

Thermal Imaging Multifunctional Device
VIPER 35 HUNTER/TAC
INSTRUCTION MANUAL

SAFETY INSTRUCTIONS

Important Usage Instructions

1.Read Before Use: Carefully read this manual before using the device to ensure safe and proper operation.

2.Testing: Thoroughly test the device before use, especially if it has been in storage for an extended period.

3.Disassembly: Do not disassemble the device. Repairs should only be performed at authorized service centers.

4.Optical Surfaces:

1. Always keep the external optical surfaces clean.
2. Avoid touching the optical surfaces with bare hands.
3. Protect the device from sand and seawater, as they can damage the optical coatings.

5.Sunlight: Never point the device directly at the sun.

6.Image Performance:

1. Image quality depends on the environment and atmospheric conditions.
2. Contrast may vary based on the time of day. For instance, at sunset, temperature differences between objects are more pronounced, resulting in better contrast.

7.Storage:

1. Remove the battery if the device will be stored for a long period.
2. Store the battery in polyethylene bags to prevent contact with metal.
3. Recharge the battery every 2–3 months to maintain its condition.

8.Condensation:

1. Condensation may form on external optical surfaces in the following cases:
 1. When moving the device between cold and warm environments.
 2. If the device's temperature differs significantly from the ambient temperature.
 3. In high-humidity conditions.
2. Condensation typically disappears once the device's temperature equalizes with the environment. Use the provided cleaning cloth to remove any moisture. Anti-fog sprays or the included rubber accessories can help prevent condensation.
3. Note: Condensation on the objective lens does not affect the device's performance.

9.Cleaning: Clean lens surfaces gently with the provided cleaning cloth.

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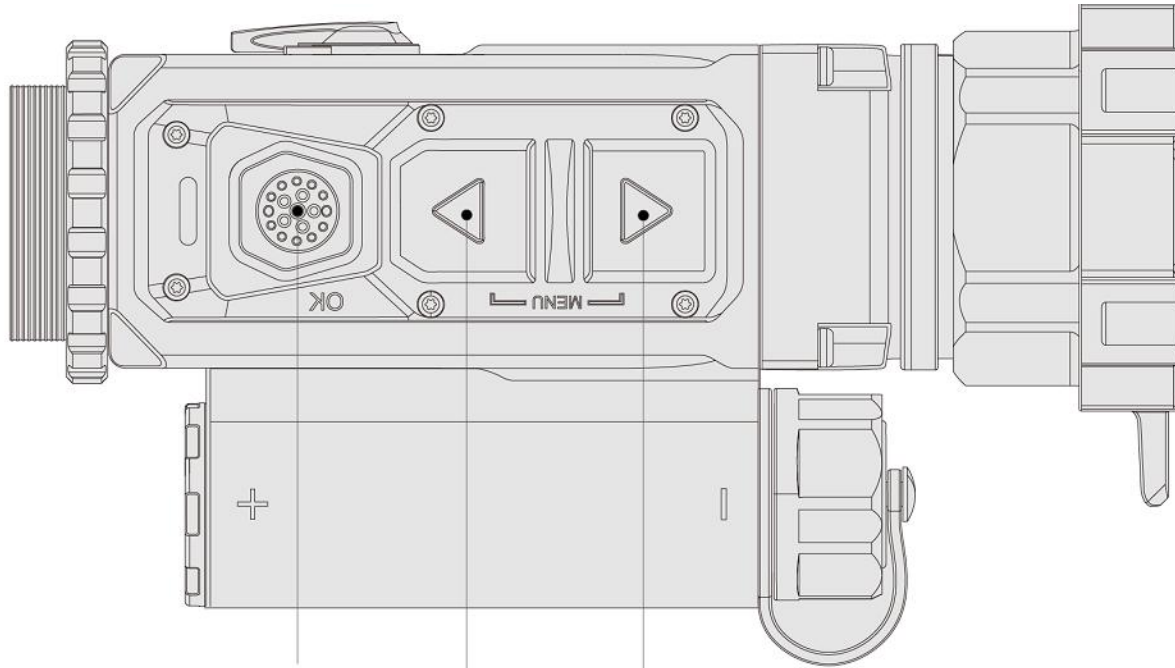
6. Battery Use

1 Delivery Set

N	Description	QTY.	
1	Thermal imaging multifunctional device Viper 35 Hunter		1
2	Transport Box		1
3	Accessories Box		1
4	Soft bag		1
5	Rechargeable battery 18650		1
6	Protective rubber lens cap		1
7	USB cable		1
8	Focusing ring		1
9	Counter ring		1
10	Cleaning cloth		1
11	User manual		1
12	Warranty card		1

2 Device Overview

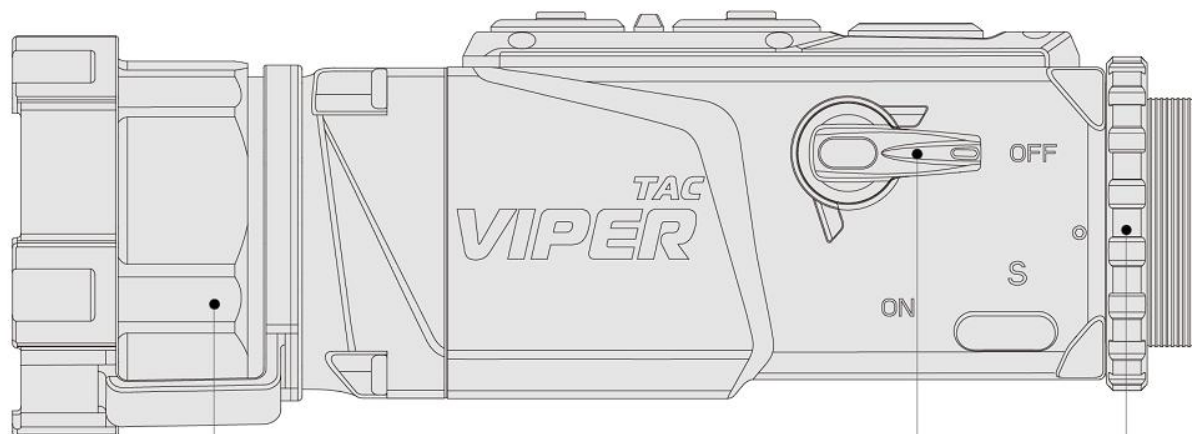
NOTE: All images used in this instruction manual are for illustrative purpose only. Actual product may vary due to product enhancement.



BRIGHTNESS / PALETTE

NUC / VIDEO RECORDING

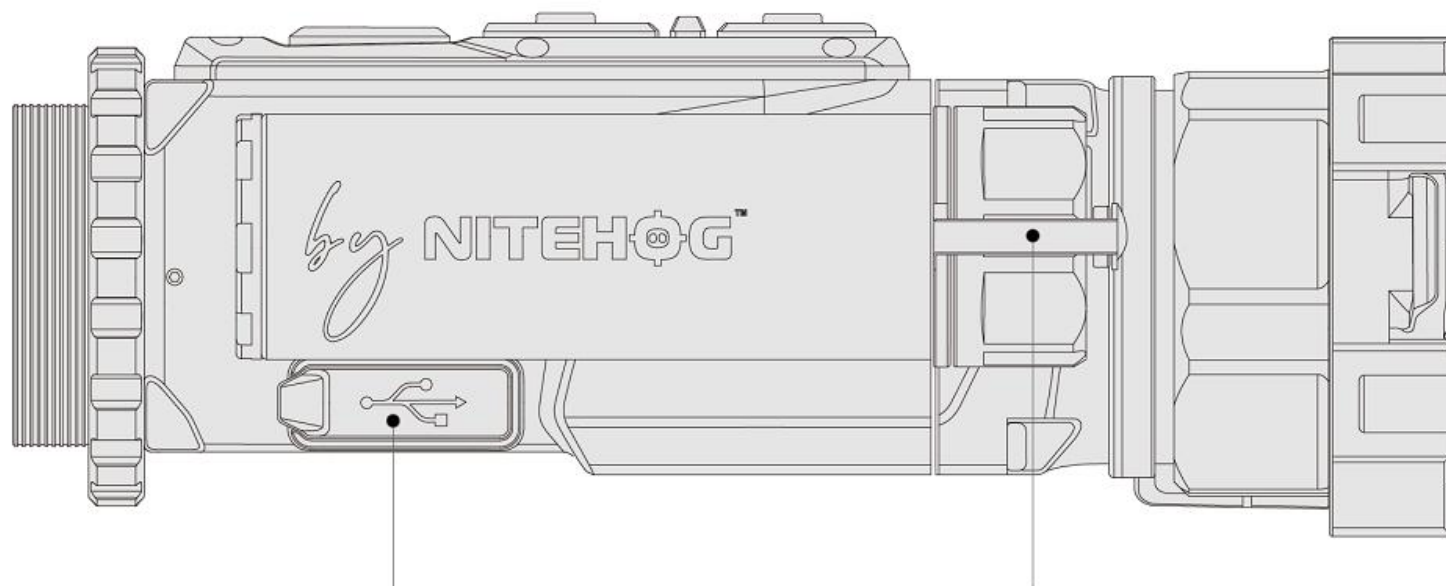
DIGITAL ZOOM / AI SRF / SNAPSHOT



OBJECTIVE FOCUS RING

ON / STANDBY / OFF

ATTACHMENT PLACE



USB PORT

BATTERY CAP

3 Description of Controls

3.1 Three position toggle switch

Toggle switch	Postion	Status
	ON	Power on
	S	Standby
	OFF	Power off

3.2 Controls

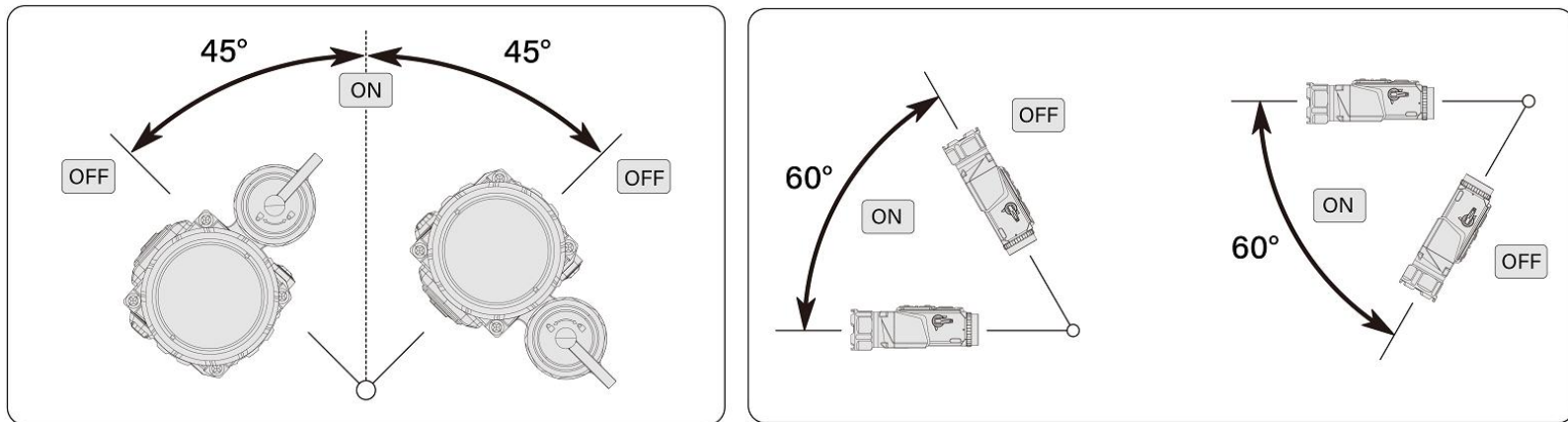
BUTTONS	SHORT PRESS		LONG PRESS
	Observation Mode	Clip-on Mode	Snapshot
	Digital zoom	AI SRF (only SRF is ON)	
	NUC activating		Video recording on/off
OK	Change between four values of the diplay luminance		Fast access to palette mode menu
OK + 	Switch between clip-on and observation mode (only available when fast switching mode is on)		

4. Basic Operation

4.1 Power On/Off/Standby

Move the toggle switch to the desired position for ON, S (Standby) and OFF settings.

NOTE: When the toggle switch is in the Standby position, the device will remain powered on if the tilt range is within 45° to either side and 60° upwards or downwards. The device will automatically enter Standby mode if the tilt exceeds 45° to either side or 60° upwards or downwards.



4.2 Interface Display

After powering on, the basic OSD is displayed. Pressing any button will switch to the full OSD.

If no operation is performed within 3 seconds under full OSD, the full OSD will automatically revert to the basic OSD.



Basic OSD in Clip-on Mode



Full OSD in clip-on Mode



Basic OSD in Observation Mode



Full OSD in Observation Mode

ATTENTION!

When the device is powered on, the basic OSD is displayed in both clip-on mode and observation mode. Pressing any button will trigger the full OSD, which will remain on-screen for 3 seconds before disappearing automatically.

NOTE

When entering Observation Mode, the  will be displayed in the center of the screen for 15 seconds. After 15 seconds, it will automatically move to the top-right corner of the screen.

4.3 Digital Zoom (Only available in Observation mode)

Short press the **Up** button in Observation mode to zoom in or zoom out between 1x/2x/3x/4x. The current digital zoom is shown on the right side of the screen.



4.4 AI SRF (Only available in Clip-on mode)

The AI SRF function uses algorithm to automatically calculate the distance to an object of known size helping users quickly estimate the approximate distance to the animal. when AI SFR is activated in main menu, short press the **Up** button to turn on the AI SRF function in Clip-on mode.

Align the lower horizontal bar with the base of object, the upper horizontal bar will automatically align and calculate the distances for the four reference objects automatically. Users select the corresponding distance based on the size of object.

Press and hold the **OK** button to exit AI SRF function.



IMPORTANT!

Users can select 4 silhouettes to be displayed on the screen from 18 predefined silhouettes.

4.5 Snapshot

Long press the **Up** button to take a photo, the capture icon appears on the screen for 1s before disappearing.



4.6 NUC

Short press the **Down** button to do non-uniformity correction.

4.7 Video Recording

Long press the **Down** button to start a video recording.

A recording timer displays on the screen.

Long press the **Down** button to stop and save the video recording.



4.8 Display Luminance Adjustment

Short press the **OK** button to change between four values of the display luminance.



NOTE

When Auto Isotherm is activated, short press **OK** button to perform sampling.

4.9 Palette Mode

Long press the **OK** button to switch the palette from Black hot, White hot, Red hot, Isotherm, Auto Isotherm, Ironbow and Rainbow.

4.10 Switch Between Clip-on Mode and Observation Mode

Press the **OK** button and the **Down** button simultaneously to quick switch between Clip-on Mode and Observation Mode.

NOTE

The quick switch function can only be performed when it is activated from the main menu.

5. MENU

5.1 Navigation

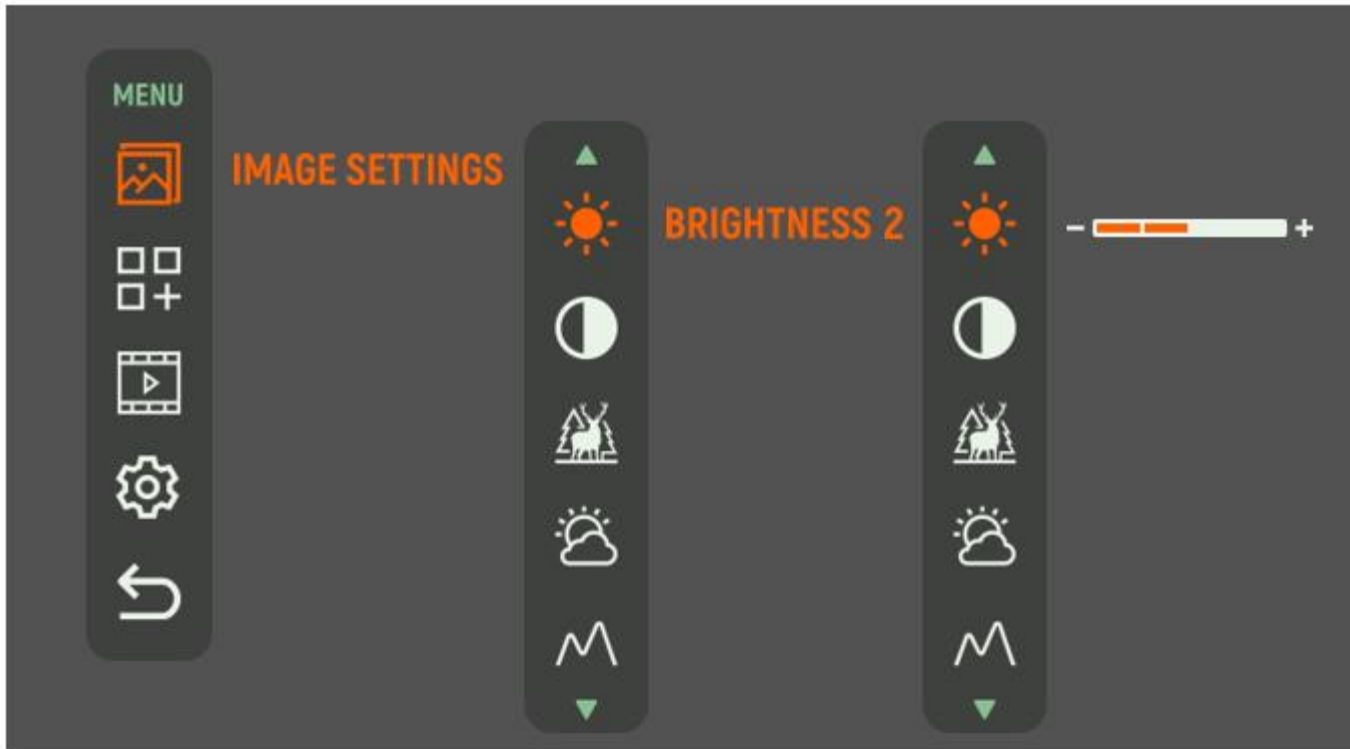
BUTTONS	SHORT PRESS	LONG PRESS
 + 	Enter menu	/
	Move the curse up	/
	Move the curse down	/
OK	Function select	Exit menu

5.2 Image Settings

Press the **Up** button and the **Down** button simultaneously to enter Menu, press Up and Down button to select Image Settings and Press the **OK** button to enter its secondary menu to adjust the parameters of current option.

5.2.1 Brightness

Select Brightness to adjust the level of image brightness from 1 to 4 by pressing **Up** or **Down** button, press the **OK** button to save and exit to upper interface.



NOTE

Brightness in Image Setting is not related with the Luminance adjustment.

5.2.2 Contrast

Select Contrast to adjust the level of image contrast from 1 to 4 by pressing the **Up** or the **Down** button, press the **OK** button to save and exit to upper interface.



5.2.3 Scene

Select a scene mode based on the properties of the scene and your preferences.

Short press the **Up** or **Down** button to switch the scene mode among Highlights, Panorama, City and AI Scene.

Short press the **OK** button to save and exit to upper interface.



Highlights - this type of image contrasting is suitable for detection and observation.



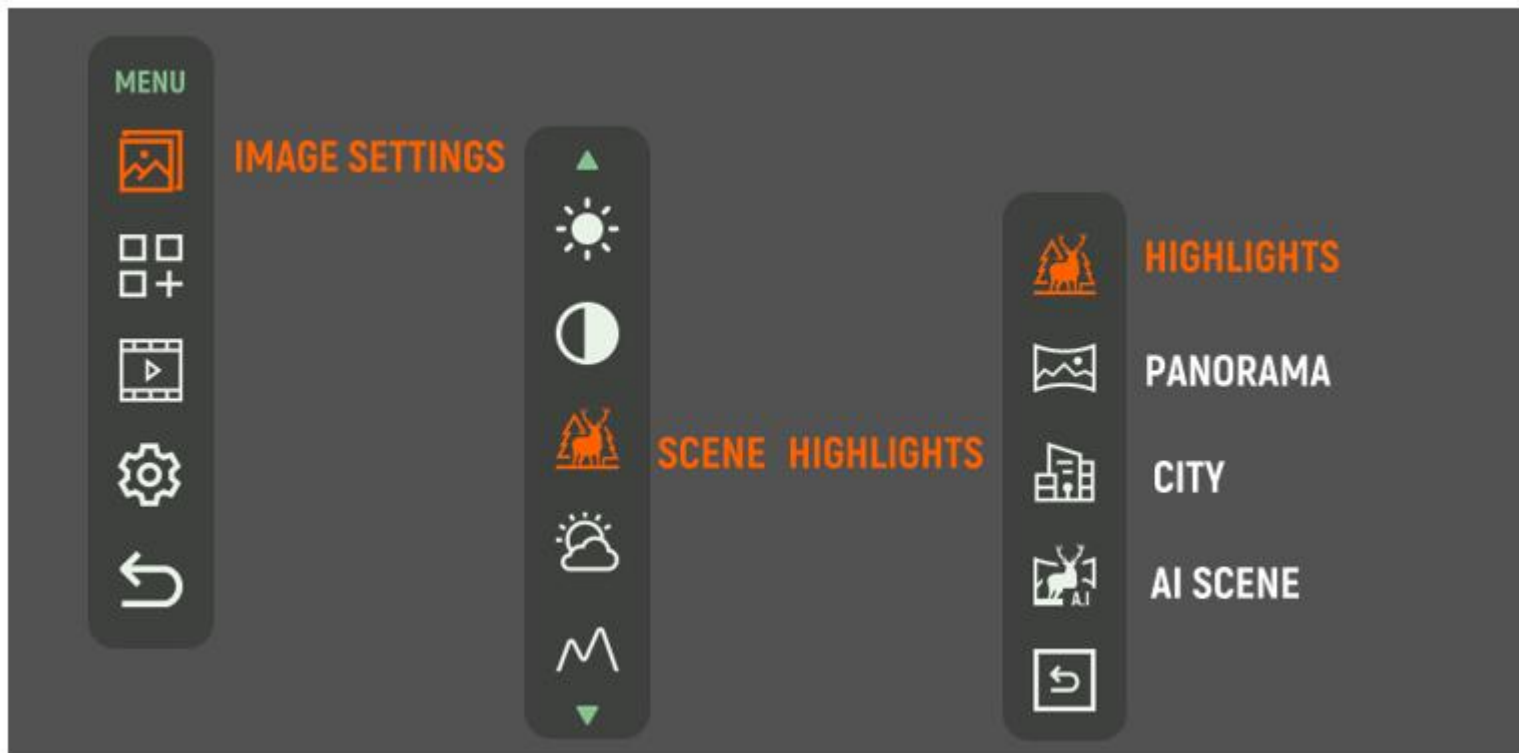
Panorama - this type of image contrasting is suitable for observing panoramic scenes with combination of: forest and sky, earth and sky, scenes on the horizon.



City - this type of image contrasting is suitable for high temperature scene.

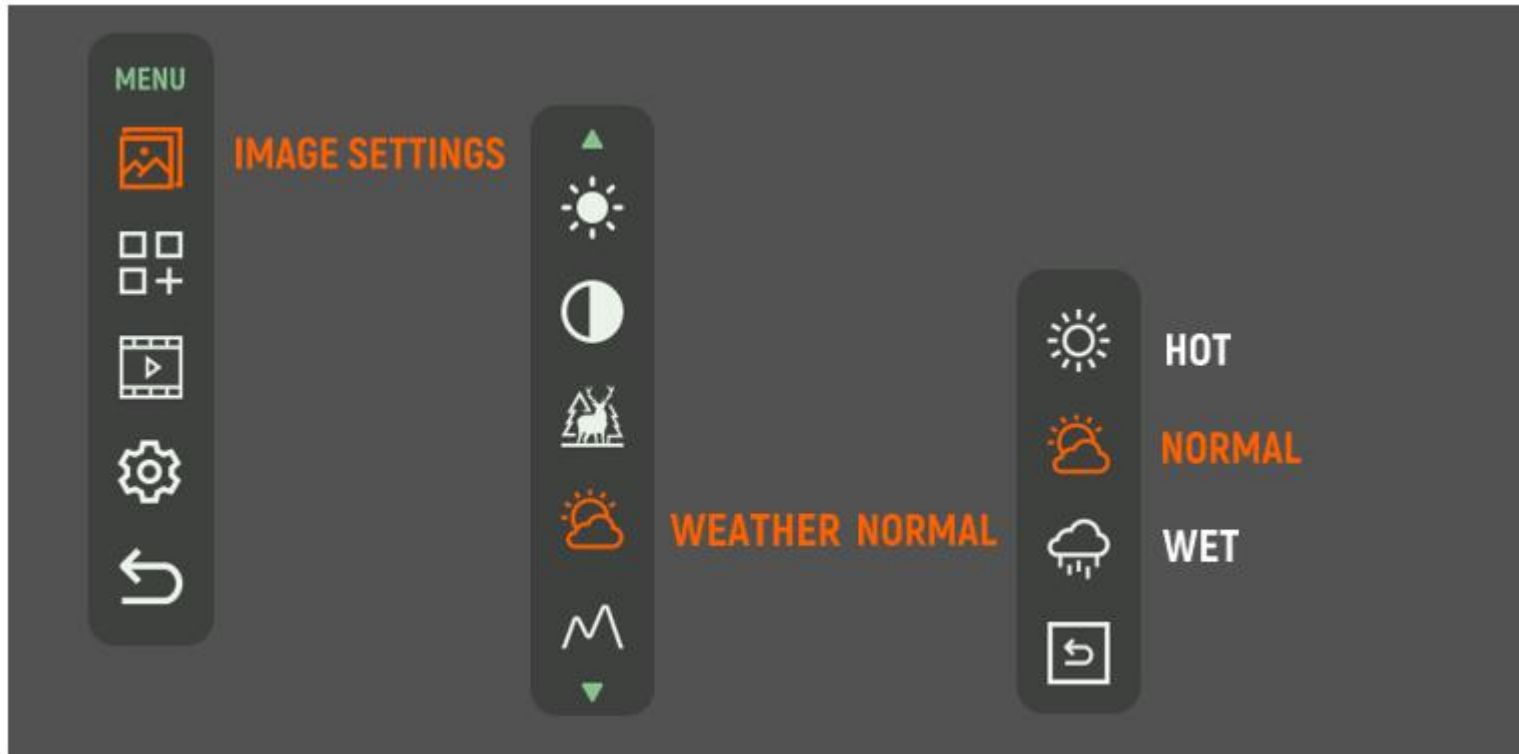


AI Scene - Adaptive Scene Mode, automatically selecte and switch among Highlights, Panorama and City based on the environmental conditions.



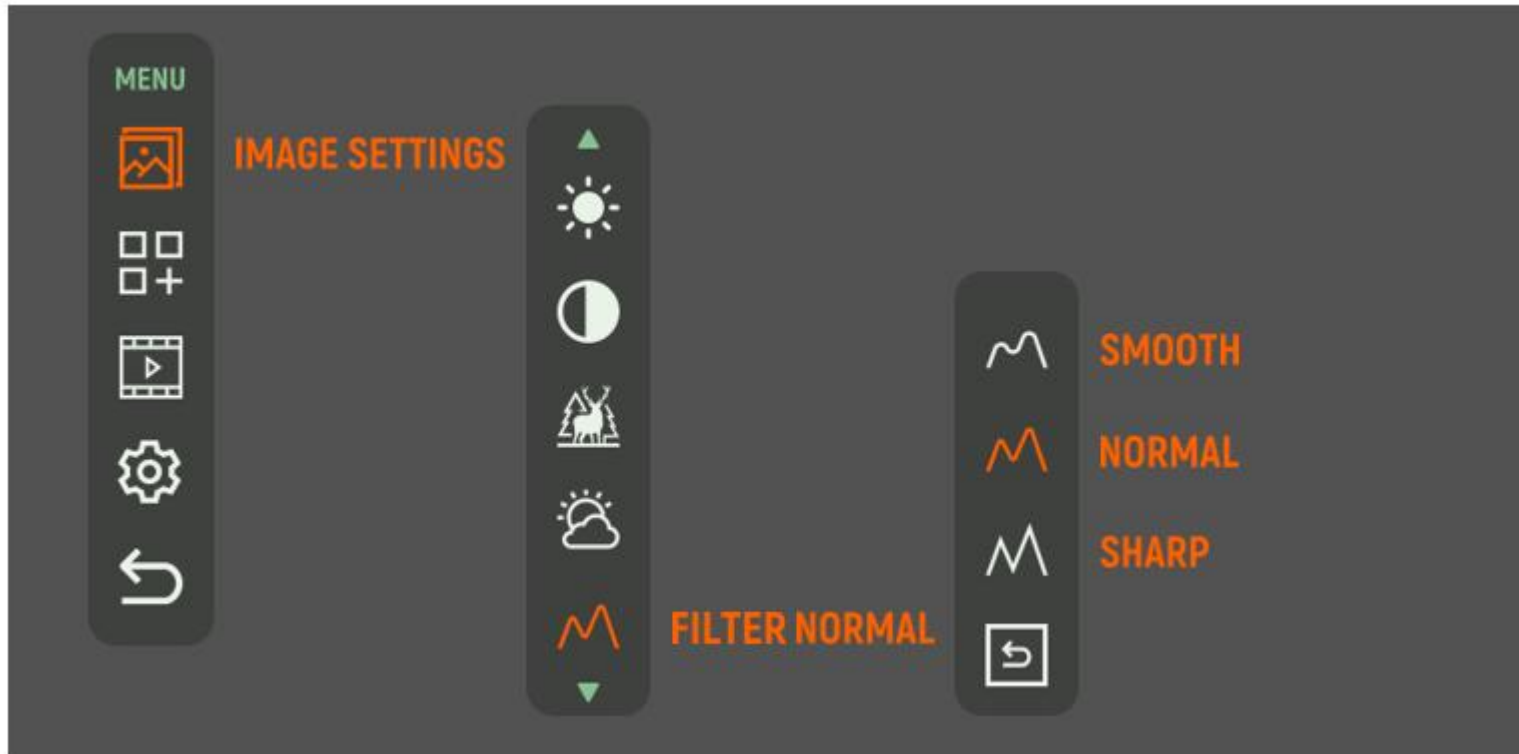
5.2.4 Weather

Select the Weather mode and switch among Normal, Wet and Hot by short pressing the **Up** or **Down** button. Press the **OK** button to save and exit to upper interface.



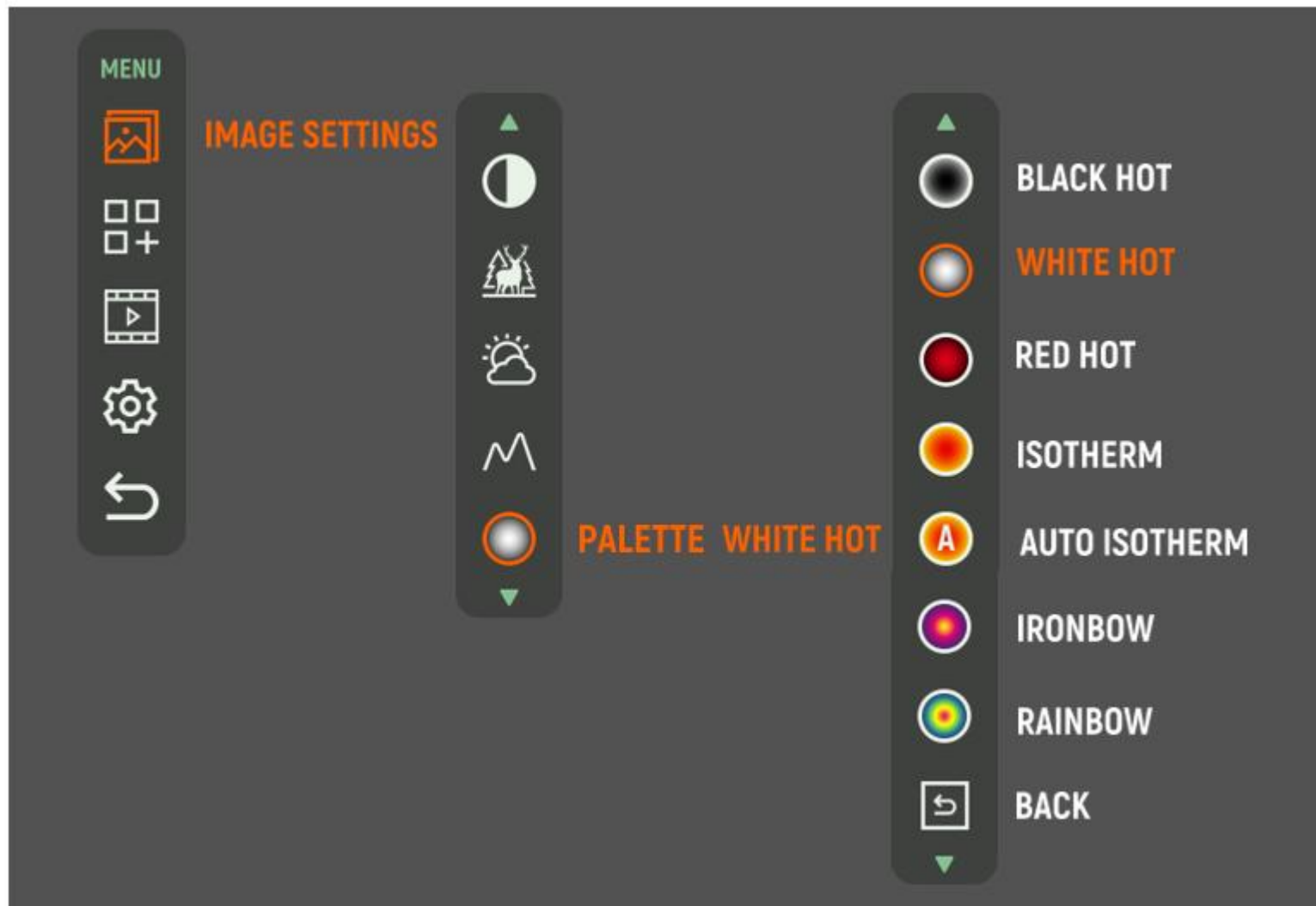
5.2.5 Filter

Select the Filter mode and switch among Smooth, Normal and Sharp by short pressing the **Up** or **Down** button. Press the **OK** button to save and exit to upper interface.



5.2.6 Palette

Select the Palette mode and switch among Black Hot, White Hot, Red Hot, Smooth, Isotherm, Auto Isotherm, Ironbow, and Rainbow by short pressing the **Up** or **Down** button. Press the **OK** button to save and exit to upper interface.





Black hot - Warmer object appears in black.



White hot - Warmer object appears in White.



Red hot -The image is red black to minimize the blue light mitting from the display and is more comfortable on the eyes.



Isotherm - the objects above the threshold temperature are colored in different shades of red. The temperature threshold can be set (increase/decrease) by the temperature scale shown. Increasing the threshold value ignores the colorizatton of the colder objects. This optton is highly dependent from the distance to the object. It is highly recommended to try different values of the threshold in the daily usage to ffind the right value for your personal preference. Short press the **OK** button to adjust the temperate threshold, decrease or increase the value by short pressing **Up** or **Down** button.



Auto Isotherm - the AUTO Isotherm mode enables a marked object to be set as the lowest temperature object in the scene, and the other objects in the scene with higher temperatures are highlighted with yellow-red colors with graduatton to this temperature threshold automattcally. When Auto Isotherm is activated, short press the **OK** button to set the value (marking the object).



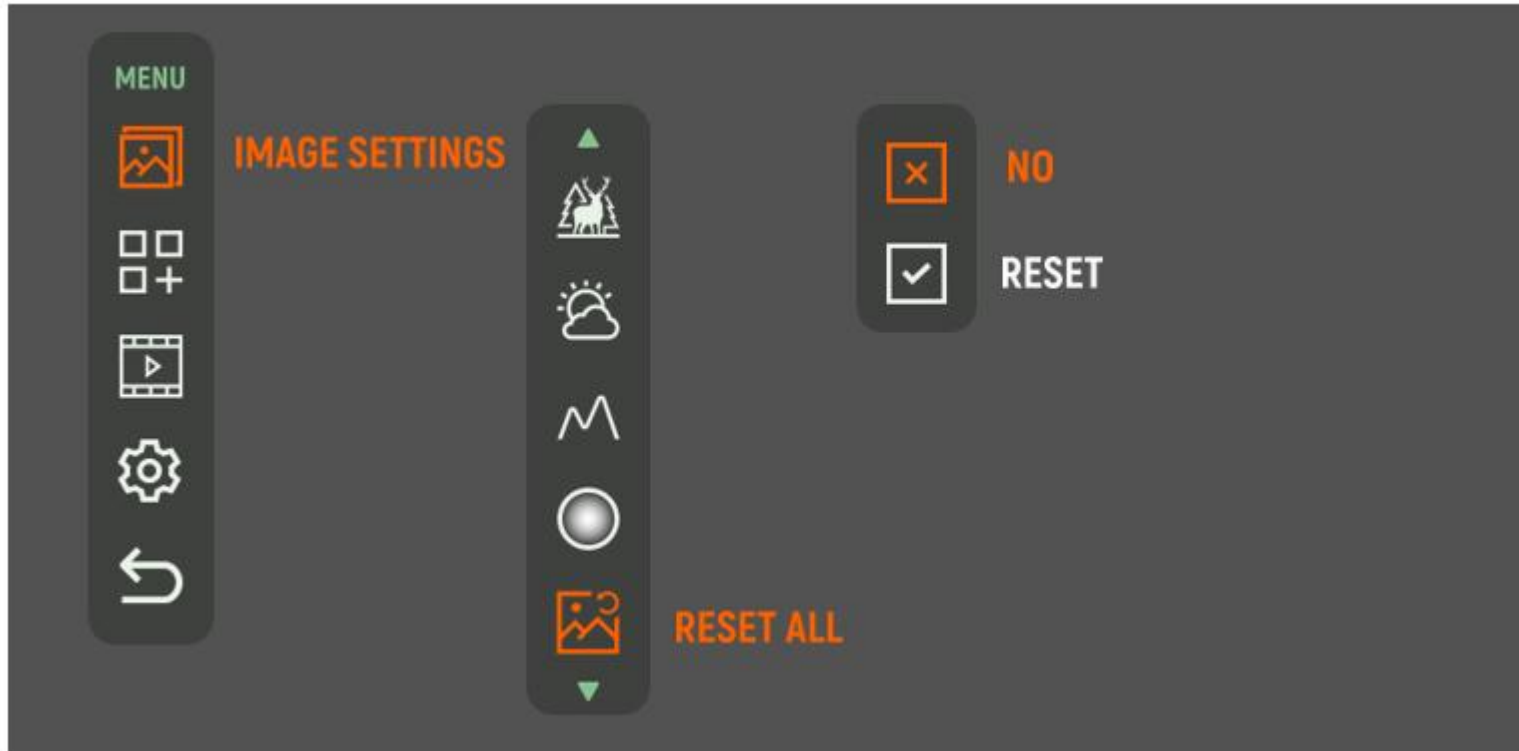
Ironbow - It helps increase chances for recognition & identification of the objects.



Rainbow - It helps increase chances for recognition & identification of the objects.

5.2.7 Image Settings Reset

Select Rest All and switch between No or Reset by sort pressing the **Up** or **Down** button. Press the **OK** button to confirm and it will exit to upper interface automatically.



5.3 Features

Press the **Up** and **Down** buttons simultaneously to access the Menu. Use the Up and Down buttons to navigate to the Features option, and press the **OK** button to enter its submenu for various functions.

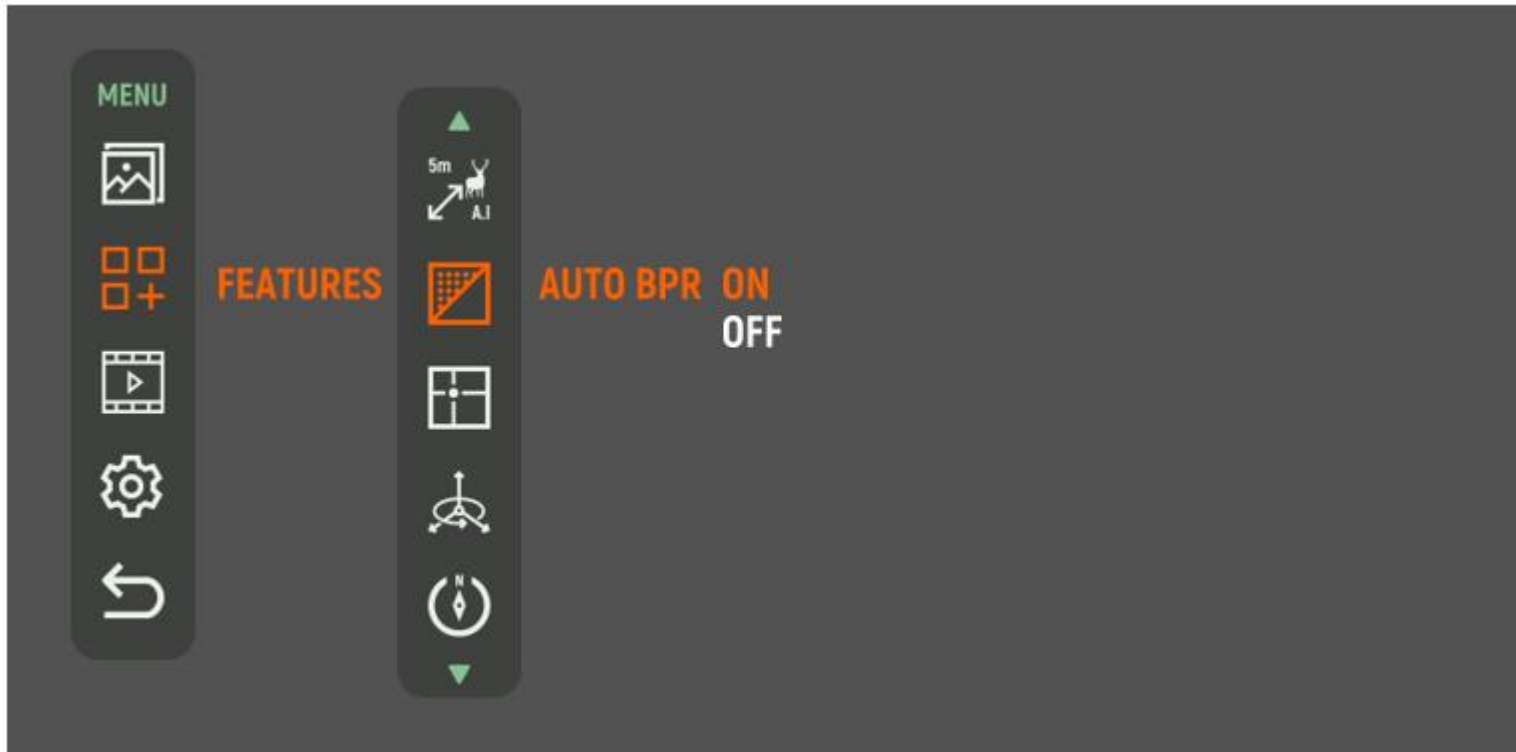
5.3.1 Features

Select AI SRF function, short press the **OK** button to switch between On or Off, long press the **OK** button to exit to upper interface.



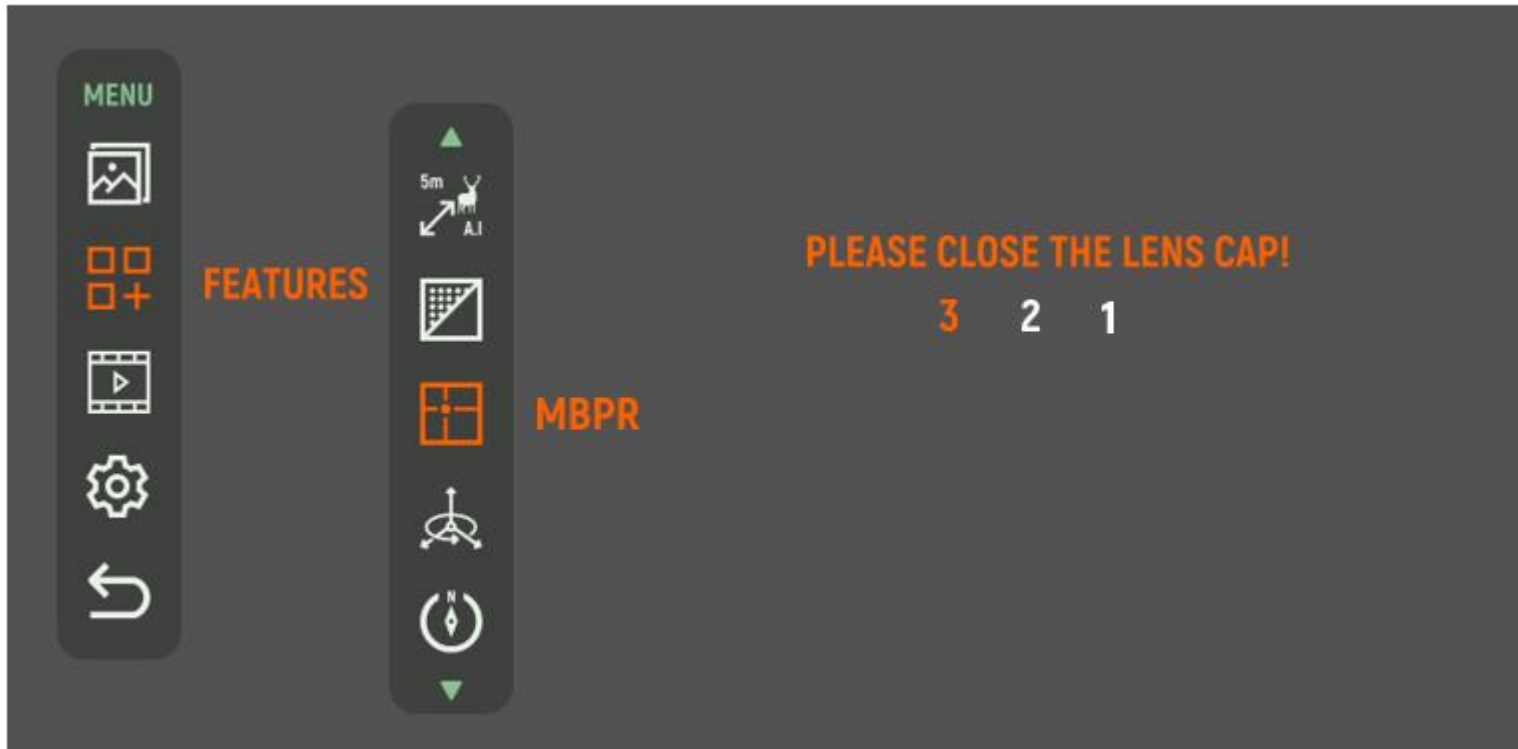
5.3.2 Auto BPR

Select Auto **BRP (automatic bad pixel correction)** function, short press the **OK** button to switch between On or Off, long press the **OK** button to exit to upper interface.



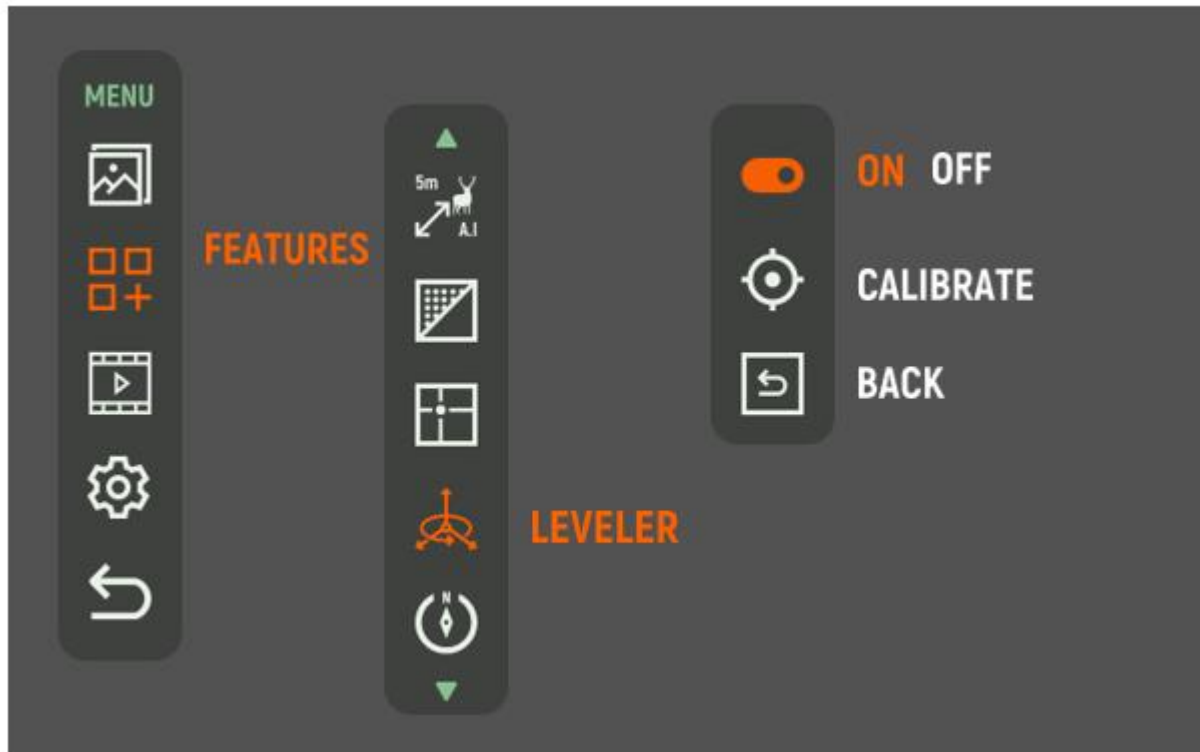
5.3.3 MBPR

Select MBPR function to do MBPR (manual bad pixel correction), close the lens cover, complete after counting down 3-2-1, and it will exit to upper interface automatically.



5.3.4 Leveler

Select Leveler function, short press the **OK** button to enter its secondary menu, switch among On/Off, Calibrate and Back by short pressing Up or Down button.



-  Select On/Off, short press the **OK** button to turn on/off the Leveler.
-  Select Calibrate, short press the **OK** button to perform Calibrate. A progress bar will appear on the screen, rotate the device in all directions (front, back, left, and right) until the progress bar reaches 100%. Once the calibration is complete, it will automatically exit to upper interface.



 Select Back, short press the OK button to exit to upper interface.

5.3.5 Compass

Select Compass function, short press the **OK** button to enter its secondary menu, switch among On/Off, Calibrate and Back by short pressing Up or Down button.

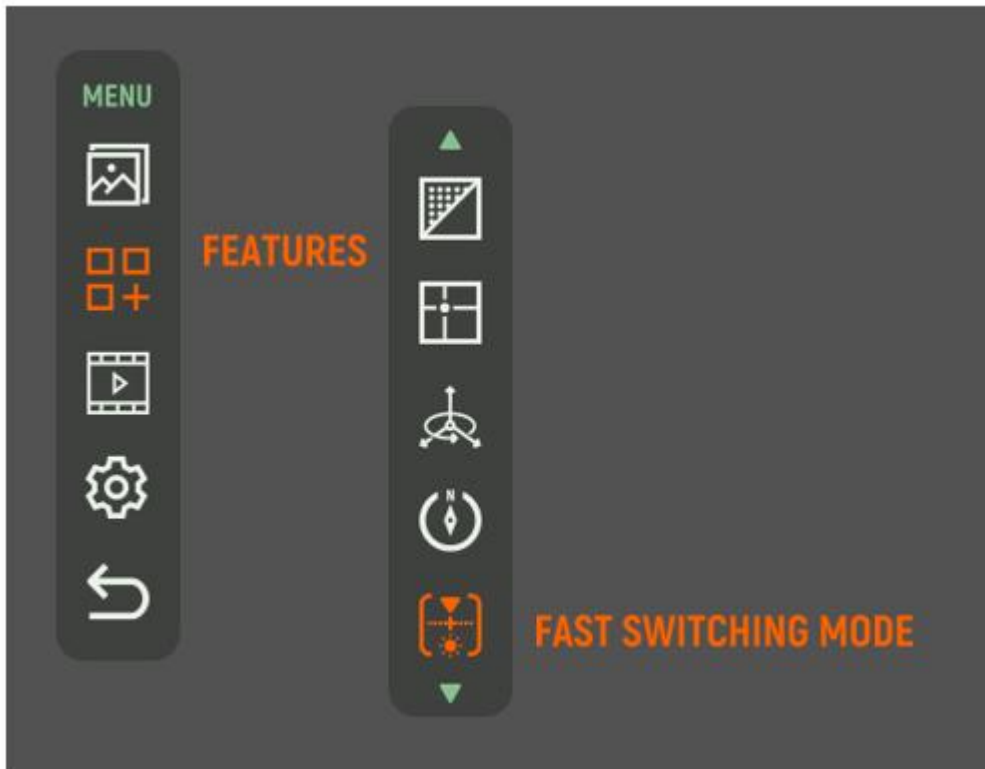
-  Select On/Off, short press the **OK** button to turn on/off the Compass.
-  Select Calibrate, short press the **OK** button to perform Calibrate. A progress bar will appear on the screen, rotate the device in all directions (front, back, left, and right) until the progress bar reaches 100%. Once the calibration is complete, it will automatically exit to upper interface.
-  Select Back, short press the OK button to exit to upper interface.



5.3.6 Fast Switching Mode

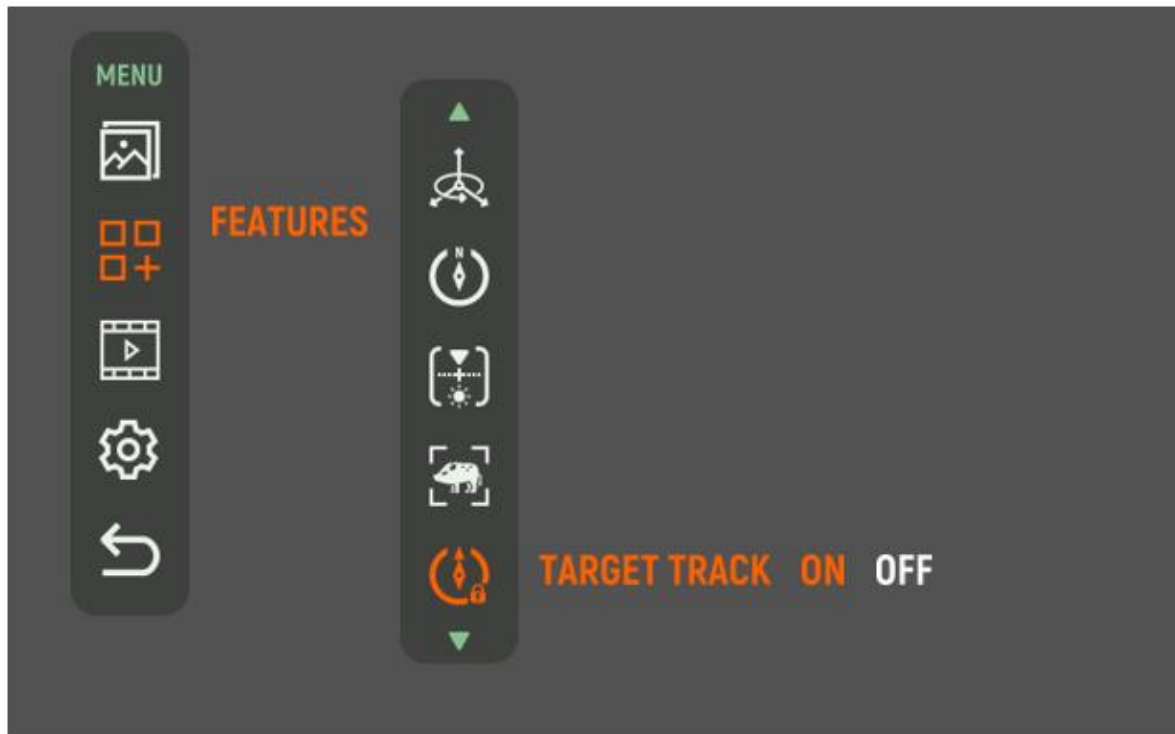
Fast Switching Mode:

- To activate or deactivate the Fast-Switching Mode between **Observation** and **Clip-On Mode**, press the **OK** button briefly.
- To return to the previous menu (upper interface), press and hold the **OK** button.



5.3.7 Target Lock

Select Target Lock, short press the **OK** button to turn on or turn off Target Lock.



When Target Lock is On, the device will automatically mark the current position with a red lock icon  when it detects a shot.

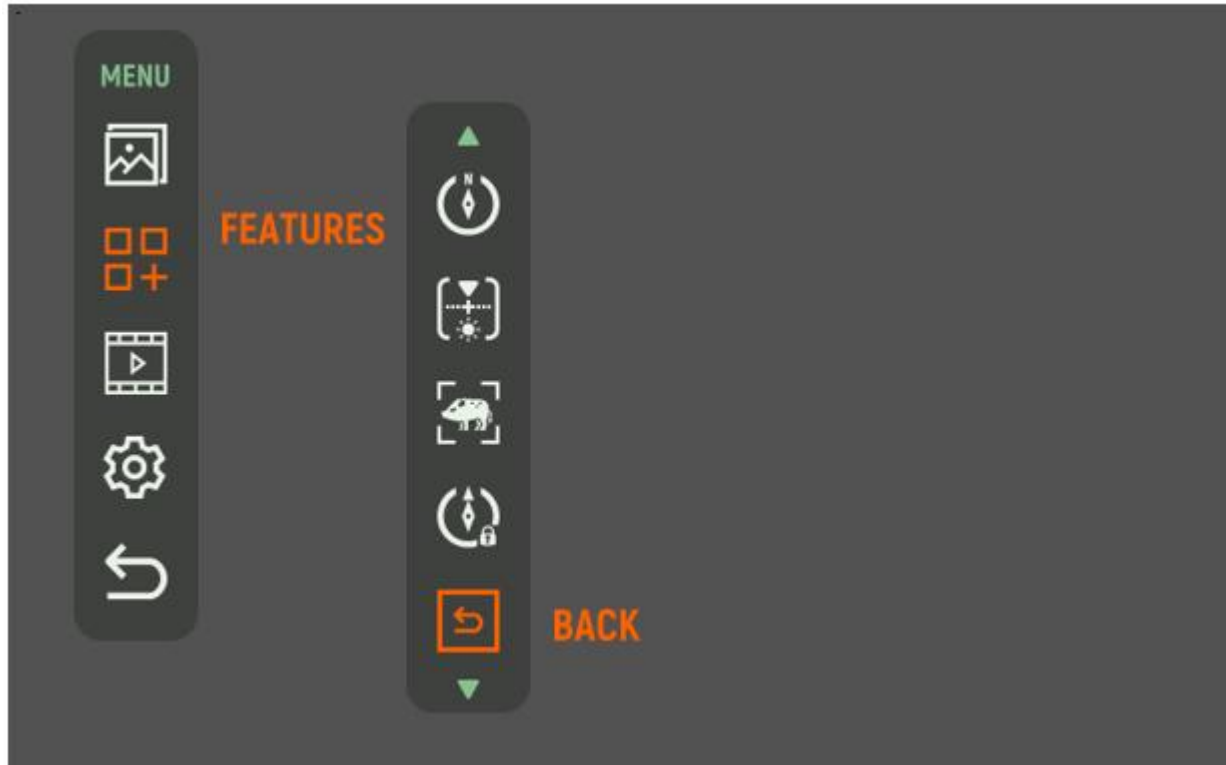


When the target moves out of the field of view, the arrow icon  will point to the marked position.



5.3.8 Back

Select Back, short press the **OK** button to exit to upper interface.



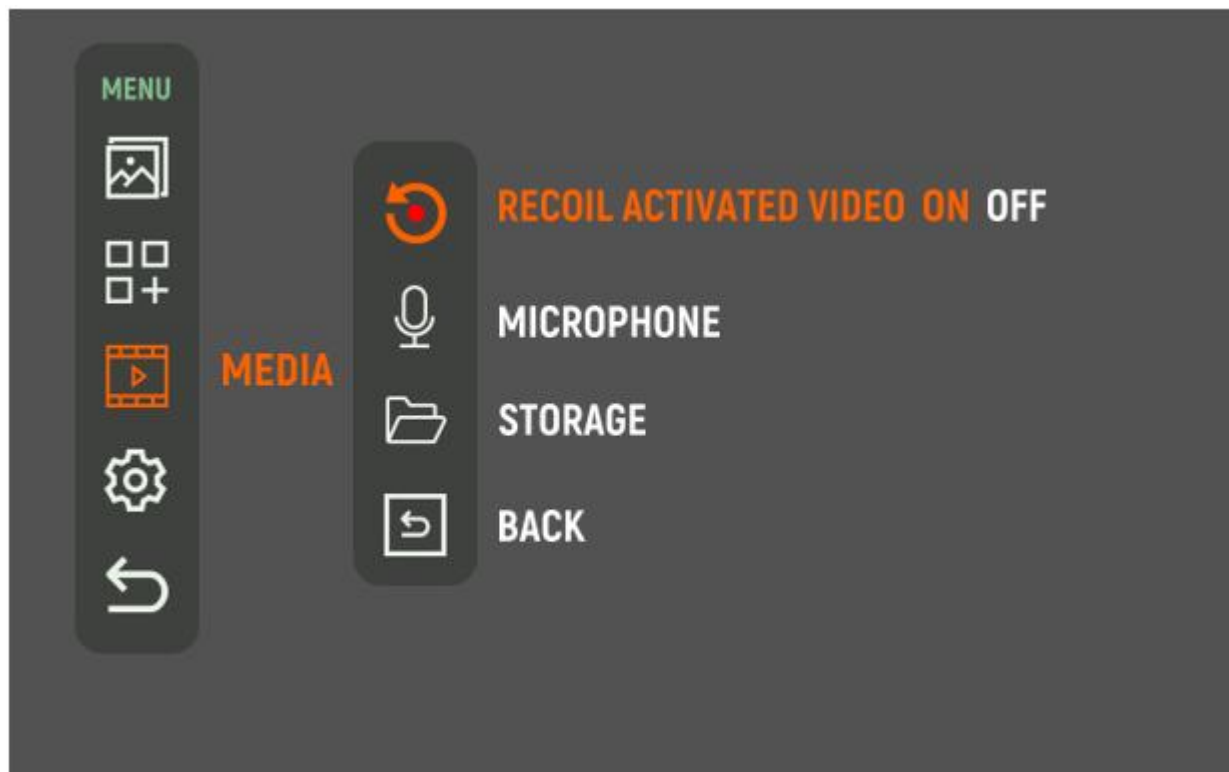
5.4 Media

Press the Up and Down buttons simultaneously to access the Menu. Use the Up and Down buttons to navigate to the Media option, and press the **OK** button to enter its submenu.

Short press OK button to turn on or turn off **Recoil Activated Video**  or **Microphone**  function.

Viper series is built-in 64GB storage space for photography and video recording.

User can check the used memory through the **Storage**  function. If the used memory reaches 63GB, it will display “INTERNAL STORAGE SPACE IS INSUFFICIENT AND NEEDS TO BE CLEARED IMMEDIATELY”.



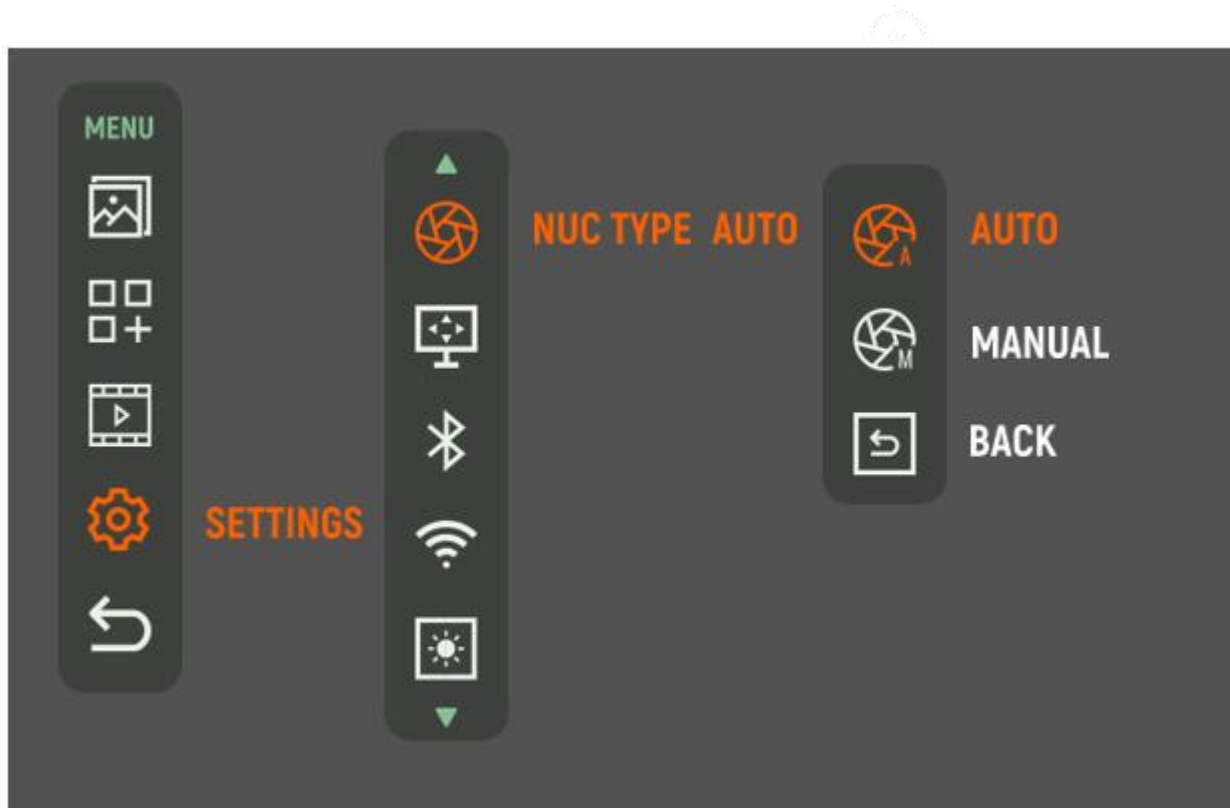
5.5 Settings

5.5.1 NUC Type

Select NUC Type, short press the **OK** button to enter its secondary menu, switch among Auto NUC, Manual NUC and Back by short pressing Up or Down button.

Auto mode - The calibration is performed automatically at regular intervals and with a shutter mechanism located in the device.

Manual mode - The calibration is performed by the user, by pressing the **Down** button at desired intervals **with a shutter mechanism located in the device**. It is not necessary for the user to close the lens cap.



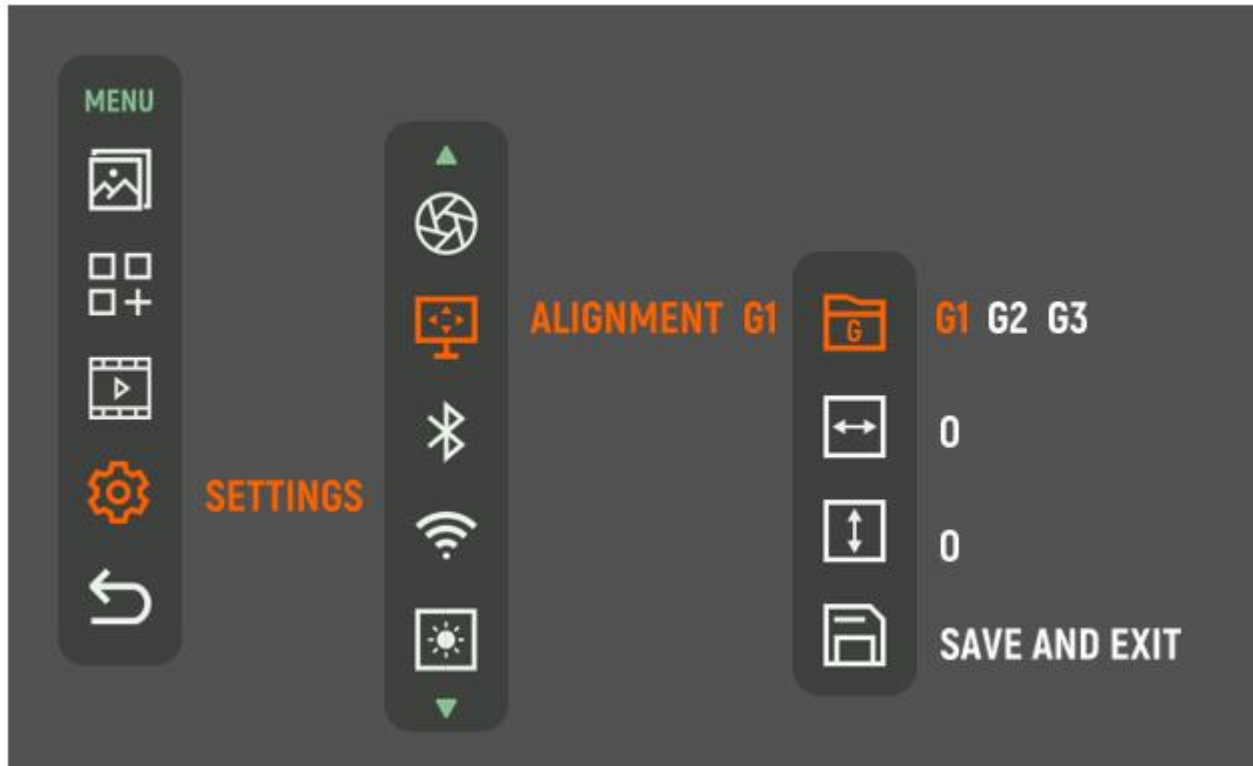
5.5 Settings

5.5.2 Alignment

The Viper series is factory-calibrated to ensure perfect alignment with your riflescope's line of sight when used as a clip-on. However, adding another device can change the scope's vibrations and sag, potentially shifting the point of impact. To counter this, the Alignment Function enables precise adjustments to the optical axis of the day sight and clip-on attachment for optimal accuracy and performance.

Short press the **OK** button to select among Alignment file, Reset X value, Reset Y value, Save and exit by short pressing **Up** and **Down** button.

There are 3 types of alignment file: G1, G2, G3.



Aiming at the target at 100 meters and shoot. Measure the horizontal distance and vertical distance between the bullet hitting point and the aiming point afterwards.

1Click X=19.7mm@100m

1Click Y=19.7mm@100m

Short press the **OK** button to select an alignment profile, reset X value option or reset Y value option. Short press **Up** or **Down** button to increase or reduce the X/Y value. Short Press the **OK** button to confirm.

For example, if the bullet hitting point is 40 mm below the aiming point and 20 mm to the left of aiming point, $X = -20\text{mm} / 19.7\text{ mm} = -1$, it means 1 click to the left.

$Y = -40\text{mm} / 19.7\text{ mm} = -2$, it means 2 clicks downward.

Press the **OK** button to select the alignment profile G1, then press the **OK** button to confirm.

Next, press the **Down** button to navigate to the X Value Reset option and press **OK** button to enter the X value reset interface, press the **Up** or **Down** button to adjust the X value to -1, then press **OK** button to confirm.

Similarly, press the **Down** button to select the Y Value Reset option and press **OK** button to enter the Y value reset interface, adjust the value to -2 by pressing the **Up** or **Down** button, and press **OK** button to confirm.

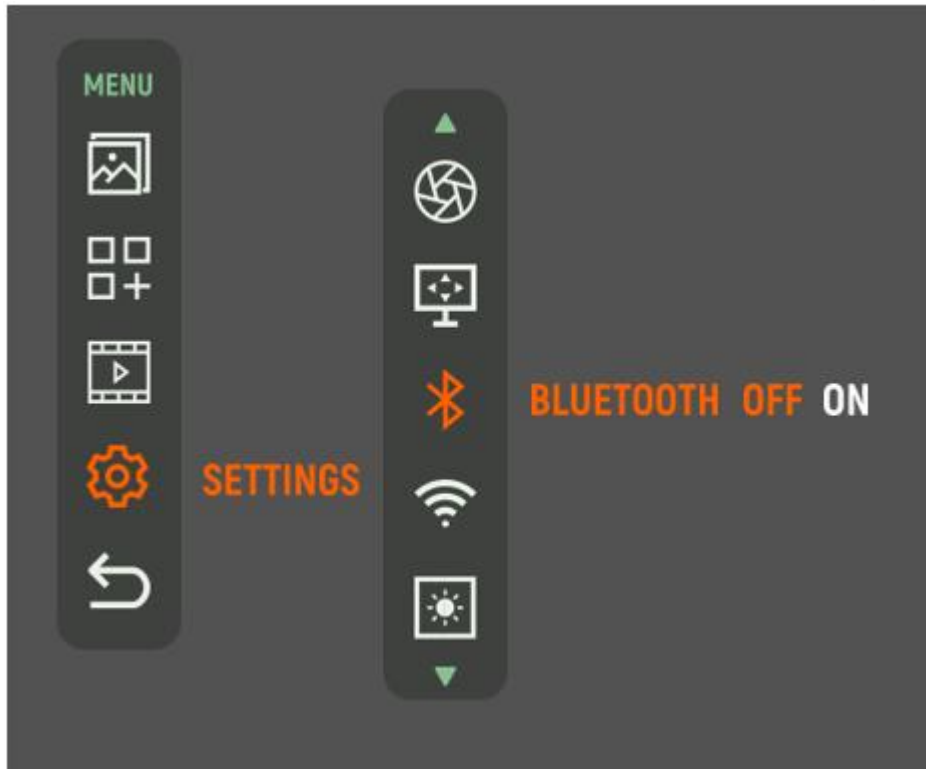
NOTE

Once the Alignment Profile, X Value Reset, and Y Value Reset settings are completed, it is essential to short press the **OK** button to perform the Save and Exit option to ensure that the values you have configured are saved.



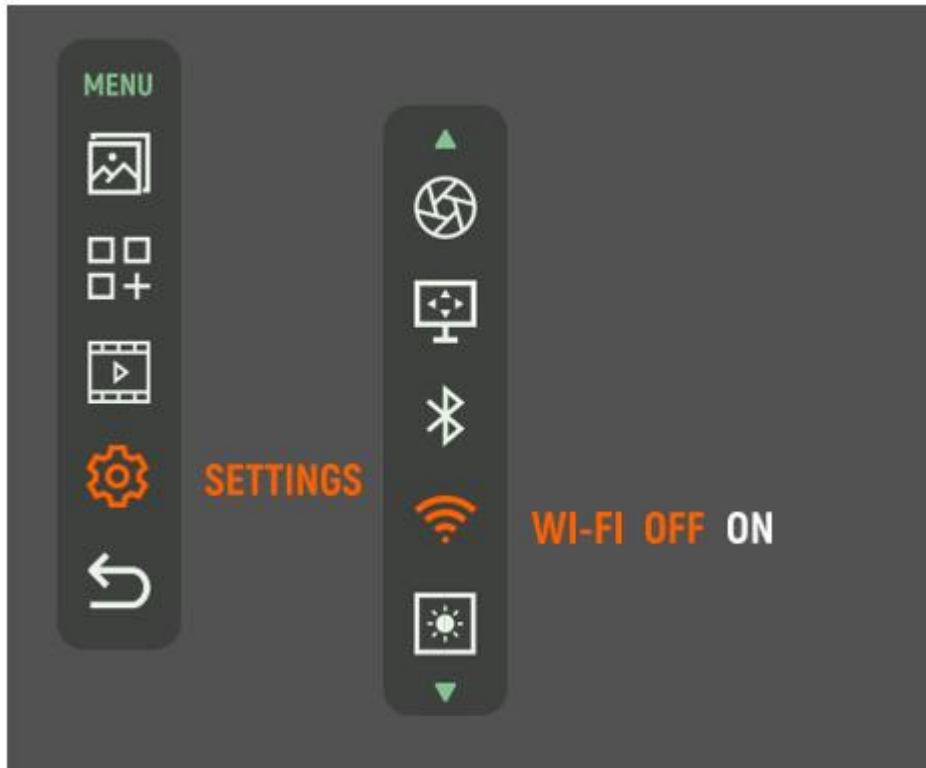
5.5.3 Bluetooth

Short press the **OK** button to select between turn on or turn off the Bluetooth.



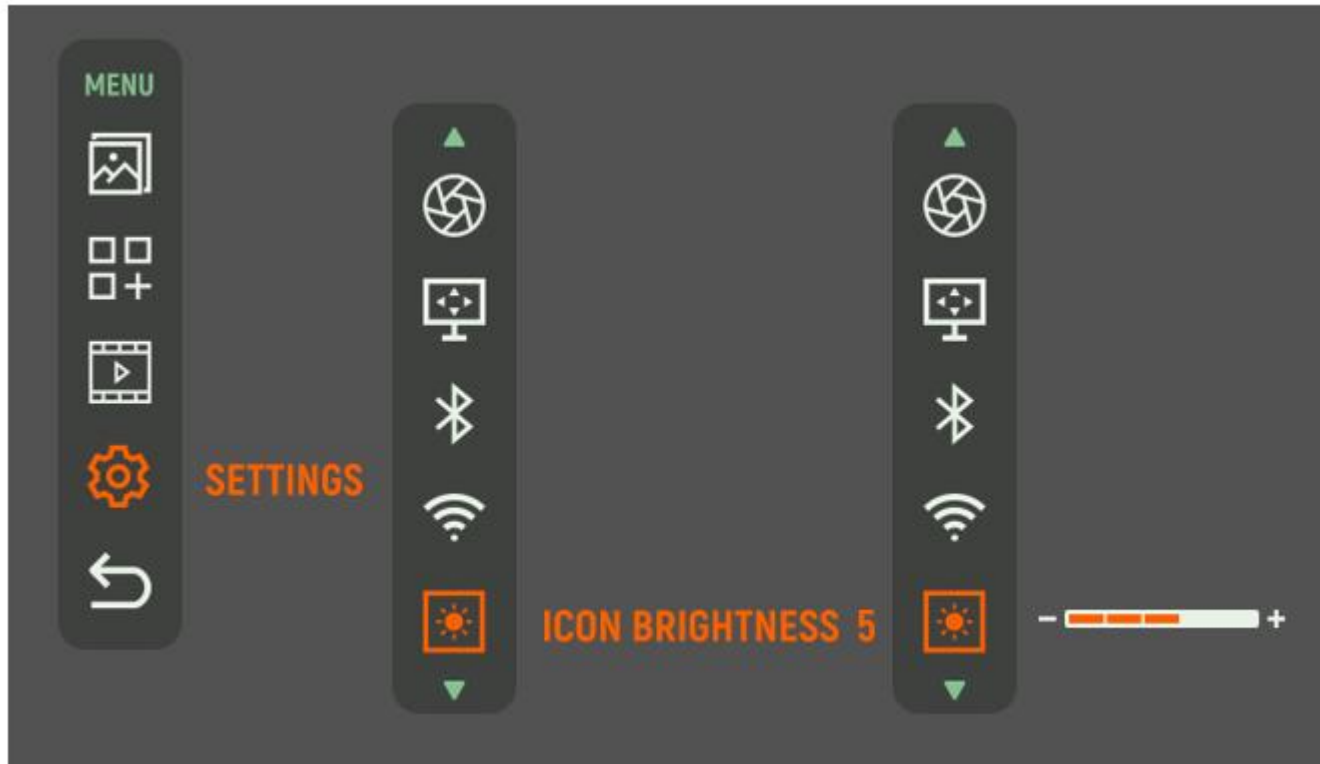
5.5.4 Wi-Fi

Short press the **OK** button to select between turn on or turn off Wi-Fi.



5.5.5 ICON BRIGHTNESS

Short press the **OK** button to adjust the Icon Brightness from 1 to 5 by pressing the **Up** or the **Down** button, short press the **OK** button to save and exit to upper interface.



5.5.6 Date & Time

In the DATE&TIME submenu interface, select Time zone  , short press the **Up** or **Down** button to change time zone and press the **OK** button to confirm.

Select  , short press the **OK** button to switch between the 12-hour and 24-hour formats.

Select  , short press the **OK** button to activate time reset function, press the **UP** or **Down** button to set the number, and short press the **OK** button to save and switch among Hour, Minute and AM&PM settings.

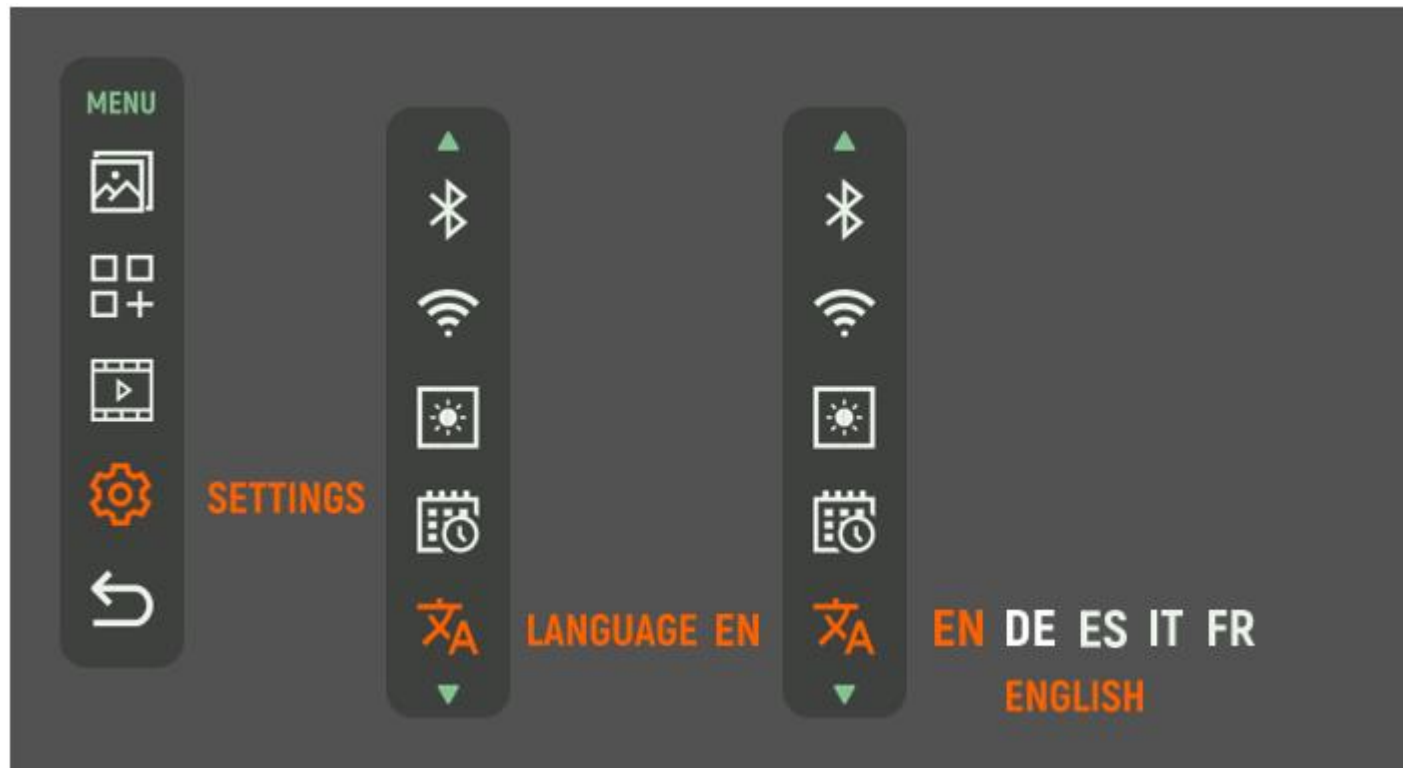
Select  , short press the **OK** button to activate the date reset function, press the **UP** or **Down** button to set the number, and short press the **OK** button to save and switch between Day, Month and Year.

Select  , short press the **OK** button to exit to upper interface.



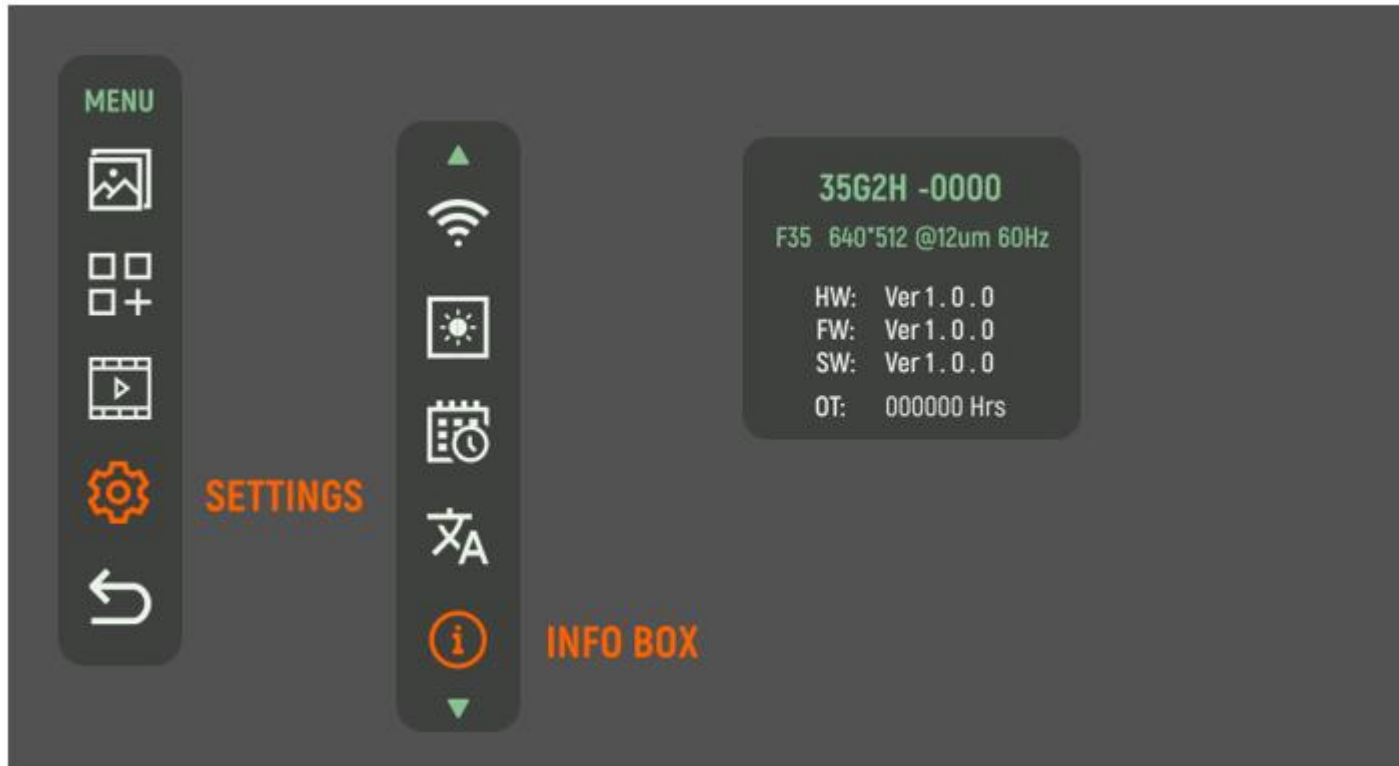
5.5.7 Language

Select a language by briefly pressing the **OK** button to access the Language submenu, then use the **Up** or **Down** button to choose from EN, DE, ES, IT, or FR.



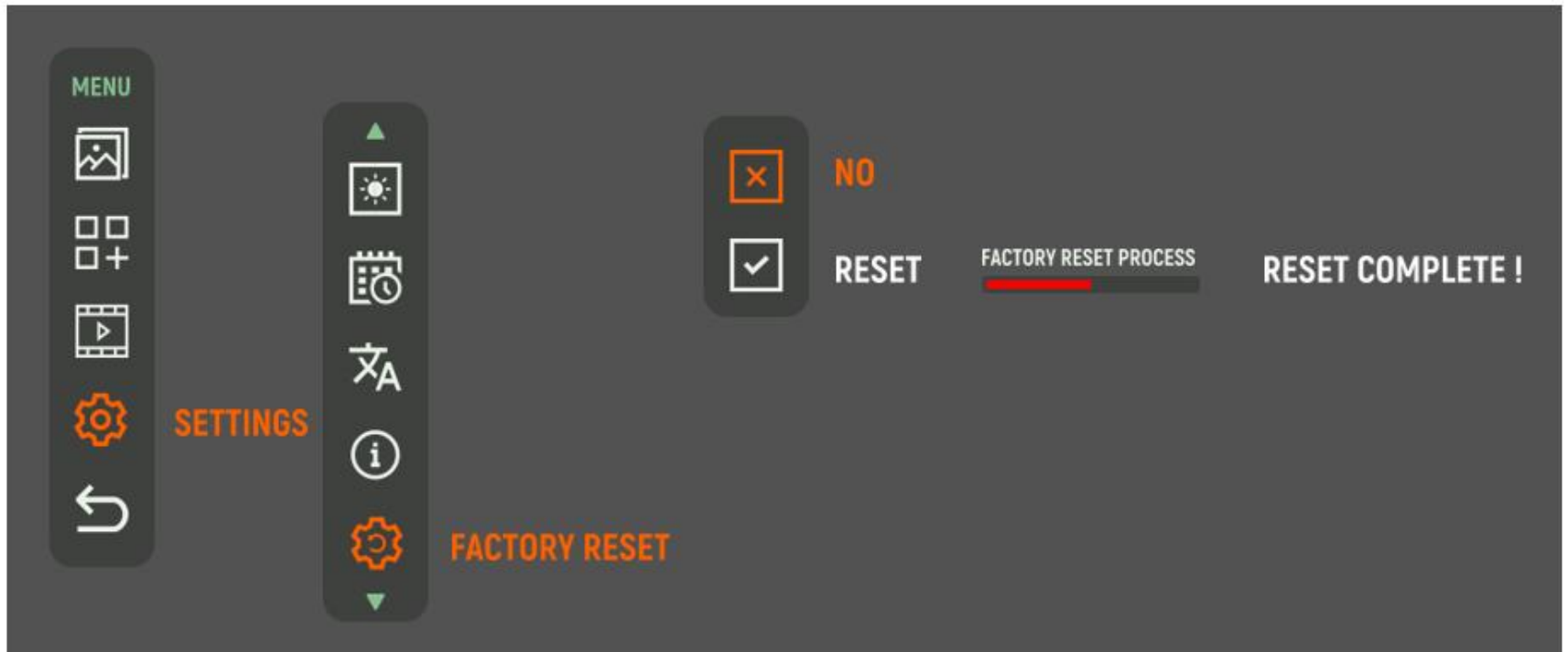
5.5.8 Info Box

Select Info Box, short press the **OK** button to show the relevant information including device model, main technical characteristics, hardware version, firmware version and actual operation time of the device.



5.5.9 Factory Reset

Select Factory select, short press the **OK** button to enter Factory Reset interface, short press **Up** or **Down** button to select **No** or **Reset** , confirm your selection by short press the **OK** button.



NOTE:

By performing the **Factory Reset** procedure, you will delete the settings saved on the device including alignment with the day optical sight. However, any on-boarding videos and photos will remain unaffected and will not be deleted

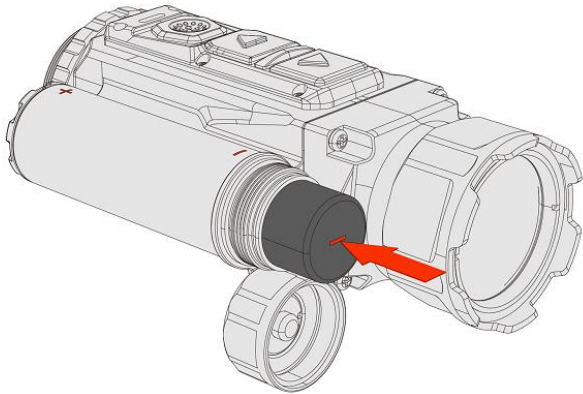
6. Battery use

6.1 Battery replacement

The device is powered through 1 piece of 18650 Li-Ion rechargeable battery.

The battery replacement instructions are presented below.

Please remove the protective rubber lens cap before opening the battery compartment and replacing the battery.



NOTE

Attempting to power on the device, when the battery is fully depleted, will cause a red indicator to blink for a few seconds.

IMPORTANT!

Always place the battery using the correct battery orientation (shown in the battery holder) to avoid damaging the device.

NOTE

The batteries are not covered by the warranty!

IMPORTANT!

Please keep all batteries away from moisture.

NOTE

Make sure the device is turned off before replacing the battery.

7. Technical Parameters

DETECTOR	
Detector	Uncooled Vox
Resolution	640x512
Frame rate	60HZ
Pixel	12um
Spectral range	8-14um
NETD	≤15mK
OPTICS	
Objective lens	35mm F1.1 (non-athermalized)
Magnification	1x
FOV	12.57° x10°
FOV(H×V), m @100m	22mx17.5m(100m)
Close-up range	3m
Eye relief	25mm
Exit pupil diameter	20mm
THERMAL IMAGING PERFORMANCE	
Digital zoom	1x (Clip-on mode) / 1x 2x 3x 4x (Observation mode)
Palettes	Black hot / White hot / Red hot / Isotherm / Auto Isotherm / Ironbow / Rainbow
Scene	Highlights/Panorama/City/AI scene
Weather Type	Hot/Normal/Wet
Filter	Smooth/Normal/Sharp
Startup time	<6s
Menu and Information	GUI
Image enhancement	DDE
Brightness and contrast	AGC

FUNCTIONS	
Controls	Togger switch + 3 buttons
Target track	Support
Target lock	Support
AI SRF	Support
Auto/Manual BRP	Support
Lever & Compass	Support
Recoil activated video	10s before/after shooting
Microphone	Support
Bluetooth	Support
Storage	64G
Upgrade	APP online upgrade / Serial port upgrade
DISPLAY	
Type	Micro OLED MDP03C
Resolution	1024x768
Output video	WI-FI
POWER SUPPLY	
Battery type	1x18650
Type-C	5V2A
Operation time	≥5h
PHYSICAL CHARACTERISTICS	
Weight	≤330g (without battery)
Dimension	140*70*46mm
Thread	M33.5x0.75
ENVIRONMENTAL COMPATIBILITY	
Working temperature	-20℃～+50℃
Storage temperature	-40℃～+70℃
Shock resistance	>6000J

FCC Warning:

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.