

HYDRA



Day Night Technologies

User Manual

HYDRA-Mini

Multi-Function Thermal Scope

Note: To ensure the best experience, please keep your firmware up to date. Some updates may not yet be reflected in this manual.

For the latest User Manual and firmware updates, please visit
dntoptics.com

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READ BEFORE USE

Safety Instructions

- **DO NOT** point the device at strong heat sources such as the sun or open flames, as this may damage the thermal sensor.
- Close the objective lens cover when the device is not in use.
- Device operating temperature: -20 to 50°C (-4 to 122°F).
- **DO NOT** attempt to disassemble the scope. Please contact us if there are any malfunctions.
- Use only DNT supplied 18650 batteries to avoid incompatibility issues.
- Only charge 18650 batteries supplied with the included charger, and use power adapters that support 5V/0.5A, 5V/1A or 5V/2A output.

Power Supply

HYDRA-Mini is powered by an external 18650 battery and provides up to 7 hours 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.

***Note:** HYDRA-Mini does not support charging the battery via the USB-C port. To charge the battery, please use an external battery charger.*

Package Contents

HYDRA-Mini × 1	Microfiber Cloth × 1
QDF193 Mount × 1	Threaded Eye Cup × 1
USB-C Data Cable × 1	Objective Lens Cover × 1
User Manual × 1	Quick Start × 1



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 to indicate menu navigation steps clearly.

Menu navigation steps are shown in the following format:

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

This means you first select [Reticle Settings] from the [Main Menu], then choose [Reticle Colors], and finally select [Red].

Live View: Refers to the main screen where live video is displayed. It is the default screen HYDRA-Mini 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.

INTRODUCTION

The HYDRA series consists of modular thermal scopes engineered for 24/7 operation in all weather conditions. All models in the series are designed to function as a standalone thermal scope, a handheld spotter, or a thermal clip-on for LPVOs and low-power day scopes.

The HYDRA-Mini models focus on enhanced portability and expanded field operability. Utilizing the included QDF193 Dual Quick-Detach Flip-to-side Mount, the HYDRA-Mini provides an additional configuration: helmet-mount integration. This allows for a dedicated thermal layer that enhances tactical situational awareness during hands-free operations, a specialized feature unique to the HYDRA-Mini within the series.

Features

- **≤18 mK NETD Thermal Sensor**

Detects subtle temperature differences for precise target detection

- **4-in-1 Multi-Function Thermal Device**

Scope, Handheld, Helmet, Clip-On modes for versatile use

- **Thermal Image Super Resolution**

Enhances thermal image clarity by up to 1.5x

- **65mm Eye Relief DNT Latest Ocular Lens System**

Forgiving eye box in all sight modes.

- **Helmet-Mountable with the included QDF193**

Hands-free operation for tactical or night-vision applications

- **Ultra Compact & Lightweight**

Easy to carry and mount for long-duration use

- **18650 Li-Ion Flat-Top Rechargeable Battery**

Long-lasting power for extended use of up to 5.5 h

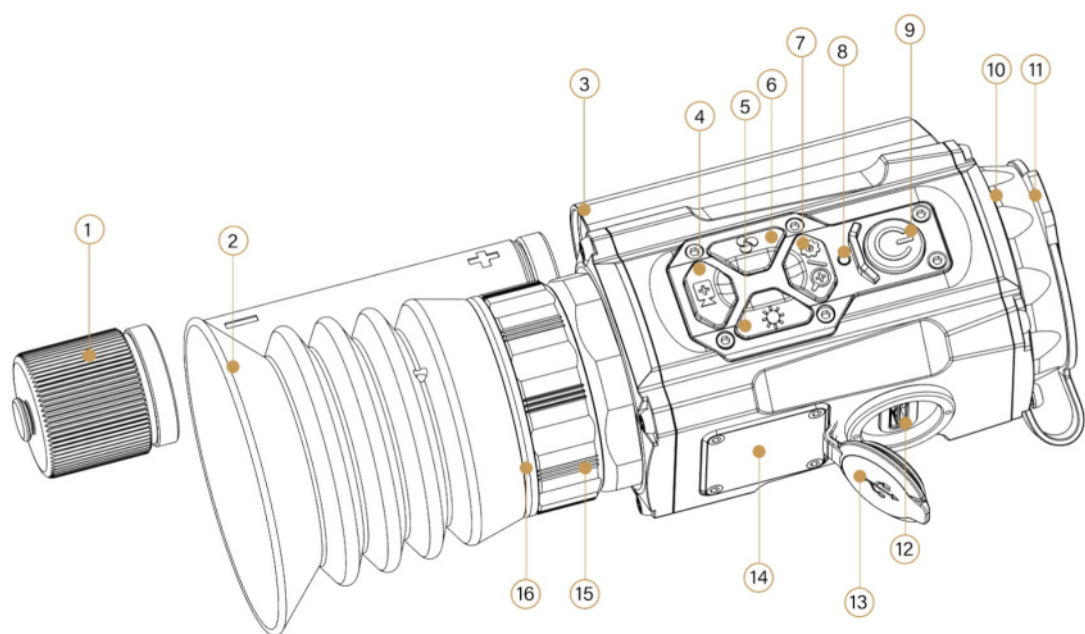
- **Micro-OLED 1024×768 Display at 50 Hz**

Smooth and sharp imaging for quick target acquisition

- **One-Shot Zeroing**

Simplifies sight calibration, saving time in the field

Device Overview

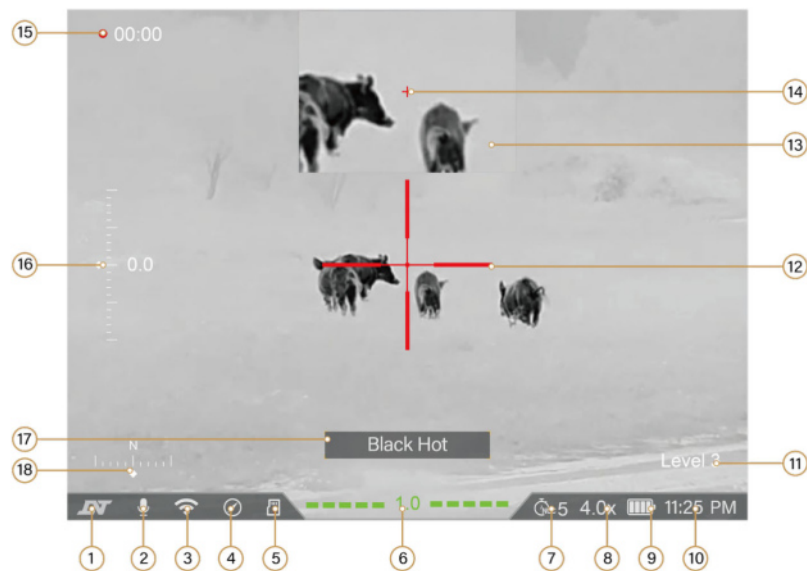


1. Battery Cap	9. Power Button
2. Eye Cup	10. Objective Lens
3. Battery Compartment	11. Objective Lens Cover
4. Record Button	12. USB-C Port
5. Brightness Button	13. USB-C Port Cover
6. Palette Button	14. Wi-Fi Module
7. Menu Button	15. Diopter-adjustment Ring
8. Power Indicator	16. Ocular Lens

Focus-adjustment Ring: Only HS625M has a focus-adjustment ring, located at position 10; HS210M and HS315M have fixed 20 m / 30 m focus instead.



On-Screen Display



1. DNT Logo	10. Current Time
2. Microphone Indicator*	11. Screen Brightness Level
3. Wi-Fi Indicator*	12. Reticle
4. Compass Indicator	13. PiP Window
5. Storage Error Indicator*	14. PiP Reticle
6. Roll Angle Indicator	15. Recording Indicator*
7. NUC Countdown	16. Tilt Angle Indicator
8. Current Magnification	17. Current Palette / Sight Mode*
9. Current Battery Level	18. Compass

Microphone Indicator: When displayed, it indicates that the recorded video has sound.

Wi-Fi Indicator: Indicates Wi-Fi is ON. No display when Wi-Fi is OFF.

Storage Error Indicator: Indicates when an internal storage error has occurred.

Recording Indicator: Indicates the recording status. The timer shows the current video recording duration.

Status Overlay: This indicator displays the active thermal palette and sight mode. The overlay appears briefly whenever a setting is toggled to provide real-time confirmation of changes.



Specifications

SPEC. / MODEL	D2203			
Thermal Sensor Specifications				
Sensor Resolution	256 × 192 pixels			
Sensor Type	Uncooled Infrared Sensor			
Sensor Frame Rate	50 fps			
Pixel Size	12 × 12 μm			
NETD Noise Equivalent Temperature Difference	≤18 mK (@25°C / 77°F)			
Optical Specifications				
Focal Length of Objective Lens	10 mm			
Base Magnification	1x (1.14x)			
Digital Zoom	1x, 2x, 4x			
Field Of View (FOV) Horizontal / Vertical / Diagonal	17.5° / 13.7° / 21.7°			
Linear FOV m @ 100m / yd @ 100 yd Horizontal / Vertical / Diagonal	30.7 / 23.0 / 38.4			
Eye Relief	65 mm / 2.6 in			
Display Specifications				
Display Type	Micro-OLED			
Display Resolution	1024 × 768 pixels			
Display Refresh Rate	50 Hz			
Power Specifications				
Battery Type	18650 Battery (Flat-top)			
Operating Time	7 h	6.5 h		
External Power Supply	5 V USB-C			



SPEC. / MODEL	D2203		
Physical Specifications			
Net Weight	320 g / 11.3 oz		
Total Weight Incl. Battery and Mount	397 g / 14.0 oz		
Dimensions	103 × 68 × 51 mm 4.1 × 2.7 × 2.0 in		
Operating Temperature	−20 to 50°C / −4 to 122°F		
Ingress Protection Rating	IP 67		
Recoil Rating	800 Gs / .50 BMG		
System Specifications			
Storage	Built-in Storage, 32 GB		
Recording Format	1024 × 768 pixels @ 50 fps*		
Connections	Wi-Fi / DNT App		

***Recording Format:** Refers to the resolution and frame rate of the recorded video file; image quality will vary depending on the sensor resolution.*



Download the DNT App to Unlock More Features

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

By connecting your HYDRA-Mini to your smartphone, you can view the scope's live video feed in real time and manage, edit, or transfer recordings directly from your smartphone.



Android 9.0 and above

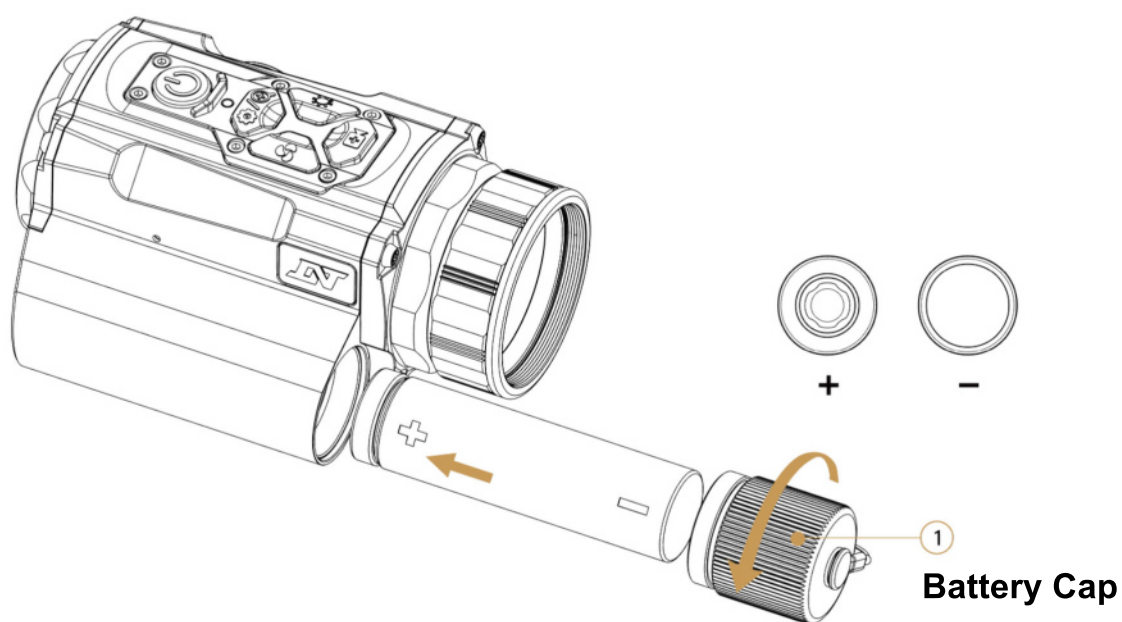


iOS 12.0 and above

START USING

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

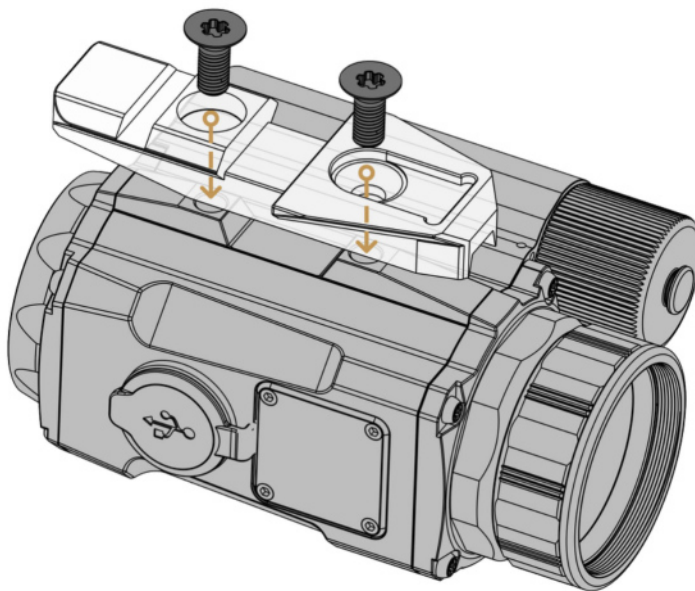
Installing Battery



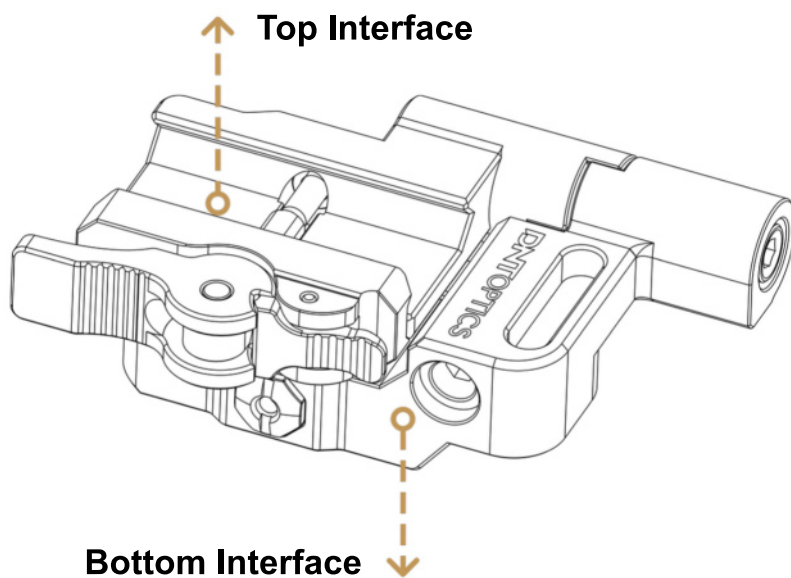
1. Twist the **Battery Cap** counterclockwise to remove it.
2. Insert the 18650 battery into the **Battery Compartment**, with the positive (+) end facing inward.
3. Press the **Battery Cap** against the battery's negative (–) end and twist it clockwise until fully tightened.

Mounting HYDRA-Mini

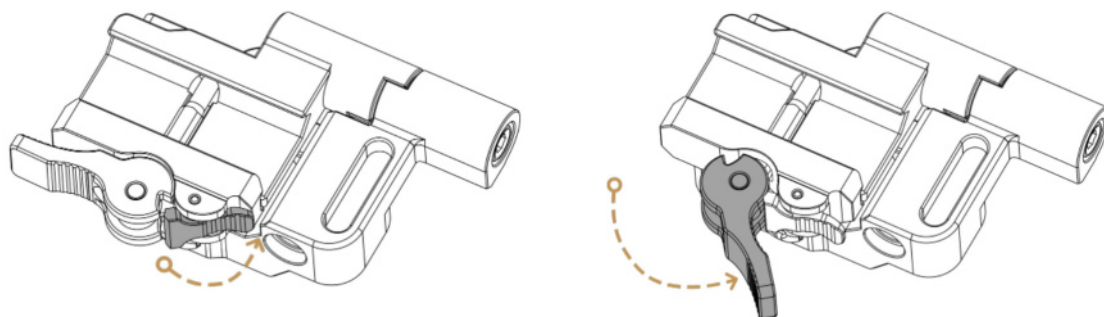
1. Attach the Adaptor Rail: Install the Dual Adapter onto the HYDRA-Mini. Ensure the dovetail section is oriented toward the Ocular Lens (eyepiece).



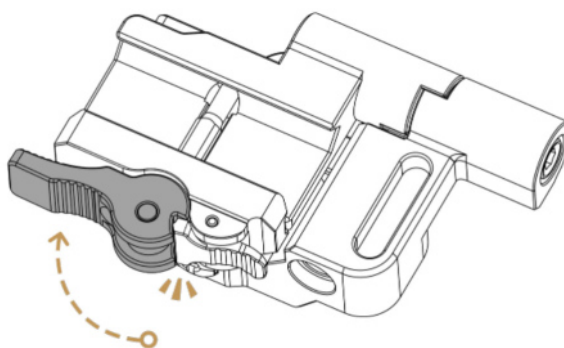
2. Orient the QDF193 Mount: Position the **QDF193** as illustrated. The top interface secures the optic, while the bottom interface mounts to your rail.



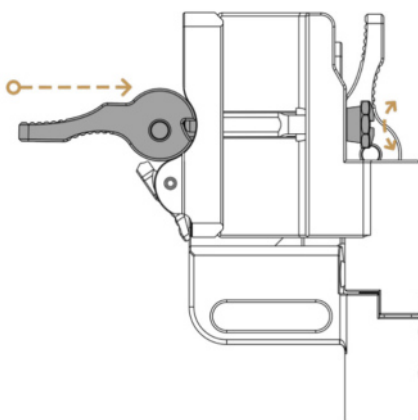
3. Open the Locking Mechanism: Press the Locking Latch down and pull the lever outward to unlock the top slot.



4. Secure the HYDRA-Mini: Seat the **HYDRA-Mini** into the slot and push the lever back until the locking latch "clicks" into place.

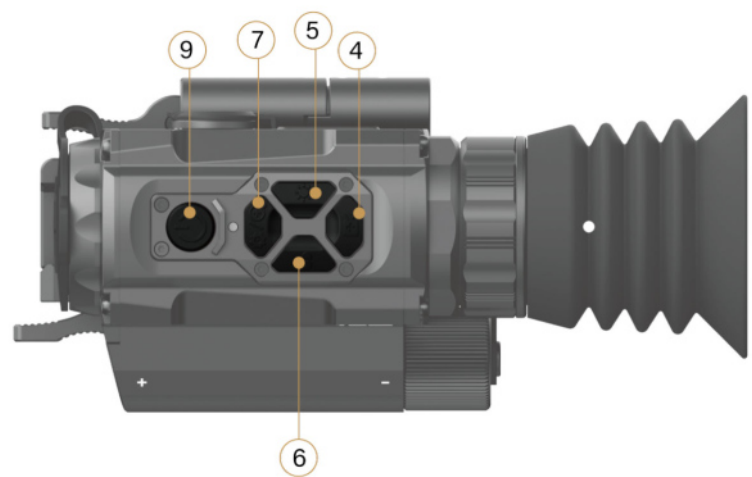


5. Adjust Tension: If the fit is too loose or the lever is too difficult to close, use the adjustment screw to fine-tune the tension. To release the screw for adjustment, press the lever against the housing wall.



Quick Start

In Live View



Power Button 	PRESS	→	Toggle Standby Mode ON/OFF
	LONG-PRESS	→	Turn Device ON/OFF
Menu Button 	PRESS	→	Cycle Zoom Levels
	LONG-PRESS	→	Enter [Main Menu]
Record Button 	PRESS	→	Start/Stop Recording
	LONG-PRESS	→	Perform Manual RAV (Recoil Activated Video)
Palette Button 	PRESS	→	Cycle Thermal Palettes
	LONG-PRESS	→	Perform Manual NUC (Non-Uniformity Correction)
Brightness Button 	PRESS	→	Cycle Screen Brightness
	LONG-PRESS	→	Cycle Sight Modes

Menu Navigation

In Live View

Long-press **Menu Button** ⚙️/🔍 to enter [Main Menu].



Live View



Main Menu

In Menu (including the main menu and all sub-menus)

Press **Record Button** 📹 to navigate DOWN.

Press **Menu Button** ⚙️/🔍 to navigate UP.

*Selected menu items will turn **YELLOW**; their names will be presented at the top of the menu list.*

Press **Brightness Button** ☀️ to navigate FORWARD.

This will either confirm the current selection to bring up the next menu pane, toggle functions ON/OFF, or lock in on a menu item for value changes.

Long-press **Palette Button** 🎨 to navigate BACKWARD.

This will return to the previous menu pane, and, while in Main Menu, return to Live View.

When Changing Values

Press **Menu Button** ⚙️/🔍 to INCREASE the value.

Press **Record Button** 📹 to DECREASE the value.

Dioptr and Focus Adjustments

Dioptr Adjustment

This adjustment helps achieve the best screen clarity for your eye and is independent of the target (therefore, you can set it even with the Objective Lens Cover closed).

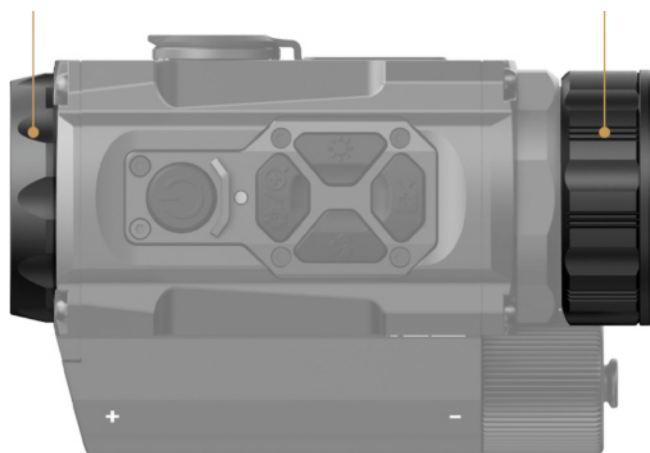
Look through the **Ocular Lens** from about 65 mm / 2.6 in away. You should see the entire screen, although it may not yet be adjusted for your eyes.

Slowly rotate **Dioptr-adjustment Ring** clockwise or counter-clockwise until you achieve the best screen clarity.

Once set, no further adjustment is needed.

Focus-adjustment Ring

Dioptr-adjustment Ring



Focus Adjustment

The HYDRA-Mini ensures clear imaging across different distances, with fixed or adjustable focus depending on the model.

HS210M / HS315M: These models have a fixed focus (20 m for HS210M, 30 m for HS315M), which maintains image clarity from near to far distances without adjustment.

HS625M: This model features an adjustable focus, allowing you to fine-tune clarity for distant targets. If the screen doesn't display the target clearly, slowly rotate the **Focus-adjustment Ring** clockwise or counter-clockwise until the image appears sharp.

Sight Modes

Scope Mode

Use this mode when the HYDRA-Mini is mounted as your primary standalone thermal optic.

Reticle: Active.

Magnification: 1x to 4x digital zoom available.

Clip-On Mode

Use this mode when the HYDRA-Mini is mounted in front of a day optic (such as an LPVO) to add thermal capability.

Reticle: Disabled (use day optic reticle).

Display: Slightly reduced to ensure a precise 1:1 ratio with your day optic.

Magnification: Locked at true 1x. (This allows the user to utilize the day optic reticle and sub-tensions of an LPVO for accurate ranging and holdovers.)

Menu Changes: The **[Zeroing]** menu is replaced by the **[Collimation]** menu.

Helmet Mode

Use this mode when the device is helmet-mounted for hands-free navigation and movement.

Reticle: Disabled for an unobstructed field of view.

Display: The UI automatically flips 180° to accommodate inverted mounting on a helmet bridge.

Magnification: Locked at 1x to maintain depth perception.

Menu Changes: The **[Zeroing]** menu is replaced by the **[Collimation]** menu.

Handheld (Spotter) Mode

Use this mode when using the device as a handheld thermal monocular for scanning and observation.

Reticle: Disabled to provide a clean, immersive "full-screen" view.

Magnification: 1x to 4x digital zoom available.

Menu Changes: None.

Zeroing HYDRA-Mini

■ Zeroing in Scope Mode

Zeroing Menu



Press **Menu Button** / or **Record Button** to navigate UP or DOWN.

Press **Brightness Button** to select an item and start adjusting the value.

Press **Palette Button** to cancel selection.

Press **Menu Button** / or **Record Button** to INCREASE or DECREASE the value.

1. Select [Zeroing Profile] to switch among 10 onboard profiles.
2. Select [Freeze] and press **Menu Button** / or **Record Button** to freeze/unfreeze the current image. You can also use **Power Button** as the shortcut key to toggle freezing.
3. Select [X] to adjust the horizontal position of the reticle.
4. Select [Y] to adjust the vertical position of the reticle.
5. Select [Save] to save the current reticle position and exit Zeroing Page.
6. Select [Exit] to exit Zeroing Page without saving.

Scope Mode Zeroing Steps

1. Make sure the HYDRA-Mini is tightly mounted and held steady.
2. Set sight mode to [Scope Mode]

[Main Menu] > [Sight Mode] > [Scope Mode]



Figure 1



Figure 2

3. Find/Place a target at your desired zero distance (50 yards/meters recommended), and zoom in for a clear view.

Zoom Level will be locked in the [Zeroing] menu for maximum accuracy.

4. Enter the Zeroing Menu:

[Main Menu] > [Zeroing]

5. 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**).
6. Move the reticle back to the original POA, then freeze the image.
7. In [X] and [Y], adjust the reticle position so that its center aligns with the POI +, as shown in **Figure 2**.
8. Select [Save] and confirm to complete zeroing. Your POA is now aligned with the POI at the selected distance.

■ Clip-On Collimation

In [Clip-On Mode], [Zeroing] becomes [Collimation]. Unlike adjusting the position of the digital reticle when zeroing in Scope Mode, Clip-On Collimation adjusts the position of HYDRA-Mini's display so that the Point of Impact (POI) shown on the screen matches the Point of Aim (POA) of your zeroed glass optic.

Collimation Menu



1. Select [Profile] to switch among 10 onboard collimation profiles.

HYDRA-Mini features independent memory storage for each sight mode. Zeroing and Collimation profiles are standalone and are stored separately based on the active mode.

2. Select [Freeze] to freeze/unfreeze the current image. You can also use **Power Button**  as the shortcut key to toggle freezing.

3. Select [X] to adjust the horizontal position of the display.

4. Select [Y] to adjust the vertical position of the display.

5. Select [Save] to save the current display position and exit Collimation Page.

6. Select [Exit] to exit Collimation Page without saving.

Clip-On Collimation Steps

1. Make sure your day optic is independently zeroed.
2. Install the HYDRA-Mini in front of the day optic and rotate the **Diopter-adjustment Ring** so that the screen appears focused in your day optic.
3. Set Sight Mode to [Clip-On Mode], then enter [Collimation]:

[Main Menu] > [Collimation]



Figure 2



Figure 3

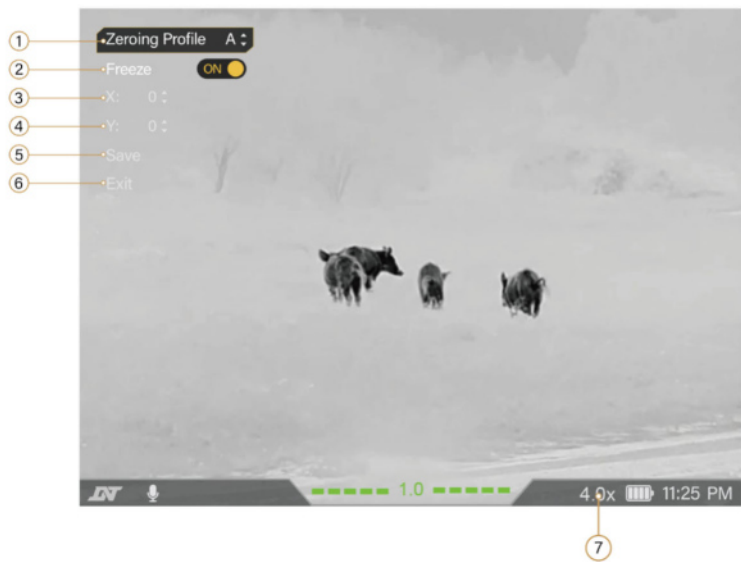
4. Find/Place a target at your desired zero distance (50 yards/meters recommended). Adjust your day optic to get a clear sight of the target.
5. Aim at the target using the center of the reticle in your glass optic as your POA, and determine the POI (illustrated as + on Figure 2).
6. Move your glass optic reticle back to the POA, then freeze the image.
7. Use [X] and [Y] to adjust the position of HYDRA-Mini's screen display so that the POI + on the screen matches the center of your glass optic's reticle, as shown in Figure 3.
8. Select [Save] and confirm to complete zeroing. Your POA is now aligned with the POI at the selected distance.

■ Helmet Collimation

Helmet Collimation allows you to digitally shift the position of the **HYDRA-Mini** display to align the thermal image perfectly with your natural line of sight. This ensures a comfortable, merged image when using the device hands-free.

Collimation Menu

(Helmet Mode) [Main Menu] > [Collimation]



1. Select [Profile] to switch among 10 onboard collimation profiles.

HYDRA-Mini features independent memory storage for each sight mode. Zeroing and Collimation profiles are standalone and are stored separately based on the active mode

2. Select [Freeze] to freeze/unfreeze the current image. You can also use **Power Button**  as the shortcut key to toggle freezing.

3. Select [X] to adjust the horizontal position of the display.

4. Select [Y] to adjust the vertical position of the display.

5. Select [Save] to save the current display position and exit Collimation Page.

6. Select [Exit] to exit Collimation Page without saving.

Helmet Collimation Steps

PHASE 1 - Mechanical Foundation

Do not touch the digital menu yet. 80% of alignment issues are physical. You must ensure the device is physically centered in front of your pupil before using digital collimation for fine-tuning.

- 1. Set Your Eye Relief:** Adjust the device forward or backward on the mount until you can see the entire circular display without any "shading" or "shadowing" around the edges.
- 2. Vertical Alignment:** Adjust the height of your helmet mount so the center of the display is exactly level with your pupil. If you have to look "up" or "down" into the unit, your neck will fatigue quickly.
- 3. Horizontal Alignment (IPD):** If using a bridge, slide the device left or right until it is centered directly in front of your eye.
- 4. Tilt Adjustment:** This is the most important step. Use the tilt screw on your mount to ensure the horizon in the thermal matches the real-world horizon. If the image is tilted, your brain will struggle to merge the two views.

PHASE 2 - Optical Focus

This phase ensures the thermal image is sharp before aligning two eyes.

- 1. Diopter Adjustment:** Look at the menu text or icons. Rotate the Diopter-adjustment Ring until the text and pixels are perfectly sharp.
- 2. Objective Focus (only applicable to HS625M):** Look at an object at a realistic distance (e.g., 20 meters away). Rotate the Focus-adjustment Ring until the thermal image of the object is in focus.

PHASE 3 – Digital Collimation

Once the physical setup is perfect, use the [Collimation] menu to fix any remaining "double vision."

- 1. Pick a Reference Point:** Find a distinct object with a sharp edge (like a door frame, a fence post, or a light pole) at least 15 - 20 meters away.
- 2. The "Both Eyes Open" Test:** Keep both eyes open. You will likely see two versions of the object—the "real" one (natural eye) and the "thermal" one (HYDRA-Mini).
- 3. Shift the Image:** Enter the [Collimation] menu. Use the X (horizontal) and Y (vertical) controls to move the thermal image until it sits **exactly on top** of the real-world object.



- 4. Verify:** Close your natural eye, then open it. The object should not "jump" or move positions. It should feel like one continuous view.



FUNCTIONS

This chapter will explain in detail the main features and functions that HYDRA-Mini includes, to help you master the operation of your device.

Power

■ Powering On/Off

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

Note: *The power status of this device is indicated by the **Power Indicator**:*

*When the device is powered on and operating, the **Power Indicator** will shine **BLUE**.*

*When the device is in Standby Mode, the **Power Indicator** will shine **ORANGE**.*

*When performing an OTA firmware update, the **Power Indicator** will flash **ORANGE**.*

■ Standby Mode On/Off

When HYDRA-Mini is powered ON and not in Menu, press **Power Button** to toggle Standby Mode ON/OFF.

Note: *To maximize battery life during your session, enable Standby Mode whenever the device is idle. Resuming from Standby Mode will take less than 3 seconds.*

If HYDRA-Mini is recording, enabling Standby Mode will stop and save the current recording. Once you turn Standby Mode OFF, HYDRA-Mini 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

HYDRA-Mini comes with an Auto Power-Off function, which will automatically turn off the device after it enters Standby Mode for a set duration (10, 20, or 30 minutes). By default, this function is not enabled. You can set it up through:

[Main Menu] > [Function Settings] > [Auto Power Off]

***Note:** DNT recommends enabling Auto Power-Off to maximize battery efficiency and avoid unwanted battery drain.*

Display

■ Adjusting Screen Brightness

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

■ Zooming In/Out

In Live View, press **Menu Button** to cycle through three Zoom Levels.

■ Picture-in-Picture (PiP) Settings

[Main Menu] > [PiP Settings]

In PiP mode, the small window size defaults to 10% of the large window. For PiP window position, you can choose from [Left] / [Center] / [Right]. To disable the PiP window, select [Off].

Recording

■ Recording Start/Stop

In Live View, press **Record Button** to start recording. During recording, press **Record Button** to stop recording. The recorded video will be saved in device's internal storage.

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

Please closely monitor the available storage in your device through [Main Menu] > [System Settings] > [Available Storage]. If [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.

■ Loop Recording

To record your entire session, turn on Loop Recording through:

[Main Menu] > [Function Settings] > [Loop Recording]

In [Loop Recording], you can choose from [1 minute], [3 minutes], [5 minutes], or [Off]. Selecting a duration enables loop recording. When you press **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 you press **Record Button** to stop.

■ Recoil Activated Video (RAV)

This feature automatically starts recording when significant recoil is detected. You can select among [Auto Mode], [Manual Mode], and [Off] through:

[Main Menu] > [Recoil Activated Video]

In RAV [Auto Mode]

When the recoil force reaches 450 Gs, the device automatically saves a video that includes 10 seconds before and after the shot. For optimal performance, DNT recommends using the RAV function with recoil stronger than .22LR.

In RAV [Manual Mode]

RAV will not trigger automatically. Instead, long-press **Record Button** to save a video that includes 10 seconds before and after the press.

Extending RAV Duration

Applicable to both Auto and Manual Modes: While RAV is recording, long-press **Record Button** to extend the RAV duration by 10 seconds. This extension can be repeated until the maximum duration of 120 seconds is reached.

■ Audio Recording

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

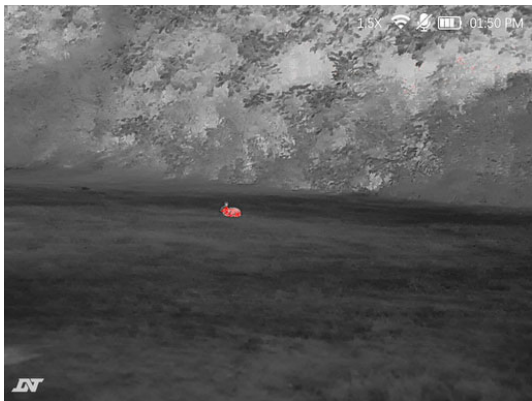
[Main Menu] > [Function Settings] > [Audio Recording]

Thermal

■ Thermal Imaging Modes

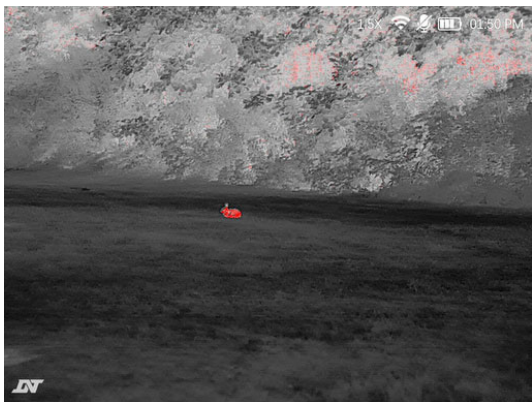
[Main Menu] > [Thermal Image Settings] > [Thermal Imaging Modes]

HYDRA-Mini 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 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.

■ **Thermal Palettes**

HYDRA-Mini provides eight different thermal palettes to accommodate preferences and ensure the most effective target acquisition under different circumstances.

To Change Thermal Palettes:

[Main Menu] > [Thermal Image Settings] > [Palettes]

Or

Press Palette Button to cycle through palettes.



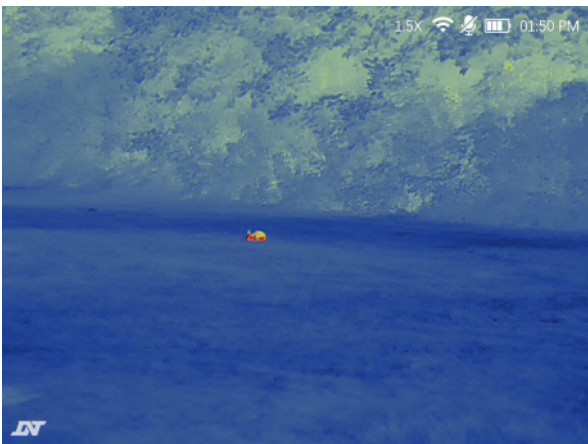
White Hot



Black Hot



Red Hot



Iron Hot



■ 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, HYDRA-Mini offers two NUC modes: [Auto Mode] and [Manual Mode].

The default setting is [Auto Mode], you can switch modes through:

[Main Menu] > [Thermal Image Settings] > [NUC]

In NUC [Auto Mode]

The thermal sensor monitors its status and performs NUC when needed. A 5-second NUC countdown icon  will appear at the top of the screen before NUC commences, allowing you to plan your next steps accordingly.

In NUC [Manual Mode]

NUC will not trigger automatically. You can manually trigger NUC by long-pressing **Palette Button**.

■ Thermal Image Contrast

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

To Change Thermal Image Contrast:

[Main Menu] > [Thermal Image Settings] > [Image Contrast]

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 Image Brightness

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

To Change Thermal Image Brightness:

[Main Menu] > [Thermal Image Settings] > [Image Brightness]

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.

■ Hotspot Tracking

[Main Menu] > [Thermal Image Settings] > [Hotspot Tracking]

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

Peripherals

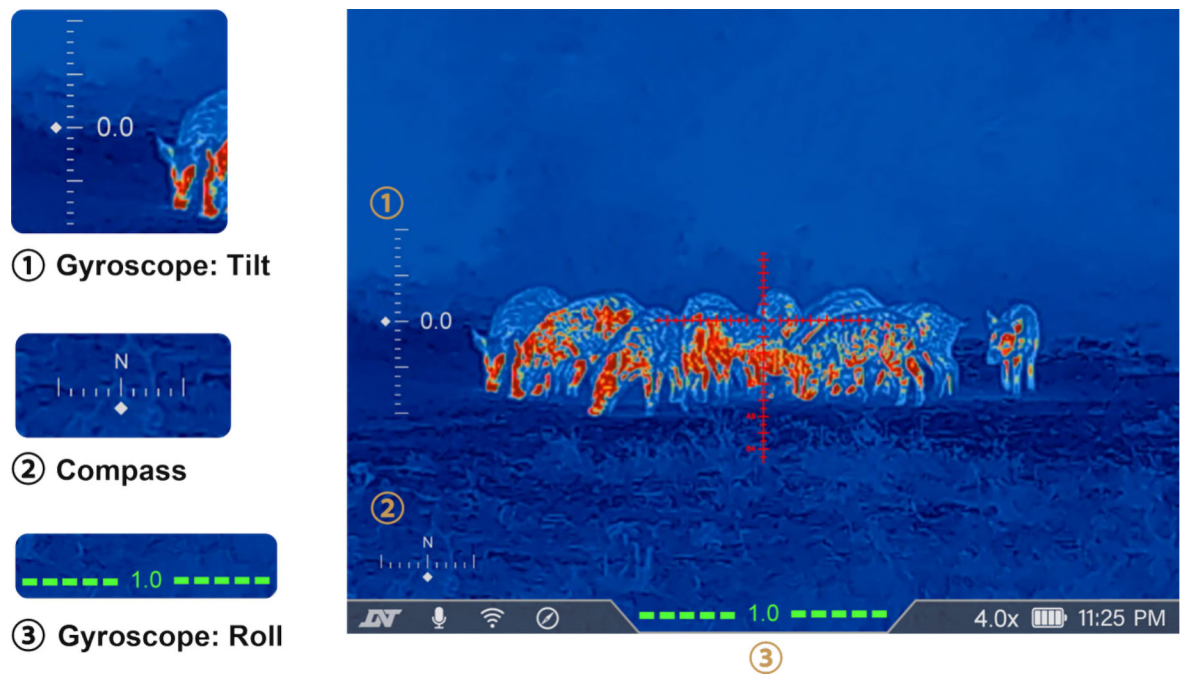
■ Gyroscope Function & Calibration

HYDRA-Mini includes a built-in gyroscope that measures the device's tilt and roll angles. Over time, the gyroscope may lose accuracy and require calibration.

To calibrate the gyroscope, navigate to:

[Main Menu] → [Function Settings] → [Gyroscope] → [Calibration]

- 1. The display will show the prompt:
“Keep the Device Leveled During Gyroscope Calibration”, followed by an 8-second countdown.
- 2. Place the device on a stable, leveled surface. You may use an external level for best results.
- 3. Wait until the calibration completes automatically.



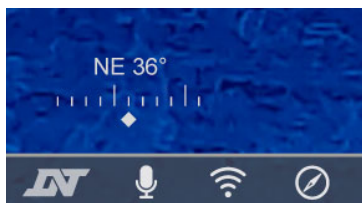
Compass Function & Calibration

Apart from the gyroscope, HYDRA-Mini also includes a built-in electronic compass. When enabled, the compass reading is displayed in the lower-left corner of the screen.

Reliability Notice

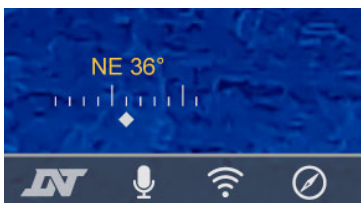
Electronic compasses (e-compasses) are inherently sensitive to surrounding magnetic fields and metallic objects. Please use the compass reading for reference only. Accuracy may vary depending on your environment.

Compass Display Colors



White

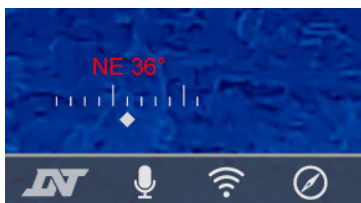
Normal operation



Yellow

Magnetic interference detected

Note: Move the device away from sources of interference



Red

Calibration required



Compass Calibration

Make sure the gyroscope is calibrated before calibrating compass. (See Page 34 for gyroscope calibration)

When the compass reading stays red, it indicates that the compass needs calibration. Follow the steps below to perform calibration:

Although HYDRA-Mini can be calibrated while mounted, DNT recommends detaching it and holding it for the easier operation.

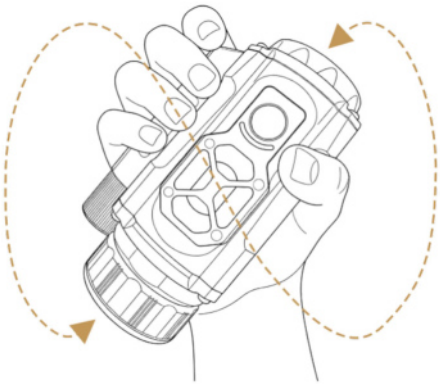
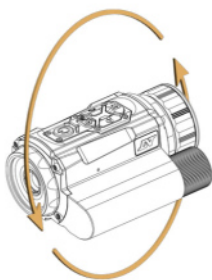
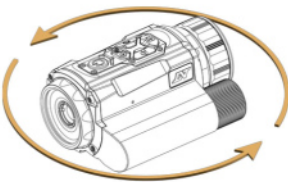


Figure 6

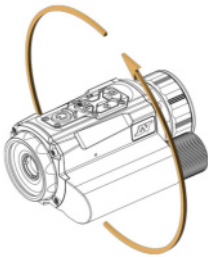
1. As **Figure 6** shows, hold the device firmly in your hand and gently rotate your wrist in a figure “8” motion.
2. Make sure the device senses movements along all three axes: Pan, Tilt and Roll. After 8 seconds, check whether the display shows a white reading.
3. If the reading stays red despite the figure “8” movement, please refer to the following graphs to perform movements on all three axes accordingly:



Pan



Tilt



Roll

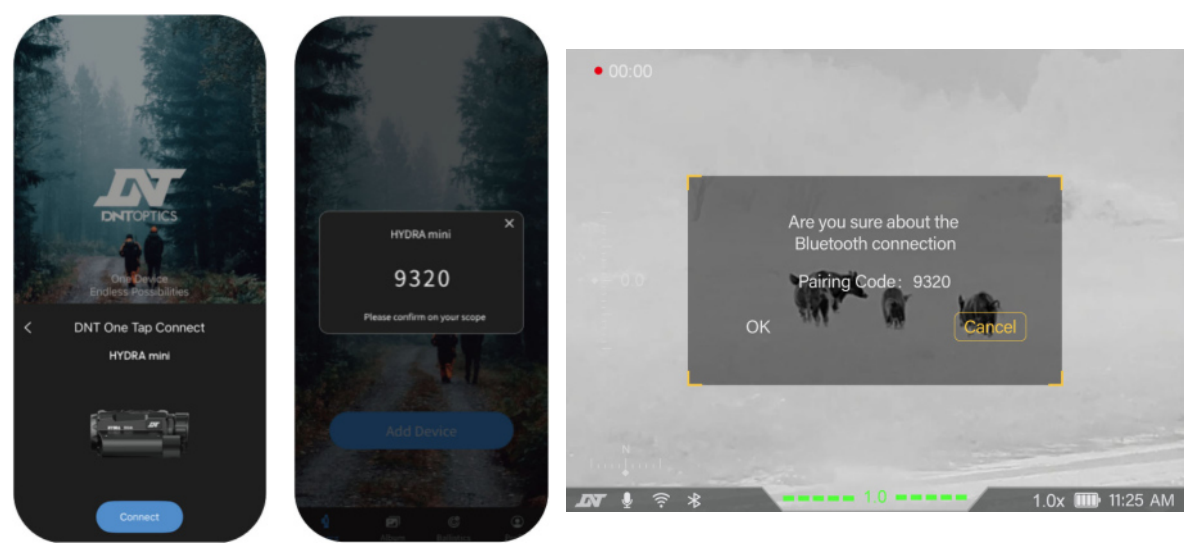
Connections

■ Connecting to the DNT App

One Tap Connect

DNT One Tap Connect is a streamlined feature designed to simplify the connection between your digital scope and the DNT App. By eliminating the need to manually toggle Wi-Fi or switch between system settings and the app, it gets you ready to go with a single tap.

- 1. **Power On:** Turn on your HYDRA-Mini.
- 2. **Launch the App:** Open the **DNT App** on your mobile device. The **HYDRA-Mini** connection pane should appear automatically on your screen within a few seconds.



- 3. **Verify the Connection:** Tap "**Connect**" in the app. A unique confirmation code will appear on both the app and inside the scope's display. Verify that the codes match, then press the confirmation button on the scope.
- 4. **Automatic Pairing:** The automated handshake will begin. Please wait a moment while the system synchronizes; the app will notify you once the connection is successful.



5. Future Use: Once this initial pairing is complete, the **DNT App** will automatically recognize and link to your **HYDRA-Mini** every time the app is opened.

Important Notes

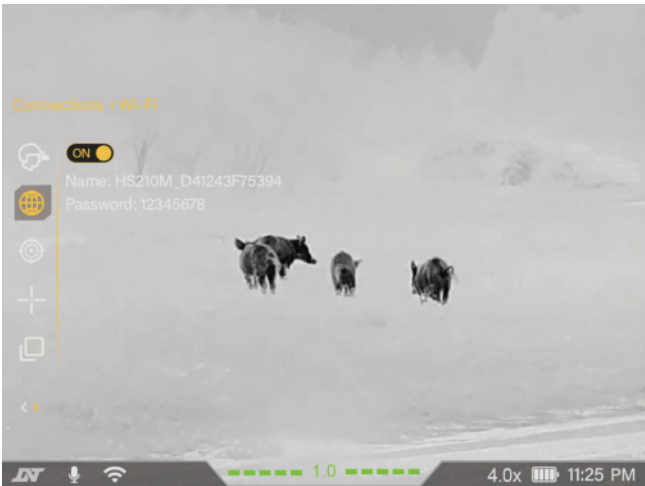
- App Version:** Ensure your DNT App is updated to v1.4.6 or higher to support One-Tap functionality.*
- Timeout Window:** The app will actively scan for devices for 2 minutes after it is opened.*
- Manual Refresh:** If your device is not found within that window, simply tap the "Device" icon in the app to restart the scanning process.*

Manual Connection

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

1. Turning on the device Wi-Fi:

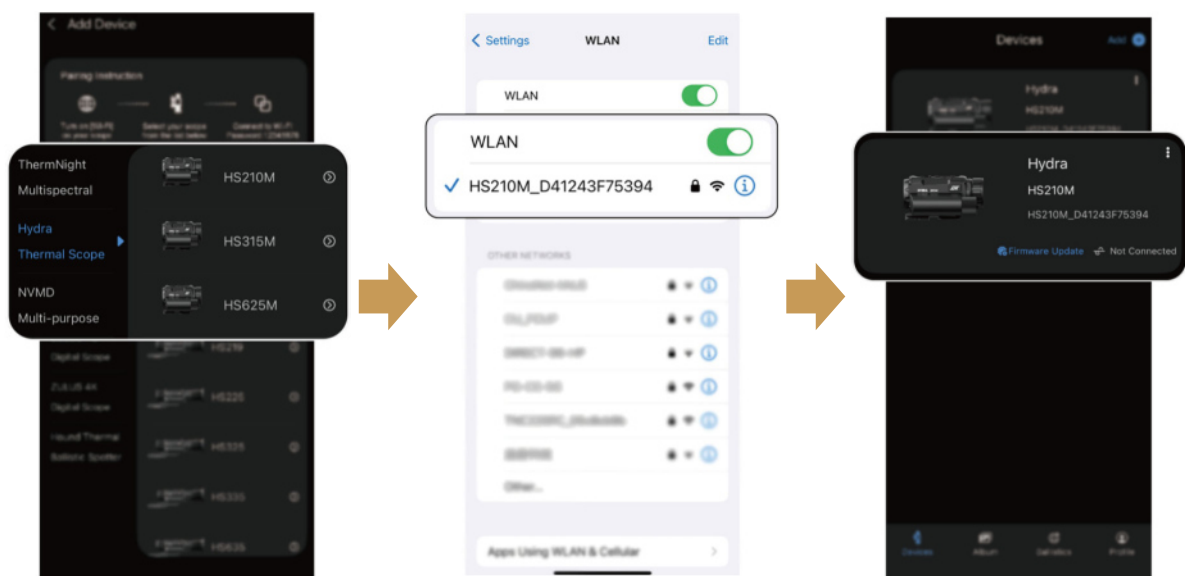
[Main Menu] > [Connections] > [Wi-Fi] > [On]



2. Open the DNT App, tap [Add Device], select [Hydra Thermal Scope], find your model, and tap it to add. This will take you to WLAN settings.
3. 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



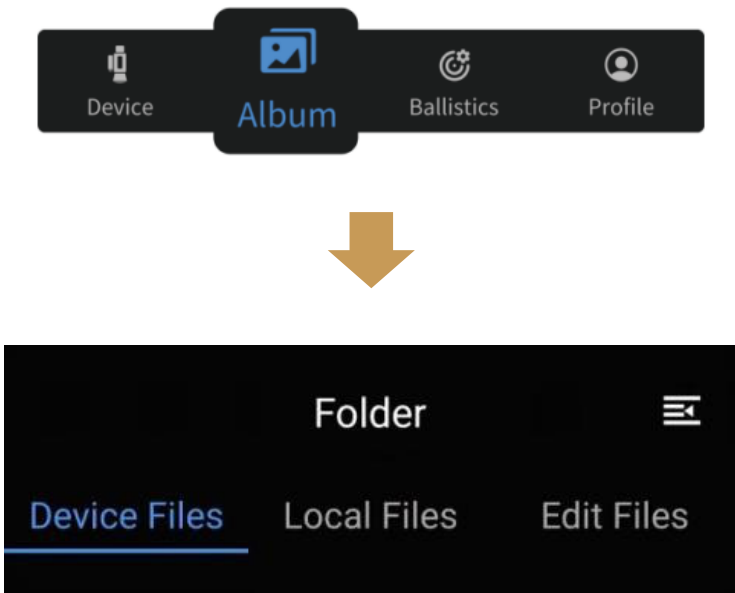
connect your phone to the device Wi-Fi. If prompted, select the option to “use without internet” on your mobile device.



4. 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 via the 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**.

Button 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

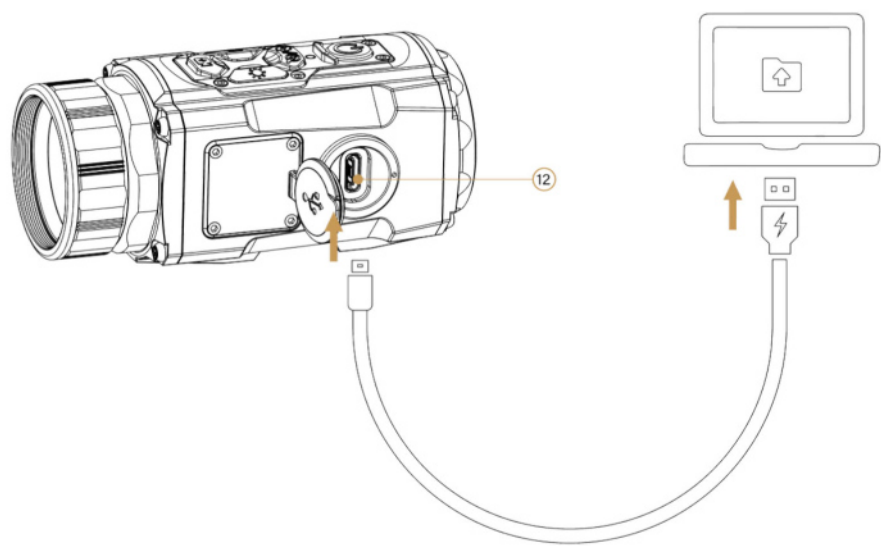
In the [Device Files] and [Edit Files] tabs, select the video you want, and tap the **Save to Local Files** button in the upper right corner to save it to [Local Files]. Once saved, you can access the video within the app even when the device is disconnected.

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**



Connecting HYDRA-Mini with your PC/Mac via a USB-C data cable. HYDRA-Mini will appear on your computer as a USB drive where you can manage your recordings.



APPENDIX

Table of Controls

Button / Control	Status	Short-Press	Long-Press
Power Button 	Power-Off	--	Power ON Device
	Live View	Enter Standby	Power OFF Device
	Standby	Exit Standby	--
	Zeroing Menu	Freeze / Unfreeze	--
Menu Button 	Live View	Cycle Zoom Levels	Enter Main Menu
	Menu	Navigate UP	--
	Changing Value	Increase Value	Return
Palette Button 	Live View	Cycle Thermal Palettes	Perform Manual NUC
	Menu	Return / Cancel	--
	Changing Value	Cancel	--
	Date / Time	Navigate LEFT	Exit without Saving
Record Button 	Live View	Start / Stop Recording	Start RAV
	Menu	Navigate DOWN	--
	Changing Value	Decrease Value	--
Brightness Button 	Live View	Cycle Brightness	--
	Menu	Select / Confirm	Cycle Sight Modes
	Changing Value	Confirm	--
	Date / Time	Navigate RIGHT	Save and Exit

Table of Menus

Icon	Description
	Sight Modes Switch among [Scope Mode] / [Handheld Mode] / [Helmet Mode] / [Clip-On Mode]
	Connections Turn Wi-Fi [ON] / [OFF]
	Zeroing / Collimation Open [Zeroing] in [Scope Mode] or [Collimation] in [Clip-On Mode] and [Helmet Mode]. Disabled in [Handheld Mode].
	Reticle Settings Reticles: [1-FFP] / [2-FFP] / [3-SFP] / [4-SFP] / [5-SFP] / [6-SFP] / [7-SFP] / [8-SFP] / [Hide] Reticle Colors: [Red] / [Green] / [Yellow] / [Black] / [White]
	PIP Settings [Off] / [Left] / [Center] / [Right]
	Recoil Activated Video Select among [Auto Mode] / [Manual Mode] / [OFF]
	Thermal Image Settings Thermal Imaging Mode: [Natural] / [Enhanced] / [Highlight] NUC: [Auto Mode] / [Manual Mode] Palettes: [White Hot] / [Black Hot] / [Red Hot] / [Iron Hot] / [Ultra Violet] / [Iron Blaze] / [Night Shade] / [Amber Glow] Image Contrast: 1-5 Image Brightness: 1-5 Image Sharpness: 1-5 Hotspot Tracking: Toggle [ON] / [OFF]
	Function Settings Auto Power Off: Auto shutdown time after entering Standby Mode: [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] Compass: [ON] / [OFF] / [Calibration] Screen Brightness: 1-6 Zeroing Freeze Countdown: [Off] [3s] [5s] [10s]



Icon	Description
	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 0cm between the radiator and your body. Use only the supplied antenna.





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