

ThermNight **4K**



Day Night Technologies

User Manual

# Contents

|                                       |          |
|---------------------------------------|----------|
| <b>Contents .....</b>                 | <b>1</b> |
| <b>Read Before Use .....</b>          | <b>4</b> |
| Safety Instructions .....             | 4        |
| Package Contents .....                | 4        |
| Glossary .....                        | 5        |
| <b>Introduction .....</b>             | <b>6</b> |
| Features .....                        | 6        |
| Device Overview (Objective Side)..... | 7        |
| Device Overview (Ocular Side) .....   | 8        |
| Live View Elements .....              | 9        |
| Specification .....                   | 1        |
| <b>Start Using.....</b>               | <b>3</b> |
| Power Supply.....                     | 3        |
| Installing Battery .....              | 3        |
| Quick Controls.....                   | 4        |
| Menu Navigation.....                  | 4        |
| Diopter and Focus Adjustment .....    | 6        |
| Diopter Adjustment.....               | 6        |
| Focus Adjustment .....                | 6        |
| IR Illumination .....                 | 7        |
| Toggling IR Illuminator .....         | 7        |
| Focusing IR beam.....                 | 7        |

Zeroing ThermNight 4K.....8

    Zeroing Menu .....8

    One Shot Zeroing.....9

    Thermal Auto Follow .....10

Connecting to DNT App..... 11

**Functions ..... 12**

    Power ..... 12

        Powering ON/OFF ThermNight 4K.....12

        Standby ON/OFF .....12

        Auto Power-Off .....13

        Auto Standby.....13

    Display..... 14

        Adjusting Screen Brightness.....14

        Adjusting Reticle Style and Colors .....14

        Zooming IN/OUT .....14

        Spectral Channels and Day / Night Modes .....14

        Picture-in-Picture Functions .....15

        Thermal Zoom Lock.....16

    Recording..... 17

        Recording START/STOP .....17

        Loop Recording .....17

        Recoil Activated Video (RAV).....17

        Audio Recording.....18

    Thermal..... 19

        Thermal Palettes .....19

        Thermal Imaging Modes .....20

        Thermal Contrast, Brightness and Sharpness .....21

        Non-Uniformity Correction (NUC).....21

        Hotspot Tracking.....21

|                                                 |           |
|-------------------------------------------------|-----------|
| DNT Ballistic Engine .....                      | 22        |
| On-board Ballistic Calculator .....             | 22        |
| Ballistic Data Settings .....                   | 23        |
| Aiming Method .....                             | 24        |
| Displaying Ballistics .....                     | 24        |
| Ranging .....                                   | 25        |
| Ranging Modes .....                             | 25        |
| Connections .....                               | 26        |
| One Tap Connect .....                           | 26        |
| Manual App Connection .....                     | 27        |
| Accessing Recorded Videos via the DNT App ..... | 27        |
| USB-C Connection .....                          | 30        |
| <b>Appendix .....</b>                           | <b>31</b> |
| Table of Controls .....                         | 31        |
| Table of Menus .....                            | 33        |
| <b>FCC Warning .....</b>                        | <b>35</b> |

# 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 can generate excessive heat. Avoid pointing it at flammable objects.
- **DO NOT** leave device unattended with IR Illuminator on.
- **DO NOT** point the device at intense heat sources like 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 get in touch with 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

Mounts × 2

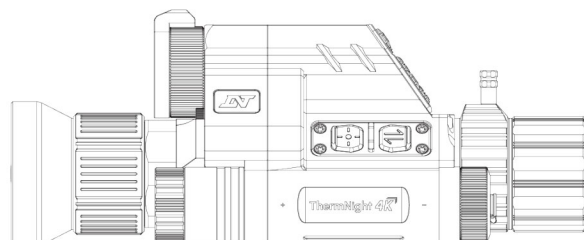
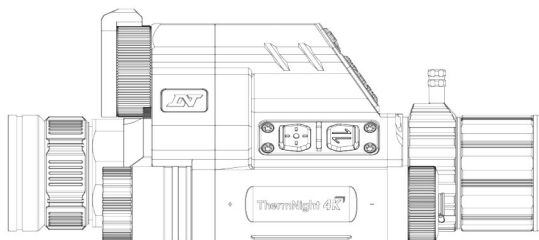
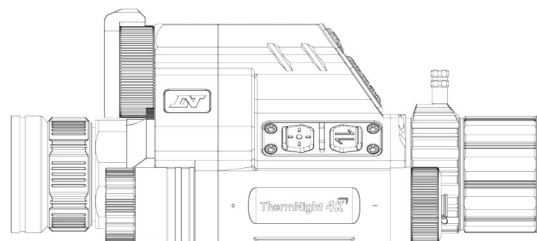
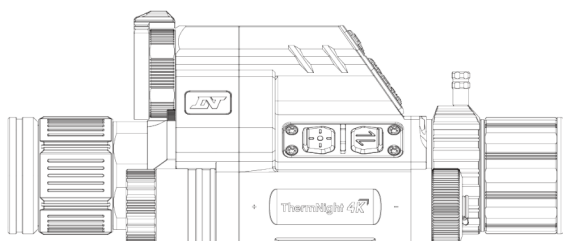
Threaded Eye Cup × 1

Microfiber Cloth × 1

Rubber Lens Cover × 1

USB-C Data Cable × 1

Literatures



## 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.

**Live View:** Refers to the main screen where live video is 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:** User is responsible for following these instructions to stay safe and prevent permanent damage to the device.



- **Cautions:** Follow these instructions to ensure safe and effective operation.



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



- **Navigations:** The instruction below means you first select [Reticle Settings] from the [Main Menu], then choose [Reticle Colors], and finally select [Red].
  - **[Main Menu] > [Reticle Settings] > [Reticle Colors] > [Red]**
-

# Introduction

The ThermNight Series is DNT's flagship multi-spectral digital scope that integrates cutting-edge thermal, full-color, night vision imaging, and range finding technologies into a compact form factor. It can be used in all weather & lighting conditions. This combination allows for faster detection of targets & provides high-quality digital images for identification.

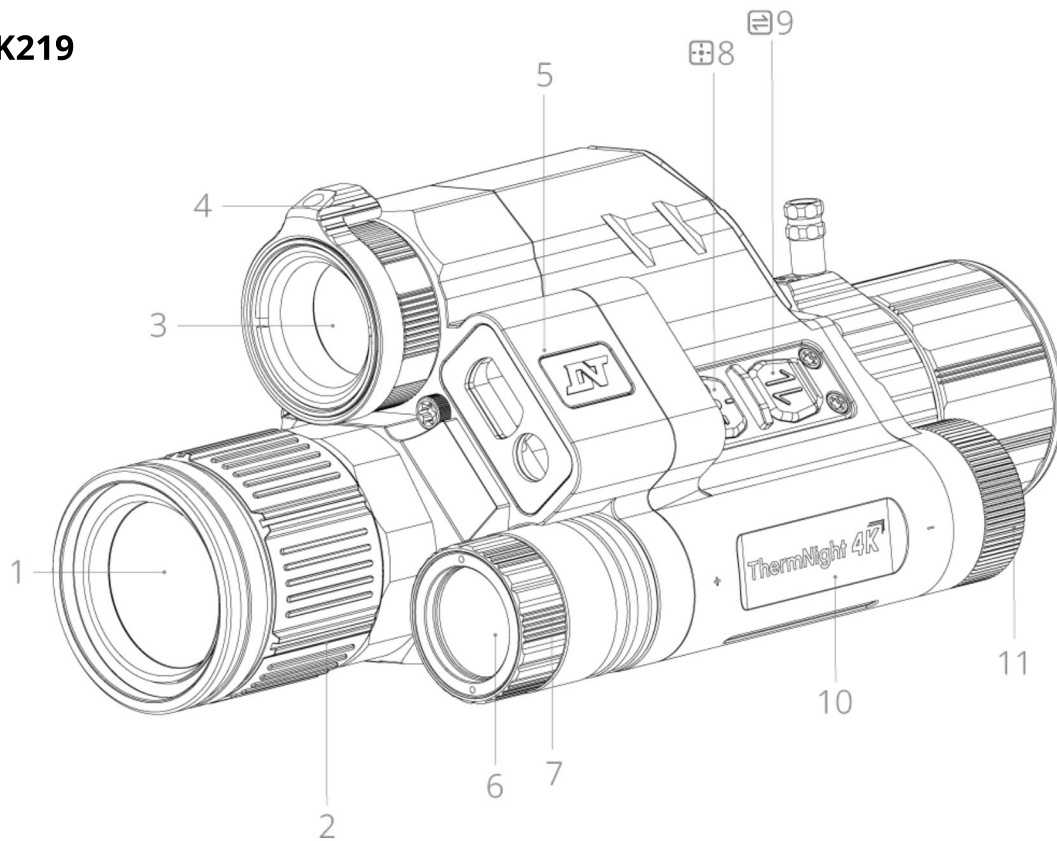
The ThermNight4K upgrades the Day/Night Sensor from the regular ThermNight from 1080p to 4K. Together with ThermNight's inherent versatile features, the ThermNight 4K series delivers reliable performance, ultra-clear 3-24x Day/Night imaging, making it the ideal choice for hunters, shooters, and outdoor enthusiasts.

## Features

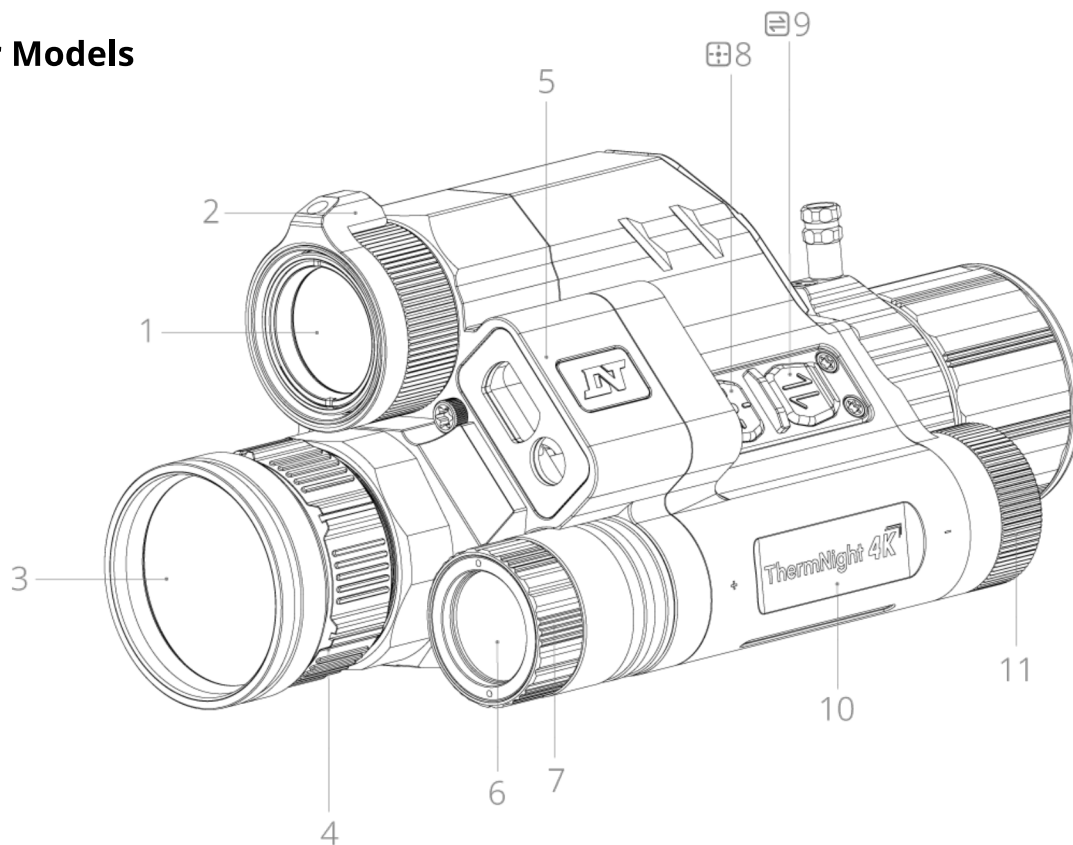
- 4K 3840 × 2160 pixels Day/Night CMOS
- ≤18 mK NETD, 12 μm pixel pitch Thermal Sensor
- 5-2000 m Range finding and Ballistic Calculation
- Up to 6x Lossless Zoom
- 1920 × 1080 @ 60Hz Micro-OLED Display
- Ultra Compact Design
- Auto Standby & Auto Power-Off
- Dual Channel Picture-in-Picture
- Thermal Auto Zeroing
- DNT One Tap Connection

## Device Overview (Objective Side)

### TNC4K219



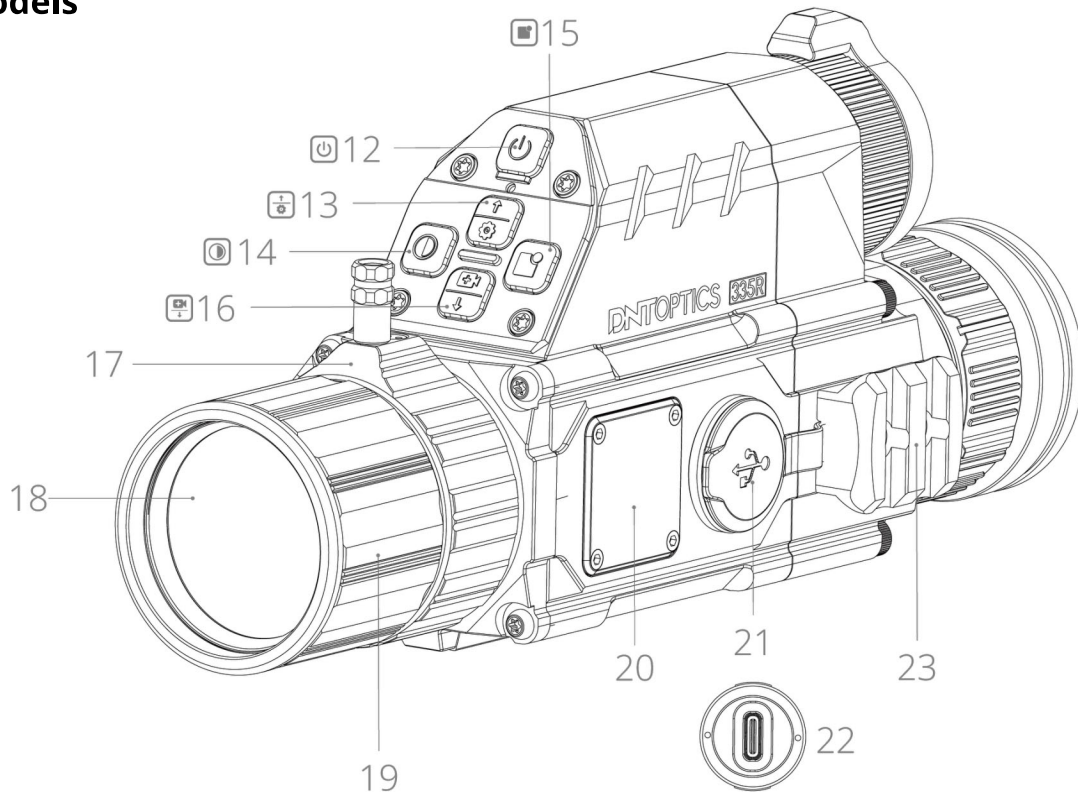
### Other Models



TNC4K219R has a different

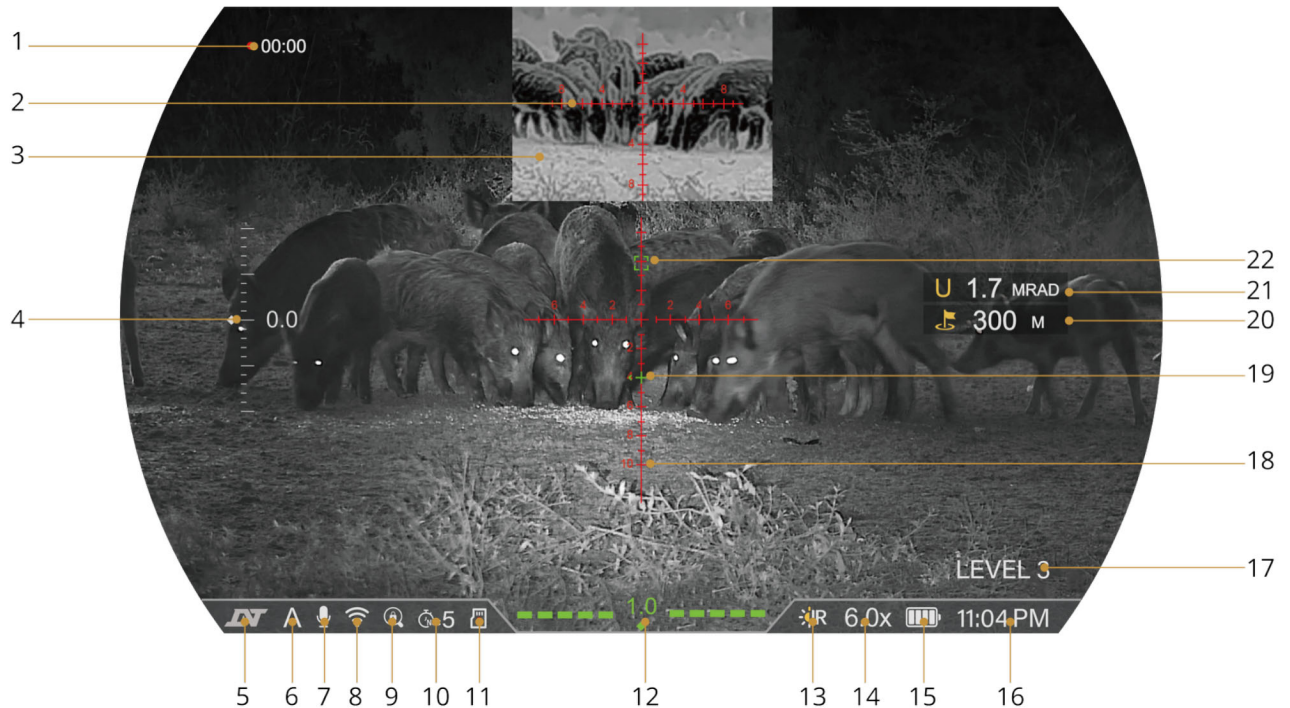
## Device Overview (Ocular Side)

### All Models



- |                             |                              |
|-----------------------------|------------------------------|
| 1. Day/Night Objective Lens | 12. Power Button             |
| 2. Day/Night Focus Ring     | 13. Menu Button              |
| 3. Thermal Objective Lens   | 14. Day/Night Button         |
| 4. Thermal Focus Ring       | 15. PiP Button               |
| 5. Rangefinder Module       | 16. Record Button            |
| 6. IR Illuminator Aperture  | 17. Zoom Ring w/ Throw Lever |
| 7. IR Focus Ring            | 18. Ocular Lens              |
| 8. LRF Button               | 19. Ocular Focus Ring        |
| 9. Channel Switch Button    | 20. Wi-Fi Enclosure          |
| 10. Battery Compartment     | 21. USB-C Cover              |
| 11. Battery Cap             | 22. USB-C Port               |
|                             | 23. Side Picatinny Rail      |

## Live View 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. Current Battery Level*    |
| 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. Hold Over 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.
- **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 display 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.

## Specification

| Spec. / Models                   | TNC4K219R                       | TNC4K335R | TNC4K635R | TNC4K650R |
|----------------------------------|---------------------------------|-----------|-----------|-----------|
| Digital Day/Night Specifications |                                 |           |           |           |
| Sensor Resolution                | 3840 × 2160 pixels              |           |           |           |
| Sensor Frame Rate                | 30 fps                          |           |           |           |
| Base Magnification               | 3x                              |           |           |           |
| Digital Magnification            | 3x, 4.5x, 6x, 9x, 12x, 18x, 24x |           |           |           |
|                                  |                                 |           |           |           |

|                                                    |                           |  |  |  |
|----------------------------------------------------|---------------------------|--|--|--|
| Thermal Specifications                             |                           |  |  |  |
| Sensor Type                                        | Uncooled thermal detector |  |  |  |
| Sensor Resolution                                  |                           |  |  |  |
| Sensor Frame Rate                                  | 40 fps                    |  |  |  |
| Pixel Size                                         | 12 × 12 μm                |  |  |  |
| NETD<br>Noise Equivalent Temperature<br>Difference | ≤18 mK (@25°C / 77°F)     |  |  |  |

|                              |                            |  |  |  |
|------------------------------|----------------------------|--|--|--|
| Physical Specifications      |                            |  |  |  |
| Ranging Distance             | 5-2000 m / 5-2100 yd       |  |  |  |
| Operating Temperature        | −25 to 60°C / −13 to 140°F |  |  |  |
| Ingress Protection<br>Rating | IP67                       |  |  |  |
| Recoil Rating                | 800Gs / .50 BMG            |  |  |  |

| Peripheral Specifications |                                            |
|---------------------------|--------------------------------------------|
| Display Type              | 0.49" Micro-OLED                           |
| Display Resolution        | 1920 × 1080 pixels                         |
| Display Refresh Rate      | 60 Hz                                      |
| Battery Type              | Rechargeable 21700 Flat-top Li-ion Battery |
| External Power Supply     | 5 V USB-C                                  |
| Storage                   | Built-in Storage, 64GB                     |
| Eye Relief                | 65 mm                                      |
| Connections               | Wi-Fi / DNT App                            |

# Start Using

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

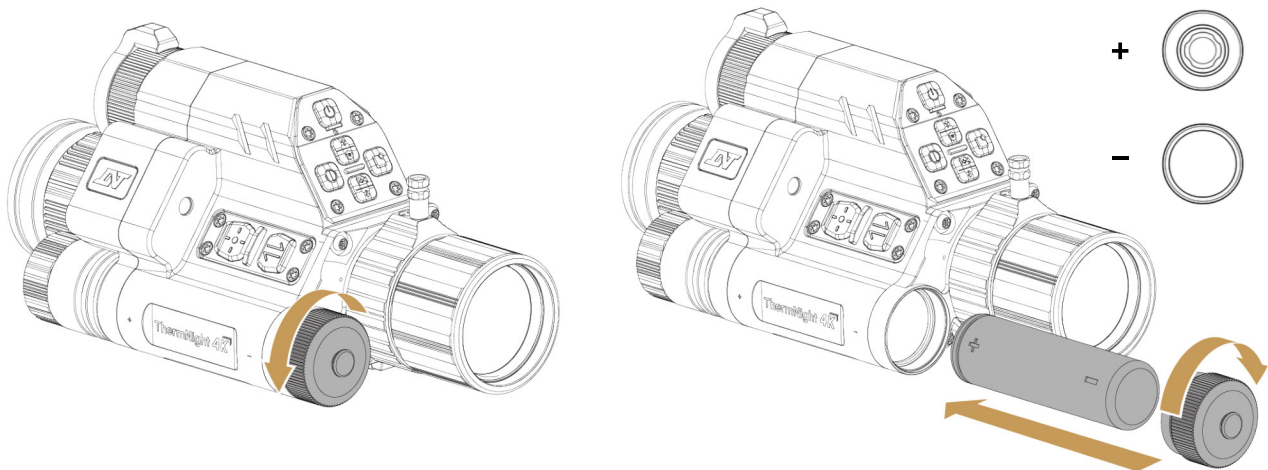
## Power Supply

ThermNight 4K is powered by an external rechargeable flat-top 21700 battery which provides up to 5 hour and 45 minutes of operation (depending on the model). 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 for maximum compatibility.



- ThermNight 4K does not support charging the battery via the USB-C port. To charge the battery, please use an external battery charger.
- When Battery level drops below 20%, LRF and IR illumination will be suspended.

## 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.

## Quick Controls

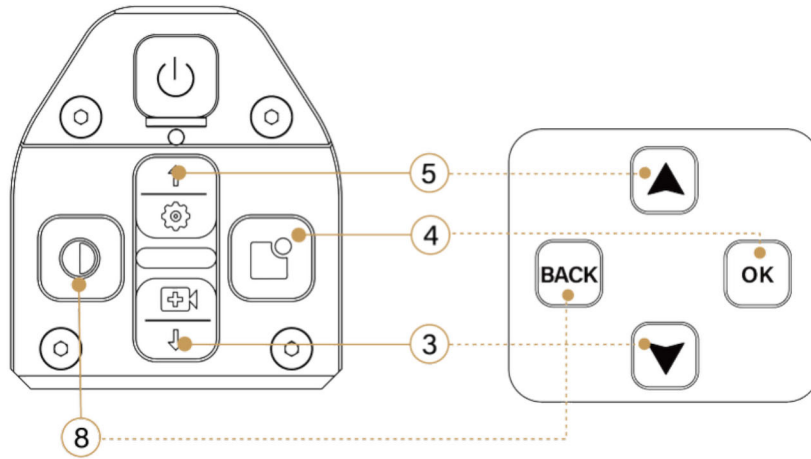
|                                                                                                              |                     |   |                                                          |
|--------------------------------------------------------------------------------------------------------------|---------------------|---|----------------------------------------------------------|
| <b>Power Button</b><br>     | <b>PRESS</b>        | → | Toggle Standby Mode ON/OFF                               |
|                                                                                                              | <b>LONG-PRESS</b>   | → | Turn Device ON/OFF                                       |
| <b>Menu Button</b><br>      | <b>PRESS</b>        | → | Cycle Zoom Levels                                        |
|                                                                                                              | <b>LONG-PRESS</b>   | → | Enter [Main Menu]                                        |
|                                                                                                              | <b>Double-Press</b> | → |                                                          |
| <b>Palette Button</b><br> | <b>PRESS</b>        | → | Cycle Thermal Palettes                                   |
|                                                                                                              | <b>LONG-PRESS</b>   | → | Perform Manual NUC (Non-Uniformity Correction)           |
| <b>PiP Button</b><br>     | <b>PRESS</b>        | → | Cycle Screen Brightness                                  |
|                                                                                                              | <b>LONG-PRESS</b>   | → | Toggle Picture-in-Picture (PiP) ON/OFF                   |
|                                                                                                              | <b>Double-Press</b> | → | Cycle Thermal Image Modes (Natural, Enhanced, Highlight) |
| <b>Record Button</b><br>  | <b>PRESS</b>        | → | Start/Stop Recording                                     |
|                                                                                                              | <b>LONG-PRESS</b>   | → | Perform Manual RAV (Recoil Activated Video)              |

## Menu Navigation

In Live View, 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

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.

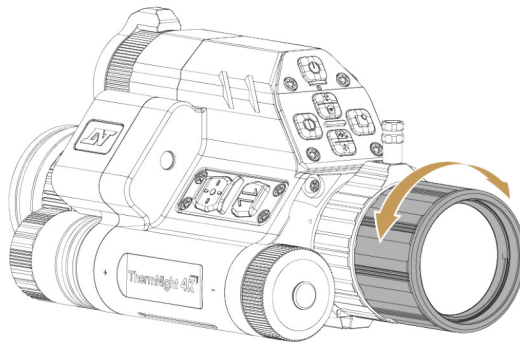
## Diopter and Focus Adjustment

### 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.

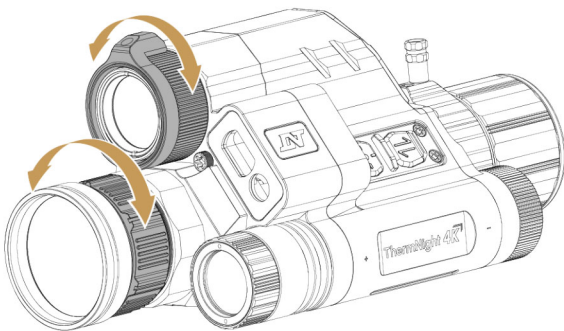
Once set, no further adjustment is needed.



### Focus Adjustment

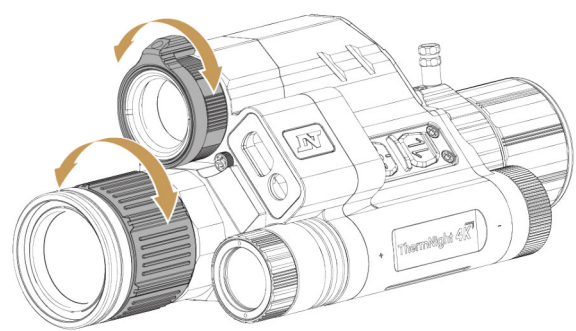
Users may need to adjust the focus to achieve optimal clarity when viewing targets at different ranges.

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 **Focus-adjustment Ring** clockwise or counterclockwise until the screen displays the target perfectly clear.



**TNC4K335R, TNC4K635R, TNC4K650R**

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



**TNC4K219R**

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

## 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 illumination generates heat. To prevent a fire, **DO NOT** leave the device unattended while the illuminator is on.

### Toggling IR Illuminator

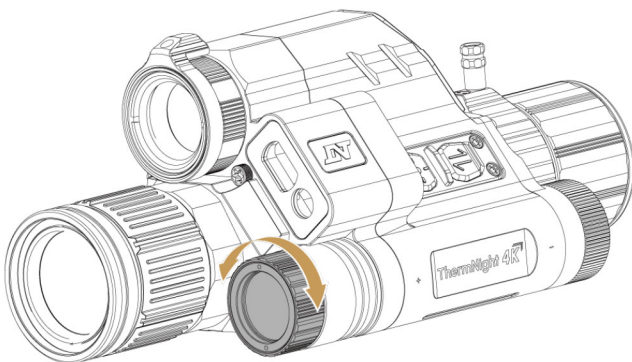
When Live View displays a night vision image or when you are in [Dual Mode], the IR indicator icon appears in the status bar. Press **Day/Night Button**  to cycle the IR illuminator through Off, Auto, and Tiers 1–5.

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 thermal channel.

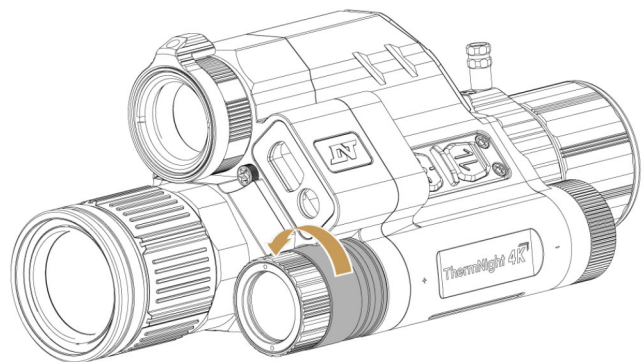
### Focusing IR beam

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

## Zeroing ThermNight 4K

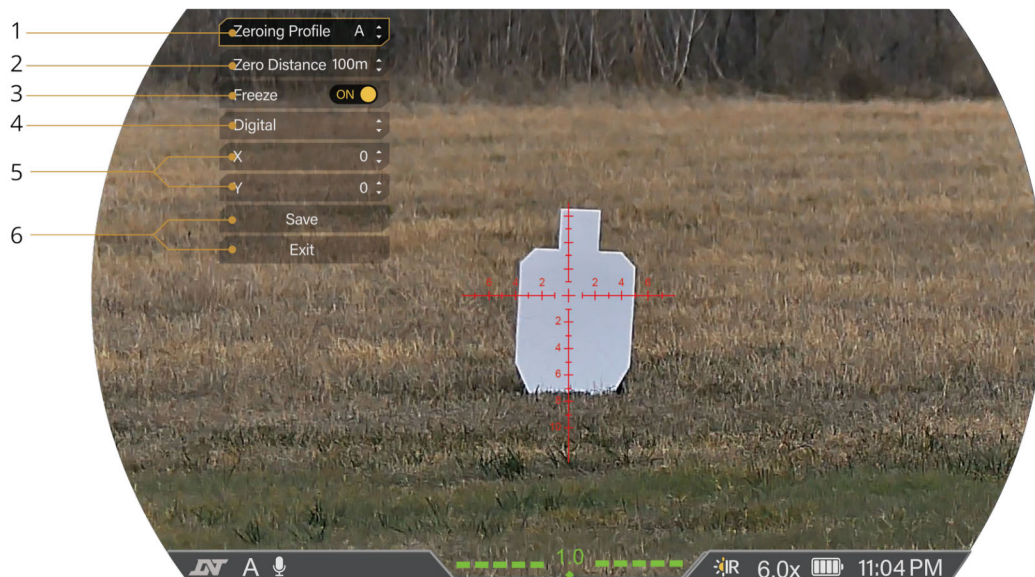
ThermNight 4K is equipped with Thermal Auto Zeroing, meaning users no longer have to zero both channels. Complete one-shot zeroing with the day/night channel, and the thermal reticle will automatically adjust to match the POI. To utilize this feature, verify that your [Zero Distance] is accurate.

The ThermNight 4K offers 10 zeroing profiles (A-J) and 10 ballistic profiles (A-J). These are linked one-to-one, meaning 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 select the desired profile.
2. Select [Zero Distance] and engage **LRF Button**  to measure the zero distance. The resulting measurement 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 Day/Night (Digital) and Thermal channel. When you [Save] Zeroing Profile in one channel, the system will also prompt you to switch.
4. In 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; Select [Exit] to exit without saving.

## One Shot Zeroing

1. Make sure the scope is tightly mounted and held steady. Switch to day/night channel.
2. Find/Place a target at your desired zero distance and zoom in for a clear view. Zoom Level will be locked once entering the [Zeroing] menu for maximum accuracy.
3. Enter the [Zeroing] Menu, and select the zeroing profile.
4. Select [Zero Distance] to adjust the zero distance. Press **LRF button**  will enable continuous ranging.
5. Aim steady at the target with the LRF marker and press **LRF button**  again to confirm the measurement. The result will be updated to the [Zero Distance] Field.
6. If the measured distance is inaccurate, press **Menu Button**  and **Record Button**  to manually adjust zero distance.

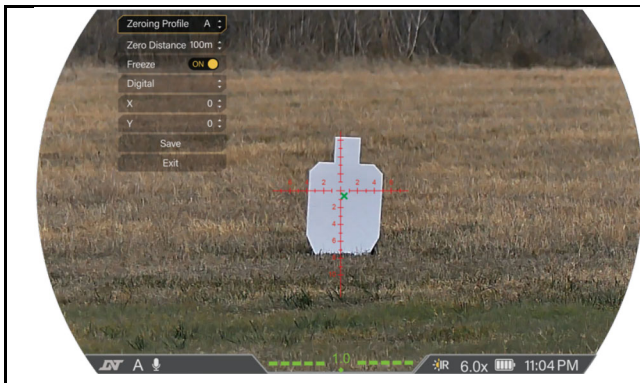


Figure 1

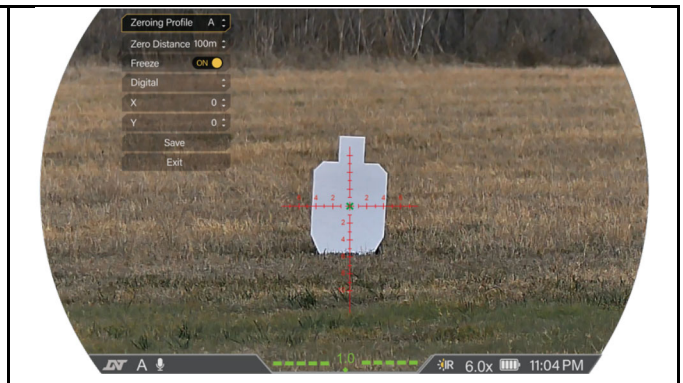


Figure 2

7. 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 + on **Figure 1**).
8. Move the reticle back to the original POA, then freeze the image.
9. In [X] and [Y], adjust the reticle position so that its center aligns with the POI +, as shown in **Figure 2**.
10. Select [Save] and confirm to complete zeroing. Your Day/Night channel POA is now aligned with the POI at designated distance.
11. 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 Follow

Thermal Auto Follow function adjusts the thermal reticle position automatically in the background when you are zeroing the day/night channel. This feature helps aligning thermal POA with day/night POA automatically, streamlining the dual-channel zeroing process.



- Always zero day/night channel first.
  - Thermal Auto Zeroing only activates when day/night reticle position is moved, and not vice versa – moving the thermal reticle will not change the day/night reticle position that's already saved.
  - The calculated thermal reticle position might vary slightly from the POI. Each time after the day/night reticle position is moved, follow the prompt to go to the thermal channel and fine tune the thermal reticle position.
-

## Connecting to DNT App

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

By connecting your scope to your smartphone, you can:

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



**Android 9.0 and above**



**iOS 12.0 and above**



- ThermNight4K features One Tap Connect, making every connection effortless. Simply power on your scope and the DNT App; The app will automatically detect your scope and prompt you to start the connection. Please see the Connection chapter for detailed guides.

# Functions

## Power

### Powering ON/OFF ThermNight 4K

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

#### Power Indicator Description

|                                                                                   |              |                                        |
|-----------------------------------------------------------------------------------|--------------|----------------------------------------|
|  | Shine blue   | Device is powered on and operating     |
|  | Shine orange | Device is in standby                   |
|  | Blink orange | Device is performing a firmware update |

### Standby ON/OFF

When the scope is powered ON and in Live View, press **Power Button** to put the scope into standby.

When the scope is in standby, press **Power Button** to resume to Live View.

Resuming from Standby should take less than 3 seconds, while powering on takes around 5 seconds.

DNT recommends enabling standby whenever the device is idle to maximize battery life.



- The thermal shutter will not drop automatically when entering standby. Please be cautious with intense heat sources to avoid burning the thermal sensor.
- The scope will still consume power in standby. To prevent battery drain, refer to the next section to enable [Auto Power-Off].
- If the scope is recording, entering standby will stop and save the current recording. Once resumed from standby, the scope will automatically start recording a new clip. This is ideal for users who want to capture all active moments throughout their sessions.

## Auto Power-Off

ThermNight 4K comes with an Auto Power-Off function, which will automatically turn off the device 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]**
- 



- DNT recommends enabling [Auto Power-Off] to maximize battery efficiency and avoid unwanted battery drain.
- 

## Auto Standby

ThermNight 4K is equipped with a presence detector. When the user enables the [Auto Standby] feature, if the detector detects nothing for 5 seconds, the scope will automatically enter Standby Mode.



- Toggle this function through: **[Main Menu] > [Auto Standby] > [ON] / [OFF]**
-

## Display

### Adjusting Screen Brightness

In Live View, press **PiP Button** to cycle through five Brightness levels.

### Adjusting Reticle Style and Colors

ThermNight 4K offers 9 reticle styles and 5 reticle colors for all-scenario adaptability. Users can change the style and color for day/night or thermal channel separately through:



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

### Zooming IN/OUT

In Live View, rotate the **Zoom Lever** to adjust among seven Zoom levels for both the Day/Night and the thermal channel simultaneously.



- The position of the **Zoom Lever** determines zoom levels, so the scope will retain the same zoom level even after powering off as the **Zoom Lever** position is not changed.
- 

### Spectral Channels and Day / Night Modes

ThermNight 4K has two spectral channels: a digital day / night channel and a thermal imaging channel. In Live View, press the **Mode Switch Button**  to switch between the two channels.

#### Digital Day / Night channel

This channel utilizes an 8 Megapixel, 3840 × 2160 CMOS image sensor to capture crystal clear day-time details and fluorescent

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

## Picture-in-Picture Functions

In Live View, 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 live view. The minor window takes up 10% of the entire screen.

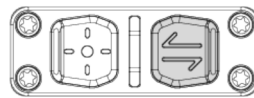


- Users can choose between two modes that provide different channel combinations through:

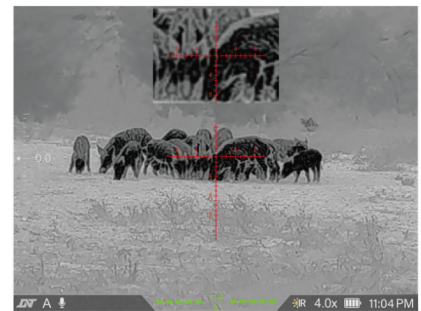
- **[Main Menu] > [Digital/Thermal Toggle] > [Digital] / [Thermal] / [Dual Mode]**

### [Digital] / [Thermal]

The Live view displays the selected channel, and the PiP window displays the selected channel at 2x magnification. (e.g., In [Digital] Mode, if live view is at Night Vision 12x, the PiP window will display Night Vision 24x).

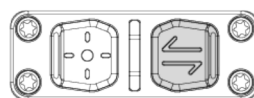


Press **Channel Switch Button** to switch between channels.

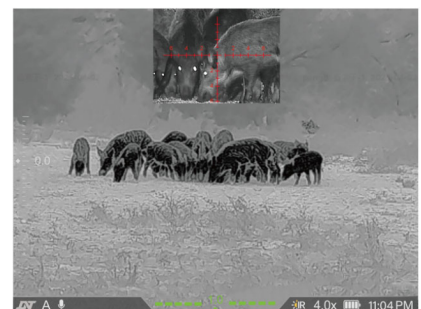


### [Dual Mode]

The PiP window displays the other channel from the live view. Rotating the Zoom Lever will change the zoom level of both channels. (e.g., If live view is at Night Vision 3x, the PiP window will display Thermal at 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]**
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## Thermal Zoom Lock

This function is designed to lock the thermal zoom level to base or 1.5x base magnification for the best spotting field of view and is typically used in conjunction with PiP mode. When Thermal Zoom Lock is enabled, the thermal channel will be locked at a lower power for spotting, while the user zooms in with the day/night channel for closer-up details and aiming.



- Users can choose from the three options in:
    - **[Main Menu] > [Thermal Zoom Lock]**
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- [Off]: Thermal channel zooms in and out with the day/night channel.
- [1x]: Thermal channel stays in base mag.
- [2x]: Thermal channel stays in 2 times of the base mag.

## Recording

### Recording START/STOP

In Live View, press **Record Button** to start recording. During recording, press **Record Button** to end the current recording. The recorded video will be saved in your scope's internal storage.



- Each video will last for a maximum of 10 minutes. Once the time limit is reached, the recording will stop automatically.

### 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 recording automatically stops, saves the clip, and immediately starts 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 of these durations enables loop recording.



- Once the selected time limit is reached, the recording will stop automatically.
- 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. If the storage is full when new recordings are finished, recordings will be automatically deleted to free up space, from the oldest to the newest.

### Recoil Activated Video (RAV)

The RAV function records 10 seconds before and 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** will trigger RAV.
- [Off]: RAV will be disabled.



- Users can adjust RAV modes through:
  - **[Main Menu] > [Auto Standby] > [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 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 so that you don't miss any highlights.
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## 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]**
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## Thermal

### Thermal Palettes

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



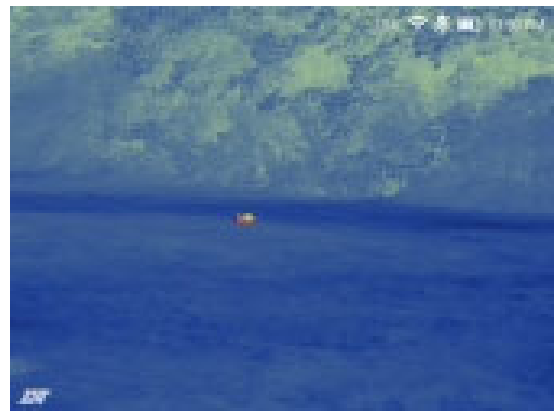
**White Hot**



**Black Hot**



**Red Hot**



**Iron Hot**



- In Live View, Thermal Channel, cycle through thermal palettes by pressing **Day/Night Button**.
- The user can also select a specific palette from the menu through:
- **[Main Menu] > [Function Settings] > [Audio Recording]**

## Thermal Imaging Modes

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

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### 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 with 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.



- The user 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], [Thermal Brightness], and [Thermal Sharpness]. Please refer to the sections below for details.
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## Thermal Contrast, Brightness and Sharpness

### 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.

While essential for maintaining consistent thermal imaging, NUC may temporarily interrupt device operation. To minimize disruption during critical moments, ThermNight 4K offers two NUC modes: [Auto Mode] and [Manual Mode].

## Hotspot Tracking

When enabled, a red dot appears on the screen to indicate the hottest spot in the current image.



- [Main Menu] > [Thermal Image Settings] > [Hotspot Tracking]
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## 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 range finding optics. Key capabilities include access to a comprehensive ballistic database via the DNT application and seamless wireless synchronization of ballistic profiles.

Furthermore, the system offers advanced analytical tools, including multi-BC compensation, BC validation, moving target compensation, and customizable ballistic configurations through 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



- 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.