

ThermNight 4K⁺



Day Night Technologies

User Manual



Thermal & Night Vision Multispectral Scope

USER MANUAL

Ver 1.3

For the latest user manual and firmware updates, please visit

www.dntoptics.com

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Read Before Use

Safety Instructions



- **DO NOT** look directly into the Infrared (IR) Illuminator to prevent eye damage.
- Turn off the IR Illuminator when it's not in use; prolonged use of IR Illuminator may generate excessive heat. Avoid pointing it at flammable objects.
- **DO NOT** leave device unattended while the IR Illuminator is on.
- **DO NOT** point the device at intense heat sources such as the sun or flames, as this could damage the thermal sensor. Close the thermal objective lens cap when the Thermal channel is not in use.
- **DO NOT** attempt to disassemble the scope (including the side Picatinny rail). Please contact us if there are any malfunctions.
- Device operating temperature: -20 to 50°C (-4 to 122°F).

Package Contents

ThermNight 4K × 1

Flip Up Cover × 1

Battery Pack × 1

Mount × 2

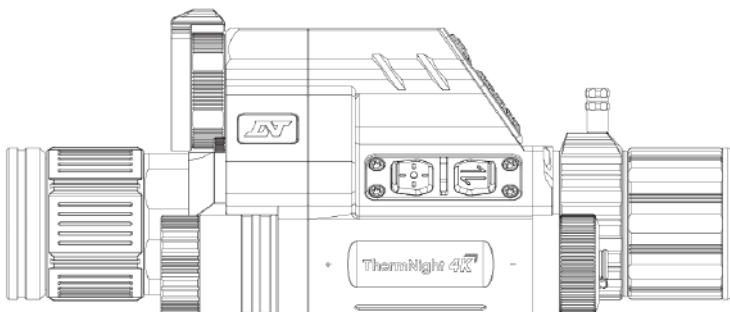
Threaded Eye Cup × 1

Microfiber Cloth × 1

Rubber Lens Cover × 1

USB-C Data Cable × 1

Literature



Glossary

Long-press: Press and hold the button for 2 seconds.

Double-press: Press and release the button twice in rapid succession.

Bolded Controls: Control instructions are marked in bold for easier reading (e.g., **Menu Button**).

[Menu Items]: Menu items are enclosed in square brackets and bolded to indicate menu navigation steps clearly.

Main Screen: Refers to the screen where image and reticle are displayed. It is the default screen that your scope enters when powered ON.

Menu: Refers to the screen where menu items are displayed, including the main menu and sub-menus. The live video remains visible in the background while navigating the menus.

Legends:



- **Warnings:** Critical instructions that must be followed to ensure personal safety and prevent permanent damage to the device or data.
-



- **Cautions:** Important instructions that must be followed to ensure safe, proper, and effective operation.
-



- **Notes:** Notes from the product team explaining specific and critical information about the device/feature.
-



- **Navigations:** Indicates the step-by-step path to access a feature. For example, the sequence below means navigating from [Main Menu] to [Reticle Settings], then [Reticle Colors], and finally selecting [Red]:

[Main Menu] > [Reticle Settings] > [Reticle Colors] > [Red]

Connecting to DNT App

Scan the QR codes below to download the DNT App and connect your scope to your mobile device.

By connecting your scope to your mobile device, you can:

- View the scope's live video feed remotely in real time.
- Manage, edit, or transfer recordings directly from your mobile device.
- Edit Ballistic Profiles and sync them to your scope.



Android 9.0 and above



iOS 12.0 and above



- ThermNight 4K supports the One Tap Connect feature. Simply power on your scope and open the DNT App. The app will automatically detect your scope and prompt you to connect. For detailed instructions, please refer to the "Connections" section.
-

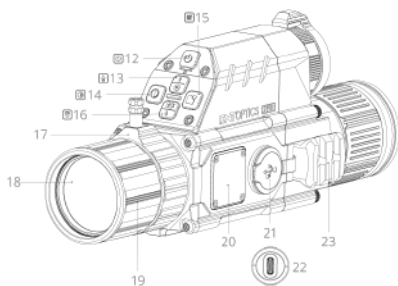
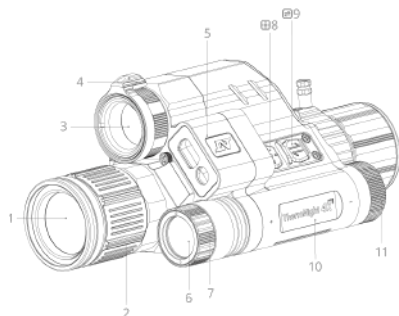
Introduction

As the next evolution of DNT's flagship multispectral series, the ThermNight 4K integrates an ultra-sensitive thermal sensor, a 4K day/night vision sensor, and a precision ballistic calculator into a compact form factor. This combination enables rapid target detection, precise identification, and accurate engagement in any environment, lighting condition, or distance, making it the ideal choice for hunters, shooters, and outdoor enthusiasts.

Features

- **4K 3840×2160 Day/Night CMOS**
Ultra-detailed imaging for clear target identification
- **≤18 mK NETD, 12 μm Thermal Sensor**
Enhanced sensitivity for fine thermal detail detection
- **Dual Channel Picture-in-Picture (PiP)**
Thermal for detection, digital for detail confirmation
- **Laser Rangefinder with DNT Ballistic Engine**
5–2100 yd ranging with real-time ballistic correction
- **3-6x Lossless Zoom**
Preserves detail and clarity during magnification
- **1920×1080 @ 60 Hz Micro-OLED Display**
Smooth, high-contrast display for extended viewing comfort
- **Compact & Rugged Design**
Built for durability in demanding field conditions
- **Thermal Auto Zeroing**
Zero digital channel only; thermal channel auto-aligns
- **DNT One Tap Connect**
Fast app pairing for control, sync, and media transfer

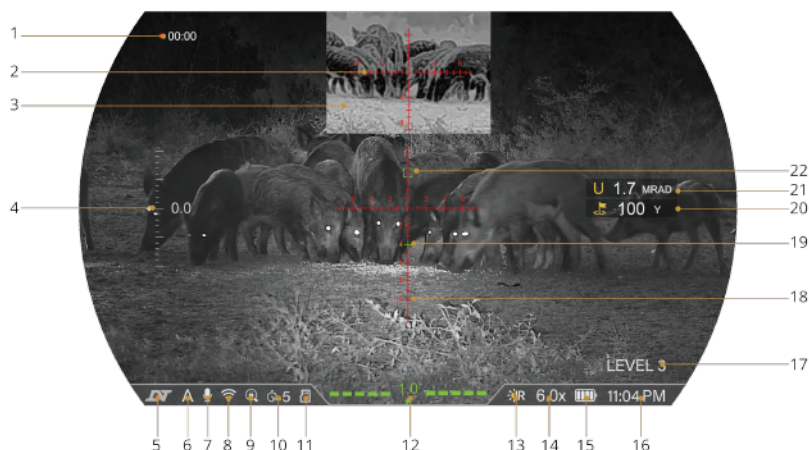
Device Overview (Objective Side)



1. Day/Night Objective Lens
2. Day/Night Focus Ring
3. Thermal Objective Lens
4. Thermal Focus Ring
5. LRF Module
6. IR Illuminator Aperture
7. IR Focus Ring
8. LRF Button
9. Channel Switch Button
10. Battery Compartment
11. Battery Cap

12. Power Button
13. Menu Button
14. Day/Night Button
15. PiP Button
16. Record Button
17. Zoom Ring with Throw Lever
18. Ocular Lens
19. Diopter-adjustment Ring
20. Wi-Fi Module
21. USB-C Cover
22. USB-C Port
23. Side Picatinny Rail

On-Screen Display Elements



- | | |
|-------------------------------------|-------------------------------|
| 1. Recording Indicator* | 12. Roll Angle Indicator |
| 2. Picture-in-Picture (PiP) Reticle | 13. IR Illuminator Indicator* |
| 3. PiP Window | 14. Current Zoom Level |
| 4. Tilt Angle Indicator | 15. Battery Level Indicator* |
| 5. DNT Logo | 16. Current Time |
| 6. Current Unified Profile* | 17. Screen Brightness Level |
| 7. Microphone Indicator* | 18. Main Window Reticle |
| 8. Wi-Fi Indicator* | 19. Holdover Marker* |
| 9. Thermal Zoom Lock Indicator | 20. Ranging Result |
| 10. Auto NUC Countdown* | 21. Ballistic Solution |
| 11. Storage Error Indicator* | 22. LRF Marker |

Battery Level Indicator

Icon	Battery Level
	100% - 75%
	75% - 50%
	50% - 25%
	25% - 10%
	< 10%
	Powered by USB-C

IR Illuminator Indicator

Icon	IR Illumination
	Off
	Auto
	Level 1
	Level 2
	Level 3
	Level 4
	Level 5



- **Recording Indicator:** Indicates the recording status. The timer shows the current video recording duration.
- **Unified Profile:** The ThermNight 4K links 10 zeroing profiles (A-J) one-to-one with 10 ballistic profiles (A-J). Selecting profile 'A' means the scope is using both zeroing profile A and ballistic profile A at the same time.
- **Microphone Indicator:** Indicates that the recorded video has sound. (No icon will be displayed when [Audio Recording] is OFF.)
- **Wi-Fi Indicator:** Indicates [Wi-Fi] is ON. (No icon will be displayed when [Wi-Fi] is OFF.)
- **Auto NUC Countdown:** Appears 5 seconds before the NUC commences. See "NUC" section for more information.
- **Storage Error Indicator:** Indicates when an internal storage error has occurred.
- **Holdover Marker:** Indicates the calculated holdover point of aim (POA). It appears only when the [Holdover] aiming method is selected. (In [Dial-In] Mode, reticle will change to calculated position.)

Specifications

Model	TNC4K219R
--------------	------------------

Digital Day/Night Specifications

Sensor Resolution	3840 × 2160 pixels
Sensor Frame Rate	30 fps
Objective Lens	50 mm f/1.8
Base Magnification	3x
Digital Magnification	3x, 4.5x, 6x, 9x, 12x, 18x, 24x
Field Of View (FOV) Horizontal / Vertical / Diagonal	8.8° / 4.9° / 10.1°
Linear FOV (yd @100 yd m @ 100 m) Horizontal / Vertical / Diagonal	15.4 / 8.6 / 17.6

Thermal Specifications

Sensor Type	Uncooled thermal detector
Sensor Resolution	256 × 192 pixels
Sensor Frame Rate	40 fps
Pixel Pitch	12 μm
NETD Noise Equivalent Temperature Difference	≤18 mK (@25°C / 77°F)
Objective Focal Length	19 mm
Base Magnification	2x
Digital Magnification	2x, 3x, 4x, 5x, 6x, 7x, 8x
Field Of View (FOV) Horizontal / Vertical / Diagonal	9.2° / 6.9° / 11.5°
Linear FOV (yd @ 100 yd m @ 100 m) Horizontal / Vertical / Diagonal	16.2 / 12.1 / 20.2

Physical Specifications

Net Weight	737 g / 26.0 oz
Dimensions	196 × 82 × 78 mm / 7.7 × 3.2 × 3.1 in
Operating Temperature	-20 to 50°C / -4 to 122°F
Ingress Protection Rating	IP67
Recoil Rating	800Gs / .50 BMG

Display & Ocular Specifications

Display Type	0.49" Micro-OLED
Display Resolution	1920 × 1080 pixels
Display Refresh Rate	60 Hz
Eye Relief	65 mm

Peripheral Specifications

Battery Type	Rechargeable 21700 Flat-top Li-ion Battery
Operating Time	5h 45m
External Power Supply	5 V USB-C
Ranging Distance	5-2000 m / 5-2100 yd
Storage	Built-in Storage, 64 GB
Connections	Wi-Fi / DNT App

Start Using

This section covers everything you need to know to get your ThermNight 4K ready to use for the first time.

Power Supply

The ThermNight 4K is powered by an external rechargeable flat-top 21700 battery which provides up to 5 hours and 45 minutes of operation. When the battery is low, it must be replaced. A 5-volt USB-C external power source can also be used to power the device directly.

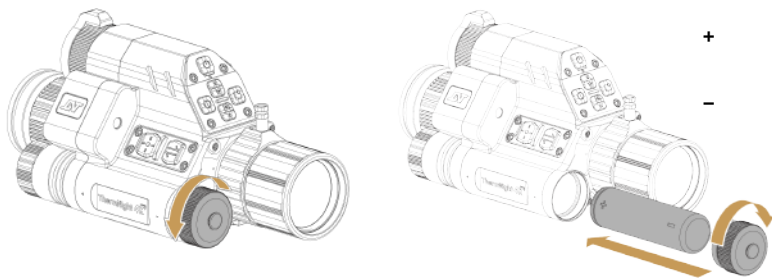


- Please use only the charger and batteries offered by DNT.



- ThermNight 4K does not support charging the battery via the USB-C port. To charge the battery, please use an external battery charger.
- When the battery level drops below 20%, range finding will stop and the maximum IR brightness will gradually decrease.

Installing Battery



1. Twist the **Battery Cap** counterclockwise to remove it.
2. Insert the 21700 battery into the **Battery Compartment**, with the positive (+) end facing inward.
3. Press the **Battery Cap** against the battery's negative (-) end and twist it clockwise until fully tightened.

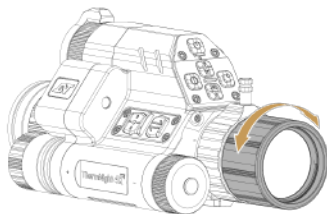
Diopter and Focus Adjustment

Diopter Adjustment

This adjustment helps achieve the best screen clarity for the user's eye and is independent of the target (therefore, you can set it even with the objective lens cap closed).

1. Look through the **Ocular Lens** from about 65 mm / 2.6 in away. You should see the entire screen, although it may not yet be adjusted for your eyes.
2. Slowly rotate **Diopter-adjustment Ring** clockwise or counterclockwise until you achieve the best screen clarity.

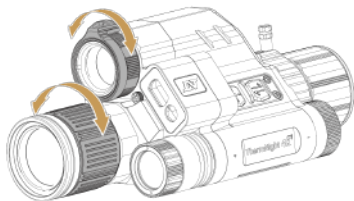
Once set, no further adjustment is needed.



Focus Adjustment

Users may need to adjust the focus to achieve optimal clarity when viewing targets at different ranges.

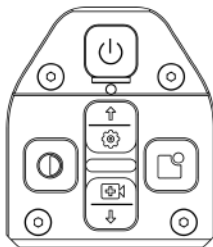
1. Make sure the diopter is adjusted, and you have perfect vision of the screen.
2. If the screen can't display the target clearly, slowly rotate either focus ring clockwise or counterclockwise until the screen displays the target perfectly clear.



TNC4K219R

Upper Ring - Thermal Focus
Lower Ring - Day/Night Focus

Main Screen Controls



Power Button



PRESS → Toggle Standby Mode ON/OFF

LONG-PRESS → Turn the Device ON/OFF

Menu Button



PRESS → Cycle Reticle Colors

LONG-PRESS → Enter [Main Menu]

Double-Press → (PiP-Dual Mode) Toggle Thermal Zoom Lock ON/OFF

Day/Night Button



PRESS → (Day/Night) Cycle IR Brightness
→ (Thermal) Cycle Thermal Palettes

LONG-PRESS → (Day/Night) Switch between day and night mode
→ (Thermal) Perform Manual NUC (Non-Uniformity Correction)

PiP Button



PRESS → Cycle Screen Brightness

LONG-PRESS → Toggle Picture-in-Picture (PiP) ON/OFF

Double-Press → Cycle Thermal Image Modes (Natural, Enhanced, Highlight)

Record Button



PRESS → Start/Stop Recording

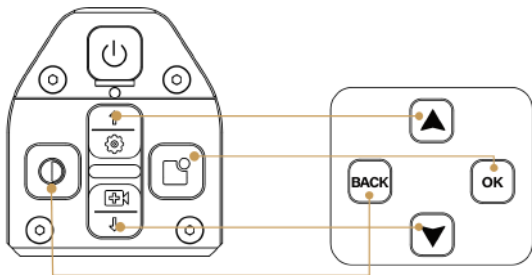
LONG-PRESS → Perform Manual RAV (Recoil Activated Video)

Menu Navigation

In Main Screen, long-press **Menu Button**  to enter [Main Menu].

In Menu

Menu includes the main menu and all sub-menus. In Menu, use **Menu Button**  and **Record Button**  to Navigate UP and DOWN, press **PiP Button**  to confirm selection, and **Day/Night Button**  to exit current screen.



When Adjusting Values in [Zeroing] Page

1. Press **Menu Button**  or **Record Button**  to navigate UP or DOWN.
2. Press **PiP Button**  to select an item and start adjusting the value.
3. Press **Menu Button**  to INCREASE the value.
4. Press **Record Button**  to DECREASE the value.
5. Press **Day/Night Button**  to finish adjustment.

When Adjusting Values in [Ballistic Data Settings] and [Date/Time] Page

1. Press **Day/Night Button**  or **PiP Button**  to cycle among digits.
2. Press **Menu Button**  to INCREASE the selected value.
3. Press **Record Button**  to DECREASE the selected value.
4. Long-press **PiP Button**  to save and exit.
5. Long-press **Day/Night Button**  to exit without saving.

Zeroing ThermNight 4K

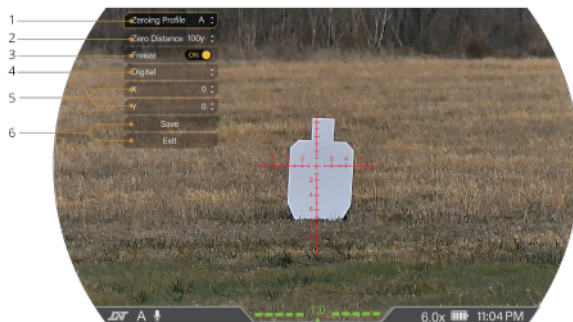
The ThermNight 4K features Thermal Auto Zeroing, eliminating the need to zero both channels manually. Once you complete a one-shot zeroing on the day/night channel, the thermal reticle will automatically adjust to match the point of impact (POI). To use this feature, ensure that your [Zero Distance] is accurately configured.

The device provides 10 zeroing profiles (A - J) and 10 ballistic profiles (A - J). These profiles are linked one-to-one; each zeroing profile is automatically paired with its corresponding ballistic profile (e.g., Zeroing Profile A links to Ballistic Profile A).

Zeroing Menu



- To Enter the Zeroing Menu: **[Main Menu] > [Zeroing]**



1. Select [Zeroing Profile] to choose your desired profile.
2. Select [Zero Distance] and press **LRF Button** to measure the zero distance. The measured value will be automatically updated in the [Zero Distance] field, though manual adjustment of this value is also permitted. The unit of measurement for Zero Distance remains synchronized with the [Ranging Unit] setting.
3. Select here to switch between Digital (Day/Night) and Thermal channel. When you [Save] Zeroing Profile in one channel, the system will also prompt you to switch and verify the other.
4. In the Zeroing Menu, press **Power Button** to freeze/unfreeze the current image or select [Freeze] and toggle with **Menu Button** .
5. Select [X] and [Y] to adjust the horizontal and vertical positions of the reticle respectively.
6. Select [Save] to save and exit; or select [Exit] to exit without saving.

One Shot Zeroing

1. Make sure the scope is properly mounted and held steady. Switch to the Day/Night channel.
2. Find/Place a target at your desired zero distance.
3. Enter the [Zeroing] Menu and select the zeroing profile.
4. Adjust zoom level and focus for a clear view of the target.



- Zoom Level will be locked once entering the [Zeroing] menu for maximum accuracy.

5. Select [Zero Distance] to adjust the zero distance. Press **LRF Button** to activate continuous ranging.
6. Aim steadily at the target with the LRF marker, then press **LRF Button** again to confirm the measurement. The measured value will automatically update in the [Zero Distance] field.
7. If the measured distance is inaccurate, press either **Menu Button** or **Record Button** to manually adjust zero distance.

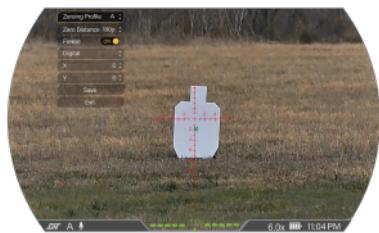


Figure 1

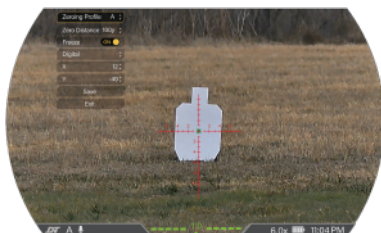


Figure 2

8. Aim at the target using the center of the reticle as your point of aim (POA), then determine the point of impact (POI, illustrated as **x** on **Figure 1**).
9. Move the reticle back to the original POA, then freeze the image.
10. In [X] and [Y], adjust the reticle position so that its center aligns with the POI **x**, as shown in **Figure 2**.

11. Select [Save] and confirm to complete zeroing. Your Day/Night channel POA is now aligned with the POI at designated distance.
12. After saving, a window will pop up and prompt you to go to the Thermal channel, select [OK] to go to the Thermal channel.

Thermal Auto Zeroing

The Thermal Auto Zeroing function automatically adjusts the thermal reticle position while you are zeroing the Day/Night channel. By seamlessly aligning the Thermal channel POA with the Day/Night channel POA, this feature eliminates the need for separate calibration, streamlining the dual-channel zeroing process.



- Always zero Day/Night channel first.
 - Thermal Auto-Zeroing is unidirectional. It only activates when the Day/Night channel reticle coordinates are modified. Moving the Thermal channel reticle independently will not alter the saved Day/Night reticle position.
 - The calculated Thermal channel reticle position may vary slightly from the actual POI. Each time the Day/Night reticle is adjusted, follow the on-screen prompt to switch to the Thermal channel and fine-tune its position for absolute precision.
-

IR Illumination



- IR illumination is invisible and may cause eye damage. When the IR Illuminator is on, **DO NOT** point the device at people.
- IR illuminator generates heat. To reduce the risk of fire, **DO NOT** leave the device un-attended while the illuminator is on.

Toggling IR Illuminator

When Main Screen displays a night vision image or when you are in [Dual Mode], the IR indicator icon appears in the status bar. Press **Day/Night Button**  to cycle the IR illuminator through [Off], levels 1–5, and [Auto].

The IR illuminator turns off automatically when night vision is inactive. It defaults to off when returning from day mode or standby but restores its previous state when switching back from the Thermal channel.

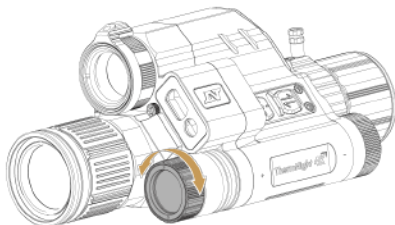


- If the IR light is turned on while viewing the night vision in [Dual Mode] main window, it will stay on when you switch night vision to the PiP window. The status bar will always show the illuminator's current state.
- IR Illuminator turns off 30 min after activation; Level 4-5 lasts 10 min max.

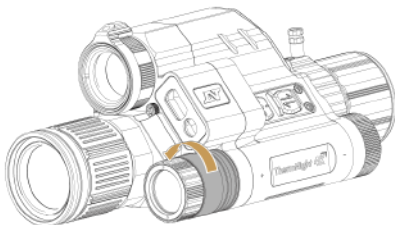
Focusing IR Beam

Depending on the target distance, you may need to rotate the **IR Focus Ring** to modify the width or focus of the IR beam. A wide (flood) beam provides broader coverage, whereas a narrow (focused) beam facilitates long-range illumination.

The included IR-850 illuminator is designed to prioritize distance over field of view, delivering illumination up to 450 yards. Consequently, a dark peripheral ring may be present at 3x base magnification.



Adjusting Beam Focus



Removing IR illuminator

Functions

Power

Powering ON/OFF ThermNight 4K

Long-press **Power Button** to power ON/OFF the device.

Power Indicator Description

	Solid Blue	Device is powered on and operating
	Solid Orange	Device is in standby
	Blinking Orange	Device is performing a firmware update

Standby ON/OFF

When the scope is powered ON and in Main Screen, press **Power Button**  to put the scope into Standby mode.

When the scope is in Standby mode, press **Power Button**  to return to Main Screen.

Resuming from Standby should take less than 3 seconds, while powering on takes around 10 seconds.

DNT recommends putting the device into Standby mode whenever the device is idle to maximize battery life.



- The thermal shutter might not close automatically when entering Standby mode. Keep the device away from intense heat sources to prevent permanent thermal sensor damage.
-



- The scope continues to consume power in Standby mode. To prevent battery drain, refer to the next section to enable [Auto Power-Off].
 - If the scope is recording, entering Standby mode will automatically stop and save the current clip. Once the device is resumed from Standby, it will immediately initiate a new recording session.
-

Auto Power-Off

The Auto Power-Off function will automatically turn off the scope after it enters Standby for a set duration (10, 20, or 30 minutes).



- Set this function up through: **[Main Menu] > [Function Settings] > [Auto Power-Off]**



- This function only works when the scope is in Standby mode. It will not automatically put the scope into Standby.
 - DNT recommends enabling [Auto Power-Off] to maximize battery efficiency and avoid unwanted battery drain.
-

Display

Adjusting Screen Brightness

In Main Screen, press **PiP Button**  to cycle through five brightness levels.

Adjusting Reticle Style and Colors

The ThermNight 4K offers nine reticle styles and five reticle colors for all-scenario adaptability. Users can change the style and color for the Day/Night and Thermal channels independently through:



- [Main Menu] > [Reticle Settings] > [Digital Reticles] / [Digital Reticle Colors] / [Thermal Reticles] / [Thermal Reticle Colors]
 - In Main Screen, press **Menu Button**  to cycle through five reticle colors for the current channel.
-

Zooming IN/OUT

In Main Screen, rotate the **Zoom Lever** to adjust among seven zoom levels for both the Day/Night and the Thermal channel simultaneously.



- Because the magnification is dictated by the physical position of the **Zoom Lever**, the scope naturally retains your selected zoom level even after powering off the device.
-

Spectral Channels and Day / Night Modes

The ThermNight 4K has two spectral channels: a digital Day / Night channel and a thermal imaging channel. In Main Screen, press the **Mode Switch Button**  to switch between the two channels.

Digital Day / Night channel

This channel uses an 8-megapixel 3840 × 2160 CMOS image sensor to capture vivid daytime details and crisp, dynamic images in low-light conditions.

When in the digital channel, long-press the **Day/Night Button**  to switch between Day Mode and Night Mode.

Thermal Channel

This channel uses a professional-grade uncooled thermal detector to pick up infrared signals, making targets stand out from their camouflage in all lighting conditions.

Picture-in-Picture Functions

In Main Screen, long-press **PiP Button**  to toggle the PiP function. When PiP is enabled, a smaller PiP window will appear at the top of the screen, displaying complementary images to the user's Main Screen. The PiP window takes up 10% of the entire screen.



- Users can choose between two modes that provide different channel combinations through:
- **[Main Menu] > [Digital/Thermal Toggle] > [Digital] / [Thermal] / [Dual Mode]**

[Digital] / [Thermal]

The Main Screen displays the currently selected channel, while the PiP window shows the same channel at 2x magnification. (e.g., In [Digital] Mode, if Main Screen is set to Night Vision at 12x, the PiP window will display Night Vision at 24x).



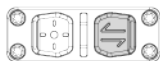
Press **Channel Switch Button** to switch between channels.



[Dual Mode]

The PiP window displays the other channel from the Main Screen. Rotating the Zoom Lever will change the zoom level of both channels. (e.g., If Main Screen is at Night Vision at 3x,

the PiP window will display Thermal at its respective base magnification) Users can view both channels together.



Press **Channel Switch Button** to switch the position of the two channels.



- Users can choose among the three positions for the minor window through:
- **[Main Menu] > [PiP Settings] > [Left] / [Center] / [Right]**

Thermal Zoom Lock

This function locks the Thermal channel at a lower magnification level (either base or 2x base magnification) to maintain an optimal spotting field of view (FOV). It is typically used in conjunction with PiP mode. When [Thermal Zoom Lock] is enabled, the Thermal channel remains at a wider, lower power for situational awareness, while the Day/Night channel can be zoomed in independently to capture close-up target details and facilitate precise aiming.

- [Off]: The Thermal channel zooms in and out simultaneously with the Day/Night channel.
- [1x]: The Thermal channel remains locked at its base magnification.
- [2x]: The Thermal channel remains locked at 2x its base magnification.



Rotating **Zoom Ring** only zooms day/night image



- Users can choose from the three options in: **[Main Menu] > [Thermal Zoom Lock]**

Recording

Video Recording

In Main Screen, press **Record Button**  to start recording. During a recording session, press **Record Button**  again to stop and save the current clip. All recorded video files are saved to your scope's internal storage.



- Each video is limited to a maximum of 10 minutes (unless [Loop Recording] is enabled). Once the time limit is reached, the recording will stop automatically and save the file.

Loop Recording

Loop Recording is designed for users who want to record their entire session non-stop.

When [Loop Recording] is enabled, once the user presses **Record Button**  to start recording, the device will continuously record in fixed-length segments.

Once the selected duration is reached, the scope automatically saves the current segment and immediately initiates a new one.

This cycle continues until the user presses **Record Button**  again to stop.



- [Main Menu] > [Function Settings] > [Loop Recording]**
- In [Loop Recording], you can choose from [1 minute], [3 minutes], [5 minutes], or [Off]. Selecting any time duration automatically activates the feature.



- Please closely monitor the available storage in ThermNight 4K through: [Main Menu] > [System Settings] > [Available Storage]. When [Loop Recording] is enabled, newly recorded videos will be saved even if storage is full by automatically overwriting the oldest saved files sequentially to free up space.

Recoil Activated Video (RAV)

The RAV function records ten seconds before and ten seconds after triggering, which can be automatic or manual, depending on settings.

- [Auto Mode]: When the recoil force reaches 450 G, the device automatically triggers RAV.
- [Manual Mode]: RAV will not trigger automatically. Instead, long-pressing **Record Button**  to trigger manual RAV.
- [Off]: RAV will be disabled.



- Users can adjust RAV modes through:

[Main Menu] > [Recoil Activated Video] > [Auto] / [Manual] / [OFF]

- While RAV is recording, long-press **Record Button**  to extend RAV duration by 10 seconds. This extension can be repeated until the maximum duration of 120 seconds is reached.
- In [Auto Mode], long-press **Record Button**  will also manually trigger RAV.



- For reliable operation of RAV [Auto Mode], DNT recommends a user setup that generates a recoil force **greater than that produced by a .22LR cartridge**. Please note that the exact recoil needed varies by configuration and environment, DNT cannot guarantee RAV will trigger consistently.
 - If Auto RAV fails to register shot, long-press **Record Button**  will also trigger manual RAV.
-

Audio Recording

To record audio along with your video, enable this setting. It is enabled by default and can be toggled through:



- **[Main Menu] > [Function Settings] > [Audio Recording]**
-

When Audio recording is turned enabled, you will see the  icon on the status bar.

Thermal

Thermal Palettes

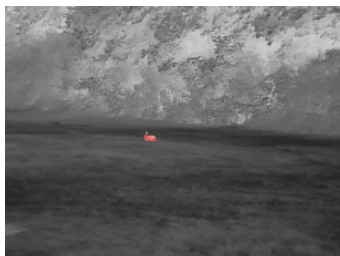
The ThermNight 4K offers four thermal palettes to accommodate preferences and ensure the most effective target acquisition in different circumstances.



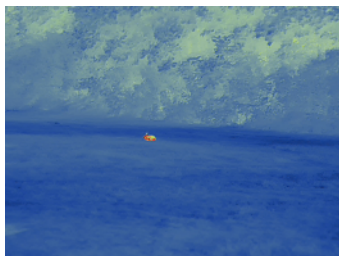
White Hot



Black Hot



Red Hot



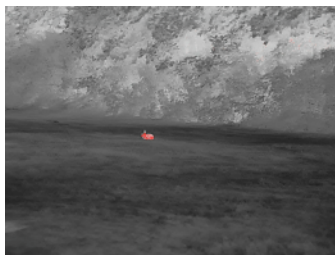
Iron Hot



- When the Thermal Channel is active in Main Screen, press **Day/Night Button**  to cycle through the four thermal palettes.
- Users can also select a specific palette from the menu through:
- **[Main Menu] > [Thermal Imaging Settings] > [Palettes]**

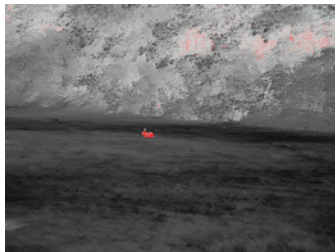
Thermal Imaging Modes

ThermNight 4K provides three thermal imaging modes to accommodate different scenarios: [Natural Mode], [Enhanced Mode], and [Highlight Mode].



Natural Mode

This is the default thermal imaging mode, reproducing the thermal environment as accurately as possible. Smooth gradients between different temperature intervals can be observed.



Enhanced Mode

This mode increases the contrast between temperatures, providing finer details compared to Natural Mode. It is ideal for highlighting the outline of a target. However, this mode introduces more image noise than Natural Mode.



Highlight Mode

This mode suppresses less significant heat sources almost completely and emphasizes only the most significant targets, making it ideal for rapid target acquisition.



- Users can select thermal imaging modes from the menu through:
 - **[Main Menu] > [Thermal Image Settings] > [Thermal Imaging Modes]**
 - Apart from the three preset modes, users can also fine-tune the thermal image to their preference by changing **[Thermal Contrast]** and **[Thermal Brightness]**. Please refer to the sections below for details.
-

Thermal Contrast and Brightness

Thermal Contrast

Thermal contrast adjustment effectively expands or compresses the range of the active color palette.

- **Increasing Contrast:** “Stretches” the palette, making small temperature differences appear as distinct color changes. This highlights subtle faults but can make the image appear segmented.
- **Decreasing Contrast:** “Compresses” the palette, making large temperature differences appear as gradual color shifts. This creates a smoother image but can mask minor anomalies.

Thermal Brightness

The thermal imager maps different temperatures to different colors. Brightness control adjusts the overall intensity level of this color map.

- **Increasing Brightness:** Makes all temperature areas appear brighter. This may cause loss of detail in cooler, darker regions.
- **Decreasing Brightness:** Makes all temperature areas appear darker. This may obscure details in hotter, brighter regions.

Non-Uniformity Correction (NUC)

Thermal devices periodically perform NUC to ensure accurate and consistent imaging. During NUC, the thermal shutter temporarily drops, and the thermal image will freeze for 1 to 5 seconds. This is completely normal.

NUC is necessary for consistent thermal imaging, but it can briefly pause device operation. To help avoid interruptions during important moments, the ThermNight 4K features both Auto and Manual modes. In **[Auto Mode]**, a NUC countdown icon  will appear in the status bar 5 seconds prior to the pause.

Regardless of the mode, you can manually start an NUC by long-pressing the **Day/Night Button** .

Hotspot Tracking

When enabled, a red dot appears on the screen to indicate the hottest spot in the current image. Toggle this function through: **[Main Menu] > [Thermal Image Settings] > [Hotspot Tracking]**

DNT Ballistic Engine

The DNT Ballistic Engine integrates an ecosystem of DNT hardware and software to deliver streamlined, instantaneous, and dependable ballistic solutions for digital optics with LRF. Key capabilities include access to a comprehensive ballistic database via the DNT App and seamless wireless synchronization of ballistic profiles.

Furthermore, the system offers advanced analytical tools, including multi-BC (multiple ballistic coefficient) compensation, BC validation, moving target compensation, and customizable ballistic configurations through the DNT App. The scope features an integrated high-precision laser rangefinder and an on-board ballistic calculator that provides real-time solution visualization.

On-board Ballistic Calculator



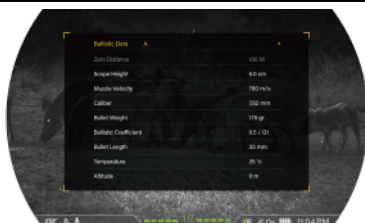
[Ballistic Calculator] Menu



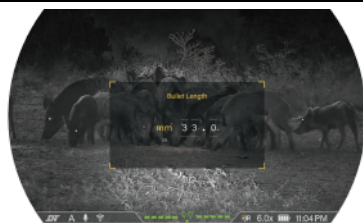
- All ballistic-related settings can be accessed through:
 - **[Main Menu] > [Ballistic Calculator]**
 - In the Ballistic Calculator interface, select the first option **[ON/OFF]**, then press **PiP Button**  to toggle ballistic calculation.
-

Ballistic Data Settings

This sub-menu stores ten Ballistic Data profiles (A-J). You can edit them on-board or through the DNT App. The ThermNight 4K uses a unified profile system, meaning the ten zeroing profiles (A-J) and ten ballistic profiles (A-J) are linked one-to-one. Each Zeroing Profile is automatically paired with its corresponding Ballistic Profile (e.g., Zeroing Profile A links to Ballistic Profile A).

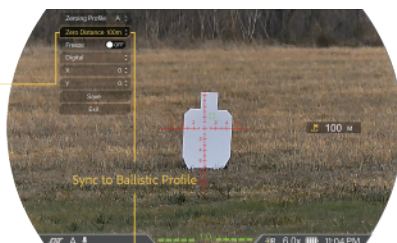


[Ballistic Data Settings] Menu



Value Adjustment Menu

The [Zero Distance] field in [Ballistic Data Settings] cannot be changed manually because it syncs automatically with the [Zero Profile].





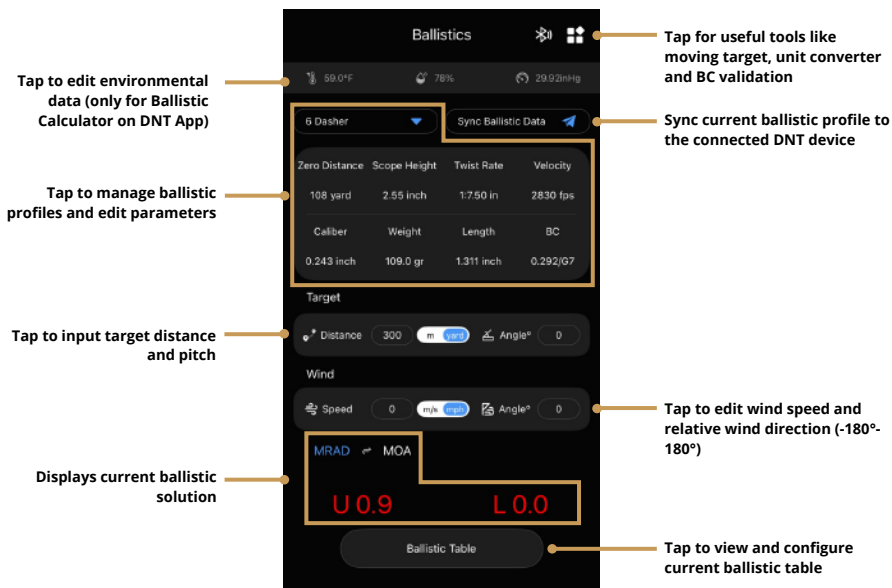
- Navigate up or down with **Menu Button**  or **Record Button** . Press **PiP Button**  to enter the data adjustment screen, press **Day/Night Button** to exit.
- In the data adjustment screen, press **Day/Night Button**  or **PiP Button**  to navigate left or right, and press **Menu Button**  or **Record Button**  to increase or decrease values.
- Long-press **PiP Button**  to save and exit the data adjustment screen.
- Long-press **Day/Night Button**  to exit without saving.

Managing Ballistic Profiles with DNT App

In addition to entering ballistic data manually using the device buttons, you can use the DNT App to create, edit, and sync custom profiles to your scope easily.

DNT App Ballistic Calculator

See the “Connections” chapter to link your scope to the DNT app, then tap the Ballistics icon  to enter the Ballistics page.



The main screen features a professional 6-DOF ballistic calculator that tracks the bullet's spatial movement and rotation, including roll, pitch, and yaw. It displays environmental data, ballistic profiles, and wind conditions, along with target distance and cant angle inputs. Once the information is entered correctly, the app automatically generates a ballistic table and displays the solution for your target distance.

Editing Ballistic Data

The DNT Ballistic Engine on DNT digital scopes currently doesn't account for environmental factors such as wind, temperature, altitude, and humidity. You can only sync your edited ballistic profiles to connected scopes through the DNT app, which includes the following parameters:

Ballistic Settings

6 Dasher

Zero Distance: 108 yd

Scope Height: 2.55 cm

Twist Rate (in): 1: 7.50 Left

Bullet or: Select Factory Ammo...

Caliber: 0.243 mm

Weight: 109.0 g

Length: 1.311 mm

Velocity: 2830 m/s

Ballistic Coefficient: 0.292 G1

E/W Adj.: 0.1MOA 1/2MOA 1/4MOA 1/8MOA

Cancel Save

Profile Name: This will also sync to the scope within the character limit. Tap to view and edit your saved profiles.

Zero Distance: On ThermNight 4K, only the unit will be synced.

Scope Height: Use the height from bore to center of day/night objective lens for ThermNight devices.

Twist Rate: The physical rate of rifling twist inside your barrel (e.g., 1 turn in 7.5 inches). You must also select the twist direction (Left or Right).

Bullet Parameters: You can typically find these data in manufacturer's data sheets, or to bypass manual parameter research, tap the "Select Factory Ammo..." option next to the "Bullet or" line.

This opens an onboard database of popular commercial ammunition. Selecting a factory loading automatically populates the correct Caliber, Weight, Length, and Ballistic Coefficient (BC) values, saving you from searching for manufacturer data sheets.

Aiming Method

The ThermNight 4K features two ballistic solution modes: **[Holdover]** and **[Dial In]**. **[Holdover]** mode displays a marker on your reticle, while **[Dial In]** mode moves the reticle to the calculated point of aim.



Aiming Mode – Holdover



Aiming Mode – Dial In

Displaying Ballistics

This sub-menu adjusts the unit of ballistic solutions; users can choose between **[MRAD]** / **[MOA]** / **[cm]** or **[inches]**.



- **[Main Menu] > [Ballistic Calculator] > [Display Ballistics]**
 - Navigate up or down with **Menu Button** or **Record Button**. Press **PiP Button** to confirm the selection.
 - To turn off ballistic display, select **[Off]**.
-

Ranging

Ranging Modes

Continuous Ranging

- Press **Ranging Button**  to turn on ranging. The screen will display the ranging icon and target distance.
- As the distance to the target changes, the range displayed will update in real time.
- Press **Ranging Button**  again to freeze the measurement and calculate ballistic solution based on the current result.
- To turn off ranging or clear ranging / ballistic results, long-press **Ranging Button** .

Single Pulse Ranging

- Press **Ranging Button**  to range once immediately. The screen will display the ranging icon, the target distance and the ballistic solution (if enabled).
- Regardless of whether a distance is successfully measured, only one measurement will be taken per press.
- Press **Ranging Button**  again to initiate a new measurement.
- To turn off ranging, long-press **Ranging Button** , or it will automatically turn off after 20 seconds of inactivity.

Timed Ranging

- Press **Ranging Button**  to start ranging. The screen will display the ranging icon and the target distance.
- Within the selected duration, as the distance to the target changes, the ranging result displayed will update in real time.
- Press **Ranging Button**  again during the countdown to stop it, this will freeze the measurement and calculate a ballistic solution using the current result. If there is no current reading, this will reset the timer instead.
- When the time expires, the screen will hold and display the final measurement. If the Ballistic Calculator is enabled, it will automatically use this final value to compute the solution.



- The user can select ranging modes through:
- **[Main Menu] > [LRF Settings] > [Ranging Modes] > [Continuous Ranging] / [Single Pulse Ranging] / [Timed Ranging 3s / 5s / 10s]**

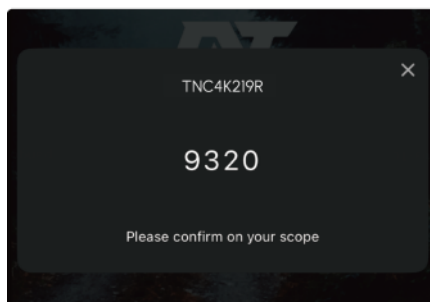
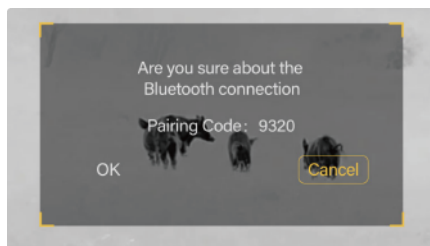
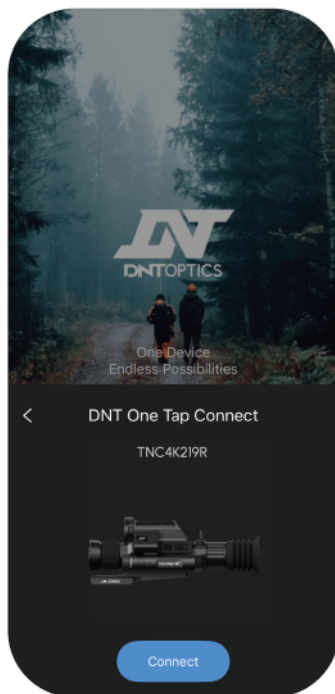


- Continuous Ranging updates distance constantly for moving targets but requires increased power consumption. Single Pulse Ranging performs one measurement per press, keeping the result static on the display for data logging. Timed Ranging updates measurements on-screen for a pre-set interval before displaying the final reading.
 - The LRF function shuts down automatically after three minutes of inactivity, clearing the LRF marker and all ballistic solutions, including the calculated POA.
-

Connections

One Tap Connect

One Tap Connect uses the scope's built-in Bluetooth Low Energy module for continuous detection and a seamless connection. You no longer need to manually turn on the scope's Wi-Fi or switch networks on your mobile device, as One Tap Connect handles these steps automatically.



1. Power on your scope, no other settings required.
2. Launch DNT App on your mobile device. If prompted, please grant the required permissions for "Bluetooth" and "Nearby Devices".

3. A connection window will pop up within the App, signaling that your scope has been detected. Tap **"Connect"** to initiate connection.
4. A unique confirmation code will appear simultaneously on the App screen and inside the scope's display. Verify that the codes match, then confirm on the scope.
5. The automated pairing process will begin. Please wait a moment while the system synchronizes; the App will notify you once the connection is successful.
6. **Future Use:** Once this initial pairing is complete, the DNT App will automatically recognize and link to your scope every time the app is launched in the future.

-
-  • To ensure the One Tap Connect feature functions correctly, please grant Bluetooth permissions on your mobile device. These permissions allow the app to detect the device's integrated Bluetooth Low Energy signal, which is active whenever the unit is powered on; without them, the device will remain undetectable.
-

-  • **App Version:** Ensure your DNT App is updated to v1.4.6 or higher to support One Tap Connect.
- **Timeout Window:** The app will actively scan for devices for 2 minutes after it is launched. The scan will then stop to optimize battery consumption.
 - **Manual Refresh:** If your scope is not found within the timeout window, simply tap [Device]  icon in the app to restart the scanning process.
-

Manual App Connection

If One Tap Connect is unavailable, you can establish a connection manually by following these steps:

1. Turn on the device Wi-Fi: **[Main Menu] > [Connections] > [Wi-Fi] > [On]**



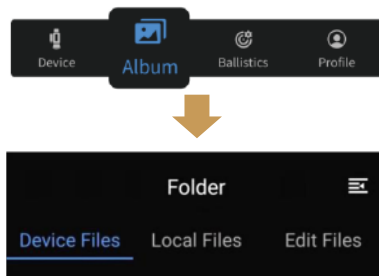
- Open the DNT App, tap [Add Device], select [ThermNight Multispectral], find your model, and tap it to add. This will take you to WLAN settings.
- In your phone's WLAN Settings, turn on Wi-Fi, find the device's Wi-Fi name, and enter the corresponding password (normally 12345678) to connect your mobile device to the scope Wi-Fi. If prompted, select the option to "use without internet" on your mobile device.



- Your Device is now connected, tap the device tile in Device page to start viewing the live footage, and when new firmware is released, a blue "Firmware Update" button will appear, tap it to start the Over The Air (OTA) update.

Accessing Recorded Videos with DNT App

In the DNT App, under the [Album] tab, there are three sections: [Device Files], [Local Files], and [Edit Files].



Device Files

This is where all recorded videos are stored. You can only access these files when the device is connected to your phone via Wi-Fi.

Local Files

This is where videos saved from the device are stored within the app. Tap a video to preview it, then use the four buttons in the upper right corner to **edit** (Merge, Trim, Slow), **save** it to your phone/tablet's album, **share** it on social media, or **delete** it.

Edit Files

This section displays videos that have been edited using the Merge, Trim, or Slow functions. You can perform the same actions as in Local Files: **edit** again, **save** to album, **share**, or **delete**.

Icon	Button Name	Function Description
	Edit	Edit the video (Merge, Trim, Slow).
	Save to Album	Save the video to your phone or tablet's album.
	Share	Share the video on social media platforms.
	Delete	Delete the video.
	Save to Local Files	Save the video from Device Files to Local Files in the app.

To Save Videos to Local Files

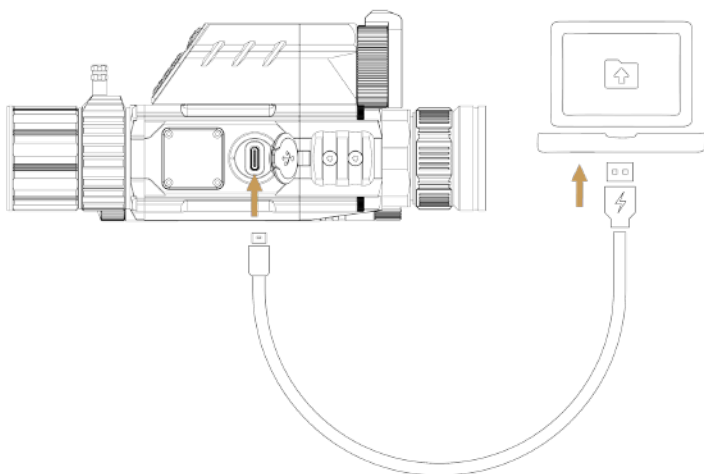
In the [Device Files] and [Edit Files] tabs, select the video you want, and tap the **Save to Local Files** button in the upper right corner to save it to [Local Files]. Once saved, you can access the video within the app even when the device is disconnected.

To Save Videos to Your Phone/Tablet's Album

First, save the video from [Device Files] to [Local Files]. Then, go to [Local Files], open the video you want, and tap the **Save to Album** button in the upper right corner to save it to

your phone or tablet's album. You can also save edited videos by following the same steps from the [Edit Files] section.

USB-C Connection



Use the **Data Cable** in the box to connect your scope with your computer's USB Port. The scope will appear on your computer as a USB drive. You can then preview and manage your recordings.



- ThermNight 4K connects to both Windows and Mac computers
-

Appendix

Table of Controls



Power Button

Status	Short-Press	Long-Press
Power-Off	--	Power ON Device
Main Screen	Enter Standby	Power OFF Device
Standby	Exit Standby	--
Zeroing Menu	Freeze / Unfreeze	--



Menu Button

Status	Short-Press	Long-Press	Double-Press
Main Screen	Cycle Reticle Color	Enter Main Menu	(Dual-Mode) Toggle [Thermal Zoom Lock]
Menu	Navigate UP	--	--
Changing Value	Increase Value	Rapid Increase	--



Day/Night Button

Status	Short-Press	Long-Press
Main Screen (Thermal)	Cycle Thermal Palettes	Perform Manual NUC
Main Screen (Digital)	(Night Mode) Cycle IR Level	Cycle between Day/Night Mode
Menu	Return / Cancel	--
Changing Value	Cancel	--
Date / Time	Navigate LEFT	Exit without Saving



Record Button

Status	Short-Press	Long-Press
Main Screen	Start / Stop Recording	Start RAV
Menu	Navigate DOWN	--
Changing Value	Decrease Value	Rapid Decrease



PiP Button

Status	Short-Press	Long-Press	Double-Press
Main Screen	Cycle Brightness	--	(Thermal Channel) Cycle Thermal Imaging Modes
Menu	Select / Confirm	--	--
Changing Value	Confirm	--	--
Date / Time	Navigate RIGHT	Save and Exit	--



LRF Button

Status	Short-Press	Short-Press Again	Long-Press
Single Pulse Ranging	Measure Once	Measure Again	Clear measurements
Continuous Ranging	Start Measuring	Stop Measuring	Clear measurements
Timed Ranging	Start Measuring	Restart Timer	Clear measurements



Channel Switch Button

Status	Short-Press	Status	Short-Press
PiP [Dual Mode]	Switch Channel Positions	PiP [Other Modes]	Switch between channels

Table of Menus

Icon	Description	Page
	Connections Turn Wi-Fi [ON] / [OFF]	
	Zeroing Enter Zeroing Menu	
	Reticle Settings (Digital / Thermal) Reticles: [1-FFP] / [2-FFP] / [3-SFP] / [4-SFP] / [5-SFP] / [6-SFP] / [7-SFP] / [8-SFP] / [Hide] (Digital / Thermal) Reticle Colors: [Red] / [Green] / [Yellow] / [Black] / [White] LRF & Holdover Markers: [01] / [02] / [03] LRF & Holdover Marker Colors: [Red] / [Green] / [Yellow] / [Black] / [White]	
	Ballistic Calculator Ballistic Calculation: [ON] / [OFF] Ballistic Data Settings Aiming Method: [Holdover] / [Dial-in] Display Ballistics: [MRAD] / [MOA] / [cm] / [in] / [Off]	
	Thermal Zoom Lock [OFF] / [2x] / [1x]	
	LRF Settings Ranging Modes: [Continuous Ranging] / [Single Pulse Ranging] / [Timed Ranging 3s / 5s / 10s] Ranging Units: [Meters] / [Yards]	
	PIp Settings [Off] / [Left] / [Center] / [Right]	
	Recoil Activated Video [Auto Mode] / [Manual Mode] / [OFF]	

	Digital / Thermal Toggle [Dual Mode] / [Digital] / [Thermal]	
	Digital Image Settings [Natural Mode] / [Color Enhancement]	
	Thermal Image Settings Thermal Imaging Mode: [Natural] / [Enhanced] / [Highlight] NUC: [Auto Mode] / [Manual Mode] Palettes: [White Hot] / [Black Hot] / [Red Hot] / [Iron Hot] Image Contrast: 1-5 Image Brightness: 1-5 Hotspot Tracking: Toggle [ON] / [OFF]	
	Function Settings Auto Power-Off: [Off] / [10 Minutes] / [20 Minutes] / [30 Minutes] Loop Recording: [Off] / [1 Minute] / [3 Minutes] / [5 Minutes] Audio ON/OFF: [ON] / [OFF] Gyroscope: [ON] / [OFF] / [Calibration] Screen Brightness: 1-6 Zeroing Freeze Countdown: [Off] [3s] [5s] [10s] Burn-In Protection: [ON] / [OFF]	
	System Settings Date / Time Language Setting: [English] / [Français] / [Español] / [Deutsch] / [Italiano] Format Restore Default Settings Available Storage Version No.	

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 must be installed and operated with a minimum distance of 20cm between the radiator and your body. Use only the supplied antenna.





Scan to View the Latest Version

www.dntoptics.com