

User's Manual

N O C P I X

# QUEST S50R

Thermal Imaging Binoculars



 **Nocpix**

## 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](http://irayusa.com/ITAR).

### CAUTION

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

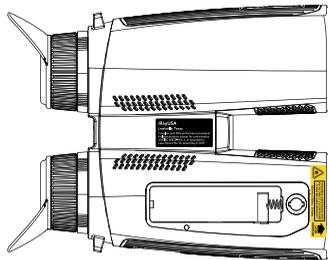
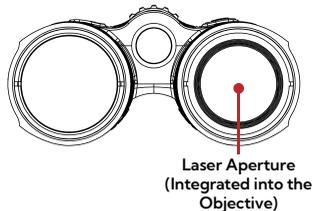
2601 State Hwy 121, Building 3, Suite 306, Lewisville, TX 75056  
800.769.7125 [info@irayusa.com](mailto:info@irayusa.com)

NOTICE: This product is a Class 3R laser product.

#### Mfr ID and Certification Label



#### Explanatory Label



**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 3R during all procedures of operation.

Wavelength: 905 nm

Laser Power for Classification: <550nJ

Emission Type: Pulsed, Invisible

Pulse Width: 25 nSec

#### 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.
- 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 .....	2
2. Features .....	2
3. Tech Specs .....	3
4. Accessories .....	4
5. Components and Controls .....	5
6. Description of Control Buttons and Shortcuts .....	6
7. Quick Start Guide.....	8
8. Charging the Batteries .....	9
9. Installing an 18650 Battery .....	11
10. Removing the Battery .....	12
11. Battery Safety Warnings.....	13
12. External Power Supply .....	14
13. Operating Instructions.....	14
14. Non-Uniformity Correction.....	20
15. Photography and Video Recording .....	21
16. Accessing the Internal Memory .....	23
17. Using the NOCPIX App .....	23
18. Integrated Laser Rangefinder .....	24
19. Digital Zoom .....	26
20. Ultra-Clear Mode .....	26
21. Main Menu Options and Descriptions .....	26
22. Basic Inspection .....	35
23. Basic Maintenance.....	35
24. Warranty .....	36
25. FCC Statement.....	37
26. General Troubleshooting .....	38
27. Notes .....	39

### WARNING: CHOKING HAZARD

Children under 3 years old can choke or suffocate on small parts of this product. This product is not a toy; keep out of reach of children.

## 1. Overview

The all-new QUEST S50R thermal binoculars offers a whole new way to detect, range, and view your targets in the dark. Each model features high-level base magnifications, wide FOV, and a 1,000 yard integrated laser rangefinder. Enhanced ergonomics in a familiar form factor make this device easy to use and carry in the field. Powered by an internal battery and a replaceable 18650, the QUEST S50R offers plenty of run-time for your next hunt. With the built-in image stabilization, onboard recording, and Wi-Fi streaming the QUEST provides serious performance for the dedicated night hunter.

## 2. Features

- Reality+ technology
- <15 mK sensor sensitivity
- 12  $\mu\text{m}$  high-performance thermal detector
- Integrated 1,000 yd laser rangefinder
- Polymer with rubber overmold housing
- Includes two rechargeable 18650 batteries
- Maximum detection range 2,850 yards
- 1920x1200 AMOLED display
- High frame frequency: 60Hz
- Built-in 64 GB storage to support image capture and video recording
- Built-in Wi-Fi module
- Mobile device App compatible
- Picture in Picture (PIP)
- Ultra-Clear mode
- Multiple color palettes
- Compact and lightweight
- Warm and cool image-hue options
- User-friendly interface

## 3. Tech Specs

QUEST	S50R
<b>Sensor</b>	
Resolution	1280x1024
Pixel Size	12 $\mu\text{m}$
Frame Rate	60hz
Sensor Sensitivity	<15 mK
Image Processing	Reality+
Core	Nocpix 1280
<b>Optics</b>	
Objective Lens	50 mm f/11
Magnification	2x
Digital Zoom	8x
Field of View	17.5° x14.0°
Detection Range	2850 Yards
Display Type	AMOLED
Display Resolution	1920x1200
Color Palettes	White Hot, Black Hot, Red Hot, Color, Crimson, Viridian, Violet
P.I.P.	Yes
Rangefinder	Integrated 1,000 yd LRF
Eye Relief	25 mm
Diopter Range	-5 to +5
<b>Electronics</b>	
Onboard Recording	Video and Image
Onboard Storage	64 GB
Wireless Connectivity	Image and Video via App.
Data/Power Connector	USB-C
Power Supply	USB-C External, Built-in Battery Pack (2.5+ Hours), 18650 Batteries x2 (3.5+ Hours Each)
Start Up Time	<10 Seconds, Instant from Standby
<b>Physical</b>	
Size	6.91" x 5.43" x 2.60"
Weight	26.46 Oz
<b>Environmental/Warranty</b>	
Warranty	5 Years
Housing Material	Polymer with Rubber Overmold
Ingress Protection	IP67
Operation Temperature	-4°F~122°F

## 4. Accessories

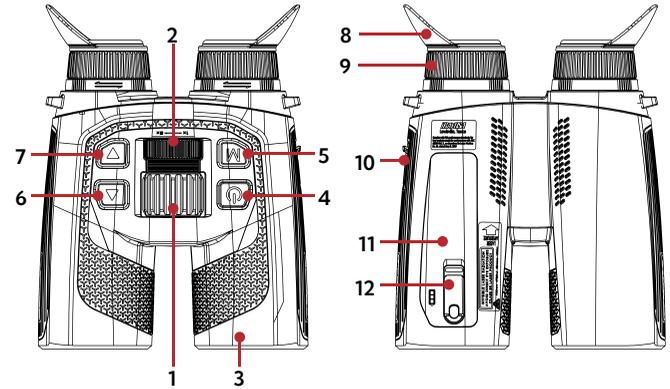
The QUEST S50R thermal imaging monocular ships with everything you need to get out and hunt.

- Objective Lens Cap
- 18650 Batteries x2
- 18650 Battery Charger
- USB-C Cable
- Carrying Bag and Straps
- Lens Cloth
- User Manual



Various replacement accessories are available for purchase. Contact us at 800-769-7125 or [irayusa.com/support](http://irayusa.com/support).

## 5. Components and Controls



- 1 Objective Lens Focus Ring
- 2 Digital Zoom Ring
- 3 Laser Rangefinder
- 4 Power Button
- 5 Menu Button
- 6 Up Button
- 7 Down Button
- 8 Eyeguard
- 9 Eyepiece / Diopter Adjustment Ring
- 10 USB-C Cover / Port
- 11 Battery Compartment
- 12 Battery Release Latch

## 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	Enter standby mode	Power off the device
Standby mode	Exit standby	---
Main menu	Return to the previous menu without saving changes	Power off the device

Up Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Take a single rangefinding measurement	Turn on/off the laser rangefinder
Main menu / quick menu	Move the cursor up	---

Up Button  + Down Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Manually perform a shuttered non-uniformity correction (NUC)	Manually perform a shutterless non-uniformity correction (NUC)

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	---

Menu Button 		
Current Screen / Menu	Short Press	Long Press
Home screen	Enter the quick menu	Enter the main menu
Main menu	Change menu options; enter submenu; or confirm submenu changes and return to previous menu	Save and return to the home screen
Quick menu	Toggle through the menu options	Exit the quick menu

Digital Zoom Ring		
Current Screen / Menu	Rotate Clockwise	Rotate Counterclockwise
Home screen	Zoom in	Zoom out

## 7. Quick Start Guide

### Step 1: Prepare to Use the QUEST S50R

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 batteries. See **Charging the Batteries** on page 9.

### Step 2: Turn On the QUEST S50R

1. Open the objective lens cap.
2. Long press the **Power** (⏻) **Button** for 3 seconds to power on the QUEST.
3. Press the eyepieces together or pull them apart to adjust the interpupillary distance until both eyes can comfortably see the display.
4. Close one eye and rotate the eyepiece diopter adjustment ring (9) until the interface icons are clear. Repeat to adjust the eyepiece adjustment ring for your other eye.

**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** (☰) **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, color, crimson, viridian, or violet.
2. Turn PIP mode on or off.
3. Select an image brightness level, from 1–10.
4. Select an image sharpness level, from 1–10.
5. Select an image contrast level, from 1–10.

## Step 4: Adjust Device Settings

1. Long press the **Menu** (☰) **Button** to enter the main menu (see **Main Menu Options and Descriptions** on page 26 for detailed instructions) to:
  - a. Turn on Ultra-Clear mode.
  - b. Set the image hue to warm or cool.
  - c. Turn on the microphone.
  - d. Set the non-uniformity correction (NUC) mode to automatic or manual.
  - e. Set the date and time.
2. From the home screen, rotate the digital zoom ring (2) to zoom in or out on the image.

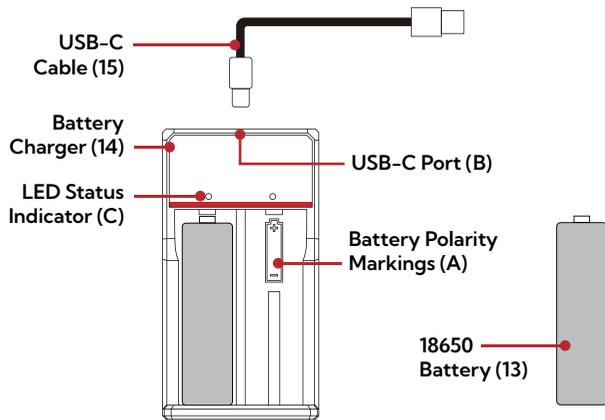
## 8. Charging the Batteries

### Charging the 18650 Batteries

The QUEST S50R comes with two rechargeable lithium-ion 18650 batteries, which allow for 3.5+ hours of operation each. Fully charge the batteries before using the QUEST for the first time:

1. Insert a 18650 battery (13) into the battery charger (14) following the polarity markings (A) inside the battery slot.
2. Connect the USB-C cable (15) to the USB-C port (B) on the battery charger.
3. Connect the standard USB end of the data cable to:
  - a. A 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 (C) on the battery charger will be solid red.

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



- When the battery is fully charged, the LED status indicator will turn solid green. Remove the battery from the battery charger. Do not overcharge.

#### NOTES:

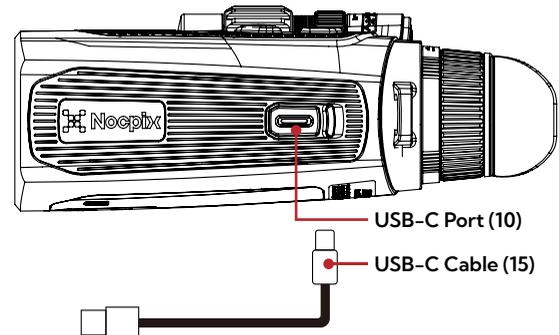
- When the LED status indicator flashes red, the battery charger is connected to a power source but no battery is installed.
- During use, the battery status icon in the status bar turns red  when the battery is below 20%; charge right away to avoid over-discharge and a reduction in battery capacity or service life.

### Charging the Built-in Battery via USB-C

- Rotate the USB-C port cover (10) on the left side of the QUEST down to open it.
- Connect the USB-C cable (15) to the USB-C port (10).
- Connect the standard USB end of the data cable to:
  - Any standard USB 3.0 port on a laptop or computer; OR
  - A 5V–2A USB power adapter and plug the power adapter into an electrical outlet.

- While charging:
  - The LED status indicator next to the USB-C port (10) will turn red during charging. When the indicator LED turns green, the battery is fully charged.
  - The battery  icon in the status bar will change to the battery charging  icon.
  - When fully charged, disconnect the data cable from the USB-C port and replace the USB-C port cover. Do not overcharge.

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



#### NOTES:

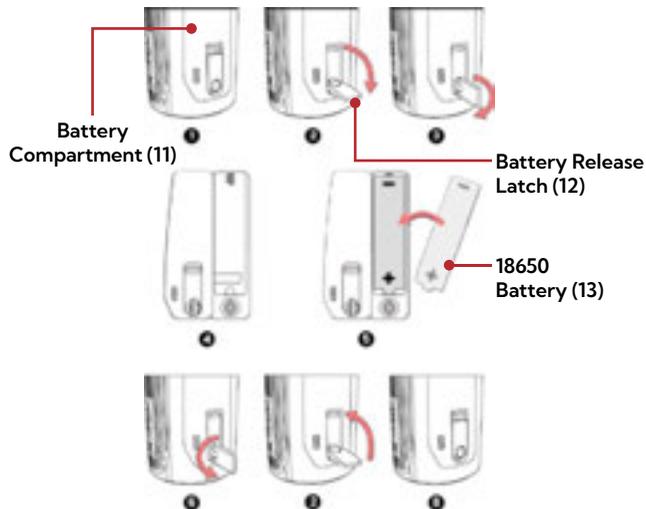
- You may charge and operate the QUEST at the same time.
- When the battery status icon turns red and only one bar remains, charge the battery right away to avoid over-discharge and a reduction in battery capacity or service life.
- Only the built-in battery pack will be charged while connected via the USB-C port.

### 9. Installing an 18650 Battery

- Flip the battery release latch (12) down, then rotate it counterclockwise to open the battery compartment (11).

- Insert a 18650 battery (13) into the battery compartment. The positive [+] battery terminal faces out and the negative [-] terminal faces in.
- Rotate the battery latch clockwise to close the battery compartment. Then flip it up so that it lies flat.

**WARNING:** The QUEST can only be powered by an 18650 battery. Using any other battery type may cause irreparable damage to the binoculars or cause a fire. Any damage from using an improper battery will not be covered by warranty.



## 10. Removing the Battery

To remove the battery from the QUEST:

- Flip the battery release latch (12) down, then rotate it counterclockwise to open the battery compartment (11).
- Remove the 18650 battery.
- Rotate the battery latch clockwise to close the battery compartment. Then flip it up so that it lies flat.

## 11. Battery Safety Warnings

**WARNING:** Only use the factory-supplied battery charger. The use of any other charger may irreparably damage the battery 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 batteries to high temperatures or open flame, and do not immerse it in water.
- Do not leave the batteries unattended while charging.
- Do not leave the batteries charging for long periods after full charge is reached. Charging time should not exceed 24 hours.
- Keep batteries out of the reach of children and pets.
- The batteries are equipped with short-circuit protection. However, any situation that may cause short-circuiting should be avoided.
- Do not disassemble, modify, hit, or drop the batteries.
- Do not connect the batteries 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 batteries 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 batteries 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 QUEST S50R 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 (15) to the USB-C port (10) on the QUEST.
2. Connect the other end of the USB-C cable to the external power supply.
3. The QUEST will switch to operation from the external power supply and begin charging the built-in battery pack.
4. In the status bar, the battery status  icon will change to the charging  icon.
5. If the external power supply is disconnected, the QUEST will switch automatically to the 18650 battery without powering off. If no 18650 battery is installed, the QUEST will switch to the built-in battery pack.

### NOTES:

- The external power supply does not charge the 18650 battery.
- Do not connect the QUEST 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 QUEST S50R 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.
2. Long press the **Power**  **Button** for 3 seconds to turn on the binoculars. The Nocpix logo will appear.
3. To determine the current battery charge, check the battery status  icon in the status bar.



### Powering Off

1. Long press the **Power**  **Button**. The shutdown screen will open, showing a 3-second countdown.
2. The QUEST will power off automatically when the countdown completes.



**NOTE:** Press any button during the 3-second countdown to stop the shutdown process and resume normal operation.

**WARNING:** If using an external power supply and no battery is installed, do not remove the power supply when saving data, as the data may not be saved.

### Entering Standby Mode

1. To enter standby at any time from the home screen, short press the **Power**  **Button**.
2. Short press the **Power**  **Button** to exit standby.

**NOTE:** The QUEST S50R can be set to automatically enter standby when the built-in proximity sensor does not detect a user. See **Settings Menu > Standby** on page 32.

## Adjusting the Focus

### ADJUSTING THE DIOPTRER/EYEPIECE

1. Press the eyepieces together or pull them apart to adjust the interpupillary distance until both eyes can comfortably see the display.
1. Close one eye and rotate the eyepiece diopter adjustment ring (9) right or left until the interface icons are clear. Repeat to adjust the eyepiece adjustment ring for your other eye.
2. Look closely to ensure all icons and the status bar 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 (9) for long distances or other conditions.
- If necessary during standard use, the objective lens focus ring (1) may be rotated 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 objective lens focus ring (1) left or right to adjust fine focus.

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

## Status Bar Overview

The status bar at the top of the screen shows information on the operating status of the QUEST S50R.



- 1 **Ultra-clear:** Shows the Ultra-clear status, on or off .
- 2 **Total Magnification:** Shows the total magnification.
- 3 **Non-Uniformity Correction (NUC) Mode:** Shows the non-uniformity correction (NUC) mode, automatic or manual . A countdown timer will appear instead of the NUC mode when 5 seconds remain until an automatic NUC.
- 4 **Microphone:** Shows the microphone status, on or off .
- 5 **Wi-Fi:** Shows the Wi-Fi status, on or off .
- 6 **Time:** Shows the current time in 24-hour format.
- 7 **Built-in Battery Status:** Shows the status of the built-in battery pack.
- 8 **18650 Battery Status:** When installed, the icon shows the status of the 18650 battery.

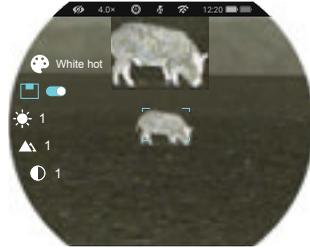
### BUILT-IN BATTERY STATUS

The battery icon color and fill level indicate the current status of the built-in battery pack.

COLOR / ICON	BATTERY STATUS
Gray Battery	41% – 100%
Yellow Battery	20% – 40%
Red Battery	<20%; charge the battery right away.
Charging Battery	The built-in battery is charging (external power is connected via the data cable).

## Using the Quick Menu

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



- On the home screen, short press the **Menu (M) Button** to enter the quick menu.
- Short press the **Up (▲) or Down (▼) Button** to move between the menu options below. The selected menu item turns blue.
  - **(Color Palette):** Short press the **Menu (M) Button** to set the color palette to white hot, black hot, red hot, color, crimson, viridian, or violet.
  - **(PIP Mode):** Short press the **Menu (M) Button** to toggle PIP mode on or off. **NOTE:** When the image in the main body of the screen is magnified via digital zoom, the PIP image will enlarge accordingly.
  - **(Image Brightness):** Short press the **Menu (M) Button** to set the image brightness level, from 1–10.
  - **(Image Sharpness):** Short press the **Menu (M) Button** to set the image sharpness level, from 1–10.
  - **(Image Contrast):** Short press the **Menu (M) Button** to set the image contrast level, from 1–10.
- Long press the **Menu (M) Button** to save any changes and return to the home screen.
- After 7 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 (M) Button** to enter the main menu.
- Short press the **Up (▲) or Down (▼) Button** to move through the menu options.
- The text and menu icons turn blue to indicate 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 QUEST is turned off). After restarting the QUEST and entering the menu, the cursor position will be at the first menu item.

## 14. 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 QUEST S50R is powered on.

The QUEST S50R has two non-uniformity correction (NUC) modes, automatic  and manual . In either mode, the user may choose to manually perform a NUC (shuttered or shutterless) at any time. See **Main Menu > Calibration Mode** on page 29 for instructions on setting the NUC mode.

### Automatic NUC Mode

When automatic NUC mode is selected, the QUEST will perform a shuttered NUC automatically according to the internal software algorithm. There is no need to close the objective lens cap as the binoculars' internal shutter covers the sensor. The timer will appear only after the microbolometer temperature has stabilized—after approximately 10 minutes of continuous operation of the QUEST.

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

### Performing a Manual NUC

The user may independently determine the need to perform a shuttered or shutterless NUC based on the quality of the observed image. A manual NUC may be performed at any time from the home screen.

### SHUTTERED NUC

It is not necessary to close the objective lens cap during a shuttered NUC, as the internal shutter covers the sensor.

1. From the home screen, short press the **Up**  and **Down**  **Buttons** at the same time.
2. The internal shutter will cover the sensor and a shuttered non-uniformity correction (NUC) will be performed instantly.

### SHUTTERLESS NUC

A shutterless NUC uses less power than a shuttered NUC because it does not use the internal shutter to cover the sensor; instead, the user must close the lens cap.

1. Close the objective lens cap.
2. From the home screen, long press the **Up**  and **Down**  **Buttons** at the same time.
3. A prompt to close the lens cap appears onscreen. The shutterless NUC starts after about 2 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.

## 15. Photography and Video Recording

The QUEST S50R is equipped with video recording and image capture. All videos and photos are automatically saved to the built-in 64 GB memory storage.

**NOTE:** 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 Time** on page 30. Alternatively, the date and time may be synchronized in the NOCPPIX App.

### Photography

To take a photo:

1. From the home screen, short press the **Down**  **Button**.
2. The image will freeze for 0.5 seconds and the camera  icon will appear briefly in the upper-right corner of the screen to indicate a photo was taken.



**NOTE:** A red warning icon ⓘ appears next to the camera icon when insufficient memory storage is available. Transfer video and image files to other storage media to free up space on the memory card.

## Video Recording

To record video:

1. Turn on the microphone in the main menu. See **Main Menu > Mic** on page 28.
2. From the home screen, long press the **Down**  **Button** to start a video recording.
3. When the video recording starts, the video recording timer, in HH:MM:SS (hour, minute, second) format, appears in the upper-right corner of the screen.
4. When recording, short press the **Down**  **Button** to take a photo.
5. Long press the **Down**  **Button** to stop and save the video recording.



## Video and Photography Notes

- You may enter and navigate the menu during video recording.
- Recorded photos and videos are saved to the memory card.
  - Photos are saved as PIC\_HHMMSS.jpg.
  - Videos are saved as VIDEO\_HHMMSS.mp4.
  - HHmmSS is hour, minute, second.
- The number of recorded files is limited only by the capacity of the internal memory.
- Regularly check the available memory storage space and move video footage and images to other storage media to free up space on the memory card.

## 16. Accessing the Internal Memory

When the QUEST S50R is turned on and connected to a computer via the included data cable, it is recognized by the computer as a flash memory (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 QUEST.
2. Connect the QUEST to your computer via the included USB-C cable (15).
3. Double-click **My Computer** on your computer desktop.
4. Double-click to open the device named **NOCPIX**.
5. Double-click to open the device named **QUEST** to access the built-in memory. Recorded photos and videos are separated into folders by date, YYYYDDMM.
6. Select the desired files or folders to copy or delete.

## 17. Using the NOCPPIX App

The QUEST S50R can be operated using the NOCPPIX App when connected to a tablet or smartphone or via Wi-Fi.

1. Download the App for free and install it on your device:
  - a. Scan a QR code to download it from the App Store or Google Play; **OR**
  - b. Download the App from any app store.
2. Connect the QUEST to Wi-Fi:
  - a. Turn on the Wi-Fi. See **Main Menu > Wi-Fi** on page 27 for instructions.
  - b. Open the App and click the **Connect Device** button. Then, click **Connect Phone WLAN**.
  - c. On the mobile device, go to **Settings > Wi-Fi**.



- d. Select the QUEST from the list of Wi-Fi networks. It will appear in the list as "QUEST\_XXXX-YYYYYYY," where XXXX is the model and YYYYYYY is the device serial number.
  - e. Enter the Wi-Fi password and tap the **Join button**. The default password is 12345678.
3. Operate the QUEST via the App:
    - a. Take real-time photos and videos, with or without audio.
    - b. View, share, download, and delete photos and videos taken via the App, which are saved to the mobile device.
    - c. Change the Wi-Fi password and SSID.
    - d. Synchronize the date and time from the mobile device.
    - e. Update the QUEST firmware.

**NOTE:** When a factory reset is performed, the Wi-Fi SSID and password are reset to the defaults, QUEST\_XXXX-YYYYYYY and 12345678. See **Settings Menu > Factory Reset** on page 34.

## 18. Integrated Laser Rangefinder

The QUEST S50R is equipped with an integrated, precision laser rangefinder which allows the user to measure the distance to objects up to 1000 yards away, with  $\pm 1$ -yard accuracy. The laser rangefinder has two ranging modes: continuous and single-measurement capture. Continuous ranging allows the user to adjust quickly to changing distances for better shot placement.



**CAUTION:** Do not stare directly into the laser.

The rangefinder interface has the following features:

- 1 **Cursor:** The blue rangefinder cursor  appears in the center of the screen.

- 2 **Rangefinding Measurement:** The target distance appears in the upper-right corner.
- 3 **Mode:** The selected rangefinding mode, SGL (single) CONT (continuous).

To use the laser rangefinder in continuous rangefinding mode:

1. On the home screen, long press the **Up  Button** to turn on the laser rangefinder in continuous ranging mode.
2. Locate the target.
3. The distance to the target indicated by the cursor will be refreshed automatically by the rangefinder every second.
4. Short press the **Up  Button** to switch to single ranging mode.
5. Long press the **Up  Button** to turn off the laser rangefinder.

To use the laser rangefinder in single rangefinding mode:

1. Locate the target.
2. On the home screen, short press the **Up  Button** to take a single rangefinding measurement. The rangefinding cursor appears in the center of the screen and the distance to the target will be shown in the upper-right corner of the screen for 10 seconds.

### ACCURACY NOTES:

- The measurement accuracy and maximum range depend on the reflection ratio on the target surface, the angle at which the laser beam falls on the target surface, and environmental conditions. Reflectivity depends on the surface texture, color, size, and shape of the object. Typically, a glossy, bright surface will have higher reflectivity than a darker surface.
- Ranging performance can degrade in bright conditions or when ranging towards the sun.
- The measurement accuracy can be affected by fog, smog, heavy rain, snow, and other weather conditions. It can also be affected by a low battery or a dirty or smudged objective lens.
- Measuring the range to a small target is more difficult than measuring the range to a large target.

## 19. Digital Zoom

The QUEST will quickly increase the base magnification by enlarging the image digitally from 1 to 8 times.

To use digital zoom:

1. From the home screen, rotate the digital zoom ring (2) to zoom in and out on the observed object.
  - a. Rotate clockwise to zoom in and counterclockwise to zoom out.
2. The total magnification is displayed in the status bar.

## 20. Ultra-Clear Mode

Ultra-Clear mode improves the image quality in inclement weather conditions, such as rain, fog, high humidity, or high temperatures as these conditions all result in lower thermal contrast. Ultra-Clear mode enhances the NETD value of the thermal sensor and improves the sensor's response rate to these challenging environment conditions. See **Main Menu > Ultra-Clear** below.

Ultra-Clear mode provides:

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

## 21. Main Menu Options and Descriptions

Menu and submenu options, from left to right are:

- **Main Menu:** Ultra-Clear, Wi-Fi, Image Hue, Mic, Calibration, Gallery, Settings.
  - **Settings Menu:** Date, Time, Language, Status Bar, Unit, Electronic Image Stabilization, Factory Reset, Info.

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

## Ultra-Clear

### Turn Ultra-Clear mode on / off

When Ultra-Clear mode is turned on, the image contrast is enhanced, which is suitable for rainy, foggy, or low-contrast conditions.

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the Ultra-Clear  menu item.
3. Short press the **Menu**  **Button** to turn Ultra-Clear on / off.
4. The Ultra-Clear status, on  or off , appears in the status bar.
5. Long press the **Menu**  **Button** to return to the home screen.

**NOTE:** When Ultra-Clear mode is turned on and off, the QUEST will automatically perform a shuttered non-uniformity correction.



## Wi-Fi

### Turn Wi-Fi on / off

Turn on Wi-Fi to operate the QUEST via the NOCPIX App.

1. Long press the **Menu**  **Button** to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the Wi-Fi  menu item.
3. Short press the **Menu**  **Button** to toggle Wi-Fi on / off. The default Wi-Fi password will appear briefly to the right of the toggle. The password will no longer be displayed after the default password is changed.
4. The Wi-Fi status, on  or off , appears in the status bar.
5. Long press the **Menu**  **Button** to return to the home screen.



## Mic

### Turn the microphone on / off

1. Long press the **Menu**  to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the mic  menu item.
3. Short press the **Menu**  **Button** to turn the microphone status,  or off , appears in the status bar.
4. Long press the **Menu**  **Button** to return to the home screen.



## Image Hue

### Toggle between warm and cool image hue modes

1. Long press the **Menu**  to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the image hue  menu item.
3. Short press the **Menu**  **Button** to toggle between warm  mode (toggle is on) and cool  mode (toggle is off).
4. Long press the **Menu**  **Button** to return to the home screen.



### NOTES:

- Cool mode provides a brighter image and warm mode provides a softer image and reduces eye strain.
- Image hue is available when using the white hot or black hot color palette.

## Calibration

### Set the non-uniformity correction (NUC) mode to automatic or manual

1. Long press the **Menu**  to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the calibration  menu item.
3. Short press the **Menu**  **Button** to move through the submenu options, Automatic and Manual. The selected NUC mode, A or M, appears inside the calibration icon in the status bar.
4. Long press the **Menu**  **Button** to return to the home screen.



## Gallery

### View photos and videos saved to the device

1. Long press the **Menu**  to enter the main menu.
2. Short press the **Up**  or **Down**  **Button** to select the gallery  menu item.
3. Short press the **Menu**  **Button** to enter the submenu.
4. Short press the **Up**  or **Down**  **Button** to move through the multimedia folders. Folders are named by date in YYYYMMDD format and are ordered newest to oldest.



- Short press the **Menu**  **Button** to select a folder. Use the **Up**  and **Down**  **Buttons** to navigate through the image and video files. A thumbnail of the selected file appears on the right side of the screen.
- Short press the **Menu**  **Button** to view an image or video in full screen. When viewing video files, short press the **Menu**  **Button** to play and pause the video.
- Short press the **Power**  **Button** to return to the list of files.
- Long press the **Menu**  **Button** to return to the home screen.

## Settings Menu

### Adjust the general settings

- Long press the **Menu**  **Button** to enter the main menu.
- Short press the **Up**  or **Down**  **Button** to select the settings  menu item.
- Short press the **Menu**  **Button** to enter the submenu.



## SETTINGS MENU > DATE

### Set the date

- In the settings submenu, short press the **Up**  or **Down**  **Button** to select the date  menu item.
- Short press the **Menu**  **Button** to edit the date, shown in YYYY.MM.DD format. A blue arrow will appear above and below the year digit.
- Short press the **Up**  or **Down**  **Button** to select the correct value for each digit (year, month, and day).
- Short press the **Menu**  **Button** to switch between digits. The two arrows move to indicate the selected digit.



- Long press the **Menu**  **Button** to save the date and return to the home screen.

## SETTINGS MENU > TIME

### Set the time

- In the settings submenu, short press the **Up**  or **Down**  **Button** to select the time  menu item.
- Short press the **Menu**  **Button** to edit the time, shown in 24-hour format, HH:MM. A blue arrow will appear above and below the hour digit.
- Short press the **Up**  or **Down**  **Button** to select the correct value for each digit (hour and minute).
- Short press the **Menu**  **Button** to switch between digits. The two arrows move to indicate the selected digit.
- Long press the **Menu**  **Button** to save the time and return to the home screen. The set time appears in the status bar.



## SETTINGS MENU > LANGUAGE

### Select the language

- In the settings submenu, short press the **Up**  or **Down**  **Button** to select the language  menu item.
- Short press the **Menu**  **Button** to enter the submenu.
- Short press the **Up**  or **Down**  **Button** to move through the language options.
- Long press the **Menu**  **Button** to confirm the selection and return to the home screen.



## SETTINGS MENU > STATUS BAR

### Turn status bar auto-hiding on / off

When "hide" is selected, the status bar and all interface icons, except for the time, magnification level, and battery status icons, will be automatically hidden for unobstructed image view. The menu and shortcut buttons are disabled until the entire interface is again displayed. Press any button to show all interface information again.



1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the status bar  menu item.
2. Short press the **Menu**  **Button** to enter the submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the options, show and hide.
4. Long press the **Menu**  **Button** to confirm the selection and return to the home screen.

## SETTINGS MENU > STANDBY

### Set standby to auto or manual

When set to auto, the device will automatically enter standby when no user is detected. When the built-in proximity sensor detects a face, the device will automatically exit standby mode.



1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the standby  menu item.
2. Short press the **Menu**  **Button** to enter the submenu.

3. Short press the **Up**  or **Down**  **Button** to move through the options, auto and manual.
4. Long press the **Menu**  **Button** to confirm the selection and return to the home screen.

## SETTINGS MENU > UNIT

### Select the units of measurement

1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the unit  menu item.
2. Short press the **Menu**  **Button** to enter the submenu.
3. Short press the **Up**  or **Down**  **Button** to move through the options, Meters or Yards.
4. Long press the **Menu**  **Button** to confirm the selection and return to the home screen.



## SETTINGS MENU > ELECTRONIC IMAGE STABILIZATION

### Turn electronic image stabilization on / off

1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the electronic image stabilization  menu item.
2. Short press the **Menu**  **Button** to turn image stabilization on / off.
3. Long press the **Menu**  **Button** to return to the home screen



## SETTINGS MENU > FACTORY RESET

### Restore factory default 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 submenu.
3. Two options, Yes and No, appear; Yes will restore factory settings and No will cancel the operation.
4. Short press the **Menu**  **Button** to select **Yes** to confirm the factory reset. Factory settings will be restored and the QUEST will reboot automatically; **OR**
5. Short press the **Up**  or **Down**  **Button** to select **No** and short press the **Menu**  **Button** to confirm cancellation of the factory reset and return to the submenu.



### FACTORY RESET NOTES:

- The screen will go dark and the factory restart will begin after a pause of about 10 seconds.
- A factory reset cannot be undone.
- The settings listed below will be reset to the factory defaults:
  - Color Palette: White Hot
  - Image Brightness: 5
  - Image Contrast: 5
  - Image Sharpness: 5
  - Digital Zoom: 1x
  - Ultra-Clear mode: Off
  - Wi-Fi: Off
  - Image Hue: C (cool)
  - Microphone: Off
  - Calibration: A (automatic)
  - Language: English
  - Unit: m (meter)
  - Wi-Fi Password: 12345678
  - Wi-Fi SSID: QUEST\_XXXX-YYYYYY

## SETTINGS MENU > INFO

### Show device information

1. In the settings submenu, short press the **Up**  or **Down**  **Button** to select the info  menu item.
2. Short press the **Menu**  **Button** to enter the submenu.
3. The info submenu will display information about the QUEST: the model number, GUI, SYS, BOOT, FPGA, and hardware versions, the part and serial numbers, and FCC ID.
4. Long press the **Menu**  **Button** to save and return to the home screen.



## 22. Basic Inspection

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

- The binoculars' 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 lens.
- The rechargeable battery should be fully charged.
- The control buttons should be in working order.

## 23. Basic Maintenance

Always replace the objective lens cap 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 the 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 binoculars using a non-greasy organic solvent.
- Check the lens and eyepiece. If necessary, remove any dirt or 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 a similar product. Only clean the lens when it is visibly soiled. Frequent wiping or cleaning can degrade the anti-reflective lens coating.

## 24. 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 and neither have we; 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 a modification. Be sure to register your QUEST binoculars at [irayusa.com/register](http://irayusa.com/register).

To return a product for repair:

1. Go to [irayusa.com/warranty](http://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, per the instructions included with the RMA. iRayUSA will return the product at no cost.

### WARRANTY NOTES:

- The one-week timeline starts from the time of receipt of the 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](http://irayusa.com/warranty), or email [info@irayusa.com](mailto:info@irayusa.com) with any questions.

## 25. FCC Statement

### FCC ID: 2BHFB-QUEST-00

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:



ISSUE	POSSIBLE CAUSES
The QUEST will not turn on.	The battery is very low or has fully discharged.
The QUEST can not connect to a computer or external power supply.	External power supply has completely discharged.
	Computer is turned off.
	USB-C cable is damaged.
The QUEST can not connect to the mobile device (smartphone or tablet).	Wi-Fi is not turned on.
	Wrong Wi-Fi password entered.
	Too many Wi-Fi signals nearby, which may cause interference.
Wi-Fi signal is lost or interrupted.	The device is out of range of a strong Wi-Fi signal, or there are obstacles (such as concrete walls) between the device and the signal.
The image is blurry, the background is uneven, or vertical lines or artifacts are present.	Non-uniformity correction is required.
The image is too dark.	Image brightness level is too low.
The GUI is clear, but the image is blurry.	The lens is not focused.
	There is dust or ice on the exterior lens surface.
	There is condensation on the interior or exterior lens surface.
Observed target disappears.	Observing the target through glass.
The QUEST will not focus.	Image settings are not optimal for the current environmental conditions or the object being observed.
Image quality is low or the detection range is reduced.	Environmental conditions, such as snow, rain, humidity, and fog.
When the QUEST is used in low-temperature conditions, the image quality of the surroundings is worse than in warm-temperature conditions.	Environmental conditions.

TROUBLESHOOTING STEPS
Charge the battery.
Check the external power supply and charge it if necessary.
Power on the computer.
Replace the cable.
Turn on the Wi-Fi in the main menu. See <b>Main Menu &gt; Wi-Fi</b> on page 27.
On the mobile device, go to <b>Settings &gt; Wi-Fi</b> and enter the correct password. The default password is 12345678. See <b>Main Menu &gt; Wi-Fi</b> on page 27.
Move the QUEST and mobile device to an area with no or fewer Wi-Fi signals.
<ul style="list-style-type: none"> <li>Try again when the Wi-Fi signal is stable.</li> <li>Move the QUEST closer to the Wi-Fi signal.</li> </ul>
Perform a non-uniformity correction. See <b>Non-uniformity Correction</b> on page 20.
Adjust the image brightness or contrast. See <b>Using the Quick Menu</b> on page 18.
<ul style="list-style-type: none"> <li>Adjust the focus on the target by rotating the objective focus ring (1).</li> <li>Adjust the image sharpness. See <b>Using the Quick Menu</b> on page 18.</li> </ul>
<ul style="list-style-type: none"> <li>Wipe the external optical surface with the included microfiber lens cloth.</li> </ul>
<ul style="list-style-type: none"> <li>Wipe the external optical surface with the included microfiber lens cloth.</li> <li>Leave the imager in a warm, dry environment for at least 4 hours to allow it to dry.</li> </ul>
Remove any glass windows from the field of view.
<ul style="list-style-type: none"> <li>Check the external surface of the lens and eyepiece and, where necessary, wipe away any dust, condensation, frost, etc.</li> <li>In cold weather, use anti-fogging coatings, such as those made for eyeglasses.</li> <li>Adjust the focus on the target by rotating the objective focus ring (1).</li> <li>Adjust the image sharpness. See <b>Using the Quick Menu</b> on page 18.</li> <li>Adjust the image and device settings. See <b>Quick Start Guide</b> on page 8.</li> <li>Turn on Ultra-Clear mode. See <b>Main Menu &gt; Ultra-Clear</b> on page 27.</li> </ul>
Turn on Ultra-Clear mode. See <b>Main Menu &gt; Ultra-Clear</b> on page 27.
In warm-temperature conditions, objects being observed (surroundings and background) heat up differently because of thermal conductivity, thereby generating a high-temperature contrast. Accordingly, image quality produced by the imager will be higher. In low-temperature conditions, the background will cool down to roughly the same temperature, and thus the temperature contrast is substantially reduced and image detail can go down as there is less contrast in the scene. This is a normal function of a thermal imager and is no indicator of actual detector performance.



2601 State Hwy 121, Bldg 3, Ste 306  
Lewisville, TX 75056  
800-769-7125 | 682-499-0047  
[info@irayusa.com](mailto:info@irayusa.com)

A26A27CT