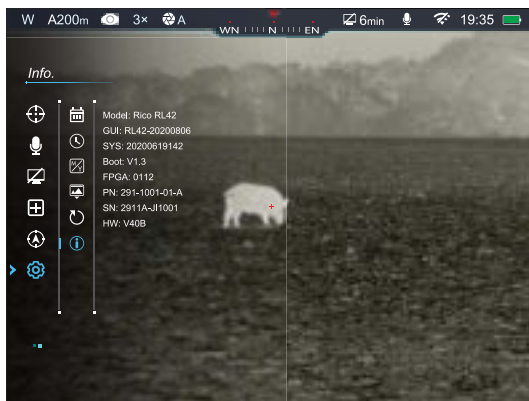
1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the factory reset  menu item.
2. Short press the **Menu**  **Button** to enter the factory reset submenu. Two options, yes and no, appear. Yes is selected by default.
3. Short press the **Menu**  **Button** to select **Yes** to begin the factory reset; **OR**
 - a. There will be about a 20-second pause as the system prepares to reboot. Do NOT press any buttons during this time.
 - b. A bright light will flash three times and the ALPHA will automatically restart. It is recommended to look away during this time as the light is quite bright.
4. Short press the **Up**  or **Down**  **Button** to select **No** to cancel and return to the submenu.



NOTES:

- A factory reset cannot be undone.
- The settings listed below will be reset to the factory defaults:
 - Imaging mode: White Hot
 - Display Brightness: 3
 - Image Sharpness: 3
 - Zeroing: A100m (or A109y if yards are selected)
 - Magnification: 3x
 - Ultra-clear mode: Off
 - Wi-Fi: Off
 - Calibration Mode: Automatic
 - Digital Compass: Off
 - Gravity Sensor: Off
 - Microphone: Off
 - Standby: Off
 - Date: 2020:01:01
 - Time: 00:00
 - Status Auto Hiding: On
 - Wi-Fi SSID: IRUS-RA50_XXXXXX
 - Wi-Fi Password: 12345678

Show device information



1. In the settings submenu, short press the **Up** **Q** or **Down** **C** **Button** to move through the submenu and select the info ⓘ menu item.
2. Short press the **Menu** **M** **Button** to enter the info submenu.
3. The info submenu will display the following information about the ALPHA: the product model, GUI version, SYS Info, boot version, FPGA, PN and SN number, and hardware version.
4. Short press the **Power** **O** **button** to return to the settings submenu; **OR**
5. Long press the **Menu** **M** **Button** to return to the home screen.

26. BASIC INSPECTION/MAINTENANCE

It is recommended to carry out a technical inspection before each use. Please check the following:

- The riflescope appearance: there should be no cracks in the body, or visible damage.
- The condition of the objective lens and eyepiece: there should be no cracks, greasy spots, dirt or other deposits on the lenses.
- The rechargeable battery pack should be fully charged.
- The control buttons should be in working order.
- The mount should be tight and correctly installed on the rail.

27. BASIC MAINTENANCE

Always replace the lens cover **(8)** after use to avoid damaging or scratching the lens. Never touch the lens directly; oil from your skin can damage the lens coating and surface.

Basic maintenance should be carried out at least twice a year and includes the following steps:

- Wipe the surface of external metal and plastic components with a clean, dry cotton cloth. Do not use chemical, corrosive, or abrasive cleaners. Canned air may also be used to clean the external components.
- Clean the electric contacts and battery slots on the riflescope using a non-greasy organic solvent.

- Check the lens and eyepiece. If necessary, remove any dirt and sand from the optics; a non-contact cleaning method is preferred.
- Cleaning the exterior of the lens should only be done with the included microfiber lens cloth or similar product. Only clean the lens when it is visibly soiled. Frequent wiping or cleaning can degrade the anti-reflective lens coating.

28. WARRANTY

At iRayUSA we're first and foremost hunters and users of our products and we understand that failure isn't an option. We also understand that having to wait extended periods for repair isn't something that a customer should have to put up with when something does go wrong. During your published warranty period, iRayUSA will repair or replace, at its discretion, any optic that becomes defective during normal use. Additionally, if we cannot fix your optic in less than one week, we will offer to replace it with a replacement product in like or better condition. If you would rather wait for your specific optic to be repaired, we can handle that too.

We know you've never seen this from a thermal manufacturer, neither have we, and that's why we started iRayUSA.

Our warranty follows the product, and is not tied to the original owner. The warranty period is tied to the date of sale to the dealer. This warranty only covers normal use and does not cover cosmetic damage, normal wear, intentional damage, theft, loss, any act of God, or a condition caused by use other than intended. Any product that is modified, opened, or tampered with will void any warranty coverage. Any serial number damage or alteration on the product will be considered modification.

To return a product for repair:

1. Go to irayusa.com/warranty and click the **Request an RMA** button to request an RMA number. Returns will not be accepted without an RMA.
2. The customer is responsible for shipping the product to iRayUSA, to the address below. iRayUSA will return the product at no cost.

iRayUSA
800 Railhead Road #316
Fort Worth, TX 76106

- The one-week timeline starts from the time of receipt of product at iRayUSA.
- iRayUSA is not liable for any damages or loss incurred when shipping to iRayUSA.
- This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Please give us a call at **800-769-7125**, visit irayusa.com/warranty, or email info@InfiRayUSA.com with any questions.

29. GENERAL TROUBLESHOOTING

The troubleshooting table below lists issues that may occur when operating the RICO ALPHA Series. Carry out the recommended troubleshooting steps in the order shown in the table. Please contact iRayUSA or an authorized vendor for assistance before attempting to perform any modifications or repairs beyond the scope of the troubleshooting procedures in this manual. Unauthorized repairs or modifications will void your warranty.

SUPPORT / SERVICE:

irayusa.com/support

info@irayusa.com

800-769-7125

ISSUE	POSSIBLE CAUSES
The ALPHA will not turn on.	Battery is very low or has completely discharged
The ALPHA can not connect to a computer or external power supply	External power supply has completely discharged.
	Computer is turned off.
	6-pin Autoloading Magnetic Cable (13) is damaged.
The ALPHA can not connect to the mobile device (smartphone or tablet).	Wi-Fi is not turned on.
	Wrong Wi-Fi password.
	Too many Wi-Fi signals near the ALPHA.
Wi-Fi signal is lost or interrupted.	Smartphone or tablet is out of range of a strong Wi-Fi signal, or there are obstacles between the ALPHA and the mobile device.
The image is fuzzy, not clear, not balanced, with artifacts	Non-uniformity correction is required.
The image is too dark	Display brightness level is too low.
The GUI is clear, but the image is fuzzy.	The lens is not focused.
	There is dust on the interior or exterior optical surfaces of the lens.
	There is condensation on the interior or exterior optical surfaces of the lens.

TROUBLESHOOTING STEPS
Charge the battery.
Check the external power supply and charge it if necessary.
Power on the computer.
Replace 6-pin Autoloading Magnetic Cable.
Turn on the Wi-Fi in the main menu. See Connecting to Wi-Fi on page 24.
On the mobile device, go to Settings > Wi-Fi and enter the correct password. The default password is 12345678. See Connecting to Wi-Fi on page 24.
Move the ALPHA and mobile device to an area with no or fewer Wi-Fi signals.
<ul style="list-style-type: none"> • Try again when Wi-Fi signal is stable. • Relocate the ALPHA closer to the Wi-Fi signal.
Perform a non-uniformity correction. See Non-uniformity Correction on page 21 and Main Menu > Calibration on page 30.
Adjust the display brightness in the quick menu. See Using the Quick Menu on page 19.
<ul style="list-style-type: none"> • Adjust the focus on the target by rotating the Single Finger Focus Lever (7). • Adjust the image sharpness in the quick menu. See Using the Quick Menu on page 19.
<ul style="list-style-type: none"> • Wipe the outside optical surfaces with the included microfiber lens cloth.
<ul style="list-style-type: none"> • Wipe the outside optical surfaces with the included microfiber lens cloth. • Allow the ALPHA to dry by leaving it in a warm, dry environment for at least 4 hours.



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682-499-0047
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