HYDRA

DNT OPTICS

Day Night Technologies

CONTENTS

HYDRA THERMAL SCOPE

HYDRA SERIES

HYDRA THERMAL SCOPE

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.
- 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.

DESCRIPTION

The **HYDRA** series consists of modular thermal scopes designed for 24/7 operation in all weather conditions. These scopes can function as standalone units, handheld thermal spotters, or thermal clip-ons for LPVOs (Low Power Variable Optics) and low-magnification prism scopes.

PACKAGE CONTENTS

- Hydra Thermal Scope
- Eye Cup
- Mount
- USB Cable
- User Manual

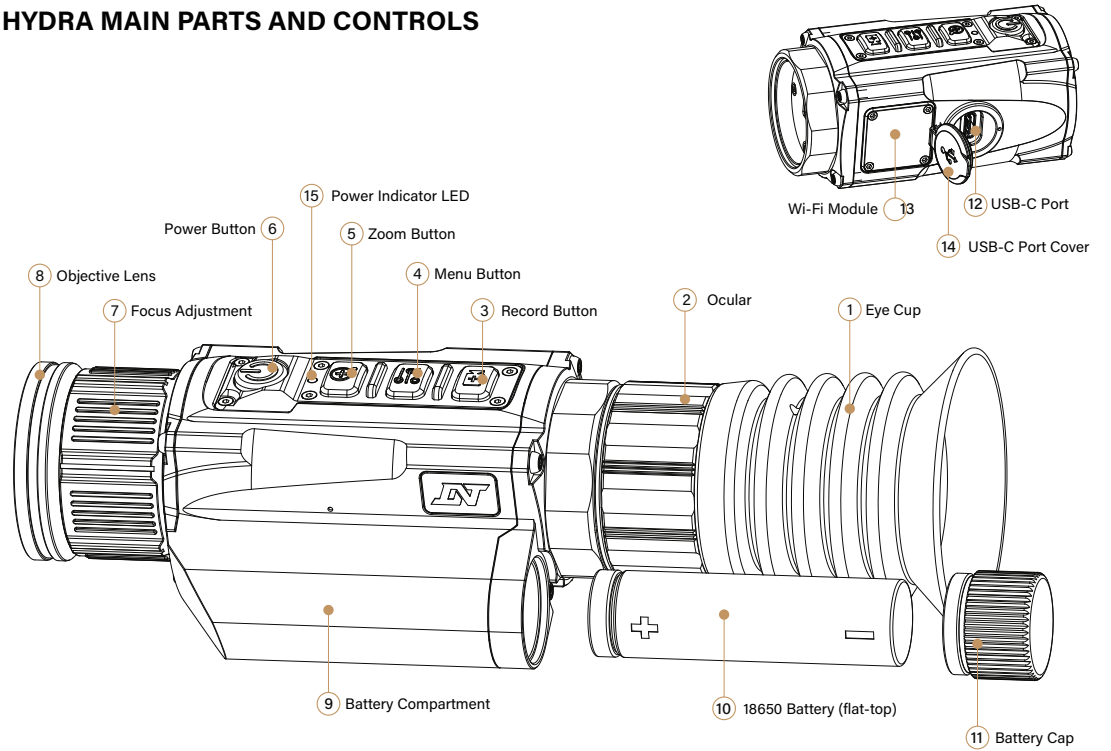
SPECIFICATIONS

	Model	HS219	HS225	HS325	HS335	HS635	HS650
Sensor Specifications	Sensor Resolution	256×192 pixels		384×288 pixels		640×512 pixels	
	Sensor Type	Uncooled Infrared Sensor					
	Sensor Frame Rate	50 fps					
	Pixel Size	12×12 μm					
	NETD	⩽25mk (@25℃)		⩽18mk (@25℃)			
	Focal Length of Objective Lens	19 mm	25 mm		35 mm		50 mm
	Base Magnification	2x	3x	2x	3x	1.5x	2.5x
	Digital Zoom	2x, 3x, 4x, 6x, 8x	3x, 4.5x, 6x, 9x, 12x	2x, 3x, 4x, 6x, 8x	3x, 4.5x, 6x, 9x, 12x	1.5x, 2.25x, 3x, 4.5x, 6x	2.5x, 3.5x, 5x, 7.5x, 10x
Display Specifications	Display Type	Micro-OLED					
	Display Resolution	1024x768 pixels					
	Display Refresh Rate	50 Hz					
Power Specifications	Battery Type	18650 Battery (Flat-top)					
	Operating Time	5.5 h		4.5 h		4 h	
	External Power Supply	5 V USB-C					
Physical Specifications	Net Weight	373 g / 13.2 oz	372 g / 13.1 oz	380 g / 13.4 oz	389 g / 13.7 oz		463 g / 16.3 oz
	Dimensions	202x68x50 mm 8.0x2.7x2.0 in	202x68x50 mm 8.0x2.7x2.0 in	202x68x50 mm 8.0x2.7x2.0 in	196x68x50 mm 7.8x2.7x2.0 in	201x68x50mm 7.9x2.7x2.0in	212x68x57 mm 8.4x2.7x2.2 in
	Storage	Built-in Storage, 32 GB					
	Wi-Fi / App	Supported / DNT App					
	Operating Temperature	-20 to 50℃ / -4 to 122℉					
	Ingress Protection Level	IP67					
	Recoil Rating	.50 BMG					

FEATURES

- ⩽18 mK NETD Thermal Sensor
- 3 in 1 Multi-Function Thermal: Standalone Scope, Clip-On, Handheld Monocular
- Thermal Image Super Resolution
- Ultra Compact & Lightweight
- 18650 Li-Ion Rechargeable Battery
- Micro-OLED 1024×768 display at 50 Hz
- One-Shot Zeroing
- Picture-in-Picture (PiP) Aiming Window

HYDRA MAIN PARTS AND CONTROLS

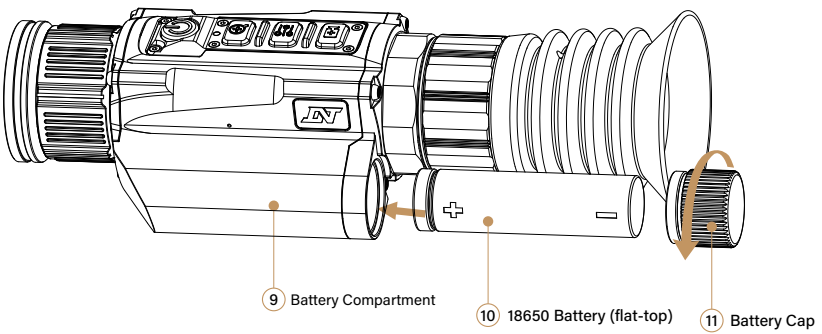


POWER SUPPLY

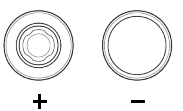
HYDRA is powered by a rechargeable 18650 battery (flat-top). The device can also operate using an external USB power supply.

Note: The USB-C port cannot be used to charge the 18650 battery. Please use an external charger instead.

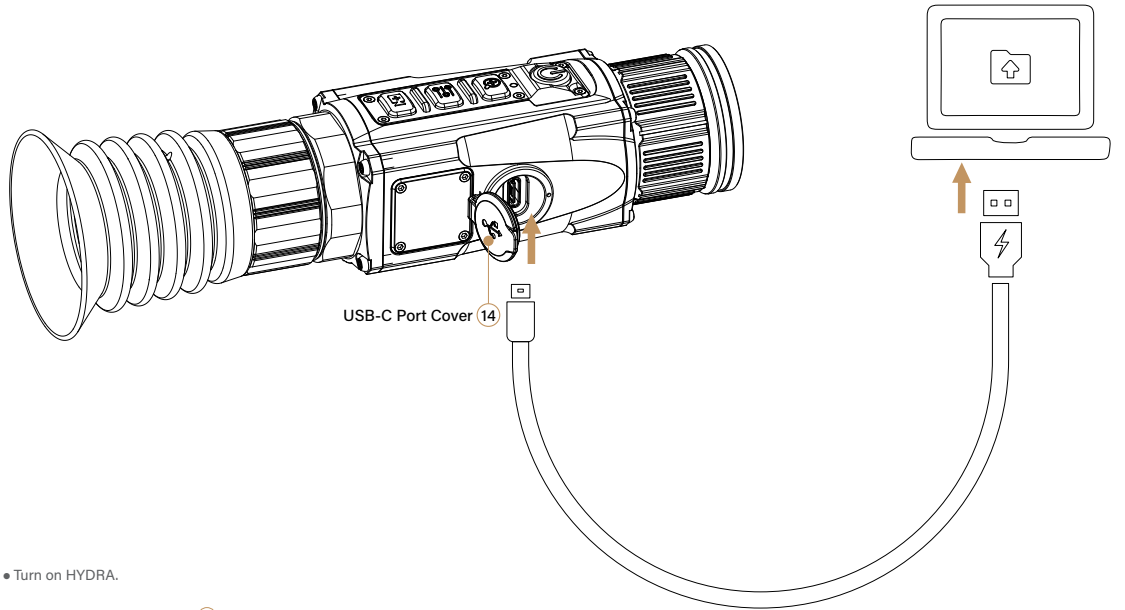
Installing the 18650 Battery



- Twist the Battery Cap (11) counterclockwise to remove it.
- Insert the 18650 Battery (flat-top) (10) into the Battery Compartment (9), with the positive (+) end going in first.
- Twist the Battery Cap (11) clockwise until fully tightened.



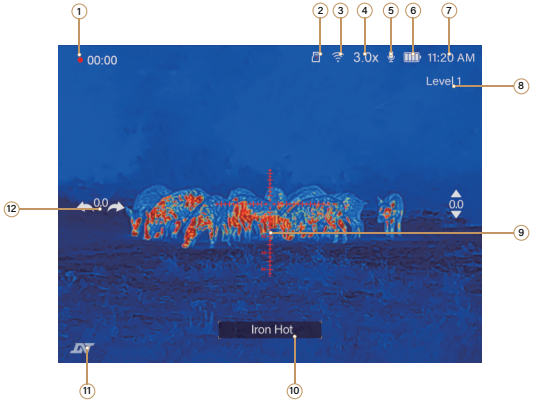
USB-C DATA TRANSFER



- Turn on HYDRA.
- Open the USB-C Port Cover (14) to reveal the USB-C port.
- Plug the USB-C cable into HYDRA's USB-C port. HYDRA will connect to your computer like a USB drive*. You can browse and download video recordings to your computer, and transfer files from HYDRA to your computer.

* MacOS may require third party software to connect to HYDRA scope.

ON-SCREEN DISPLAY



1. Recording Indicator (It displays during recording and shows the duration)
2. Storage Warning Status (It appears when there are storage issues)
3. Wi-Fi (Wi-Fi on; no display when off)
4. Current Magnification (e.g., 3.0x)
5. Microphone Status (It indicates whether sound would be included when recording;
   microphone on, microphone off)

6. Battery Status

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

7. Current Time
8. Current Screen Brightness Level
9. Reticle
10. Current Thermal Palette
11. DNT Logo
12. Gyroscope

QUICK START GUIDE

Turning On/Off the Device

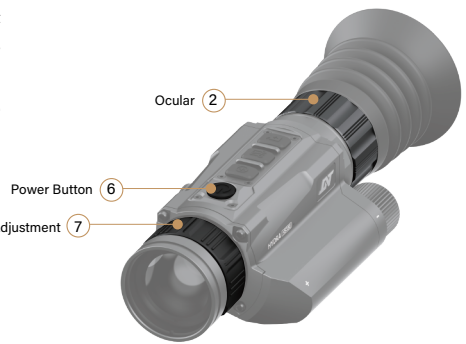
To turn on the device, long press the **Power Button** (6) for 2 seconds. The Power Indicator LED will turn blue, and the DNT logo will appear on the screen.
To turn off the device, long press the **Power Button** (6) . A 2-second countdown will appear on the screen. Keep holding the **Power Button** (6) until the device powers off. The Power Indicator LED will also turn off.

Enabling Standby Mode

To enable Standby Mode, short press the **Power Button** (6) . The screen will turn black and the Power Indicator LED will turn orange. To exit Standby Mode, short press the **Power Button** (6) again.

Ocular 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 cap closed). You can use the eye cup as a reference point for proper eye relief.
Slowly rotate the **Ocular** (2) clockwise or counterclockwise until you achieve the best screen clarity. Once set, no further adjustment is needed.
For Clip-On Mode, rotate **Ocular** (2) to the zero mark to ensure a clear image enters your glass optic.



Focus Adjustment

This adjustment controls image focus. Depending on your distance from the target, rotate the **Focus Adjustment** (7) clockwise or counterclockwise to achieve maximum clarity.
You may need to adjust this frequently to keep the target in focus.

Zooming In/Out

Short press the **Zoom Button** (5) to cycle through available magnification levels.

Changing Thermal Color Palettes

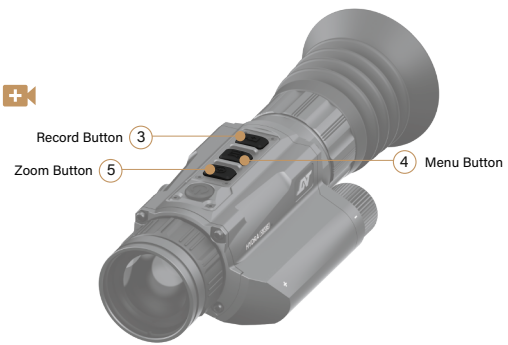
Short Press the **Menu Button** (4) to cycle through four available thermal color palettes.

Adjusting Screen Brightness

Long press the **Zoom Button** (5) to cycle through different screen brightness levels.

Recording

Short press the **Record Button** (3) to start or stop recording.
When RAV (Recoil Activated Video) is set to "Manual Mode", long press the **Record Button** (3) to trigger manual RAV. The device will automatically capture 10 seconds of footage before and after the button is pressed.



Clip-On Mode

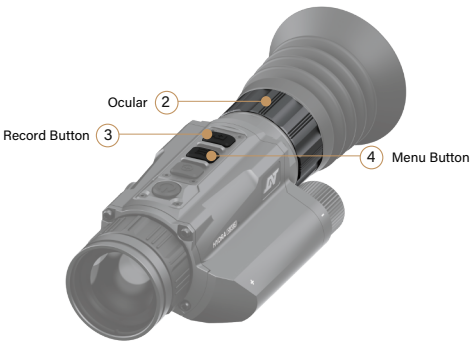
Thermal devices cannot see through glass, so ensure HYDRA is mounted in front of your LPVO, prism, or other low-magnification optic.

To activate Clip-On Mode:

- Either double-press the **Record Button** (3) ,
- Or long press the **Menu Button** (4) to access the settings menu, then short press it again to toggle "Clip-On" to "ON".

Once activated:

- Rotate the **Ocular** (2) to the zero mark (used as a reference only).
- Depending on the spacing between HYDRA and your primary optic, slowly adjust the **Ocular** (2) until you achieve the clearest image.



Zero Mark

Clip-On Zeroing

To zero the HYDRA in Clip-On Mode, you will adjust the position of HYDRA's display so that the Point of Impact (POI) displayed on HYDRA's screen matches the Point of Aim (POA) of your zeroed glass optic.

- Step 1:

  [Menu > Clip-On Zeroing]

  Aim at your target at the desired zeroing distance (50 yards recommended for HYDRA).

  Rotate the Objective Lens until the target appears in clear focus.

  You will get a POI on or near the target, shown as point T in Figure (1).

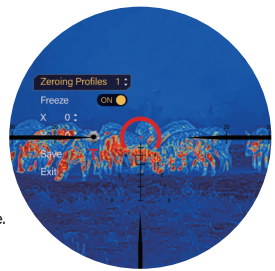


Figure (1)

Figure (2)

- Step 2:

  Keep HYDRA steady and ensure the reticle of your glass optic remains on your original POA.

  Short press the **Power Button** (6) or toggle "Freeze" to "ON" to freeze the current image.

- Step 3:

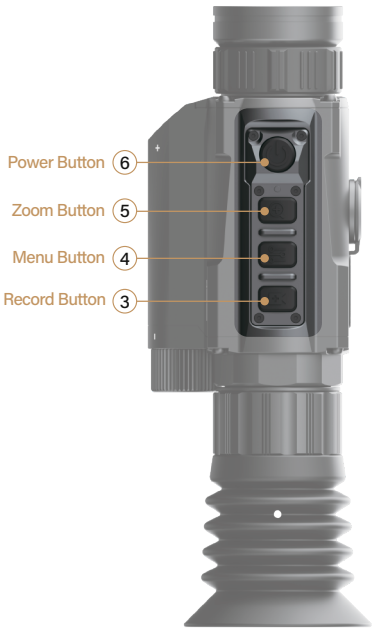
  Adjust the "X" and "Y" values to move the thermal image, until point T coincide with the center of your reticle.

  To adjust the "X" or "Y" value, short-press the Menu Button (4) **to select "X" or "Y", then** use the Zoom Button (5) **and** Record Button (3) to increase or decrease the value. This will shift the image accordingly to match the POI (point T) with the POA as shown

- Step 4:

  Move the cursor to "Save" and short press **Menu Button** (4) to save and exit.

CONTROL DESCTRIPTION

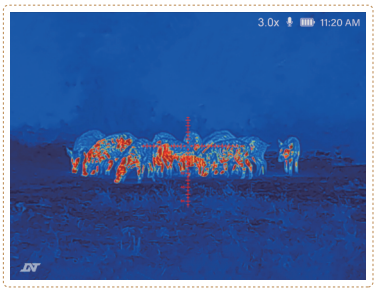


Button	Status	Short Press	Long Press	Quick Double-Press
6	O	--	On	--
	On	Standby	O	--
	Standby	Wake-up	--	--
	Zeroing	Freeze / Continue	--	--
4	On	Thermal Palette	Open Settings Menu	Toggle Among: Natural / Enhanced / Highlight
	Date / Time	Move Cursor	--	--
	Menu	Confirm	Exit	--
	Zeroing	Select / Deselect	--	--
	Defective Pixel Repair	Select / Deselect	--	--
5	On	Increase Magnification	Adjust Screen Brightness	NUC
	Menu	Move Cursor Up	--	--
	Date / Time	Increase Value	--	--
	Zeroing	Move Cursor Up / Increase Value	--	--
	Defective Pixel Repair	Move Cursor Up	--	--
3	On	Start / Stop Recording	Start RAV Recording (manual mode)	Toggle Clip-On Mode
	Menu	Move Cursor Down	--	--
	Date / Time	Decrease Value	--	--
	Zeroing	Move Cursor Down / Decrease Value	--	--
	Defective Pixel Repair	Move Cursor Down	--	--

MENU LIST

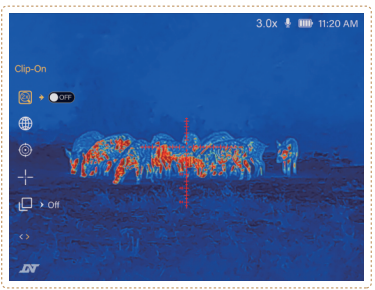
Long press the Menu Button to enter the settings menu, which contains 10 sections.
Once in the settings menu, the buttons function like a TV remote:

- Use the **Zoom Button** (5) to move the cursor up
- Use the **Record Button** (3) to move the cursor down
- Short press the **Menu Button** (4) to make a selection
- Long press the **Menu Button** (4) to go back

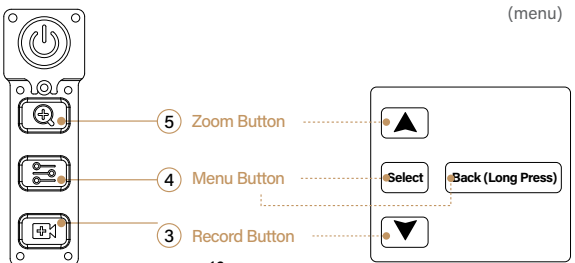


(main screen)

Long Press for 2s



(menu)



Icon	Description
	【Clip-On】 ON / OFF
	【Connections】 Wi-Fi Setting
	【Zeroing】 In Clip-On Mode, this function switches to Clip-On Zeroing
	【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】 Auto Mode / Manual Mode / Off
	【Image Super Resolution】 ON / OFF

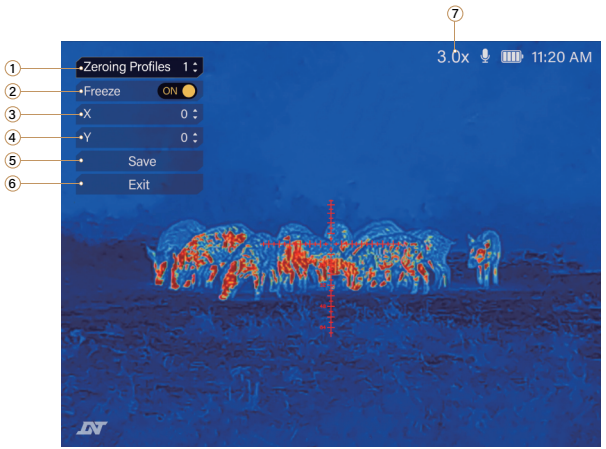
Icon	Description
	【Thermal Image Settings】 Thermal Imaging Mode: Natural / Enhanced / Highlight NUC (Non-uniformity correction): Auto Mode / Manual Mode Palettes: White Hot / Black Hot / Red Hot / Iron Hot Image Contrast: 1-5 Image Brightness: 1-5 Imagine Sharpness: 1-5 Hotspot Tracking: ON / OFF
	【Function Settings】 Defective Pixel Repair: Move the cursor to the defective pixel for repair Auto Power Off: Auto shutdown after entering Standby Mode: Off / 10 / 20 /30minutes Loop Recording: Off / 1 / 3 / 5minutes Audio Recording: ON / OFF Gyroscope: ON / OFF / Calibration Screen Brightness: 1-5
	【System Settings】 Date / Time Language Setting: English / Français / Español / Deutsch / Italiano Format Restore Default Settings Available Storage Version

MAIN FUNCTION

Reticle Zeroing

[Menu > Zeroing]

Select your zeroing profile, then short press the **Menu Button** (4) to confirm your choice. There are 10 zeroing profiles (1-10) to choose from, and each can have its own reticle color, style, and zeroing values.



(1) Zeroing Profiles 1: Current zeroing profile. Total: 10 profiles (1-10).

(2) Freeze: Freeze / Unfreeze image.

(3) X=0: Horizontal position of the reticle (Left and Right).

(4) Y=0: Vertical position of the reticle (Up and Down).

(5) Save: Save and exit.

(6) Exit: Exit without saving.

(7) 3x: Current magnification setting.

Zeroing (When Used as a Standalone Scope)

- Step 1: Aim at the target at your preferred zeroing distance (50 yards recommended for HYDRA). Adjust the **Objective Lens** (8) until the target is in focus. You will get a Point of Impact (POI) on or near the target, shown as point T in Figure (1).
- Step 2: Keep your HYDRA steady and the reticle aimed at your original Point of Aim (POA). Short press the **Power Button** (6) to freeze the current image.
- Adjust the "X" and "Y" values to move the center of the reticle (POA) to the POI (Point T) in Figure (2). You can adjust the "X" and "Y" values by short pressing the **Menu Button** (4) , selecting your option, and then using the **Zoom Button** (5) and **Record Button** (3) to move the reticle Up/Down or Left/Right.
- Move the cursor to "Save" and short press the **Menu Button** (4) to save and exit.

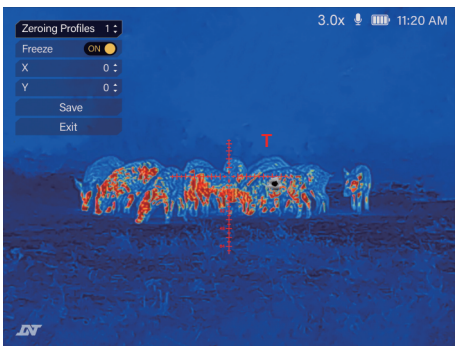


Figure (1)

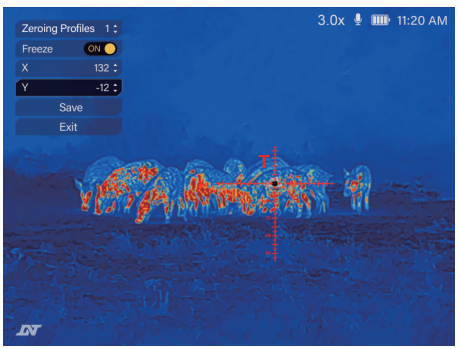


Figure (2)

Reticle Settings

[Menu > Reticle Settings]

Reticles

[Menu > Reticle Settings > Reticles]
Select a reticle style. Reticles 1-2 are First Focal Plane (FFP), and Reticles 3-8 are Second Focal Plane (SFP). Short press the **Menu Button** (4) to save your selection and return to the Reticle Settings interface.

Reticle Colors

[Menu > Reticle Settings > Reticle Colors]
Select a reticle color (Red, Green, Yellow, Black, or White). Short press the **Menu Button** (4) to save your selection and return to the Reticle Settings interface.

PiP Settings

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

Recoil Activated Video (RAV)

[Menu > Recoil Activated Video]

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, we recommend using Auto Mode with recoil greater than .22LR.

Manual Mode
In this mode, long press the **Record Button** (3) to save a video with 10 seconds before and after the press. While RAV is recording, long pressing the **Record Button** (3) again will extend the duration of RAV for another 10 seconds.

Off Mode
In this mode, RAV is disabled by default.

Hotspot Tracking

[Menu > Thermal Image Settings > Hotspot Tracking]
When activated, the screen will automatically display the hottest heat source within the visible area.

Auto Power Off

[Menu > Function Settings > Auto Power Off]
Choose from 10, 20, or 30-minute auto power-off intervals. The countdown begins when the device enters Standby Mode. We recommend enabling this function to prevent excessive battery drain.

Loop Recording

[Menu > Function Settings > Loop Recording]

Off
Records a single video of up to 10 minutes, then stops automatically.

1 minute / 3 minutes / 5 minutes
Selecting any of these durations enables loop recording, which means that when you short press the **Record Button** (3) 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 manually press the **Record Button** (3) to stop.

Audio Recording

[Menu > Function Settings > Audio Recording]
Enable this setting to record audio along with the video during recording. It is enabled by default.

Thermal Imaging Modes

[Menu > Thermal Image Settings > Thermal Imaging Modes]

Natural

The thermal image appears most natural. This is the standard mode for general use, where everything is balanced.

Enhanced

The thermal image is enhanced for finer detail, but this may introduce more noise and pixelation.

Highlight

Rapid target detection mode. The heat source will stand out and become more vivid, while the surrounding environment dims to provide the highest contrast for the heat source.

Wi-Fi

[Menu > Connections > Wi-Fi]

Wi-Fi is used to connect the HYDRA scope to your cellphone/tablet via the DNT App. You do not need an internet Wi-Fi signal.

To turn on Wi-Fi, short press the **Menu Button** (4) to toggle it to "ON". The device's Wi-Fi name and password will be displayed. Once set, long press the **Menu Button** (4) to return.

USING THE DNT APP

Installing the DNT App

You can download the DNT App from Google Play (Android) or the App Store (iOS), or scan the QR codes below.

Android

iOS

Connecting to the DNT App

- **Turn on the device Wi-Fi:** See Page 21 for detailed instructions.
- **Connect your phone to the device Wi-Fi:** In your phone's Settings, turn on Wi-Fi, find the device's Wi-Fi name, and enter the the password 12345678.

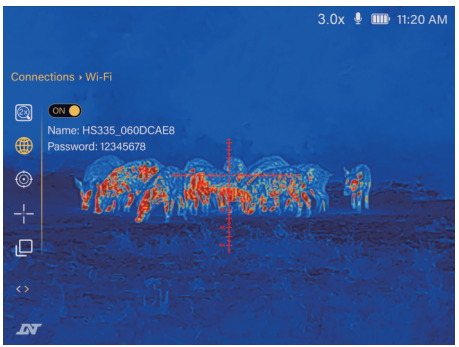
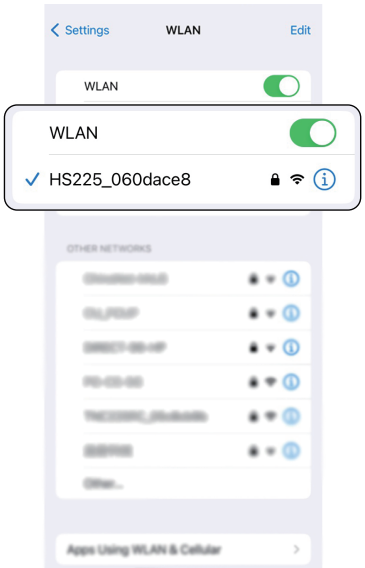
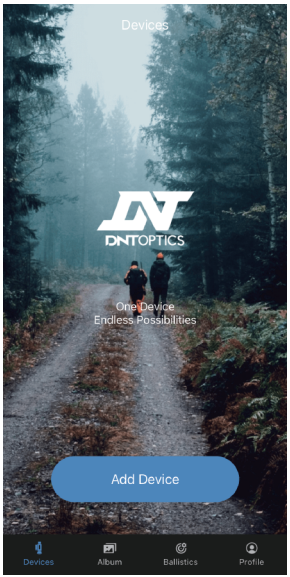
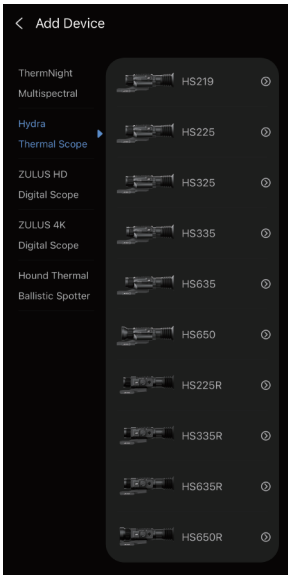


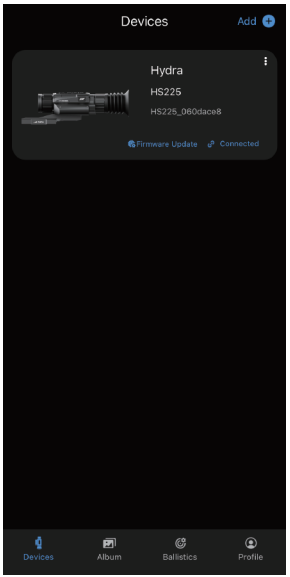
Figure (1)



- **Add Device:** Open the DNT App, tap "Add Device" to jump to the device list. Select "Hydra Thermal Scope", find your specific model, and tap to add.
- **Establish Connection:** Once the device is successfully added, you will see the device status showing as "Connected", indicating the app has properly connected to the device's Wi-Fi.

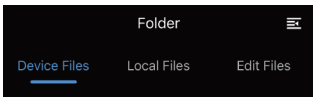






Accessing Recorded Videos via the DNT App

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.

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 compliancecould 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 differentfrom 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.

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