User's Manual

NOCPIX

RICO 2 SERIES

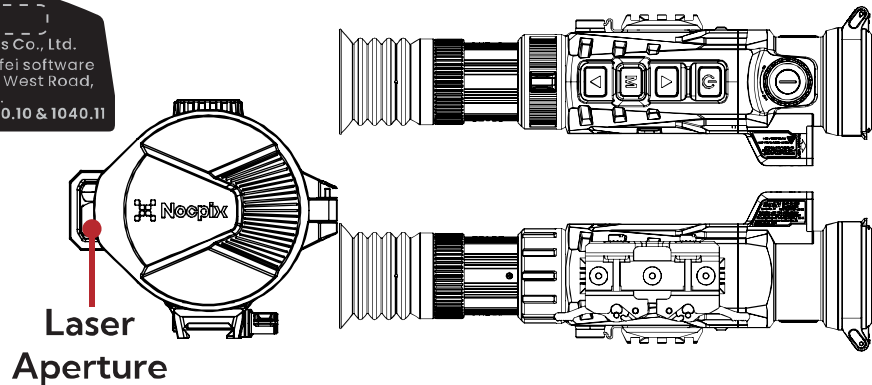## Rugged Infrared Compact Optic

Nocpix

⚠️ CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

2601 State Hwy 121, Building 3, Suite 306, Lewisville, TX 75056
800.769.7125 info@irayusa.com

NOTICE: This product is a Class 1 laser product.

Mfr ID and Certification Label

Nocpix
Inlumen Technologies Co., Ltd.
North 6F,Building B3, Hefei software Park,No.800 Wangjiang West Road, Anhui, china.
Complies with 21 CFR 1040.10 & 1040.11

Laser Aperture

NOTE: There is no scheduled maintenance or service necessary to keep this product in compliance and no user service or maintenance is required.

This Laser Product is designated as Class 1 during all procedures of operation.

Wavelength: 900 nm
Laser Power for Classification: <700nJ
Emission Type: Pulsed, Invisible
Emission Frequency 10 kHz
Beam Diameter: 12 mm*2 mm
Divergence: 6 mRad*1mRad

INVISIBLE LASER RADIATION
AVOID DIRECT EYE EXPOSURE
CLASS 1 LASER PRODUCT

NOTES:
- There is no service required or allowed of this product by the end user.
- This product is to be serviced or repaired only by factory authorized technicians.
- This product is not to be opened or modified by the user.
- The user is not to modify the unit or remove protective covers or housing. Service is only to be handled by authorized factory trained technicians. This product has no user-serviceable parts.
- Do not point laser or allow laser light to be directed or reflected toward other people or reflective objects.
- Operators should be trained to not target the eyes of people, animals, and pets or aim at reflective objects, etc.
- There is a potential hazard of eye or skin exposure to laser radiation if the included instructions are not followed.
- This laser is never to be operated if the unit is defective or the cover or seal is damaged.
- Always operate the product with the aperture pointed downrange.

Table of Contents

1.   Overview

Built upon the RICO Mk1 series, the RICO 2 Series was designed with an integrated 1,200-yard capable rangefinder, a 60hz refresh rate, and increased sensitivity to an impressive ≤15 mK. The RICO 2 features a high-performance 12 µm Nocpix core, a 4250-yard detection range, and an ultra-high-contrast 2560×2560 AMOLED HD display for an unparalleled viewing experience. The RICO 2 takes its image processing one step further with Advanced Image Correction and Automatic Image Optimization courtesy of its Reality+ processor. An intuitive and easy-to-use interface combines with a picture-in-picture function, 5+ hour run-time, magnesium housing, 1000 G/s^2 shock resistance, and 32 GB of internal memory. The RICO 2 also unlocks advanced features such as a rotating zoom lever, magnetic charging port, and recoil activated video.

2.   Features

- 12 µm high-performance thermal detector
- ≤15 mK sensitivity
- 1200-yard integrated, high-precision laser rangefinder
- Stepped digital zoom
- High image quality
- Magnesium alloy housing
- Quick-change rechargeable battery pack
- Maximum detection range 4250 yards
- HD 2560×2560 AMOLED display
- High frame frequency: 60Hz
- Multi-variable ballistics calculator and 5 ballistics profiles
- Multiple reticle types and color options
- Supports multiple charging options
- Recoil activated video
- Multiple zero profiles and ranges
- Built-in 32 GB storage to support image capture and video recording
- Built-in Wi-Fi module
- Mobile device App compatible

3.   Tech Specs

| RICO 2	H75R	S75R
Sensor		
Resolution	640×512	1280×1024
Pixel Size	12 μm	
Frame Rate	60hz	
Sensor Sensitivity	≤15 mK	
Image Processing	Reality+	
Core	Nocpix 640	Nocpix 1280
Optics		
Objective Lens	75 mm f/1.0	
Magnification	4×	3×
Digital Zoom	8×, Stepped	10×, Stepped
Field of View	5.9° × 4.7°	14.7° × 9.4°
Detection Range	4250 Yards	
Display Type	1.03–inch Large–format AMOLED	
Display Resolution	2560×2560	
Color Palettes	White Hot, Black Hot, Red Hot, Rainbow, Violet, Crimson, Viridian	
Reticle Types	8 (7 Static, 1 DIY)	
Reticle Colors	Black Red, Black Green, White Red, White Green, Black White, White Black, Red, Green	
Mounting System	Picatinny MIL–STD 1913 Rail	
P.I.P.	Yes	
Rangefinder	Integrated 1,200 yd LRF	
Eye Relief	60 mm	70 mm
Diopter Range	–5 to +5	
Electronics		
Onboard Recording	Video, Recoil–Activated Video, and Image	
Onboard Storage	32 GB	
Wireless Connectivity	Image and Video via App.	
Data/Power Connector	USB-C	
Power Supply	USB–C External, IBP–5 Li–ion Battery Packs	
Max. Operating Time	5.5+ Hours (per Battery)	4.5+ Hours (per Battery)
Start Up Time	<10 Seconds, Instant from Standby	
Physical		
Size	13.23″ × 4.57″ × 3.54″	13.46″ × 4.57″ × 3.66″
Weight	44.09 Oz	45.86 Oz
Environmental/Warranty		
Warranty	5 Years	
Housing Material	Magnesium Alloy	
Ingress Protection	IP67	
Operation Temperature	–4°F~122°F	
Max. Recoil	1000 g/s² (300 Win./7mm Mag)	

4. Accessories

The RICO 2 rifle scope ships with everything you need to get out and hunt.

- 75mm Objective Lens Cap
- Standard Rubber Eyeguard
- Picatinny Rail Mount for RICO 2
- M5 Screws
- 3mm Hex Key and Spanner Tool
- Magnetic Charging Cable

- USB–C Cable
- IBP–5 Batteries ×2
- IBP–5 Battery Charger
- USB Power Adapter
- Hard Case
- Lens Cloth
- User Manual

Various replacement accessories, are available for purchase. Contact 800–769–7125 or irayusa.com/support.

5.   Components and Controls
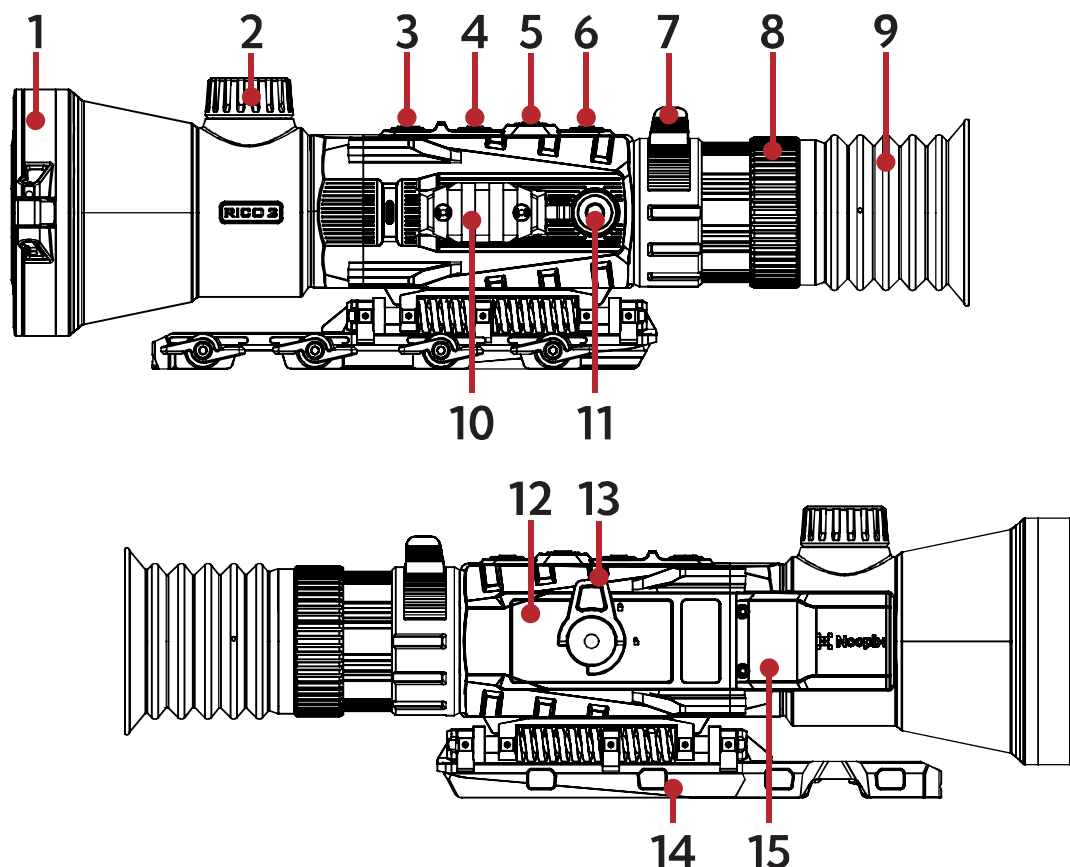
1	Objective Lens Cap
2	Objective Lens Focus Knob
3	Power Button
4	Up Button
5	Menu Button
6	Down Button
7	Zoom Lever
8	Eyepiece / Diopter Adjustment Ring
9	Eyeguard
10	Accessory Rail
11	Magnetic Charging Port / USB-C Port
12	IBP-5 Battery Pack
13	Battery Pack Pull-Ring
14	Picatinny Rail Mount
15	Laser Rangefinder

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 shuttered non-uniformity correction (NUC)	Power off the device
Main menu	Return to the previous menu without saving changes	Power off the device
Single or continuous rangefinding mode	Exit the rangefinding mode	Power off the device
Defect pixel correction & reticle zeroing interfaces	Exit the interface without saving	——

Up Button ▲		
Current Screen / Menu	**Short Press**	**Long Press**
Home screen	Enter single rangefinding mode	Enter continuous ranging mode
Single rangefinding mode	Take a rangefinding measurement	Switch from single to continuous rangefinding
Continuous rangefinding mode	——	Exit rangefinding mode
Main menu / quick menu	Move the cursor up	——
Defect pixel correction & reticle zeroing interfaces	Move the cursor 1 pixel in the positive direction	Move the cursor 10 pixels in the positive direction

Power Button ⏻ + Up Button ▲		
Current Screen / Menu	**Short Press**	**Long Press**
Home screen	——	Enter standby screen

Up Button ▲ + Down Button ▼		
Current Screen / Menu	Short Press	Long Press
Home screen	Perform a shutterless non-uniformity correction (NUC)	——

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

Down Button ▼		
Current Screen / Menu	Short Press	Long Press
Home screen	Take a photo	Start / stop recording video
Main menu / quick menu	Move the cursor down	——
Defect pixel correction & reticle zeroing interfaces	Move the cursor 1 pixel in the negative direction	Move the cursor 10 pixels in the negative direction

Zoom Lever	
Current Screen / Menu	Rotate
Home screen	Adjust the digital zoom level
In the screen brightness menu	Adjust the screen brightness

Menu Button M + Down Button ▼		
Current Screen / Menu	Short Press	Long Press
Home screen	——	Activate / deactivate reticle (Long press for 15 seconds)

7.   Quick Start Guide

Step 1: Prepare to Use the RICO 2

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.
3. Charge the battery pack **(12)**. See **Charging the Battery Pack** on page 10.
4. Install the eyeguard **(9)**.

Step 2: Turn On the RICO 2

1. Open the objective lens cap **(1)**.
2. Long press the **Power** ⏻ **Button** for 3 seconds to power on the RICO 2.
3. Rotate the eyepiece diopter adjustment ring **(8)** until the interface icons are clear.

   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 3: Adjust 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 18):

1. Set the color palette to white hot, black hot, red hot, rainbow, violet, crimson, or viridian.
2. Select an image brightness level, from 0–10.
3. Select an image contrast level, from 0–10.
4. Select an image sharpness level, from 0–10.
5. Select a zero distance.

Step 4: Adjust Device Settings

1. Long press the **Menu M Button** to enter the main menu (see **Main Menu Options and Descriptions** on page 30 for detailed instructions) to:
    a. Turn on Ultra-Clear mode.
    b. Turn on the PIP window.
    c. Set the non-uniformity correction (NUC) mode to automatic (A) or manual (M).
    d. Turn on the motion sensor.
    e. Turn on recoil activated video.
    f. Turn on the microphone.
    g. Select a screen brightness level, from 0–100%.
    h. Set the date and time.
    i. Set the unit of measure to meters or yards.
2. From the home screen, rotate the zoom lever **(7)** to zoom in and out on the observed object.

Step 5: Set Up the Reticle and Zero the RICO 2

1. The reticle may be inactive when the RICO 2 is powered on for the first time. To activate the reticle, press and hold the **Menu M and Down ▼ Buttons** at the same time for 15 seconds from the home screen.
2. Adjust the reticle settings (see **Main Menu > Reticle** on page 31):
    a. Set the zeroing profile to A, B, C, D, E, or F.
    b. Set the reticle type to 1–7. A custom reticle is also available for purchase in the Nocpix App.
    c. Set the reticle color to black red, black green, white red, white green, black white, white black, red, and green.
3. Zero the rifle scope. See **Zeroing the RICO 2** on page 20.
    a. Select, or customize, a zero distance that matches the target distance.
    b. Zero the reticle.

8. Charging the Battery Pack

The RICO 2 rifle scope comes with two long-lasting rechargeable lithium-ion IBP-5 battery packs, which allow for approximately 5 hours of operation each. The IBP-5 battery packs use a cam-locking mechanism to ensure quick and secure battery changes in the field. Fully charge the battery packs before using the RICO 2 for the first time.

Charging with the Battery Charger

1. Insert a battery pack **(12)** into the battery charger **(15)**. Align the slots **(A)** on the edge of the battery pack with the pins **(B)** on the inside of the charger.
2. Connect the USB-C cable **(16)** to the USB-C port **(C)** on the battery charger.
3. Connect the standard USB end of the data cable to:
   a. The included 5V-2A USB power adapter; **OR**
   b. Any standard USB 3.0 port on a laptop or computer.
4. During charging, the LED status indicator **(D)** on the battery charger will be solid red.

USB-C Cable (16)

USB-C Port (C)

Pins (B)

Battery Pack (12)

Pull Ring (13)

LED Status Indicator (D)

Battery Charger (15)

Slots (A) (Located on the top edge of the battery pack; not visible)
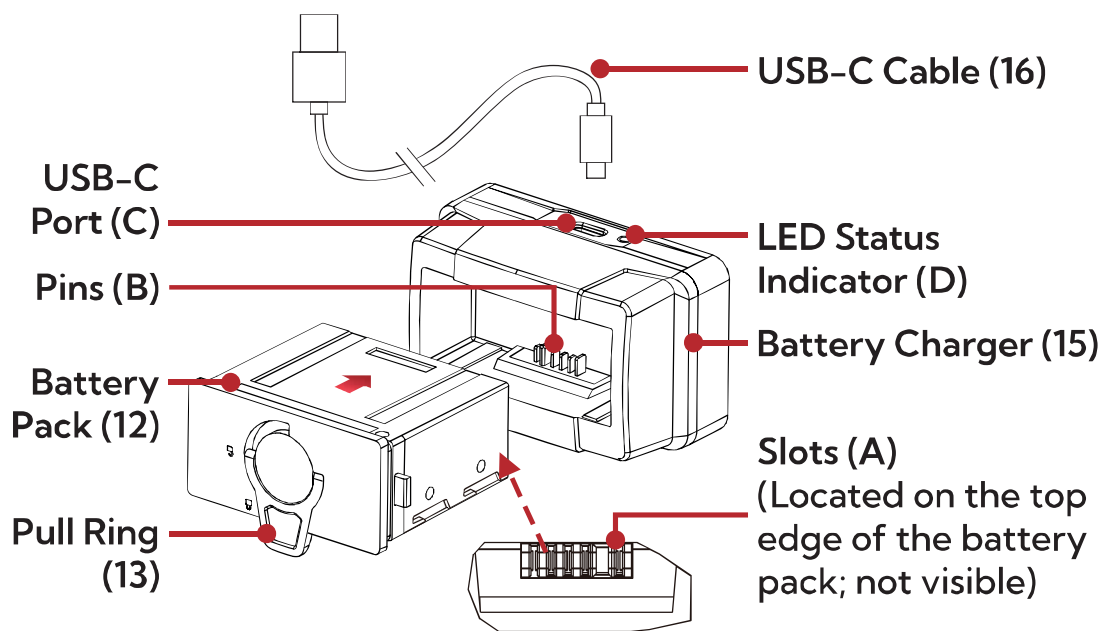
5. When fully charged, remove the battery pack from the battery charger.
   a. The LED status indicator will turn solid green when the battery is fully charged. Do not overcharge.

NOTE: When the LED status indicator flashes red, the battery charger is connected to a power source but no battery pack is installed.

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

Charging Via the Magnetic Charging Port

1. Place the magnetic charging cable on the magnetic port **(11)** on the side of the rifle scope.
2. Connect the USB end of the magnetic charging cable **(17)** to:
   a. The included 5V–2A USB power adapter; **OR**
   b. Any standard USB 3.0 port on a laptop or computer; **OR**
   c. An external power supply, such as a USB power bank.

Charging via the USB–C Port

1. Remove the magnetic charging port and connect the USB–C cable **(16)** to the USB–C port **(11)** behind it.
2. Connect the standard USB end of the data cable to:
   a. The included 5V–2A USB power adapter; **OR**
   b. Any standard USB 3.0 port on a laptop or computer; **OR**
   c. An external power supply, such as a USB power bank.
3. During charging, the battery status 🔋 icon in the status bar changes to the battery charging 🔋 icon.
4. When fully charged, disconnect the charging cable.

NOTES:

· You may charge and operate the RICO 2 at the same time.

· The battery status icon turns red 🔋 when the battery is below 20%; charge right away to avoid over–discharge and a reduction in battery capacity or service life.

9. Installing the Battery Pack

1. Pull out the pull-ring (13) on the battery pack (13) and rotate it clockwise 90 degrees until it is horizontal to the battery pack.

2. Position the battery pack with the slots (A) facing up. Align the slots (A) on the edge of the battery pack with the pins (B) on the inside of the battery compartment.

3. Firmly press the battery in to install it.

Pins (B)
(Located on the inside edge of the battery compartment)

Slots (A)

Battery Pack (12)
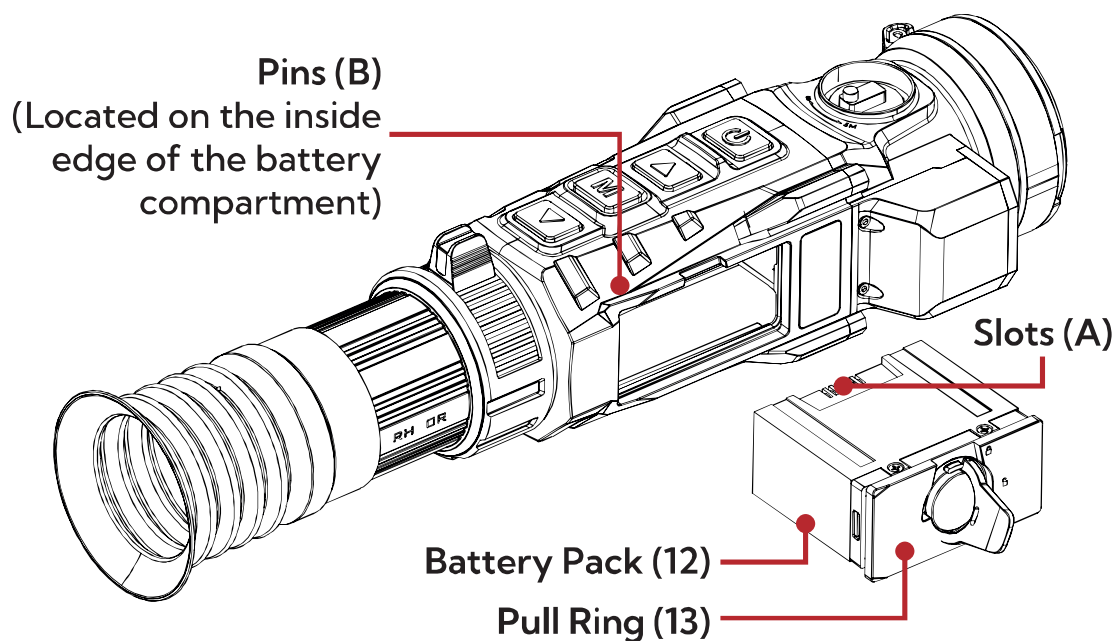
Pull Ring (13)

4. Rotate the pull-ring counterclockwise 90 degrees to the vertical position to lock the battery pack in place.

WARNING: The RICO 2 can only be powered by a factory-supplied IBP-5 battery pack. Using any other battery pack may cause irreparable damage to the rifle scope or cause a fire. Any damage from using an improper battery pack will not be covered by warranty.

10. Removing the Battery Pack

To remove the battery pack from the RICO 2:

1. Pull out the pull-ring (13) on the battery pack (12) and rotate it clockwise 90 degrees until it is horizontal to the battery.

2. Pull the battery pack out.

11. Battery Safety Warnings

WARNING: Only use the battery charger supplied with the battery pack. The use of any other charger may irreparably damage the battery pack or the charger and may cause a fire. Any damage from using an improper battery charger will not be covered by warranty.

WARNINGS:

- Do not use a battery charger, power adapter, or USB cable that has been modified or damaged.
- Do not expose the battery to high temperatures or open flame, and do not immerse it in water.
- Do not leave the battery unattended while charging.
- Do not leave the battery charging for long periods after full charge is reached. Charging time should not exceed 24 hours.
- Keep the battery pack out of the reach of children and pets.
- The battery is equipped with short-circuit protection. However, any situation that may cause short-circuiting should be avoided.
- Do not disassemble, modify, hit, or drop the battery pack.
- Do not connect the battery to any external device with an electrical current that exceeds permitted levels.
- Do not connect an external device with a current supply that
  exceeds the 3.0 USB port.

To maintain optimal battery capacity and service life:

- Avoid storing a fully charged or discharged battery for long periods. Partial charging of the battery is necessary if the battery will be stored for an extended period.
- Do not charge an extremely cold battery. Allow the battery to warm up for about 45 minutes before charging.
- Charge the battery at a temperature range from 32°F to 113°F; otherwise, the service life of the battery may be reduced.

- The recommended operating temperature range is –4°F to 122°F. Avoid using the battery above the maximum or below the minimum recommended temperature range as this may decrease the battery capacity or service life.

12. External Power Supply

The RICO 2 supports the use of a 5V external power supply, such as a mobile power bank. To connect to an external power supply:

1. Connect the USB–C cable **(16)** to the USB–C port **(11)**.
2. Connect the other end of the USB–C cable to the external power supply.
3. The RICO 2 will switch to operation from the external power supply, and the internal battery pack will begin slowly charging.
4. In the status bar, the battery status 🔋 icon will change to the battery charging 🔋 icon.
5. If the external power supply is disconnected, the RICO 2 will automatically switch to the battery pack, if installed, without powering off.

   NOTE: Do not connect the RICO 2 to an external device with a power supply that exceeds the 3.0 USB cable.

13. Operating Instructions

> **WARNING!**
> Don't point the objective lens towards any intense energy sources, such as laser radiation or the sun. This may render the electronic components inoperative. The warranty does not cover damage caused by improper operation.

Using the Control Buttons

The RICO 2 is operated via four control buttons. The control buttons can be used to perform shortcut operations from the home screen, as well as in the menu and full–screen interfaces. See **Description of Control Buttons and Shortcuts** on page 6 for shortcut button details.

Powering On

1. Open the objective lens cap **(1)**.
2. Long press the **Power** ⏻ **Button** for 3 seconds to turn on the rifle scope. The Nocpix logo will appear.
3. To determine the current battery charge, check the battery status 🔋 icon and battery charge percentage in the top status bar.

Powering Off and Entering Standby

To power off the RICO 2:

1. Long press the **Power** ⏻ **Button**. The shutdown screen will open, showing a 3-second countdown.
2. The RICO 2 will shut down automatically when the 3-second countdown completes.

   NOTE: Press any button before the countdown completes to cancel the shutdown and return to the home screen.

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

STANDBY MODE
Manually Enter Standby Mode

1. To enter standby at any time from the home screen, long press the **Power** ⏻ and **Up Buttons** at the same time.
2. Short press any button to exit standby.

Set the RICO 2 to Enter Standby Mode Automatically

The rifle scope may be set to enter standby mode automatically.

1. In the main menu, turn automatic standby on. When turned on, the RICO 2 will automatically enter standby after 5 seconds of inactivity. See **Main Menu > Standby** on page 46.
2. Press any button or move the rifle scope to exit standby.

STANDBY NOTES:

- When automatic standby is turned **on**:
  - The RICO 2 will enter standby mode automatically when it is tilted up or down at an angle of more than 70° or left or right at an angle of more than 30°.
  - The RICO 2 will not enter standby mode while it is in a level (horizontal) firing position.
- When **off** is selected, standby mode is turned off and the rifle scope will operate until the battery runs out.

Adjusting the Focus

ADJUSTING THE DIOPTER/EYEPIECE

1. Rotate the eyepiece diopter adjustment ring **(8)** at the rear of the rifle scope right or left until the user interface is clear.
2. Look closely to ensure all icons, the status bar, and the reticle appear sharp and in focus. No additional diopter adjustments are required unless the user wishes to make changes.

NOTES:

- After the initial adjustment, there is no need to rotate the eyepiece adjustment ring **(8)** for long distances or other conditions.
- If necessary during standard use, the objective lens focus knob **(2)** may be rotated to adjust fine focus on the target object being observed. See **Focusing the Objective Lens** below.

FOCUSING THE OBJECTIVE LENS

To adjust the focus on the target object:

1. Rotate the objective lens focus knob **(2)** left or right to adjust fine focus.

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

Activating / Deactivating the Reticle

1. The reticle may be inactive when the RICO 2 is powered on for the first time. To activate the reticle, press and hold the **Menu** Ⓜ **and Down** ▼ **Buttons** at the same time for 15 seconds from the home screen.

Status Bar Overview

The status bars at the top and bottom of the screen show information on the operating status of the RICO 2.

1 **Photo:** The camera 📷 icon appears briefly when a photo is taken. A warning icon ⚠ appears when insufficient memory storage is available.

2 **Recoil Activated Video:** The recoil activated video (RAV) 📹 icon will appear when RAV is turned on.

3 **Video Timer:** The timer appears during video recording.

4 **Time:** Shows the current time in 24-hour format.

5 **Battery Status and Charge:** Shows the battery status and current charge level.

6 **Zeroing Profile and Distance:** Shows the selected zero profile, A, B, C, D, E, or F, and the zero distance.

7   **Magnification:** Shows the total magnification.

8   **Ultra-Clear:** Shows the Ultra-Clear status, on ◉ or off ⦰.

9   **Non-Uniformity Correction (NUC) Mode:** Shows the icon
     for the selected non-uniformity correction (NUC) mode,
     automatic Ⓐ or manual Ⓜ. When automatic mode is
     selected, a countdown timer ⑤ icon will appear when
     5 seconds remain until a NUC.

10   **Wi-Fi:** Shows the Wi-Fi status, on 📶, on but not
     connected 📶, or off 📶.

11   **Standby Status:** Shows the standby ◹ icon and the
     status, on or off.

12   **Microphone:** When on, the microphone icon 🎙 appears.

Using the Quick Menu

In the quick menu, the color palette, image brightness, image
contrast, image sharpness, and zero distance can be quickly
adjusted.

- On the home screen, short press the **Menu** Ⓜ **Button** to
  enter the quick menu.
- Short press the **Up** ▲ or **Down** ▼ **Button** to move
  between the menu options below. The selected menu item
  is highlighted in the background.
  - 🎨 **(Color Palette):** Short press the **Menu** Ⓜ **Button**
    to set the color palette to white hot ▪, black hot ▪,
    red hot ▪, rainbow ▪, violet ▪, crimson ▪, or
    viridian ▪.

- · ☀ (**Image Brightness**): Short press the **Menu** Ⓜ **Button** to set the image brightness level, from 1–10.
  - · ◑ (**Image Contrast**): Short press the **Menu** Ⓜ **Button** to set the image contrast level, from 1–10.
  - · ▲ (**Image Sharpness**): Short press the **Menu** Ⓜ **Button** to set the image sharpness level, from 1–10.
  - · ⊕ (**Zero Distance**): Short press the **Menu** Ⓜ **Button** to select a zero distance within the selected zeroing profile. Only the zero distances in the selected profile will be available for selection. The selected zeroing profile and distance appear in the bottom status bar.
- · Long press the **Menu** Ⓜ **Button** to save any changes and return to the home screen.

  NOTE: In the quick menu, after 5 seconds of inactivity, the system will automatically save any changes and return to the home screen.

Navigating the Main Menu

- · From the home screen, long press the **Menu** Ⓜ **Button** to enter the main menu.
- · Short press the **Up** ▲ or **Down** ▼ **Button** to move up and down through the menu options.
- · A blue arrow ▶ icon indicates the cursor position in the menu.

- Short press the **Menu M Button** to:
  - Change the parameters for the selected menu option; **OR**
  - Enter the submenu; **OR**
  - Confirm submenu changes and return to the previous menu.
- Long press the **Menu M Button** to confirm any changes and return to the home screen.
- Short press the **Power ⏻ 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 RICO 2 is turned off). After restarting the RICO 2 and entering the menu, the cursor position will be at the first menu item.

14. Zeroing the RICO 2

RICO 2 features a "freeze" zeroing method. To zero the RICO 2:

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 following the steps in the **Quick Start Guide** on page 8, if you have not done so already.
4. Set the zeroing profile to A, B, C, D, E, or F. See **Reticle Menu > Zeroing Profile** on page 32.
5. Based on the distance to the target you wish to zero, select or customize a zero distance to match. See **Zeroing Menu > Customize Zero Distance** on page 38.
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.