ZULUS HD V2

DNT OPTICS

Day & Night Technologies

CONTENTS

ZULUS HD V2 DIGITAL DAY & NIGHT SCOPE

ZULUS HD V2

Digital Day & Night Scope

SAFETY INSTRUCTIONS

- DO NOT look directly into the INFRARED (IR) Illuminator to avoid damage to your eyes.
- Switch off the IR Illuminator when not in use. Continuous use of IR light will generate excessive heat. Avoid pointing it towards flammable objects.
- Device operating temperature -4F-122F (-20~50℃).

DESCRIPTION

The ZULUS Series Digital Scope is a compact, versatile device designed for 24/7 operation in all weather conditions. With its exceptional day and night image quality, it's ideal for hunting and shooting sports. The integrated laser rangefinder (LRF Models Only), combined with a ballistic calculator, ensures accurate shot placement.

PACKAGE CONTENT

- ZULUS Scope
- Eye Cup
- Mount Accessories
- USB Cable
- User Manual
- 21700 Battery (flat-top)

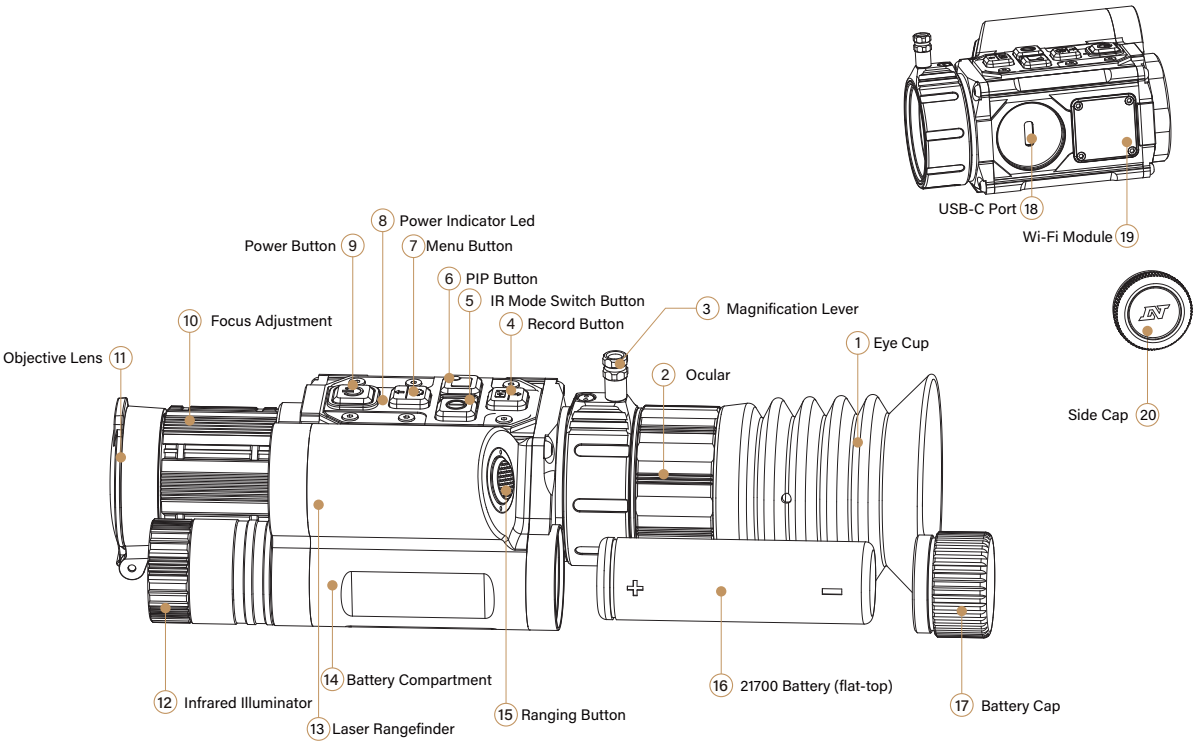
SPECIFICATIONS

	Model	ZHD312-V2	ZHD312R-V2	ZHD520-V2	ZHD520R-V2
Sensor Specifications	Resolution	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels
	Frame Rate	60 Hz	60 Hz	60 Hz	60 Hz
	Video Record Resolution	1800x1080 pixels	1800x1080 pixels	1800x1080 pixels	1800x1080 pixels
Optical Specifications	Base Magnification	3X	3X	5X	5X
	Digital Magnification	3-12X	3-12X	5-20X	5-20X
	Eye Relief	65 mm/2.7 inches	65 mm/2.7 inches	65 mm/2.7 inches	65 mm/2.7 inches
	Diopter Adjustment	±3D	±3D	±3D	±3D
	IR Wavelength	Vcsel: 850 nm	Vcsel: 850/940 nm	Vcsel: 850 nm	Vcsel: 850/940 nm
	IR Rating	Class 3R Eye Safe	Class 3R Eye Safe	Class 3R Eye Safe	Class 3R Eye Safe
	Detection Range	400 m	400 m	400 m	400 m
Display Specifications	Type	Micro—OLED	Micro—OLED	Micro—OLED	Micro—OLED
	Display Resolution	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels
	Frame Rate	60 Hz	60 Hz	60 Hz	60 Hz
Power Specifications	Battery Type	21700 Battery (flat top)	21700 Battery (flat top)	21700 Battery (flat top)	21700 Battery (flat top)
	Operating Time	10 h	10 h	10 h	10 h
	External Power Supply	5V-TYPE C USB	5V-TYPE C USB	5V-TYPE C USB	5V-TYPE C USB
Physical Specifications	Net Weight	462 g/16.3 oz	522 g/18.4 oz	482 g/17.0 oz	542 g/19.1 oz
	Dimensions	153.5x74.7x50 mm /6.0x2.9x2.0 inches	153.5x75.7x54.2 mm /6.0x3.0x2.1 inches	161.9x74.7x50 mm /6.4x2.9x2.0 inches	161.9x75.7x54.2 mm /6.4x3.0x2.1 inches
	Memory	Built-in Memory, 32GB	Built-in Memory, 32GB	Built-in Memory, 32GB	Built-in Memory, 32GB
	Waterproof	IP67	IP67	IP67	IP67
	WIFI/APP	YES (DNT)	YES (DNT)	YES (DNT)	YES (DNT)
	Operation Distance	——	5-1000 M/5-1100 Yards	——	5-1000 M/5-1100 Yards
	Operating Temperature	-20~50°C/-4~122F	-20~50°C/-4~122F	-20~50°C/-4~122F	-20~50°C/-4~122F
	Recoil Proof	800 Gs	800 Gs	800 Gs	800 Gs

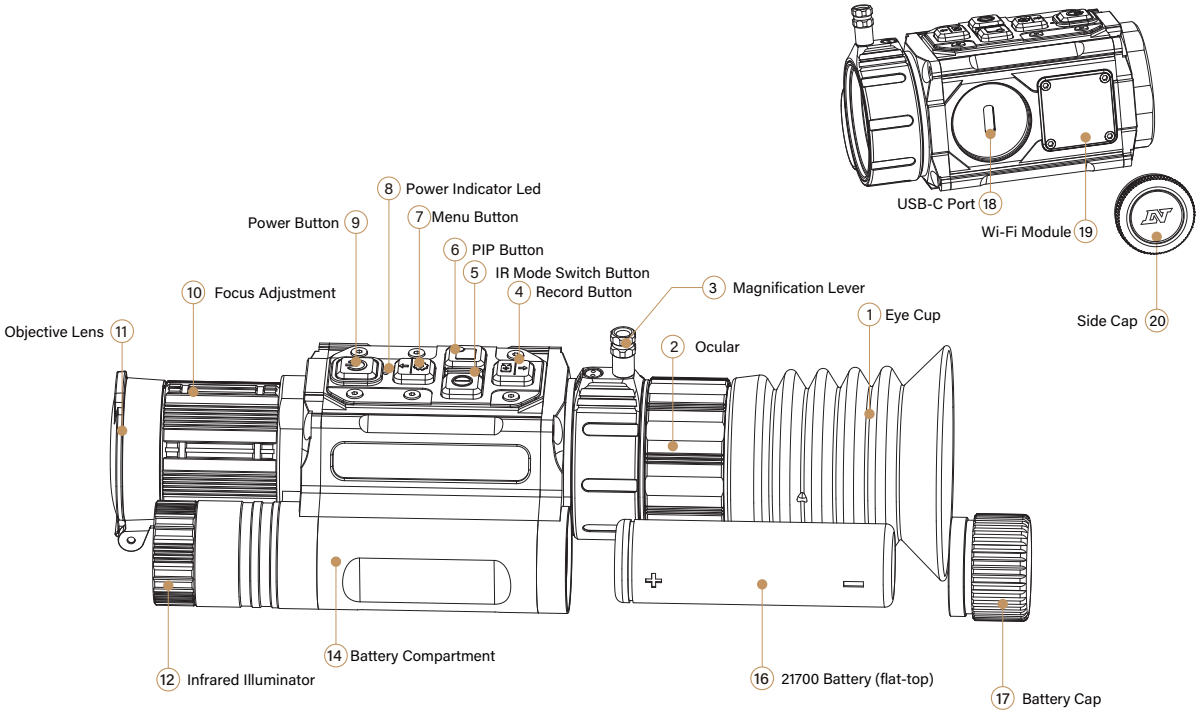
FEATURES

- Laser rangefinder (LRF models only) and built-in ballistic calculator with 3-axis gyroscopic detection
- Ultra HD image quality: Micro-OLED Display of 1920x1080 resolution at 60 Hz
- Picture-in-Picture function
- Full-color images in low-light conditions
- One-shot zero
- Removable/replaceable IR torch (LRF models only)
- 32GB internal memory

MAIN PARTS AND CONTROLS (LRF MODEL)



MAIN PARTS AND CONTROLS (Non LRF)

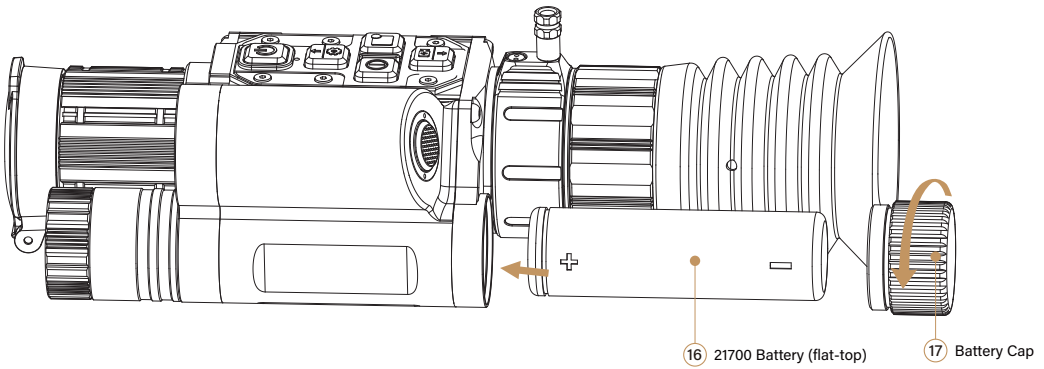


POWER SUPPLY

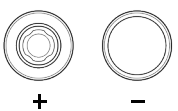
This device is powered by a rechargeable 21700 battery (flat-top). The device can also be powered using a USB power supply. The USB-C port does not charge the 21700 battery. Please remove the 21700 battery if using USB power. To recharge, please use USB battery charger.

Note: If the side cover is removed, the device will no longer maintain its IP67 waterproof rating.

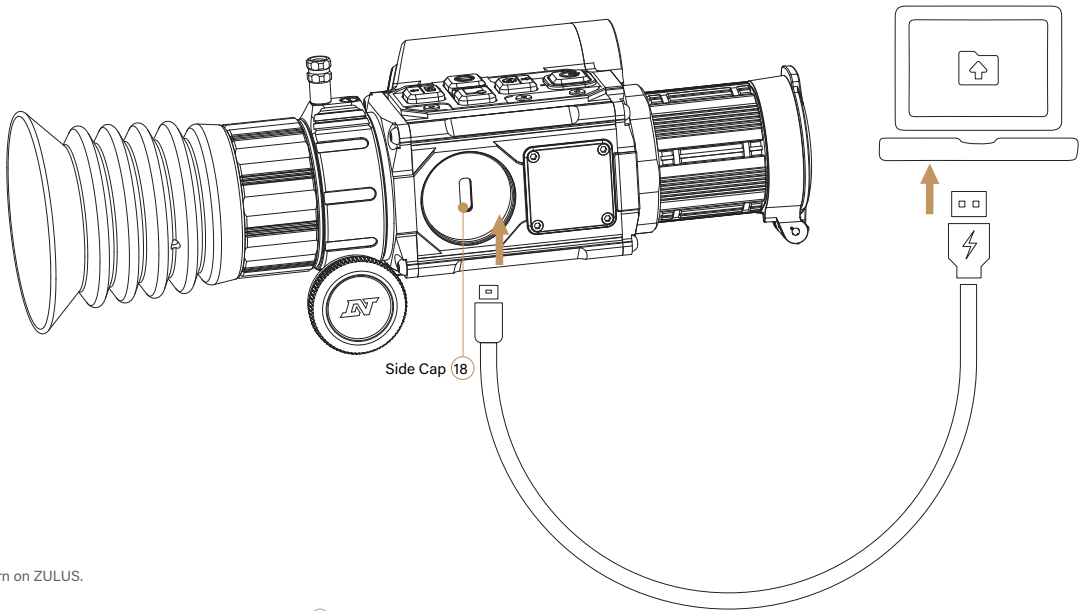
Installing the 21700 Battery (flat top)



- Unscrew the Battery Cap (17) .
- Insert 21700 battery (16) into battery compartment, positive end (+) first.
- Screw the Battery Cap (17) tight till the end of the thread.

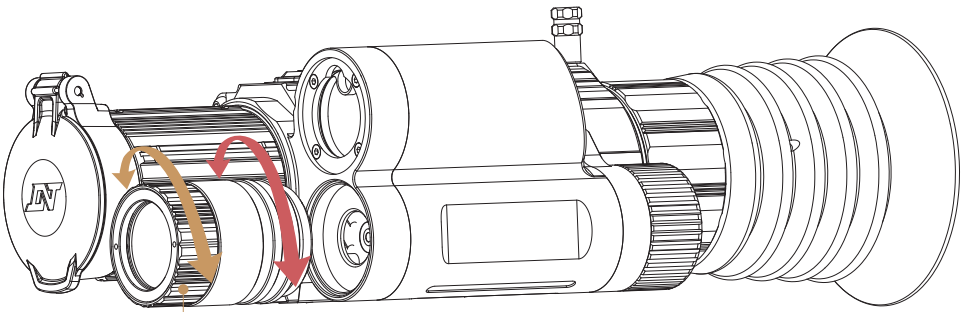


USB-C DATA TRANSFER



- Turn on ZULUS.
- Unplug the USB Port Cover to reveal the Side Cap (18) .
- Plug USB-C cable into ZULUS USB-C port. ZULUS will connect to your computer like a USB drive. You can browse and download video recordings to your computer as well as transfer files from ZULUS to your computer.

REMOVABLE INFRARED ILLUMINATOR (IR TORCH) LRF models only



- Rotate the IR Illuminator (12) to adjust brightness. Optical focus helps the device reach its maximum detection range.

Note: IR Illuminator (12) is replaceable.

ON-SCREEN DISPLAY

① Recording Indicator: this shows the device is recording.

② PIP Reticle

③ PIP Window

④ Ranging Reticle

⑤ Ranging Distance

⑥ Reticle

⑦ Current Screen Brightness Level

⑧ Current Time

⑨ Battery Level

Icon	Status	Battery Status
	Low Battery	0% ~ 10%
	1 bar	10% ~ 20%
	2 bars	20% ~ 50%
	3 bars	50% ~ 80%
	4 bars	80% ~ 100%
	USB Powered	Connected to type C

⑩ Current Magnification

⑪ Current Icon Indicates Night Mode

IR	Night Mode, IR Off
IR	IR On Level 1 (The Sun Light Bar Indicates IR Level)
IR	IR On Level 2
IR	IR On Level 3
IR	IR On Level 4
IR	IR On Level 5
A	IR On Auto Mode (The Sun Light Bar Indicates IR Level)

⑫ Gyroscope Horizontal Direction Angle

⑬ Built-In Memory (It Only Shows When Memory Error Occurs)

⑭ Wi-Fi (It Only Shows When Wi-Fi is on)

⑮ Mic (It Only Shows When Recording Audio is on)

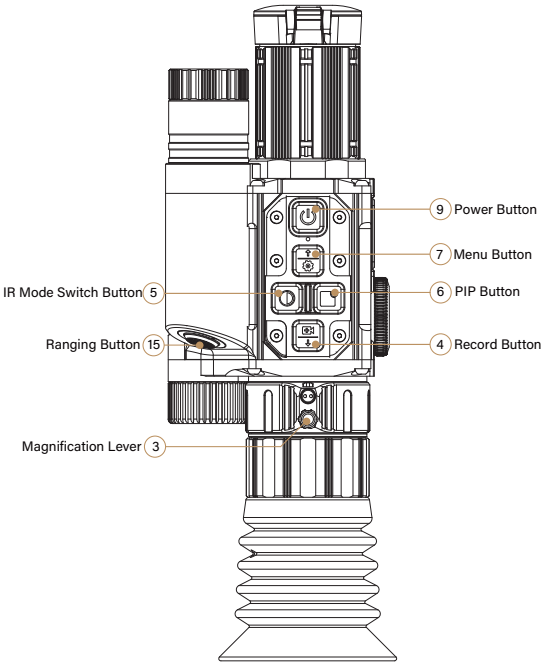
⑯ Ballistic Profiles Info

⑰ DNT LOGO

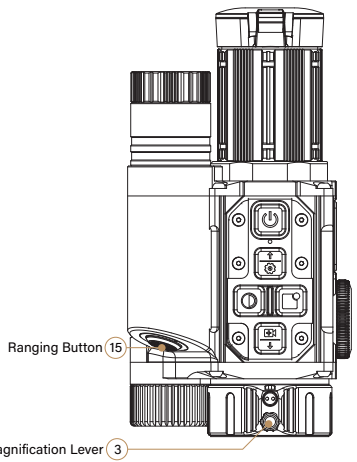
⑱ Aim Point

⑲ Gyroscope Vertical Direction Angle

CONTROL DESCRIPTION



Button	Status	Short Press	Long Press
9	Off	——	On
	On	Standby	Off
	Standby	Wake-up	——
	Reticle Zeroing	Freeze/Unfreeze	——
7	On	Set Reticle Color/ Ranging Reticle Color	Open Menu Setting
	Menu	Move Cursor up	——
	Reticle Zeroing	Move Cursor up	——
6	On	Adjust Brightness	Turn On/Off PIP
	Menu	Confirm	——
	Reticle Zeroing	Change Reticle X/Y Value Change Zeroing Profiles	Continuously Increase or Decrease the X/Y-axis Value of the Reticle
	Date Setting	Move Cursor Right	Save & Exit
	Time Setting	Move Cursor Right	Save & Exit
5	Color Mode	——	Black/White Mode
	Black/White Mode	Adjust IR Brightness	Color Mode
	Reticle Zeroing	Change Reticle X/Y Value Change Zeroing Profiles	Continuously Increase or Decrease the X/Y-axis Value of the Reticle
	Date Setting	Move Cursor Left	Save and Exit
	Time Setting	Move Cursor Left	Save and Exit
4	On	Start/End Recording	Start RAV Recording (only in Manual Mode)
	Menu	Move Cursor Down	——
	Reticle Zeroing	Move Cursor Down	——



Button	Status	Short Press	Long Press	Rotation
	On	——	——	Turn the Lever to the Left/Right to Zoom In/Out
3	Reticle Zeroing	——	——	Turn the Lever to the Left/Right to Zoom In/Out
	Ballistic Calculation Off	Show/Hide Ranging Icon and Distances	Turn Off Ranging	——
15	Ballistic Calculation On	Ranging and Ballistic Calculation	Turn Off Ranging	——

QUICK START GUIDE

Turning On/Off the Device

To turn on the device, press and hold the **Power Button** (9) for 2 seconds. The blue light indicator will turn on and the DNT logo will appear on the screen.
To turn it off, press and hold the **Power Button** (9), and a 2-second countdown timer will appear. Continue to hold the Power Button to turn it off (the blue light indicator will also turn off).

Entering Standby Mode

Short press the **Power Button** (9) will place ZULUS in standby mode. The screen will turn black, and the orange indicator light will appear. To exit standby mode, simply short press the **Power Button** (9) again.

Ocular Adjustments

This is to achieve the best screen clarity for your eye, and it is independent of the target (therefore, you can set it with the objective lens cap closed). You can use the eye cup as a reference point for proper eye relief. Slowly spin the **Ocular** (2) either left or right until you have achieved the best clarity of the screen. Once it is set, you don't need to adjust it anymore.

Focus Adjustments

This is to adjust the focus of your image. Depending on how close or far you are to the target, spin the **Focus Adjustment** (10) either left or right to achieve maximum clarity. This is something that you may need to adjust frequently to ensure the target is in focus.

Zooming In/Out

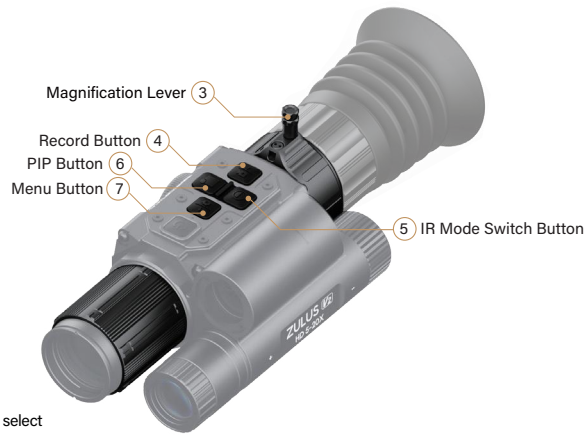
Turn the **Magnification Lever** (3) right to zoom in.
Turn the **Magnification Lever** (3) left to zoom out.

Switching Between Color and Black-and-White Modes

Press and hold the **IR Mode Switch Button** (5) for 2 seconds to toggle between color and black-and-white modes.
When the device is in black-and-white mode, a short press of the **IR Mode Switch Button** (5) can adjust the light intensity levels.

Adjusting Screen Brightness

Short press the **PIP button** (6) to adjust the screen brightness in 5 levels (1 to 5).



Recording

Loop Recording

Short press the **Record Button** (4) to start loop recording, with each video lasting up to 10 minutes. To stop the recording at any time, simply short-press the record button again. To adjust loop recording time, long press the **Menu Button** (7) to enter Function Settings, select "Loop Recording," and choose from off (default 10 minutes), 1 minute, 3 minutes, or 5 minutes.

RAV in Auto Mode

To activate RAV in auto mode, long press the **Menu Button** (7) to enter Settings, and select "Recoil Activated Recording" > "Auto Mode".

When RAV is in auto mode, the device will record 10 seconds before and after you shoot.

Recording

RAV in Manual Mode

To activate RAV in manual mode, long press the **Menu Button** (7) to enter Settings, and select "Recoil Activated Recording" > "Manual Mode".

When RAV is in manual mode, the decvice will record 10 seconds before and after the **Record Button** (4) is long pressed. To extend the recording, long press the **Record Button** (4) again while the current recording is still in progress. Each long press adds 10 seconds to the recording, with a maximum total duration of 2 minutes.

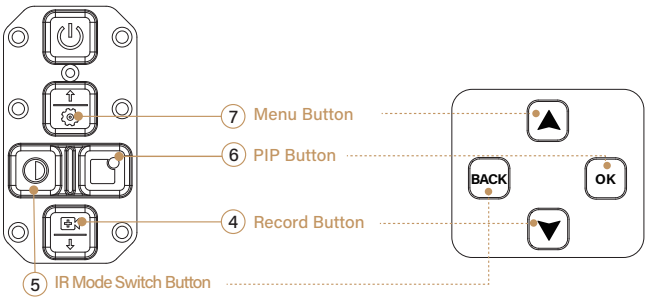
To deactivate RAV, long press the **Menu Button** (7) to enter Settings, and select "Recoil Activated Recording" > "Off ".

MENU LIST

Long press the **Menu Button** (7) to enter the settings. There are currently 10 different sections in total. Once you are in the settings menu, the four buttons work like your typical TV Remote. Short press **Menu** (7) **& Record Buttons** (4) to navigate Up & Down. Short press the **PIP Button** (6) to make the selection and short press the **IR Mode Switch Button** (5) to go back.

(main screen)

(menu)



Icon	Description
	【Connections】 Wi-Fi
	【Zeroing】 Zeroing
	【Reticle Settings】 Reticles: 1-FFP / 2-FFP / 3-SFP / 4-SFP / 5-SFP / 6-SFP / 7-SFP / 8-SFP / 9-SFP / Hide Reticle Colors: Red / Green / Yellow / Black / White
	【Ballistic Calculator】 Turn ON / OFF Ballistic Calculation Ballistic Data Settings Aiming Method: Holdover / Dial In Display Ballistics: MRAD / MOA / cm / inches / Off
	【LRF Settings】 Ranging Modes: Continuous Ranging, Single Pulse Ranging, Timed Ranging 3s / 5s / 10s Ranging Units: Meter / Yard
	【PIP Settings】 Off / Left / Center / Right
	【Recoil Activated Recording】 Auto Mode / Manual Mode / Off
	【Image Settings】 Select between Natural Mode and Color Enhancement Mode
	【Function Settings】 Auto Power Off: Off / 10 / 20 / 30 minutes (Countdown will only start in standy mode) Loop Recording: Off / 1 / 3 / 5 minutes Audio Recording: ON / OFF Gyroscope: ON / OFF / Calibration IR Torch Type: IR-LED / IR-V Screen Brightness: 1/2/3/4/5
	【System Settings】 Date / Time Language Setting: English / Français / Español / Deutsch / Italiano Format Restore Default Settings Available Storage Version

MAIN FUNCTION

Reticle Zeroing

Long press the **Menu Button** (7) for 2 seconds to open Settings. Short press the **Record Button** (4) down to "Zeroing" , and short press the **PIP Button** (6) to select.
Short press the **Power Button** (9) to freeze/unfreeze the current image, or short press the **Record Button** (4) to toggle "Freeze" to "On". Short press the **PIP Button** (6) to confirm freeze/unfreeze the current image.

- Short press the **Menu Button** (7) to move the cursor up. Short press the **Record Button** (4) to move the cursor down.
- If the cursor is at the x/y axis, short press **IR Mode Switch Button** (5) and the value will decrease by 1. Press and hold **IR Mode Switch Button** (5) , and the value will continuously decrease. Short press **PIP Button** (6) , and the value will increase by 1. Press and hold **PIP Button** (6) , and the value will continuously increase.
- Select "Save", and short press the **PIP Button** (6) to confirm, save and exit.
- Select "Exit", and short press the **PIP Button** (6) to confirm and exit without saving.

① Zeroing Profiles 10: current zeroing profile info (total: 1-10)

② Freeze: freeze / unfreeze image

③ X=0: the horizontal position of the reticle (left and right)

④ Y=0: the vertical position of the reticle (up and down)

⑤ Save: save and exit

⑥ Exit: exit without saving

⑦ 5.0x: magnification setting

Reticle Zeroing Example

Steps:

1. Place the target 100 yards away. Adjust the focus to ensure that the objective lens presents a sharp image of the target.
2. On the target, choose a central aiming point and observe the point of impact (T).
3. Return the reticle to the original aiming point, hold steady on this aim point, and then short press the **Power Button** (9) to freeze the sight picture.
4. Adjust the X and Y value to align the reticle with the point of impact.
5. Select "save", then short press the **PIP Button** (6) to confirm, save the settings, and exit.

Note: Once the reticle has been changed (either moved), the magnification cannot be adjusted.

Range Finding LRF models only

Continuous Ranging

- Long press the **Menu Button** 7 for 2 seconds to open Settings, short press the **Record Button** 4 to move the cursor to "LRF Settings", short press the **PIP Button** 6 to select, move the cursor to "Ranging Mode", short press the **PIP Button** 6 to confirm your selection, and select "Continuous Ranging".
- Short press the **IR Mode Switch Button** 5 until you reach the main shooting screen.
- Short press the **Ranging Button** 15 to turn on range finding. The screen will display the range-finding icon and target distance. The target range will continuously update in real time as your target distance changes.
- Long press the **Ranging Button** 15 for 1.5 seconds to turn off the ranging function.

Range Finding LRF models only

Single Pulse Ranging

- Long press the **Menu Button** (7) for 2 seconds to open Settings, short press the **Record Button** (4) to move the cursor to "LRF Settings", short press the **PIP Button** (6) to select, move the cursor to "Ranging Mode", short press the **PIP Button** (6) to confirm your selection, and select "Single Pulse Ranging".
- Short press the **IR Mode Switch Button** (5) until you reach the main shooting screen.
- Short press the **Ranging Button** (15) to turn on the ranging function, and display the ranging icon and target distance. Press the **Ranging Button** (15) again to measure distance again.
- Single pulse ranging will automatically turn off by long pressing the **Ranging Button** (15) for 1.5 seconds or if unused for 20 seconds.

Timed Ranging

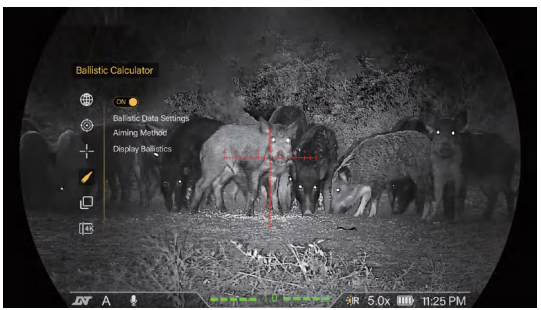
- Long press the **Menu Button** (7) for 2 seconds to open Settings, short press the **Record Button** (4) to move the cursor to "LRF Settings", short press the **PIP Button** (6) to select, move the cursor to "Ranging Mode", short press the **PIP Button** (6) to confirm your selection, and select "Timed Ranging" for 5, 10, or 15 seconds.
- Short press the **IR Mode Switch Button** (5) until you reach the main shooting screen.
- Short press the **Ranging Button** (15) to turn on the range-finding function, and display the ranging icon and target distance. The device will continue to display target ranges for the duration selected.
- Timed Ranging will turn off with a long press of the **Ranging Button** (15).

Built-In Ballistic Calculator LRF models only

Long press the **Menu Button** (7) for 2 seconds to open Settings, navigate to the Ballistic Calculator, and toggle it "**ON**".

Ballistic Data Settings

After opening Ballistic Calculator from the Settings menu, select "**Ballistic Data Settings**" and it will open the following screen:

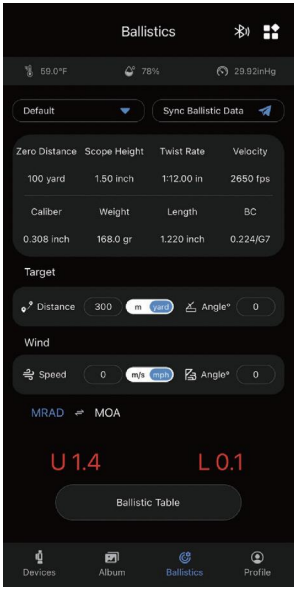


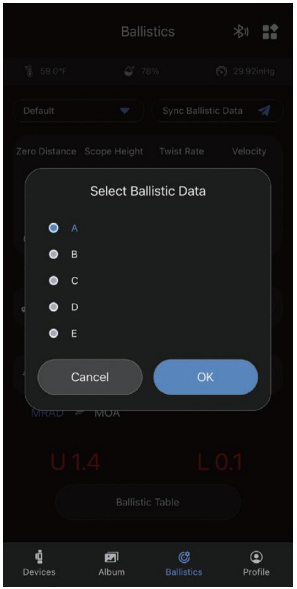
- Short press the **Record Button** (4) or short press the **Menu Button** (7) to adjust the value.
- Short press the **PIP Button** (6) or short press **IR Mode Switch Button** (5) to move the cursor to the left/right. Long press **PIP Button** (6) and **IR Mode Switch Button** (5) to save and exit the screen.

Ballistic Calculation—APP WiFi Connection

You can upload ballistic data from the DNT app to the device once they have been paired via WiFi.

Note: APP installation & connection instructions on page 26





Aiming Method - Holdover LRF models only

Long press the **Menu Button** (7) to enter Settings, and select "**Ballistic Calculator**" - "**Aiming Method**" - "**Holdover**".

- Press the **IR Mode Switch Button** (5) until you reach the main shooting screen.
- A short press of the **Ranging Button** (15) will display the ranging icon and the measured distance.
- A second short press of the **Ranging Button** (15) will display the holdover reticle for the correct point of impact.
- A third short press of the **Ranging Button** (15) will clear the holdover reticle.
- Long press the **Ranging Button** (15) for 1.5 seconds will turn off the ranging function. The ranging icon and distance will disappear.

(First short press Ranging Button)

(Second short press Ranging Button)

(Third short press Ranging Button)

(Long press Ranging Button for 1.5 seconds)

Aiming Method - Dial in LRF models only

Long press the **Menu Button** (7) to enter Settings, and select "**Ballistic Calculator**" - "**Aiming Method**" - "**Dial In**".

- Press the **IR Mode Switch Button** (5) until you reach the main shooting screen.
- A short press of the **Ranging Button** (15) will turn on the ranging function, display the ranging icon and measured distance.
- A second short press of the **Ranging Button** (15) will display the ranging distance and re-zero the main reticle to the correct point-of-aim or point-of-impact.
- A third short press of the **Ranging Button** (15) will return the reticle to the shooter's initial zero.
- Long press the **Ranging Button** (15) for 1.5 seconds will turn off the ranging function. The ranging icon and distance will disappear.

(First short press Ranging Button)

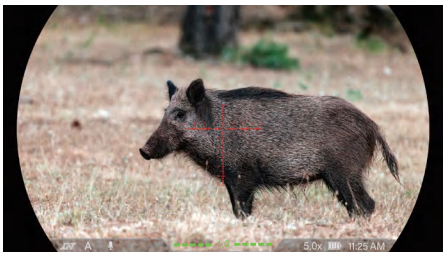
(Second short press Ranging Button)

(Third short press Ranging Button)

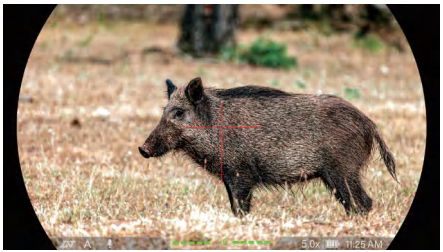
(Long press Ranging Button for 1.5 seconds)

Image Quality Enhancement Function

Choose between natural color images and enhanced color images.



Natural Mode: the image with natural color (similar to human eyes)



Color Enhanced Mode: the image with enhanced color

APP USER MENU

APP Installation

Search the **DNT OPTICS** App on **App Store (iOS System)** or **Google Play (Android System)** to download it, or scan the QR code below to download and install the app.

Android

iOS

APP Connection

- Long press the **Menu Button** (7) for 2 seconds to open Settings. Next, short press the **Record Button** (4) to move the cursor to "**Connection**" and short press the **PIP Button** (6) to confirm your selection. Finally, short press the **PIP Button** (6) to turn it on.
- Short press the **PIP Button** (6) to toggle Wi-Fi to "**On**". This will display the Wi-Fi name and password of the device as shown in figure (1).
- Go to your phone's "Settings" menu, find and tap on the Wi-Fi name of the device. Then enter the password (**12345678**), tap "Connect" and wait for the connection to be established.

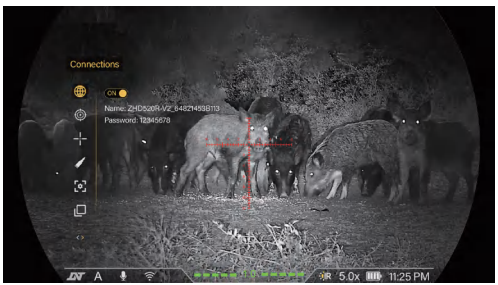
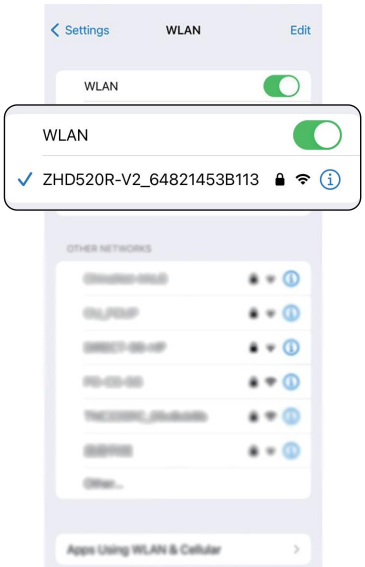
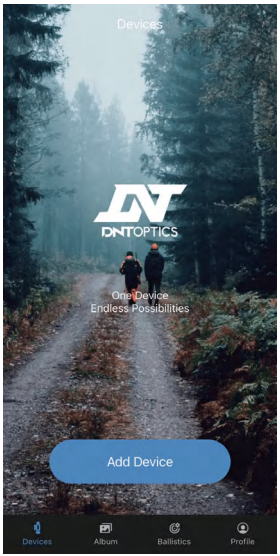
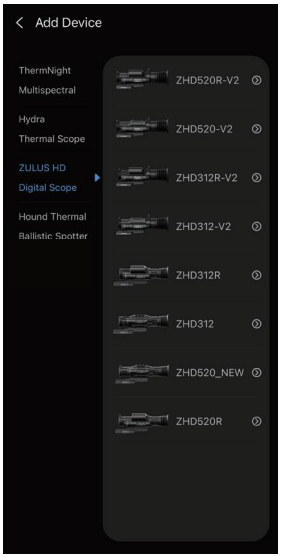


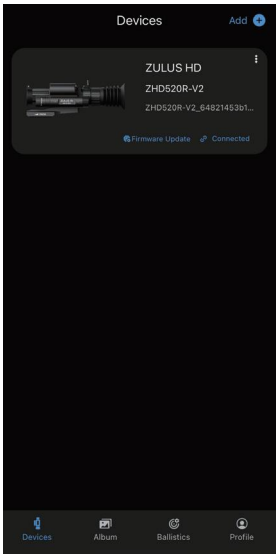
Figure (1)



- To add a device, open the DNT app and click "**Add Device**". Select "**ZULUS HD Digital Scope**," find ZHD520R-V2 / ZHD312R-V2 / ZHD520-V2 / ZHD312-V2, and click Add.
- After adding the device successfully, it is now connected.







Firmware Updates

Using the "**Firmware Update**" feature on the App to perform online OTA/Wireless Updates.

FCC WARNING

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment 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. To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

ZULUS SERIES MODELS	LASER Rangefinder	Built-in Ballistic Calculation
ZHD312-V2	-	-
ZHD312R-V2	Y	Y
ZHD520-V2	-	-
ZHD520R-V2	Y	Y

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