Avilume XR50/XT50 Pro

manual

Table of contents

Table of contents 3
Specification 6
About the device 9
Description 9
Package Contents 10
Components and Controls 11
Features 13
Power Supply 14
Precautions 14
Recommendations for Battery Use 14
Battery Charging 15
Battery Installation 18
External Power Supply 20
Getting Started 21
Button Operation 27
Interface 31
Status Bar 31
Quick Menu 34
Main Menu 35
Observation & Zoom Controls 36
Laser rangefinder 36
Picture-in-Picture 37
Zoom on button press 38
IR level 38
Image Settings 39
Brightness 39
Contrast 39
Save thermal image settings 39
Available palettes 39
Amplification 41
Smoothing 41

Display dimming 41
Interface brightness 41
Image stabilization 42
Device Settings 42
Wi-Fi 42
Wi-Fi Settings 43
Calibration 43
No-use shutdown 44
Control preference 44
Haptic vibro indication 44
Power saving mode 45
Media 46
Record with sound 46
Video compression 46
Overlay media mode 46
Format media disk 46
System Settings 47
Language 47
Date 47
Time 47
Units of measurement 47
Reset to default settings 47
Image pixel repair 47
Device information 48
Functions 50
Digital Channel Modes 50
Video Recording and Photography 52
Using the Laser Rangefinder 55
Discrete Digital Zoom 57
Wi-Fi Function 57
Installing the Device on a Tripod 58
USB Connection 59
Software 62

Wild Vision 62
Firmware Update 63
Maintenance 64
Technical Inspection 64
Technical Maintenance 64
Storage 64
Troubleshooting 65
Legal compliances and disclaimers 72

Specification

Model	**XR50**	**XT50 Pro**
SKU	77540	77541
Microbolometer		
Type	uncooled	uncooled
Resolution, pixels	640×480	1280×1024
Pixel Pitch, µm	12	12
Sensor NETD, mK	< 35	< 35
System NETD, mK	< 18	< 20
Frame rate, Hz	50	50
Digital Sensor		
Type	CMOS	CMOS
Resolution, pixels	3840×2160	3840×2160
Optical Characteristics		
Thermal imaging channel:		
Lens	50 mm F/1.0	50 mm F/1.0
Magnification, x	4 – 32	2 – 24
Field of view angle (horizontal), °/m@100	8.8 / 15.4	17.5 / 30.7
Detection distance (deer-type object), m	2300	2300
Digital channel:		
Focal length	50 mm	50 mm
Magnification, x	6.5 – 26	6.5 – 26
Digital zoom	x1, x2, x4	x1, x2, x4
Field of view angle (horizontal), °/m@100	5.8 / 10.2	5.8 / 10.2
Minimum focus distance, m/yd	3 / 3.28	3 / 3.28
Eye relief, mm/inch	13 / 0.51	13 / 0.51

Exit pupil diameter, mm/inch	5 / 0.2	5 / 0.2
Diopter adjustment, D	-5/+5	-5/+5
Interpupillary distance adjustment, mm / inch	62.5 – 74 / 2.46 – 2.91	62.5 – 74 / 2.46 – 2.91
Display		
Type	AMOLED	AMOLED
Resolution, pixels	1920×1080	1920×1080
Operational characteristics		
Power supply, V	3.7	3.7
Battery type / Capacity / Output voltage	Li-Ion Battery Pack APS 5 / 4900 mAh	Li-Ion Battery Pack APS 5 / 4900 mAh
External power supply	5 V, 9 V (USB Type-C Power Delivery)	5 V, 9 V (USB Type-C Power Delivery)
Operating time from 2 APS 5 battery packs at t=22 °C, hours*	10	8
Degree of protection, IP code (IEC60529)	IP67	IP67
Operating temperature range, °C /° F	-25 … +40 / -13 … 104	-25 … +40 / -13 … 104
Dimensions, mm / inch	207x132x72.5 / 8.2×5.2×2.9	207x132x72.5 / 8.2×5.2×2.9
Weight (with battery), kg / oz	1 / 35.3	1 / 35.3
Video recorder		
Video / photo resolution, pixel	1440×1080	1440×1080
Video / photo format	.mp4 / .jpg	.mp4 / .jpg
Built-in memory	64 Gb	64 Gb
Wi-Fi channel**		
Frequency	2.4/5 GHz	2.4/5 GHz
Standard	IEEE 802.11 b/g/n/ac	IEEE 802.11 b/g/n/ac
Bluetooth		

Wireless protocol	BLE 4.2	BLE 4.2
Laser rangefinder		
Wavelength, nm	905	905
Max. measuring range, m/yd***	1500/1640	1500/1640
IR-Illuminator		
Type	LED	LED
Wavelength, nm	850	850

* Actual operating time depends on the degree of use of Wi-Fi, video recorder, built-in laser rangefinder, Bluetooth, IR illuminator, active observation channels and activated power saving mode.

**The reception range may vary depending on various factors: obstacles, other Wi-Fi networks.

***Depends on the characteristics of the object under observation and environmental conditions.

About the device

Description

Avilume multispectral binoculars are high-tech devices designed for various applications, such as bird and wildlife observation, terrain orientation, search operations, and outdoor tours.

Avilume binoculars allow you to quickly switch between thermal imaging and digital channels. The digital channel can be used in both color and black-and-white modes. There is support for the Duo multispectral mode, where the image from one channel is displayed in the main window and the image from the second channel is displayed in a PiP (Picture in Picture) window.

The thermal imaging channel can be used both at night and during the day, including in difficult weather conditions (fog, smog, rain) and in the presence of obstacles (branches, tall grass, thick bushes, etc.) that make it difficult to detect objects of interest.

In digital mode, the device allows for observation both during the day and at night. In night conditions, it is recommended to use a focusable infrared illuminator.

To get started, see the sections:

Battery Charging

Battery Installation

Getting Started

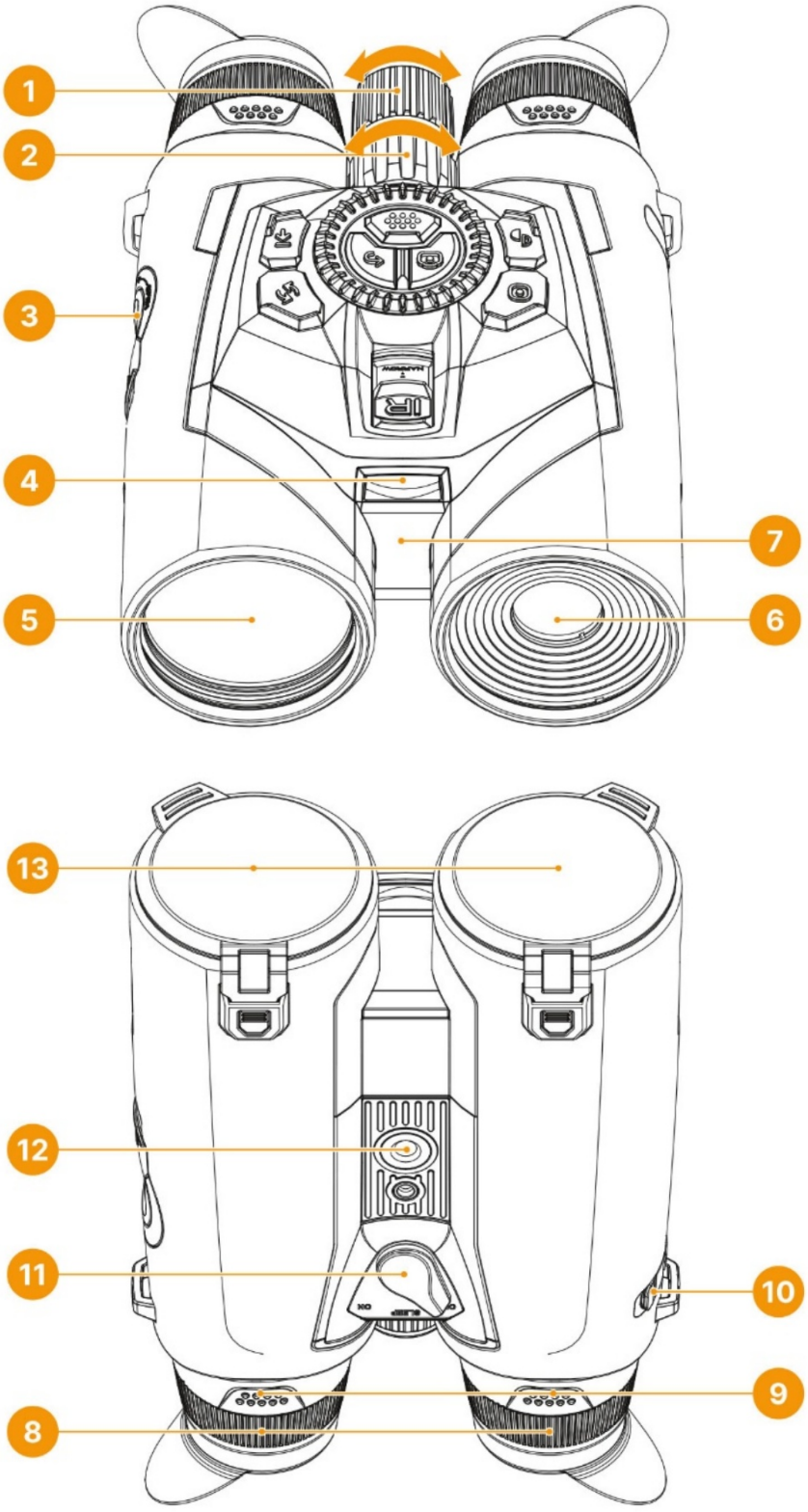
Using the Laser Rangefinder

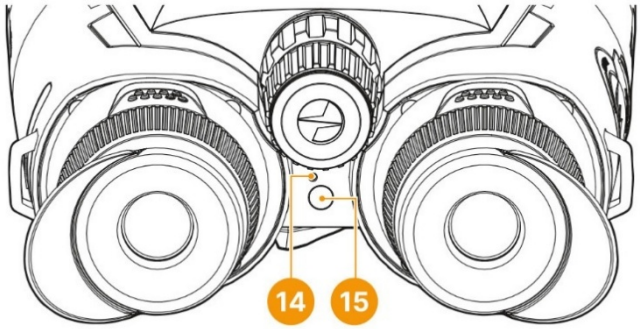
Wild Vision

Package Contents

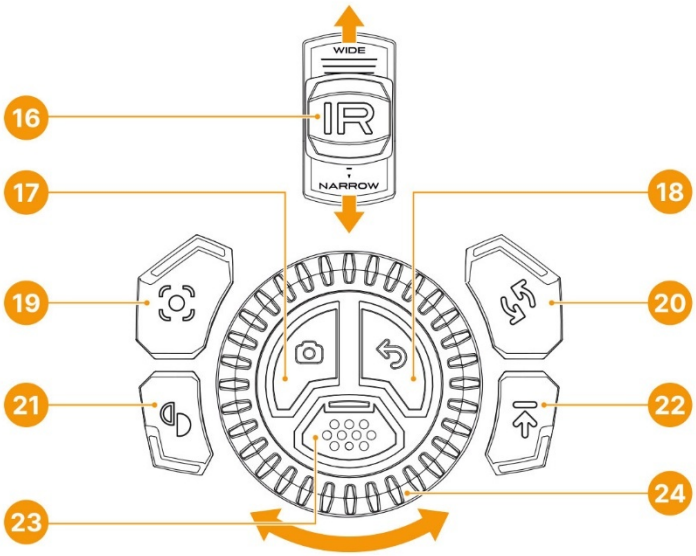
- Avilume multispectral binoculars
- APS 5 rechargeable battery (2 pcs.)
- APS 5 battery caps (2 pcs.)
- APS 5 charger
- Power adapter
- USB Type-C cable with Type-A adapter
- Carrying case for binoculars
- Binoculars harness
- Neck strap
- Optics cleaning cloth
- Quick start guide
- Warranty card
- Tripod adapter

Components and Controls





1. Thermal channel focusing ring
2. Digital channel focusing ring
3. Battery compartment
4. IR-illuminator
5. Thermal channel lens
6. Digital channel lens
7. Laser rangefinder
8. Diopter adjustment rings
9. Eyepieces
10. USB-C port
11. ON/Sleep/OFF switch
12. Tripod adapter socket
13. Lens caps
14. Microphone
15. Proximity sensor
16. IR focusing switch
17. REC button
18. BACK button
19. Calibration/Stabilization button
20. DUO button
21. MODE button
22. LRF button
23. MENU button
24. Controller ring



Features

- Multispectral image – digital and thermal
- 24/7 use – day, night, twilight
- Combined multispectral Picture-in-Picture modes
- 4K Digital full-color sensor
- HD 1280×1024/12µm premium thermal imaging sensor (For XT50 model)
- Built-in powerful laser rangefinder
- Focusable infrared illuminator
- Optimized for one-hand use
- Left-hand mode
- New user-friendly graphic interface
- Classic daytime binocular design
- 9-color display palette
- 3 calibration modes: manual, semi-automatic and automatic
- Long detection distance
- Smooth digital zoom
- 3 levels of sensitivity enhancement: Normal, High, Ultra
- Auto Display-Off using proximity sensor
- Display dimming function
- Auto shutdown function
- Image stabilization
- Defective Pixel Repair function
- Device firmware update using the free Wild Vision App
- Wide operating temperature range -25 °C – +40°C (-13 °F … 104 °F)
- Completely waterproof and dustproof IP67
- Tripod mount

Video/Audio Recording

- Built-in video and sound recorder
- Integration with iOS and Android devices
- Wi-Fi remote control and viewing using a smartphone
- Storing photos and videos in Cloud when using the Wild Vision App

Battery Pack

- Quick Change Li-Ion Battery Pack APS 5
- Charging from USB Power Bank
- Quick-Charge power delivery

Power Supply

Precautions

- Only use the charger supplied with the Battery Pack. The use of any other charger may irreparably damage the Battery Pack or the charger and may cause fire.
- Do not charge batteries immediately after moving the device and batteries from a cold place to a warm place. Wait at least 30 minutes for the device and batteries to warm up.
- Do not leave the Battery Pack unattended while charging.
- Never use a modified or damaged charger.
- Do not leave the Battery Pack with a charger connected to the power adapter after charging is complete.
- Do not expose batteries to high temperatures or to a naked flame.
- Do not use batteries as a power source for devices that do not support APS batteries.
- Do not disassemble or bend batteries or charger.
- Do not drop or strike batteries or charger.
- Batteries and charger are not designed to be immersed in water.
- Keep the Battery Pack out of the reach of children.

Recommendations for Battery Use

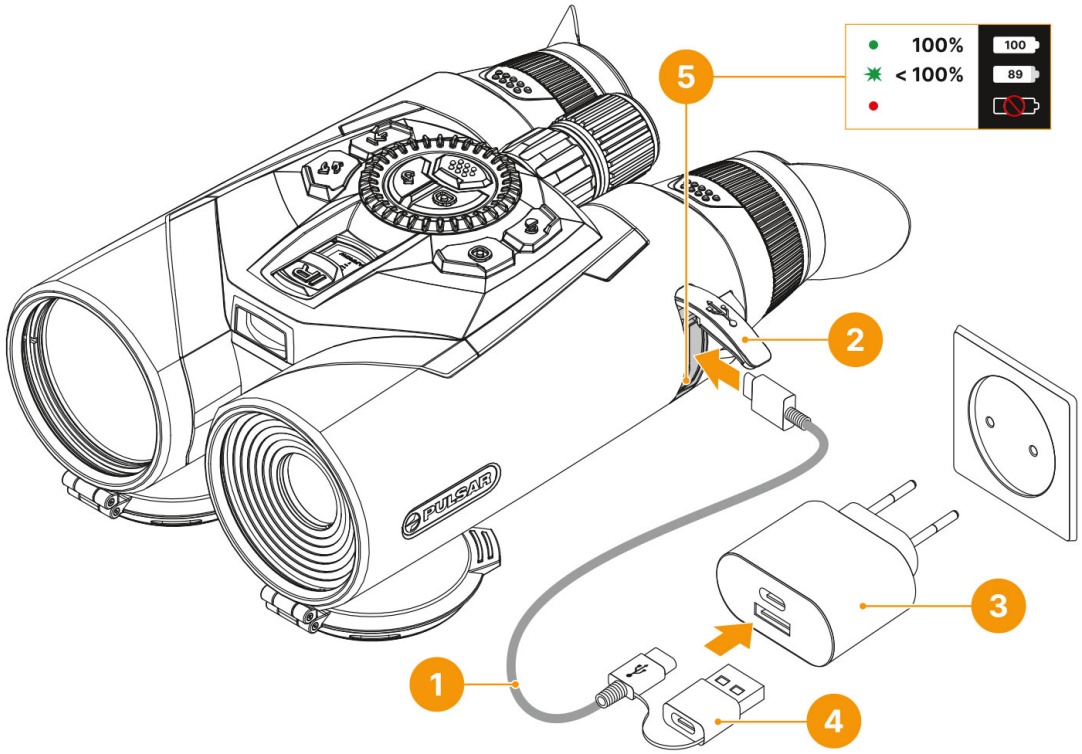
- For long-term storage, batteries should be partially charged – from 50 to 80%.
- Batteries should be charged at an ambient temperature of 0 °C … +35 °C (32 °F … 95 °F). Otherwise, battery life will be significantly reduced.
- When using batteries at sub-zero (sub 32° F) ambient temperatures, the battery capacity decreases, this is normal and not a defect.
- Do not use batteries at temperatures outside the range of -25 °C … +40 °C (-13 °F … 104 °F) – it may reduce the battery life.
- The battery has a short-circuit protection. Any situation that may cause short-circuiting, however, should be avoided.

Battery Charging

Avilume binoculars are supplied with a removable and rechargeable APS5 lithium-ion battery pack. The battery should be charged before first use.

The icon  in the status bar will flash when the battery is low. The battery needs to be charged.

Option 1

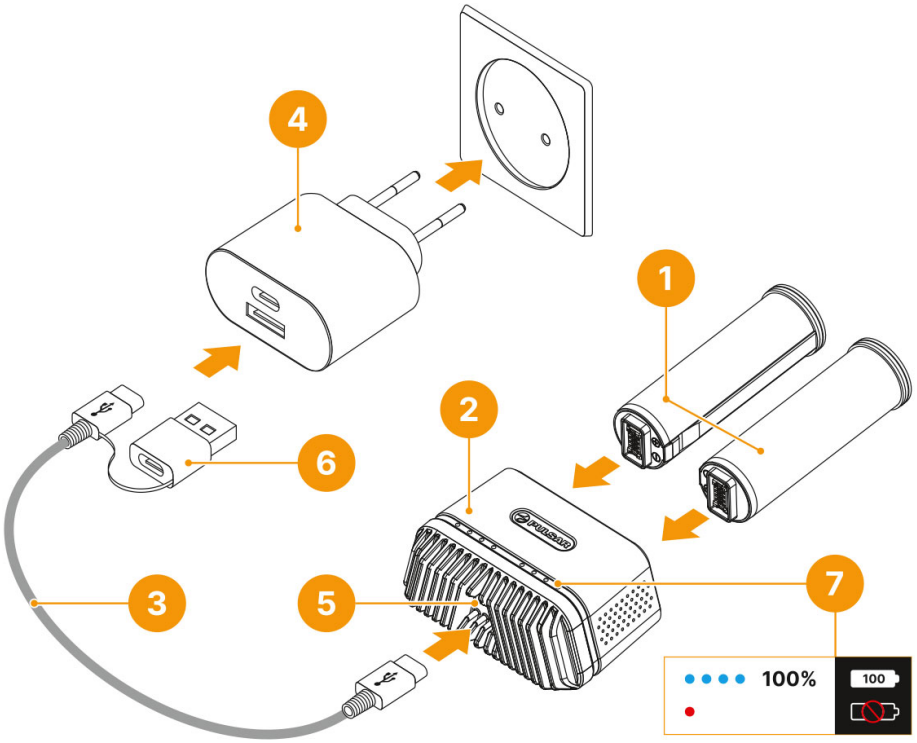


1. Install the APS5 battery in the battery compartment of the device.
2. Connect the USB Type-C cable **(1)** to the USB Type-C connector **(2)** of the device.
3. Connect the other end of the USB cable **(1)** to the Power Adapter **(3)** by removing the USB Type-A adapter **(4)**.
4. Plug the Power Adapter **(3)** into a 100-240 V socket**.**
5. Wait until the battery is fully charged (indication in the status bar: ).

Note: next to the USB Type-C connector on the device body there is a light-emitting **(5)** diode to indicate the battery charge level when the device is switched off.

LED indication	Battery status
	Battery is charging
	Battery is fully charged
	Battery is defective. **Do not use the battery!**

Option 2



1. Insert the APS 5 battery **(1)** along the guide into the APS 5 charger **(2)** slot as far as it will go. The APS 5 charger is supplied with your device or purchased separately.
2. Connect the other end of the USB Type-C cable **(3)** to the Power Adapter **(4)** by removing the USB Type-A adapter.
3. Plug the Power Adapter **(4)** into a 100-240 V socket**.**
4. Connect the other end of the USB Type-C cable **(3)** to the USB Type-C connector **(5)** of the charger by removing the USB Type-A adapter **(6)**.
5. LED indicators **(7)** will display the battery charge level (see Table).
6. Wait until the battery is fully charged (LED indication: ).

Note: Two batteries can be charged at the same time, a second slot is provided for it.

indication in the battery charging mode	**Battery Level**
	Battery charge level is from 0% to 25%
	Battery charge level is from 26% to 50%
	Battery charge level is from 51% to 80%
	Battery charge level is from 81% to 99%
	Battery is fully charged. Charging will automatically stop. The battery can be disconnected from the charger.
	Defective battery. **Do not use the battery!**

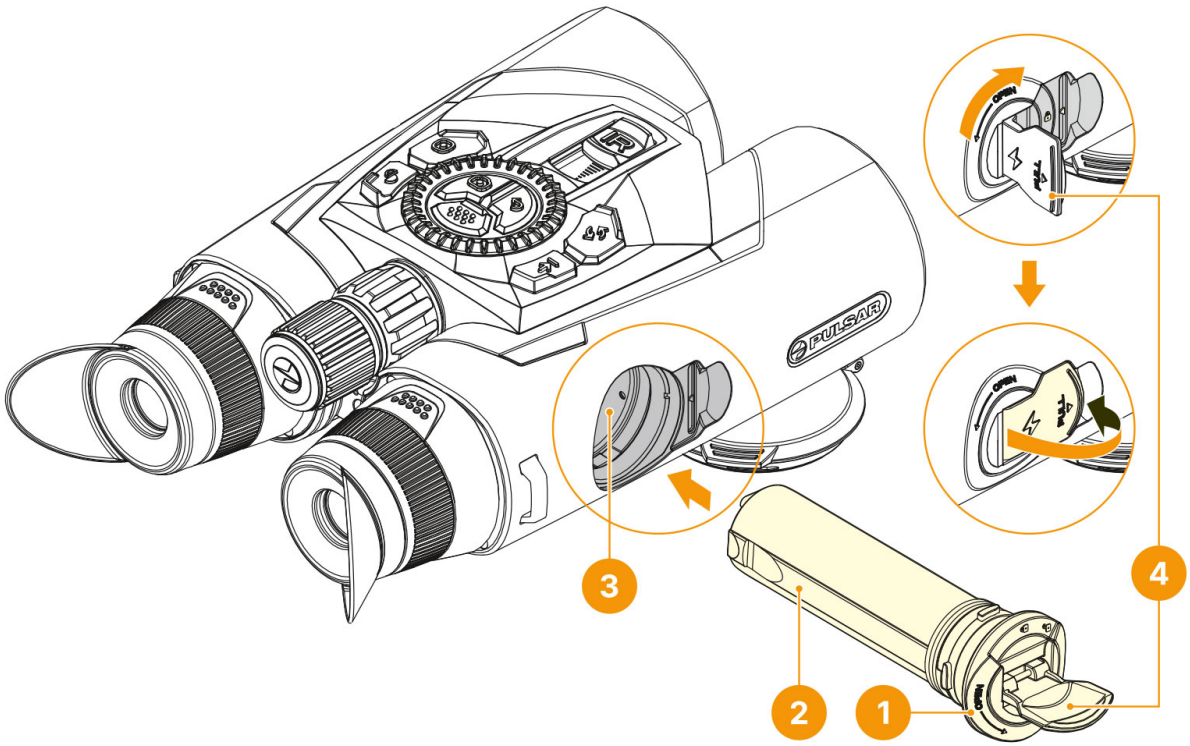
LED indication in the standby mode*	**Battery Level**
	Battery charge level is from 0% to 25%
	Battery charge level is from 26% to 50%
	Battery charge level is from 51% to 80%
	Battery charge level is from 81% to 99%
	Battery is fully charged. It can be disconnected from the charger.
	Defective battery. **Do not use the battery!**

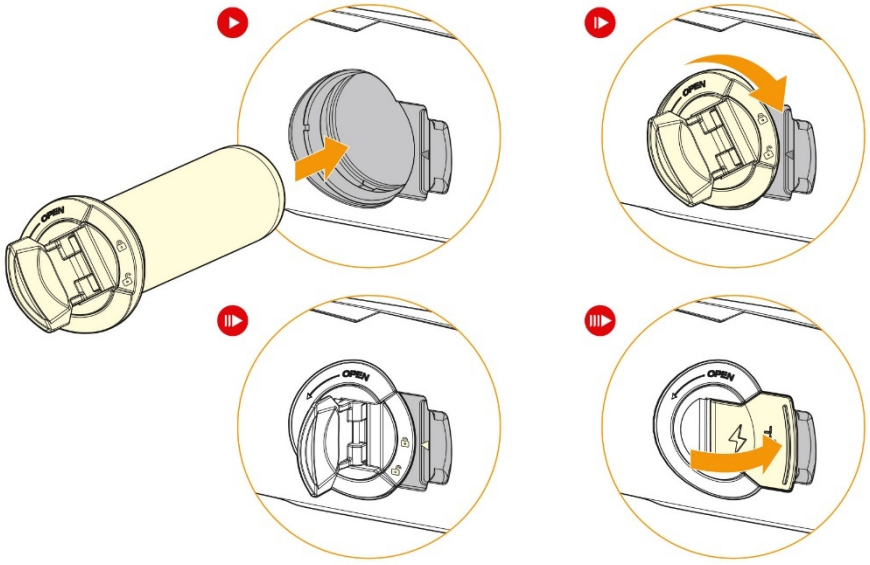
* Standby mode is when the batteries are in the charger but the Power Adapter is not connected. In this mode, the indicators are only on for 10 seconds.

Attention! When using a Power Adapter that does not support USB Power Delivery fast charging technology, the flicker frequency of the LED indicators decreases by a factor of 3 and the charge time increases.

Attention! The charger heats up during fast charging. Excess heat is removed through the radiator and does not affect the device operation.

Battery Installation





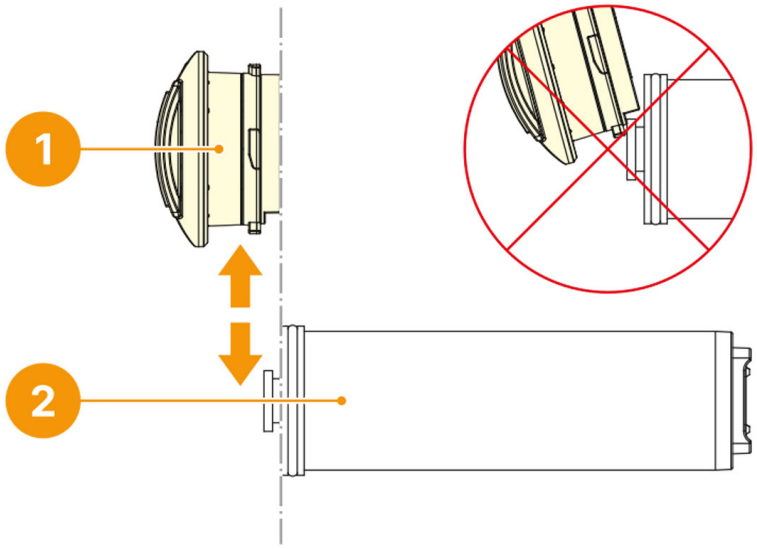
1. Place the battery compartment cover **(1)** on the battery **(2)**.
2. Insert the battery **(2)** into the battery compartment **(3)** along the guides until it is fully seated.
3. Turn the cover so that the handle **(4)** aligns with the recess on the body.
4. Close the battery compartment cover handle **(4)**.

Removing the Battery

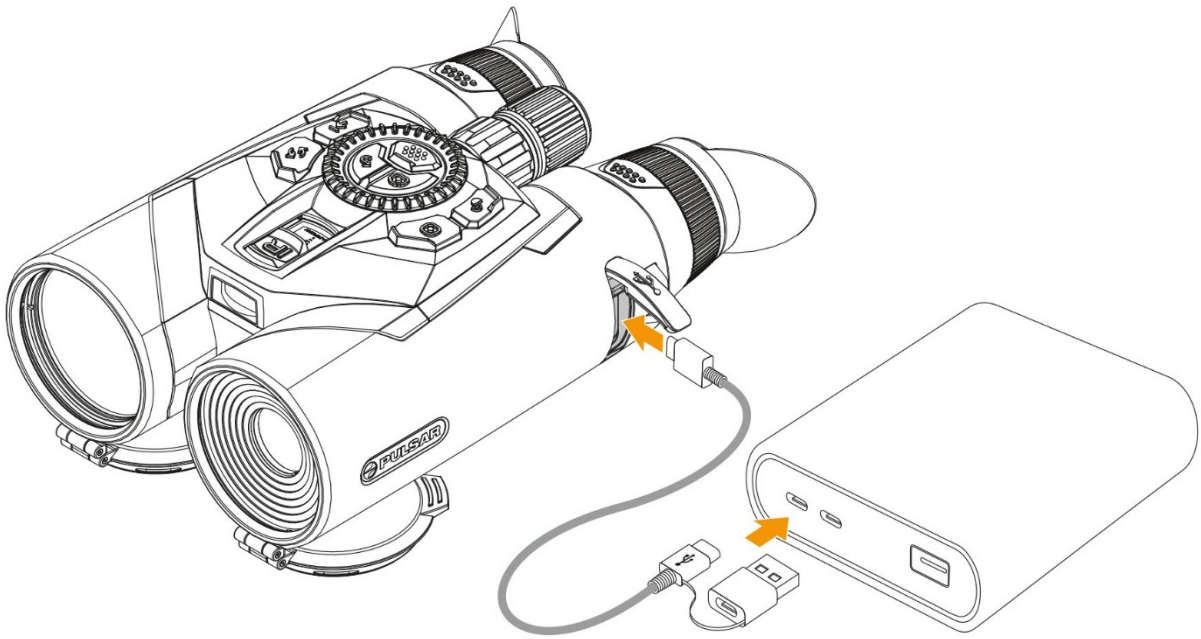
1. Pull the battery compartment cover handle **(3)**.
2. Turn the cover **(1)** counterclockwise until it stops.
3. Pull the handle **(3)** toward you and carefully remove the battery **(2)** from the compartment **(3)**.

Precautions:

- Do not rotate the cover **(1)** relative to the battery **(2)** once it is attached.
- When removing the cover **(1)**, slide it horizontally relative to the battery **(2)**. Do not lift it upward during removal.



External Power Supply



Power can be supplied from an external source such as a 5 V or 9 V power bank.

1. Connect the external power supply to the USB Type-C port of the device.
2. The device switches to external power source, while the removable Battery Pack APS5 will gradually recharge.
3. The display will show the battery icon  with charge level as a percentage.
4. If the device is powered by an external power supply, but the APS5 battery is not connected, an  icon is shown.
5. When the external power supply is disconnected, the device switches to the APS5 battery without powering off.

Warning! Charging the APS5 battery from the power bank at an external temperature below 0 °C (32 °F) can reduce the battery life. When using external power, connect the Power Bank to the device after it has been turned on and working for several minutes.

Getting Started

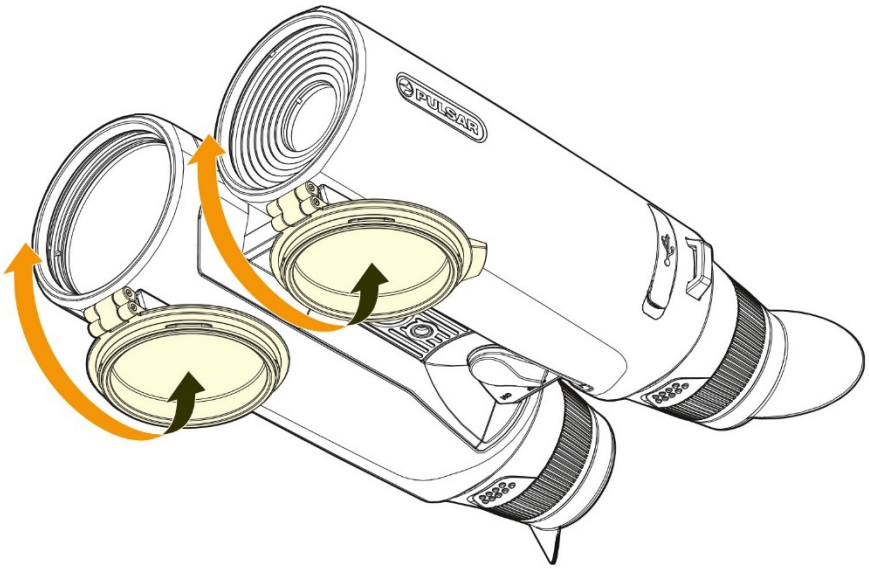
Recommended: When using the device for the first time, it is recommended to connect to the Wild Vision app and check for firmware updates. If a newer version is available, the software should be updated.

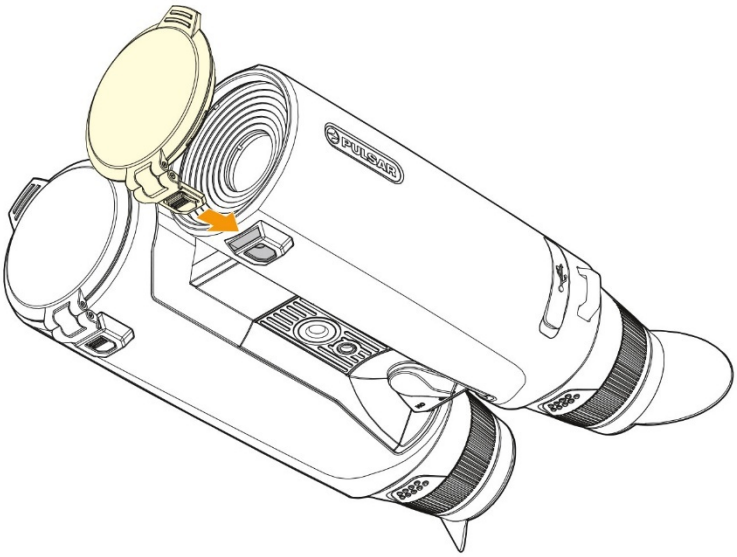
Charging the battery

- Charge the battery before the first use.
- Insert the battery into the battery compartment.

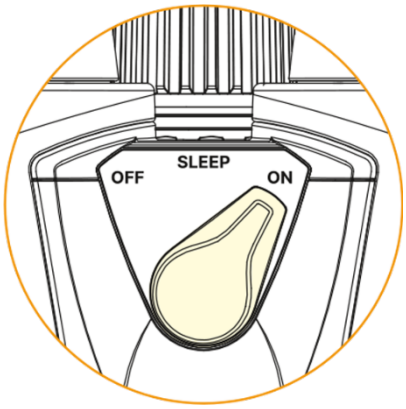
Turning on and adjusting the image

- Open the lens caps. The lens caps can also be removed.

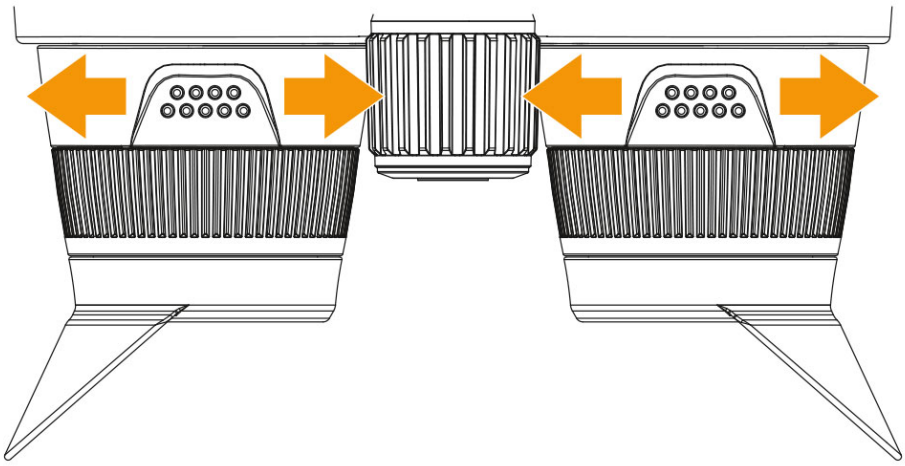




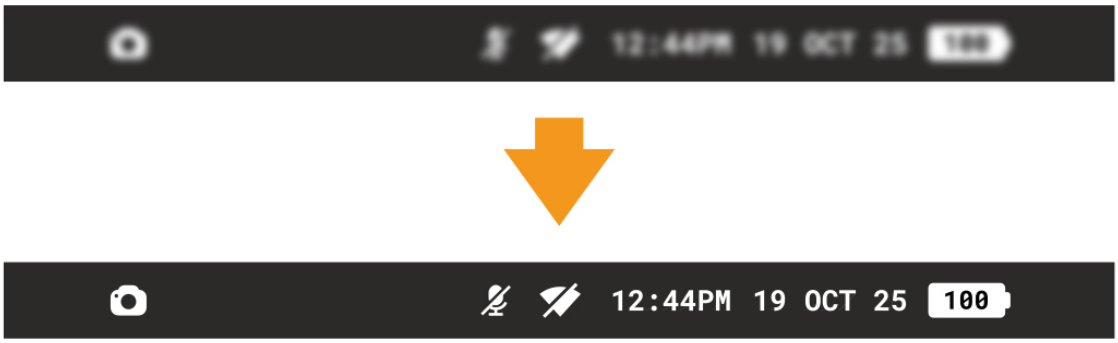
- Turn the switch to the **ON** position to turn on the device.

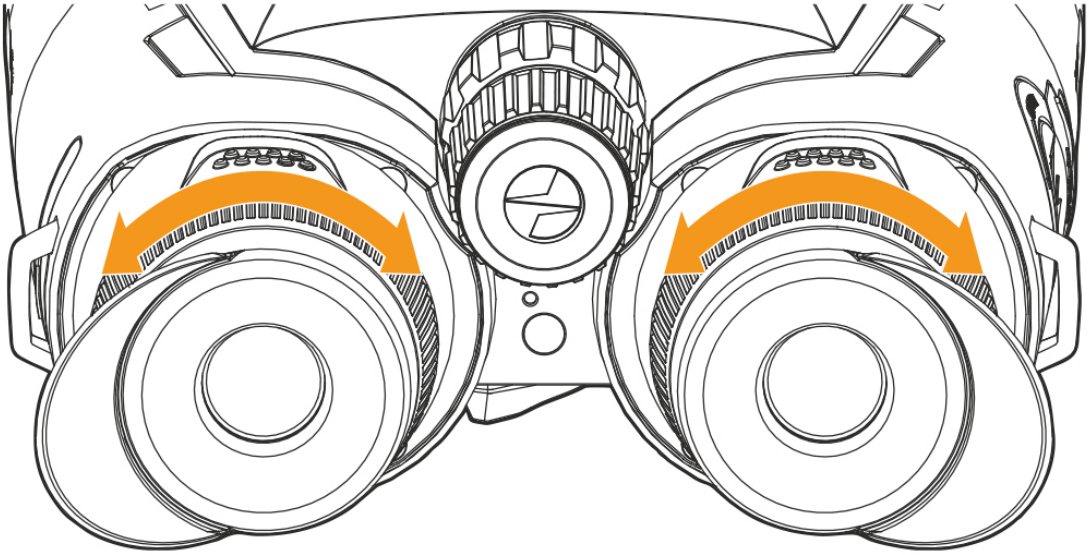


- Adjust the interpupillary distance by moving the eyepieces closer together or further apart



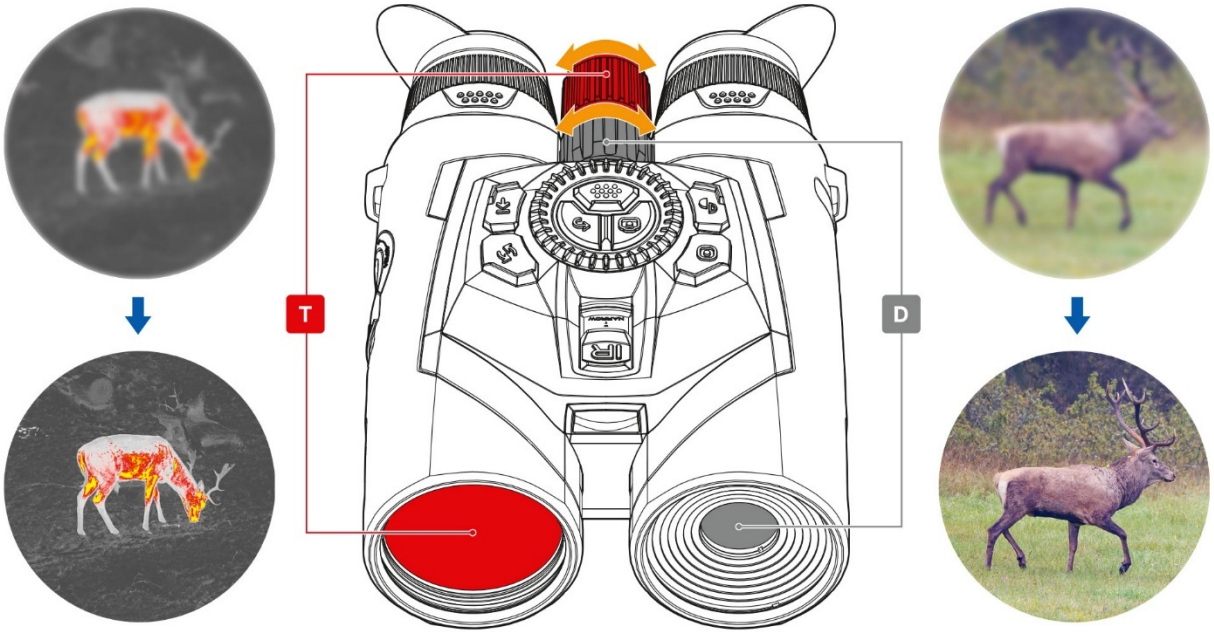
- Adjust the sharpness of the symbols on the displays by rotating the eyepiece diopter adjustment rings. After that, regardless of the distance and other conditions, it is not necessary to rotate the eyepiece diopter adjustment rings.





- Press the **DUO** button briefly to select the desired image mode: thermal or digital.

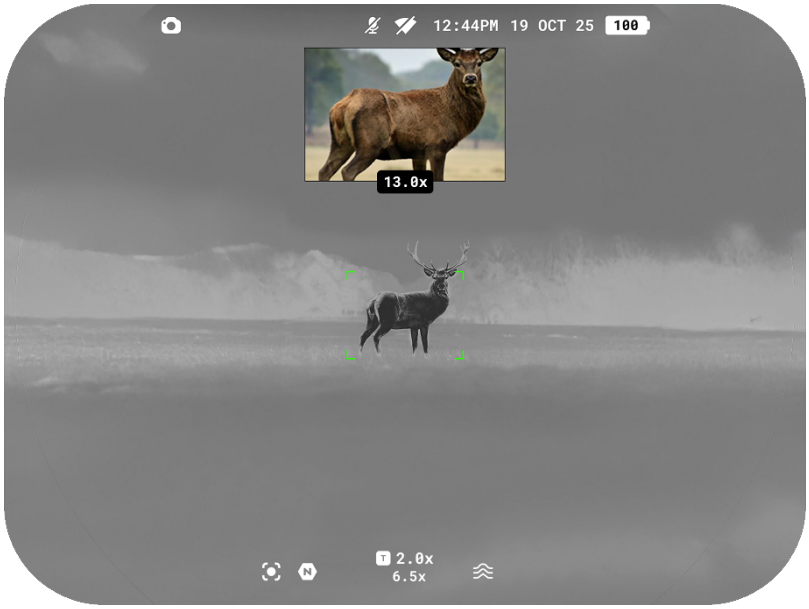
- To focus on the object of observation, rotate the focus rings of the thermal imaging T or digital D channels, depending on which channel you are using.



- If necessary, adjust the brightness and contrast of the displays in the quick menu (the menu is activated by briefly pressing the button MENU) or in the main menu.

Observation conditions: time of day, weather, and type of objects being observed affect image quality. The desired quality in a specific situation can be achieved using the microbolometer sensitivity amplification level adjustment function (for thermal imaging mode), IR illuminator settings (radiation power level, focus) for digital mode, as well as user settings for display brightness and contrast.

DUO mode



- Press and hold the **DUO** button to activate the DUO multispectral mode.
- Press the **DUO** button briefly to select the PiP window image mode: thermal or digital.

Image adjustment in thermal imaging and thermal imaging DUO modes

- Select the calibration mode: manual, semi-automatic, automatic the main menu item (enter the menu by pressing and holding the **MENU** button).
- Calibrate the thermal imaging by briefly pressing the button (if **semi-automatic** or **manual** calibration mode is selected). Close the thermal imaging lens cover before manual calibration.
- Select the desired amplification level by pressing and holding the **MODE** button .
- To improve the thermal image when increasing the gain level, activate the smoothing filter in the main menu.
- Select one of the color palettes by briefly pressing the **MODE** button.

IR illuminator

- In **Digital** or **Digital DUO** modes, activate the IR illuminator using one of the following methods:
    - Press and hold the **MODE** button.
    - Select IR Level in the Quick Menu.
    - Navigate through the Main Menu: Observation & Zoom Controls → IR Level.

- Press and hold the **MODE** button to select one of three IR illuminator power levels. Increasing the power level is necessary when the distance to the observation object increases. This increases the battery discharge rate.
- To focus the IR illuminator, move the **IR** control forward or backward.
- To turn off the IR illuminator, press and hold the **MODE** button when the maximum power level IR is selected.

Note: In Thermal DUO mode, the IR illuminator is controlled through the Quick Menu or the Main Menu.

Laser rangefinder

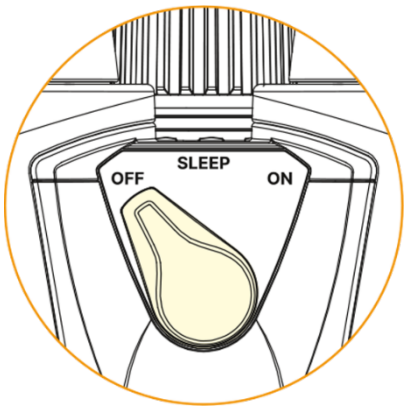
- Briefly press the **LRF** button to turn on the rangefinder. The rangefinder mark will appear in the center of the display.
- Briefly press the **LRF** button to measure the distance. If the rangefinder is not used for more than 10 seconds after measurement, it will automatically turn off.
- To measure distance in scan mode, press and hold the **LRF** button for 2 seconds.

Proximity sensor

- To prevent accidental decamouflage of the user, the displays automatically turn off when the observer moves the device away from their face.
- When the device is brought close to the face, the displays will automatically turn on.
- The proximity sensor is controlled by enabling or disabling Power saving mode in the main menu.

Switching off

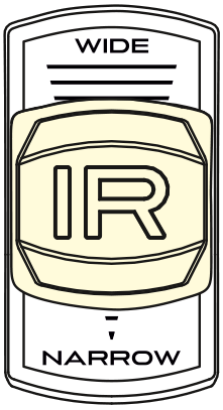
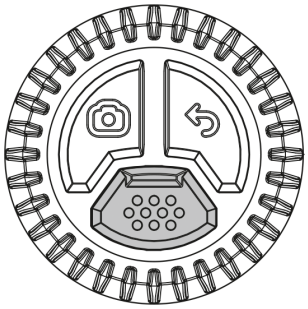
- When you have finished using the device, move the switch to the **OFF** position to turn off the device.

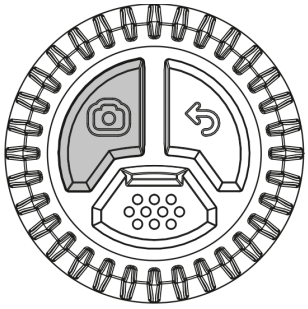


Button Operation

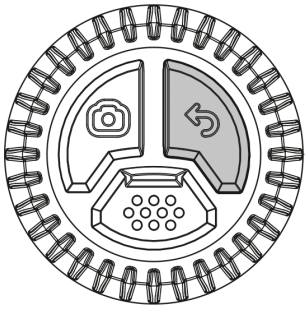
– Short press

– Long press

Controls	Functions
	IR illuminator focusing
MENU 	Quick menu / Back Main menu / Back
REC	Photo / Video recording Toggle photo / Video mode



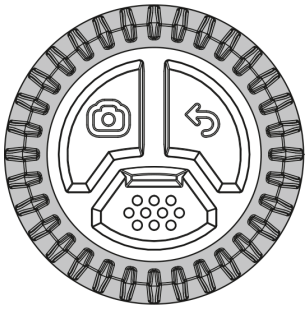
BACK/ZOOM



Digital zoom / Back

PiP mode / Back

CONTROLLER RING



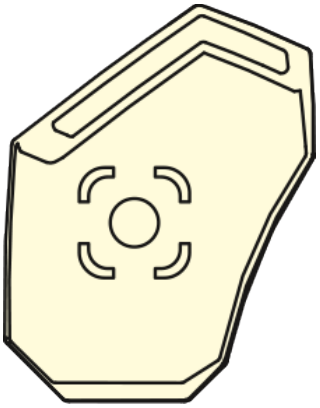
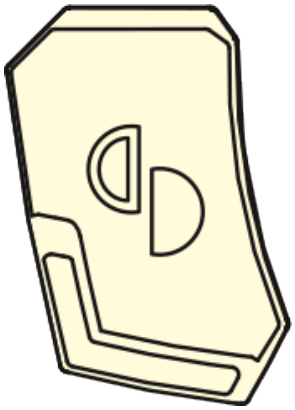
Rotation:

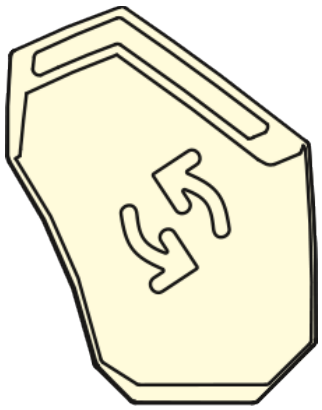
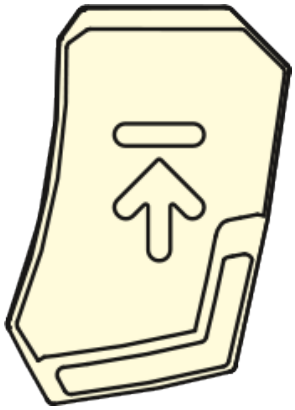
- Smooth zoom
- Menu navigation

CALIBRAION/STABILIZATION

Thermal image calibration

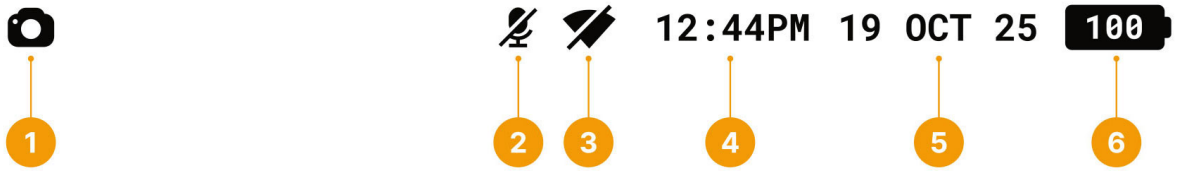
Image stabilization On/Off

	
MODE 	**Thermal imaging mode:** Palette switching Amplification level switching **Digital mode:** Switching modes: Daytime Color / Twilight / Night Black-and-White / Night Green IR illuminator: on / power adjustment / off
DUO	Thermal/Digital mode switching Multispectral DUO mode

	
LRF 	Rangefinder activation / Single distance measurement Rangefinder Scan Mode

Interface

Status Bar



1. Photo/video recorder

2. Microphone

3. Wi-Fi connection

4. Time

5. Date

6. Power indication:

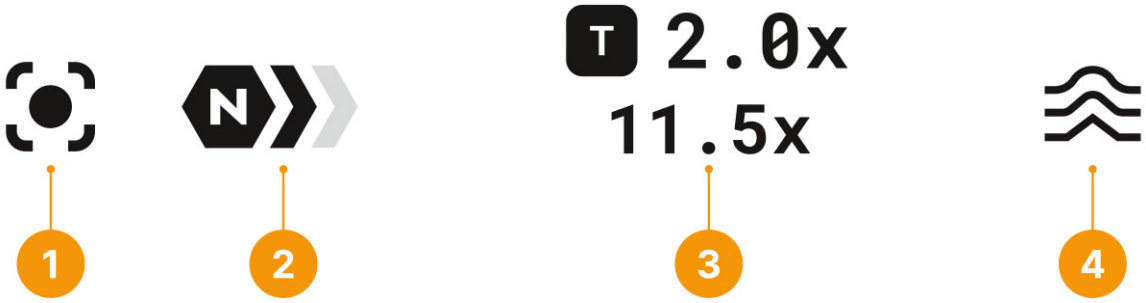
– charge level if the device is powered by a battery

– charge level if the device is charging and powered by a battery

– the device operates on an external power supply but is not charging


– low battery charge

Thermal imaging mode



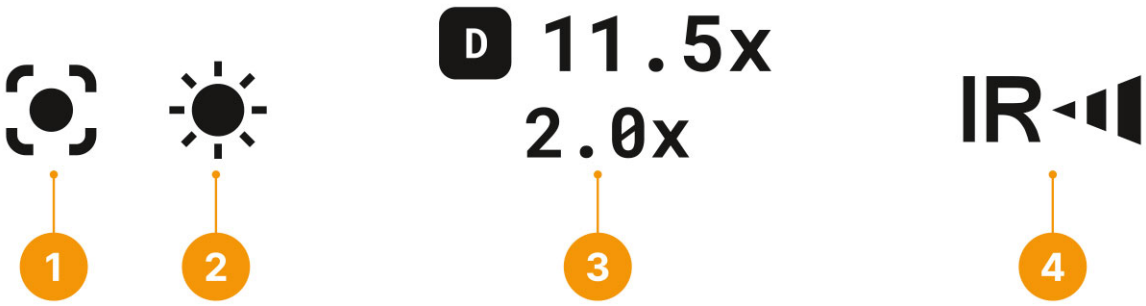
1. Image stabilization

2. Amplification level

3. Magnification in thermal/digital channel

4. Smoothing filter

Digital mode



1. Image stabilization

2. Modes:

Day Color – color image

 Twilight – color image in low light conditions

 Night B&W – monochrome black-and-white image

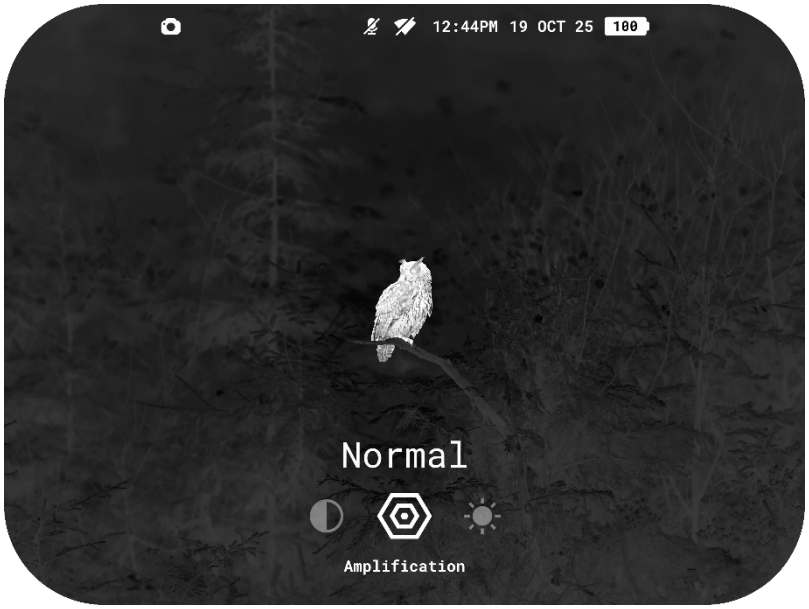
 Night Green – monochrome green image

3. Magnification in digital/thermal channel

4. IR-Illuminator power levels

Quick Menu

The Quick Menu gives you instant access to the most important device settings, letting you adjust key parameters quickly without opening the main menu. It’s designed for fast, on-the-go changes to brightness, contrast, sensitivity amplification levels, and IR illuminator power.



How to open the Quick Menu:

- Briefly press the **MENU** button.

Navigation:

- To switch between settings, press the **MENU** button repeatedly.

Available settings:

- **Brightness** **:** Rotate the controller ring to set the display brightness level from 0 to 20.
- **Contrast** **:** Rotate the controller ring to set the display contrast level from 0 to 20.
- **Sensitivity amplification levels** **:** Select one of three levels for the thermal imaging channel — Normal, High, Ultra.
- **IR illuminator power** **IR:** Adjust the IR power level (Low / Medium / High) depending on observation conditions and distance to the object.

How to exit the Quick Menu:

- Press the **BACK** button or wait 5 seconds for automatic exit.

Main Menu

The main menu provides access to the full range of settings and functions of the device. It includes:

- Observation & Zoom Controls
- Image settings
- Device settings
- Media
- System settings

1. **To enter the main menu**, press and hold the **MENU** button until the menu appears on the screen.
2. **Navigate through the menu items** by rotating the controller ring .
3. **To select a menu item or confirm selection**, press the **MENU**
4. **To return to the previous level or exit the menu**, press the **BACK** button or press and hold the **MENU**
5. If no actions are performed within 10 seconds, the menu will close automatically.

Note: When entering the main menu, the background image darkens to improve menu visibility. This is a normal feature and not a defect.

Observation & Zoom Controls

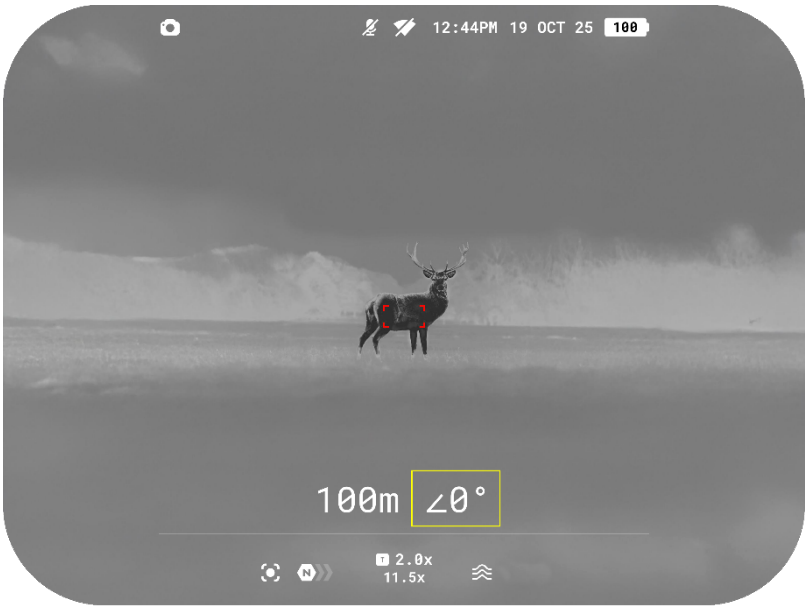
Laser rangefinder

Reticle type

Reticle Type menu item allows you to select one of the three reticle shapes

Target position angle

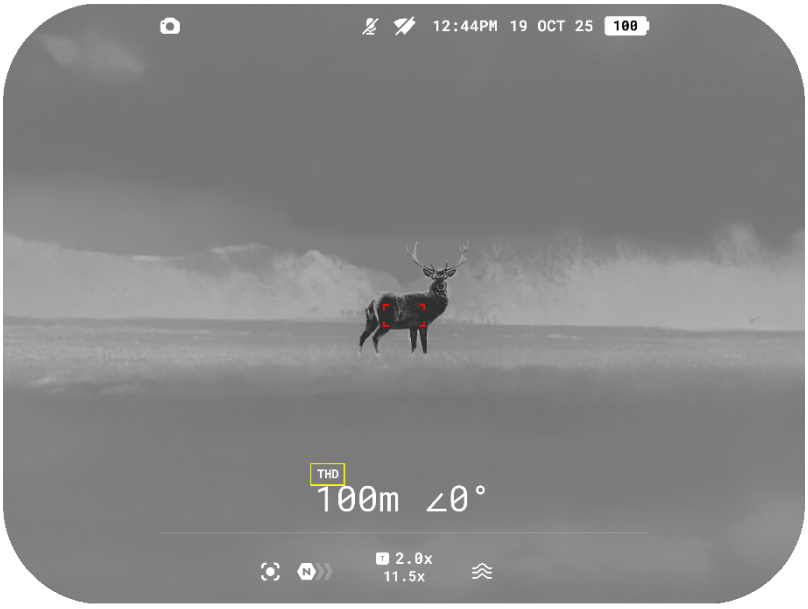
Function Target Position Angle allows you to measure the angle of target location (angle of elevation). When the function is activated, the angle is shown continuously.



True distance

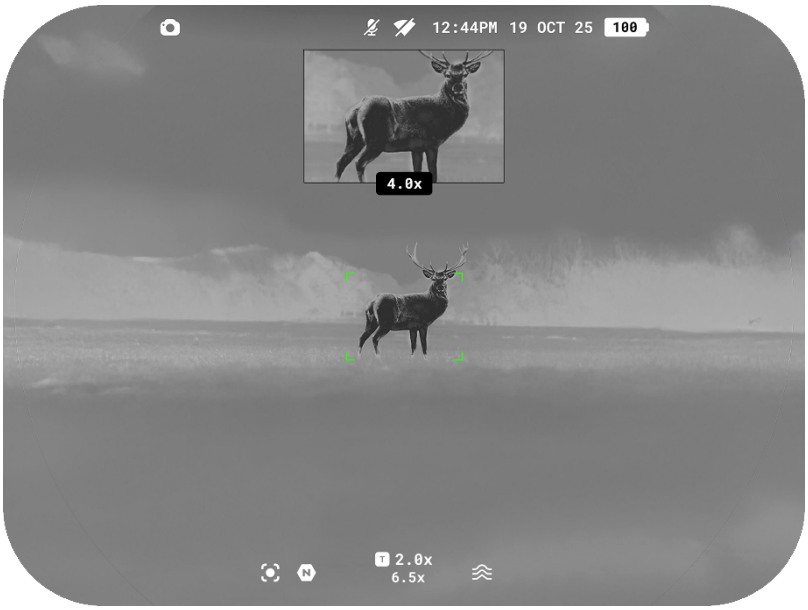
True Horizontal Distance THD function allows you to measure true horizontal distance to a target based on the angle of elevation value.

When activated, the message **THD** will appear above the distance reading.



Picture-in-Picture

PiP (“Picture-in-Picture”) allows you to see a zoomed image simultaneously with the main image in a dedicated window.



- Turn on/off the PiP function with a long press of **BACK** button or in the main menu: **Observation and Zoom Controls –> Picture-in-picture** PIP.
- Change zoom ratio in the PiP window with a rotation of the controller ring .
- The zoomed image is displayed in a dedicated window, while the image in the rest of the screen is displayed at base magnification.
- When PiP is turned on, you can operate the discrete and continuous digital zoom. The magnification will take place only in the dedicated window.
- When PiP is turned off, the image is shown with the optical magnification set for the PiP function.

Zoom on button press

If enabled, smooth zooming starts after pressing the **BACK** button and then rotating the controller ring.

If disabled, zoom level can be adjusted directly by rotating the controller ring without pressing the **BACK** button.

IR level

In **digital** and **DUO** modes**,** this menu item IR lets you set the IR illuminator power level or switch it off.

Image Settings

Brightness

allows adjustment display brightness from 0 to 20.

Contrast

allows adjustment display contrast from 0 to 20.

Save thermal image settings

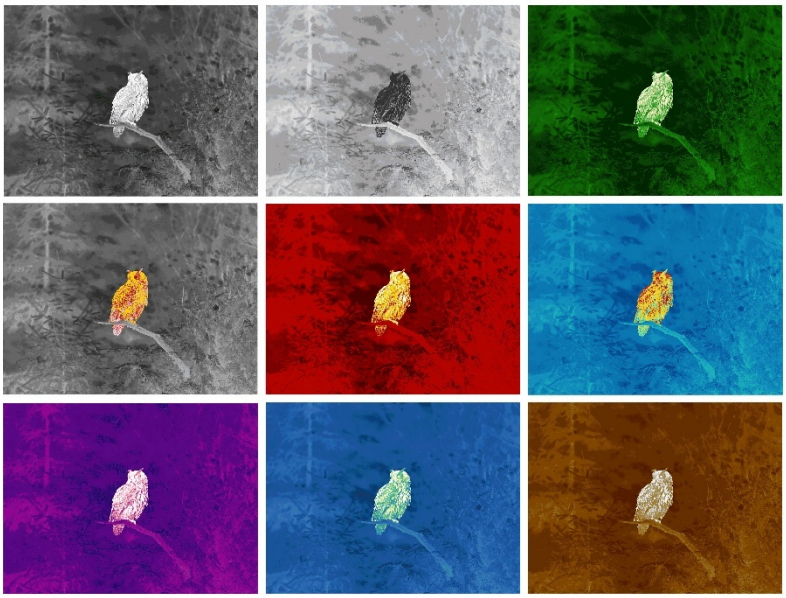
If enabled, the device will restore the previously saved brightness and contrast values for the thermal channel when powered on again.
If disabled, default brightness and contrast values for the selected palette will be applied.

Available palettes

In this section, you can select color palettes that can be switched by pressing the **MODE** button.

The user can disable all palettes except one.
If the active palette is disabled, it will remain in use until the user presses the button. After that, the palette is removed from the switching cycle.

To preserve brightness and contrast values when switching palettes, activate Save thermal image settings.



Available color palettes:

- White hot
- Black hot
- Green
- Red Hot
- Red Monochrome
- Rainbow
- Ultramarine
- Violet
- Sepia

Amplification

The Normal  , High  , Ultra  sensitivity enhancement features are the latest in software algorithm offerings from Pulsar that enhance the quality of detection and object recognition, regardless of observation conditions. When the temperature contrast decreases due to conditions such as fog, precipitation or high humidity, increasing the amplification level can optimize the image picture.

To reduce digital distortion, activate the Smoothing in the main menu.

Option 1: Press and hold the **MODE**  button to switch the amplification level.

Option 2: Choose amplification level in the main menu: **Image settings**  **-> Amplification**  .

Smoothing

The **Smoothing**  function refines the image and makes the thermal picture appear smoother and more uniform. When smoothing is enabled, the image looks less grainy and more comfortable for long-term observation, especially on uniform backgrounds.

Display dimming

The **Dimming function**  is designed to reduce the brightness of the display when using the device in the dark to reduce eye strain.

The Interface brightness value in dimming mode will be retained when the function is turned on again.

Interface brightness

Adjusting the **Interface brightness**  helps ensure comfortable viewing in any lighting conditions. Increase brightness for daytime use or lower it at night to minimize glare and reduce eye strain.

Image stabilization

Image stabilization reduces image shake when observing handheld, especially at high magnification or during long observations.

Activation

- By long-pressing the Stabilization button on the device body.
- In the main menu: **Image settings -> Image stabilization -> Activation**.

Note: the image stabilization function is automatically switched off during laser rangefinder operation.

Calibrate

If performance of Electronic Image Stabilization (EIS) decreases during long-term use, it is recommended to perform calibration.

For this put device on the smooth surface and press “Calibrate”. It will take up to 10 seconds.

Device Settings

Wi-Fi

Activate **Wi-Fi** to connect the device to the Wild Vision application on your smartphone. This enables remote control of the device and provides access to additional features via the app.

Wi-Fi Settings

Password Setup

This menu option PAS allows you to set a password for accessing your Pulsar device from an external device. The password is unique for each device.

Access Level Setup

This menu option allows you to set the required access level for the Wild Vision application:

- **Owner:** Full access to all device functions.
- **Guest:** Access to real-time video streaming only.

Wi-Fi Band

This setting helps resolve smartphone connection issues in the following cases:

- If your smartphone does not support the 5 GHz Wi-Fi band, switch to 2.4 GHz.
- If there is interference from multiple Wi-Fi networks, switching between Wi-Fi bands can improve the connection between the device and your smartphone.

Calibration

Calibration equalizes the microbolometer's background temperature and eliminates image flaws such as vertical bars and phantom images on the thermal image.

There are three calibration modes: **Automatic**, **Semi-Automatic** and **Manual**:

Automatic

- The device calibrates itself automatically according to firmware algorithms.
- There is no need to close the lens cover; an internal shutter automatically covers the microbolometer.
- The user can also initiate calibration manually by pressing the **Calibration** button (as in SA mode).
- A countdown timer 5s appears on the right side of the screen when 5 seconds remain before automatic calibration.

Semi-Automatic

- The user decides when calibration is needed (based on the observed image).
- Briefly press the **Calibration** button to start calibration.
- There is no need to close the lens cover; an internal shutter automatically covers the microbolometer.

Manual Mode

- Close the thermal imaging channel lens cover.
- Briefly press the **Calibration** button.
- Open the lens cover after calibration is complete.

Notes:

- During calibration, the image on the display may freeze for up to 1 second.
- The selected calibration mode is retained after restarting the device.

No-use shutdown

The **No Use Shutdown** function automatically turns off the device after 30 minutes of inactivity in Power saving mode or Sleep mode. If no buttons are pressed and no actions are performed during this period, the device will power off to conserve battery life.

Control preference

The **Control Preference** function allows you to adapt the button layout for left- or right-handed use.

When enabled, the device mirrors the button assignments, making it more convenient to operate with the left hand. When disabled, the standard (right-handed) button layout is used.

Note: Button icons printed on the device do not change and will not correspond to the reassigned functions when the mirrored layout is enabled.

Haptic vibro indication

This function enables vibration feedback when the device is turned on or off, and when buttons are pressed.

Power saving mode

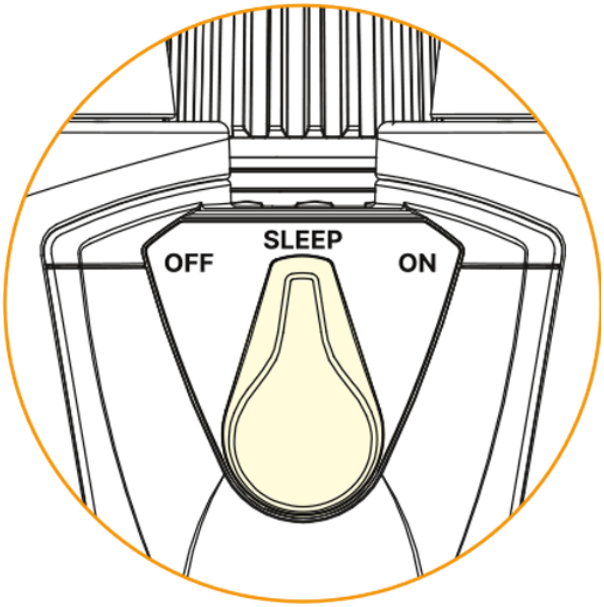
When **Power Saving Mode** is on, the device helps save battery as follows:

Power Saving Mode

- The displays turn off if you move the device away from your eyes for more than 5 seconds.
- Video recording and streaming can continue if they were active.
- Wi-Fi and Bluetooth stay on.
- To turn the displays back on, just bring the device to your eyes or press any button.
- If video recording, streaming, or file transfer is not active, and you keep the device away from your eyes for more than 5 seconds, Power Saving Mode will automatically switch to Sleep Mode for maximum battery saving.

Sleep Mode

You can activate at any time by turning the switch on the device to the Sleep position, even if Power Saving Mode is off.



- The displays turn off.
- Wi-Fi and Bluetooth are turned off.
- IR illuminator and rangefinder are turned off.
- Video recording and USB streaming stop.

Media

Record with sound

This function allows you to enable the microphone  to record video with sound.

Video compression

This setting allows you to choose the level of video compression  to balance between file size and video quality.

ON: Standard compression is applied.

- Video files take up less space.
- You can store more videos on the device.

OFF: Minimal compression is applied.

- Video quality is higher.
- Video files are much larger and take up more space.

Note: Larger video file sizes result in shorter available recording times and may increase the download time for video files when using the Wild Vision app.

Overlay media mode

This function  allows disabling all OSD overlay graphics in recorded photos and videos, leaving only PULSAR logo on the screen. Overlay remains visible on the display during recording. The Logo only option is useful for capturing photos and videos without auxiliary on-screen indicators.

Format media disk

This function  erases all files from the device's internal memory.

Use this option to quickly clear all recorded videos and photos.

Formatting should be performed if a memory error occurs.

Note: All data will be permanently deleted and cannot be restored. Before formatting, make sure to transfer important files to another device.

System Settings

Language

This function allows you to select the device's menu language from the following options: English, German, Spanish, French, Russian, Italian, Portuguese, Dutch, Danish, Norwegian, Swedish, Polish, Czech, Hungarian, Lithuanian, Latvian, Bulgarian, Finnish, and Ukrainian.

Date

This function lets you set the current date in the device.
The date is shown in the status bar and is used for naming videos and photos.

Time

This function lets you set the current time on the device.
The time is shown in the status bar and is used for naming videos and photos.
You can choose between 12-hour and 24-hour formats.

Units of measurement

This function lets you choose the units for distance displayed in the laser rangefinder widget. You can select either meters or yards.

Reset to default settings

This function restores all device settings to their original factory values.
The reset cannot be undone. All your custom settings will be erased.

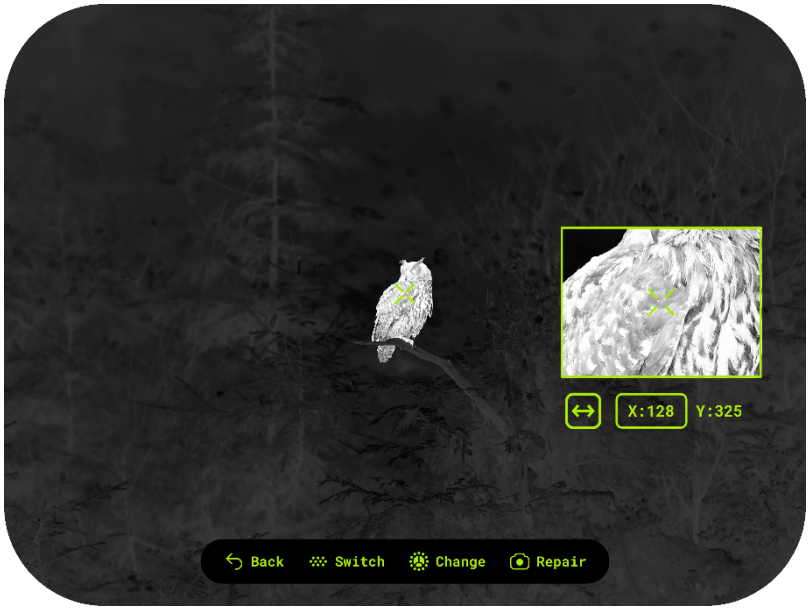
Note: When restoring the factory defaults, the date, time, and user pixel map are saved.

Image pixel repair

When using the thermal imager, you may notice defective (dead) pixels — bright or dark dots that do not change brightness.
Defective pixels on the microbolometer can increase in size relative to the digital-zoom power.
The Pixel Repair function allows you to mask these pixels on the image.

How it works:

- Go to the menu: **System settings** **-> Image pixel repair** **-> Pixel Repair** and use a movable marker to select a defective pixel on the display.
- A magnified area helps you precisely align the marker with the defective pixel.



- Move the marker by rotating the controller. To switch between vertical and horizontal movement, press the **MENU** button. The x and y coordinates are shown in the widget below the magnified area.
- Once aligned, remove (mask) the defective pixel by pressing the **REC** button. An “OK” message will confirm the action.
- To save the pixel map and exit the menu, press the **BACK** button.
- You can repeat the process for other defective pixels.
- All masked pixels are saved in the device’s memory and added to the factory pixel map.

Note: While in the Pixel Repair menu, other device functions are temporarily unavailable.

Restore default pixel map

If needed, you can restore the original factory pixel map through the menu. This will remove all user-masked pixels and return the display to its original state.

Device information

This option allows you to view important details about your device, including:

- Full name
- SKU number

- Serial number
- Firmware version
- Hardware version
- Service information

Functions

Digital Channel Modes

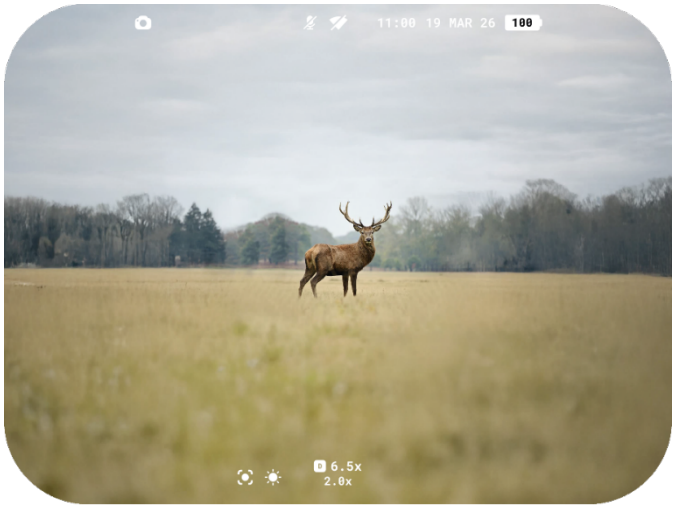
The digital channel supports the following viewing modes.

Select the mode depending on ambient lighting conditions.

To switch between digital modes, briefly press the **MODE** button in Digital mode.

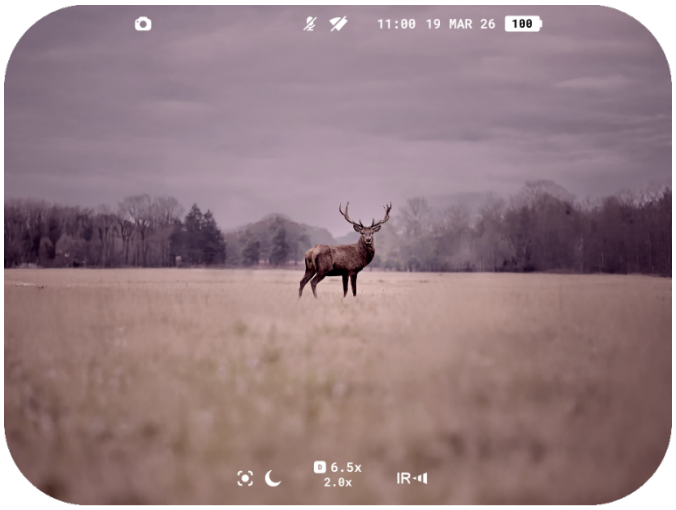
Day Color

Full-color image for observation in daylight conditions.



Twilight

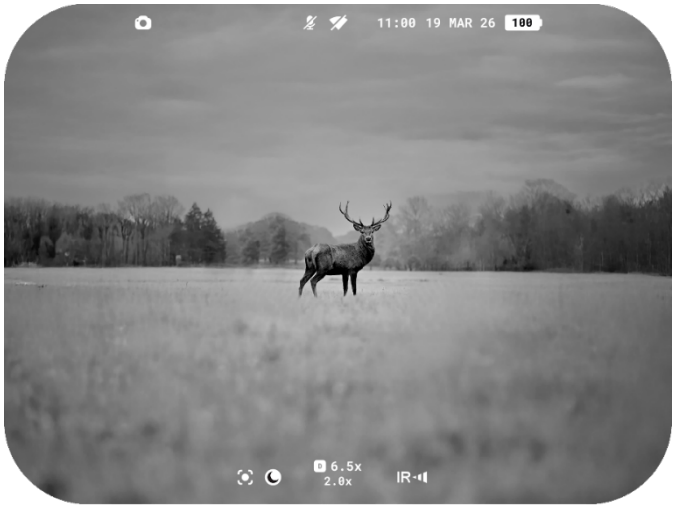
Full-color image optimized for low-light conditions (twilight).



Night – Black & White

Monochrome black-and-white image for night observation.

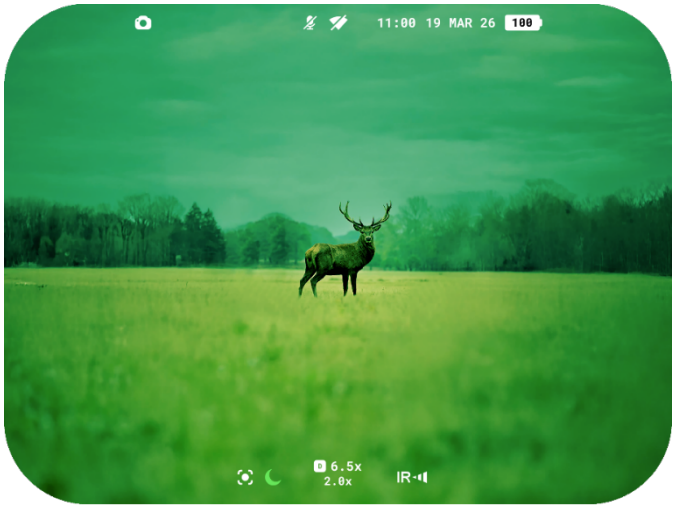
Use of the IR illuminator is recommended.



Night – Green

Monochrome green image for night observation.

Use of the IR illuminator is recommended.



Video Recording and Photography

Avilume binoculars feature video recording and photography of the image being ranged to the internal memory card.

Before using the photo and video functions, setup the Date and Time in the **System Settings**.

Built-in recorder operates in two modes:

- **Photo** (photography; the icon is displayed in the upper left corner of the image).
- **Video** (video recording; the icon is displayed in the upper left corner of the image, the total remaining recording time is given taking into account the current resolution in the HH:MM format (hours:minutes).

Switching between the operating modes of the video recorder is done by long pressing the **REC** button. Switching between the modes is cyclical (**Video**–> **Photo**–> **Video**…).

Photo mode. Capturing an image

1. Switch to the **Photo** mode with a long press of the **REC** button.

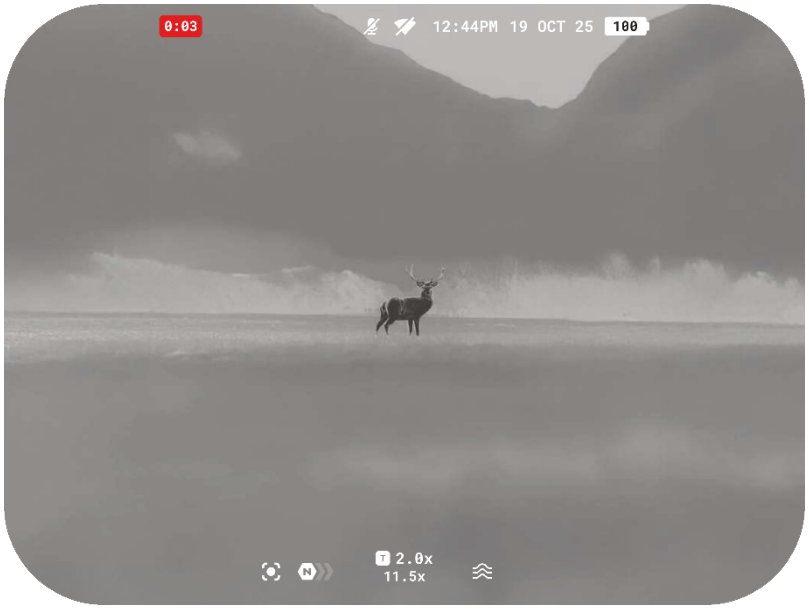
2. Press the **REC** button briefly to capture a photo. The icon flashes – the photo file is being saved to the built-in SD card.

Video mode. Recording a video

1. Switch to the **Video** mode with a long press of the **REC** button.

2. Press the **REC** button briefly to start video recording.

3. When the video recording starts, the icon will disappear, instead of it an icon with a timer in the MM:SS (minutes:seconds) format will appear 0:03.



4. Pause/continue recording by briefly pressing the **REC** button.

5. Press and hold the **REC** button to stop video recording.

Video files are stored in the built-in memory card:

- After turning off the video recording;
- Upon powering the device off if recording was on;
- When the memory card is overfilled during recording (Memory Full message appears).

Notes:

- You can enter and navigate the menu during video recording.
- Recorded videos and photos are saved to the built-in memory card of the device in the format img_xxx. jpg (for photos); video_xxx. mp4 (for video).
- Videos are recorded in clips with a maximum duration of 5 minutes. The number of recorded files is limited by the capacity of unit's internal memory and video compression ratio.
- Regularly check free memory within the built-in memory card and move the footage to other storage media to free up the memory card space.

- In case of a memory card error, you can use the format function in the Media section of the main menu.
- When the Power saving mode is activated, video recording continues to run in the background.

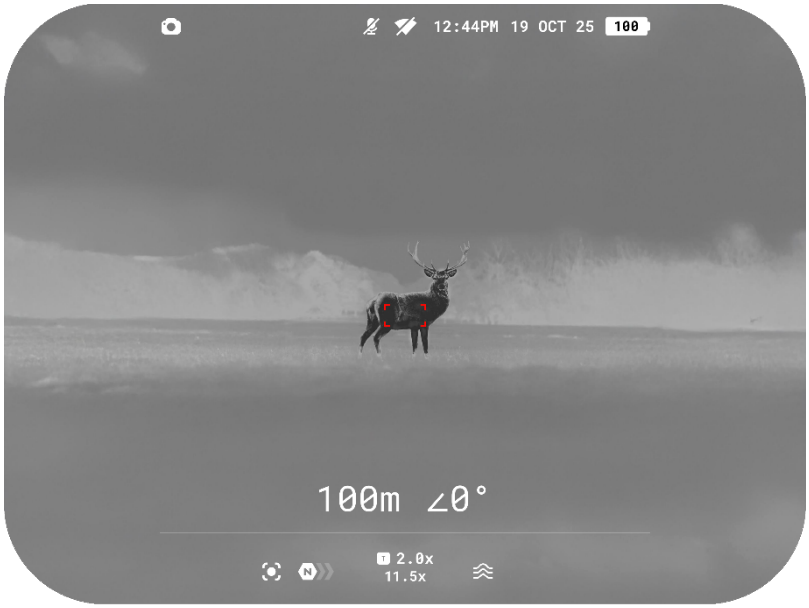
Using the Laser Rangefinder

The binoculars are equipped with a built-in rangefinder, allowing you to measure distance to objects up to 1500 m away.

How the rangefinder works

1. Turn on the device, set up image according to section Getting Started.

2. Briefly press the **LRF** button to measure the distance. The rangefinder reticle will appear in the centre of the image. In the bottom of the display you will see distance in meters (or yards – depending on settings).

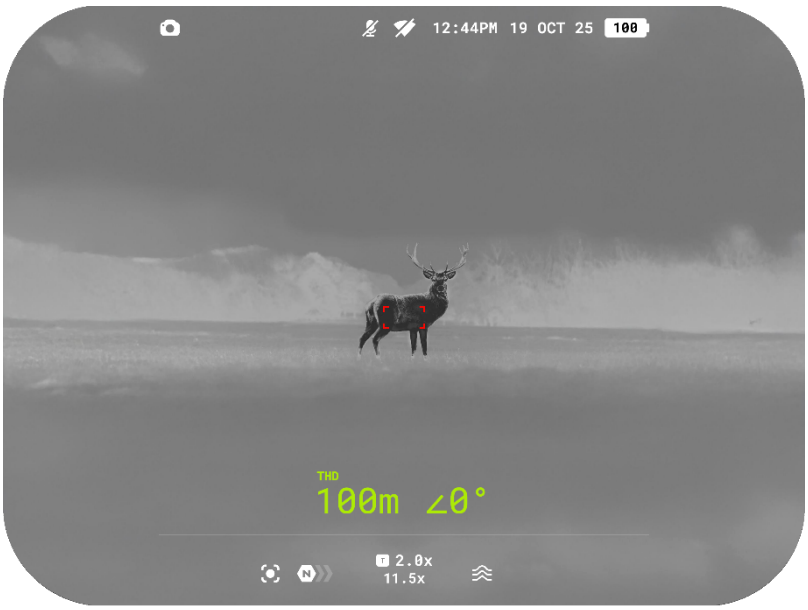


3. Point the rangefinding reticle at an object and press the **LRF** button.

Note: if the rangefinder is idle longer than for 10 seconds, it turns off automatically.

Operation in SCAN mode

1. To measure distance in scanning mode, hold down the **LRF** button for longer than two seconds. Measurement readings will be changing in real time as you point the binoculars at different objects. The text in the LRF widget will become green.



2. If measurement fails, dashes will appear on the display.

3. To turn off the rangefinder, press **LRF** button again.

4. In 10 seconds of inactivity (no measurement is taken) the rangefinder turns off, the rangefinding reticle with readings disappears from the display.

Notes:

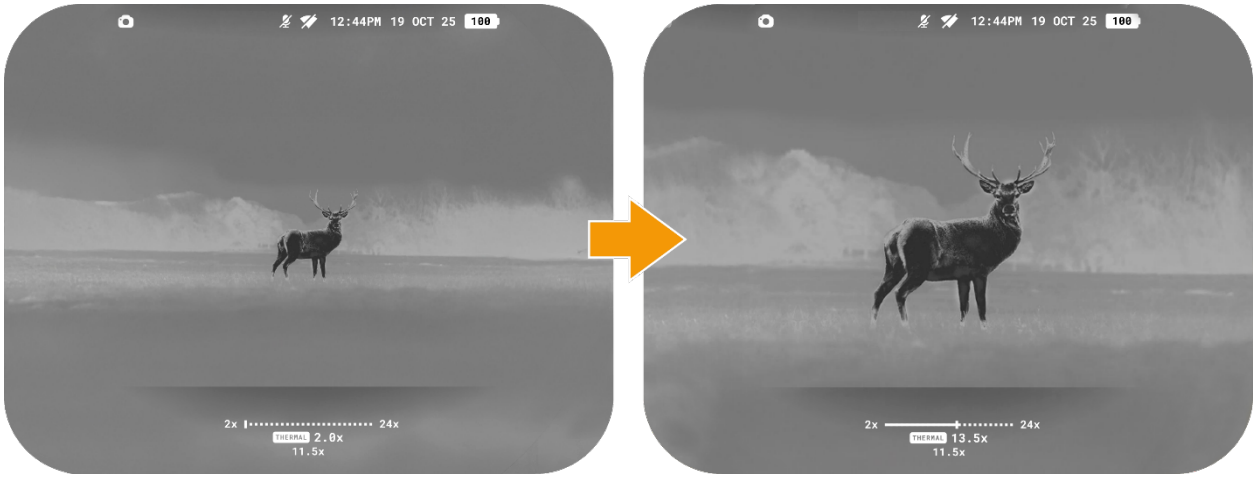
- The rangefinding reticle can be changed in the **Observation & Zoom Controls** -> Laser rangefinder -> **Reticle Type**.
- Units of measurement (meters or yards) can be changed in see the **System Settings** -> Units of measurements section.

Additional Information:

- Accuracy of measurement and maximum range depend on the reflection ratio of the target surface, the angle at which the emitting beam falls on the target surface and environmental conditions. Reflectivity is also affected by surface texture, color, size and shape of the target. A shiny or brightly colored surface is normally more reflective than a dark surface.
- Measuring range to a small sized target is more difficult than to a large sized target.
- Accuracy of measurement can also be affected by light conditions, fog, haze, rain, snow etc. Ranging performance can degrade in bright conditions or when ranging towards the sun.

Discrete Digital Zoom

The device allows you to quickly increase the basic magnification (please refer to the **Magnification** line in the Specifications table).



- To operate the discrete digital zoom, press successively the **BACK** button.
- The digital zoom will not be saved after the device is restarted.

Wi-Fi Function

The device has a function enabling wireless communication with external devices (smartphone or tablet) via Wi-Fi.

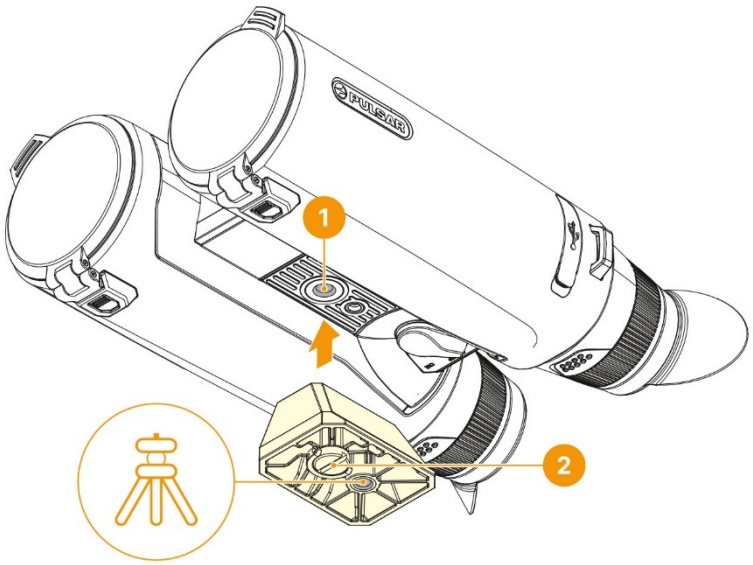
- Turn on the wireless module in the main menu: **Device Settings** > Wi-Fi .

Wi-Fi operation is shown in the status bar as follows:

Status bar indication	Connection status
	Wi-Fi is off
	Wi-Fi activated by the user, Wi-Fi in the device is being activated
	Wi-Fi is on, no connection with device
	Wi-Fi is on, device connected

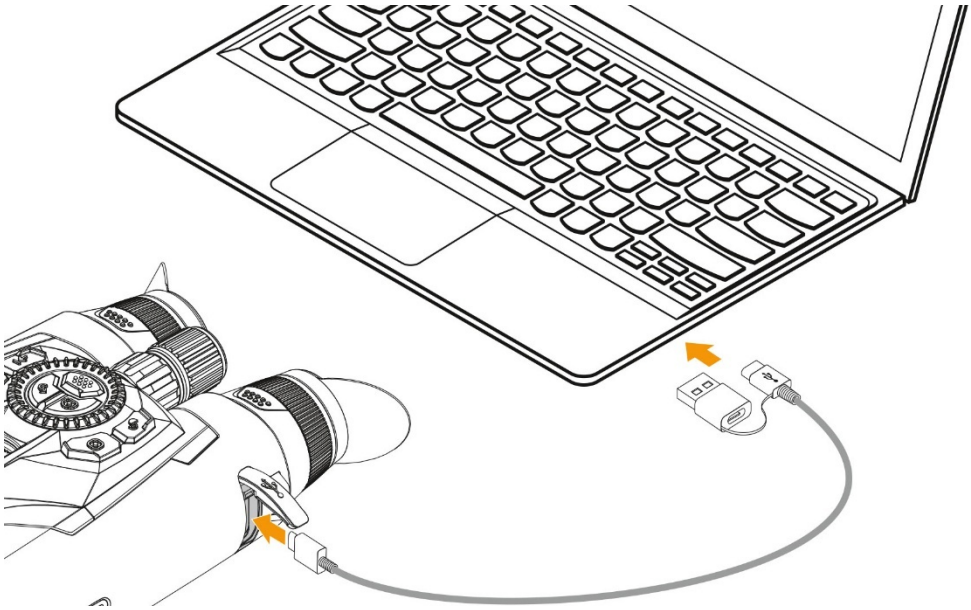
- Your device is detected by an external device as Avilume_[serial number].
- After entering the password on a mobile device (see **Password Setup** subsection of the Wi-Fi Settings section for more information on setting a password) and connection is established, the icon in the status bar will change to .
- The Wi-Fi function will turn off automatically if there is not enough battery power for Wi-Fi.

Installing the Device on a Tripod



1. Attach the tripod adapter to the mounting socket **(1)**.
2. Screw the adapter handle **(2)** clockwise until it is securely tightened.
3. Mount the device with the adapter onto the tripod. The adapter is compatible with **Arca-Swiss mounts**.

USB Connection

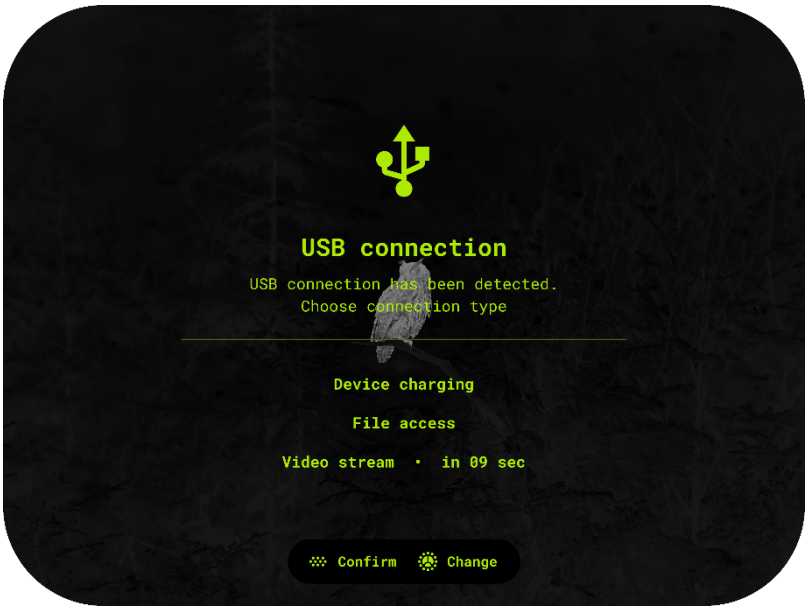


1. Connect one end of the USB cable to the USB Type-C connector of the device, the other one to the USB port on your computer using a USB Type-A adapter.

2. Turn the device on (device that has been turned off cannot be detected by your computer).

3. Your device will be detected by the computer automatically; no drivers need to be installed.

4. Three connection modes will appear on the image: **Device charging**, **File access (external memory)** and **Video stream**.



5. Select connection mode by rotating the controller ring .

6, Confirm selection with a short press of the **MENU** button.

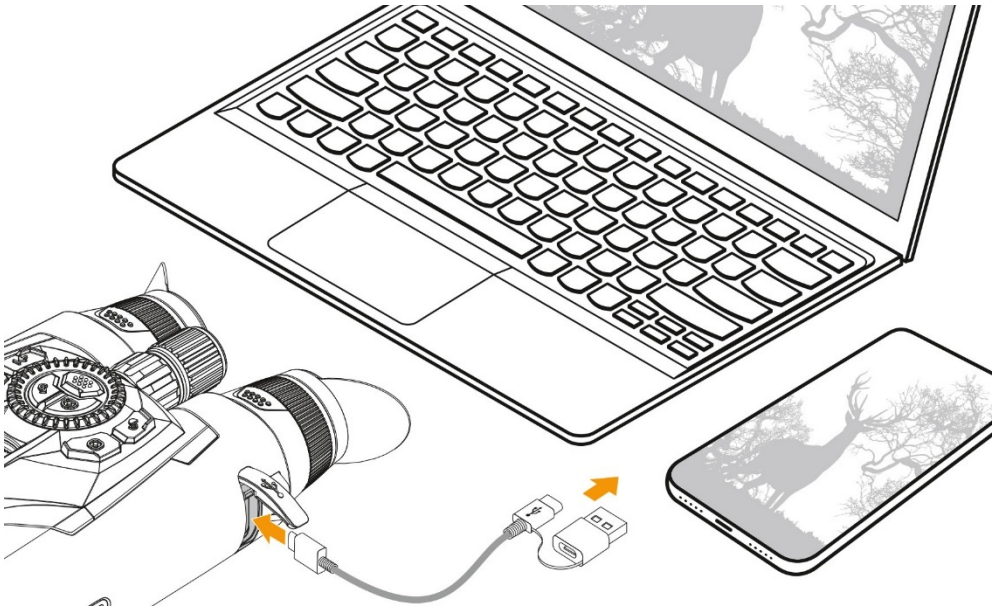
Device charging

- In this mode, when a computer is used as an external power supply, the icon 100 appears in the status bar. The device will continue operating and all functions are available.
- The Battery pack installed in the device is not being charged!
- A battery recharge feasibility depends on your computer's USB port.
- When the USB is disconnected from the device connected as the **Device charging** mode, the device continues operating from the rechargeable batteries if they are sufficiently charged.

File access

- In this mode the device is detected by the computer as a flash card.
- This mode is designed for work with the files saved in device's memory. The device's functions are not available in this mode; the device turns off automatically.
- If video recording was in progress when connection was made, recording stops and video is saved.
- If the device is in **File access** mode and is disconnected from USB, the device will remain on.

Video stream



The device can be connected to PC or smartphone via USB Type-C cable.

The device is recognized as a web camera and accessed via any app that can work with web cameras. Signal from USB has better quality and latency and can be recorded or edited with software on the connected device.

During the video stream it is possible to record the observed picture. Activation of video recording is only available from the device itself by briefly pressing the **REC**  button.

NOTE! Feature is supported only with iPhones that have USB Type-C port.

To view the video stream, use any application (on desktop or mobile platforms) that supports the UVC video standard.

Image transfer latency may occur in some applications. To reduce latency, disable the buffer in the application settings.

Software

Wild Vision

Install the Wild Vision application to download files, update firmware, control the device by remote control and broadcast images from your device to a smartphone or a tablet via Wi-Fi.

You can find further guidelines on Wild Vision here.

Download from Google Play

Download from App Store

Wild Vision Manual

Android

iOS

Firmware Update

1. Download the free Wild Vision App in Google Play or App Store.
2. Connect your Pulsar device to your mobile device (smartphone or tablet).
3. Launch Wild Vision and go to section “Settings”.
4. Select your Pulsar device and press “Check firmware update”.
5. Wait for the update to download and install. Pulsar device will reboot and will be ready to operate.

Important:

- if your Pulsar device is connected to a phone or mobile device, please turn on mobile data transfer (GPRS/3G/4G) to download update;
- if your Pulsar device is not connected to your phone or mobile device but is already listed in “Settings” > “My devices” section, you may use Wi-Fi to download update.

Is your firmware up to date?

Click here to check the latest firmware for your device.

Maintenance

Technical Inspection

It is recommended to inspect your device before each use. Check the following:

- The device should be free of any cracks or deformations.
- The lenses and protective glass should be free of cracks, grease, dirt or debris.
- The battery level of the device should be full. Electrical sockets should be free of salts, oxidation, or other debris.
- All controls should be responsive.

Technical Maintenance

Maintenance should be carried out at least twice a year and should include the following steps:

- Wipe the exterior surfaces of metal and plastic parts with a cotton cloth. Do not use chemically active substances, solvents, etc. as these will damage the paint.
- Clean the electric terminals of the Battery Pack and device's battery slot using a grease-free organic solvent.
- Inspect the following optical components for cleanliness and damage:
  - Eyepiece lenses
  - Objective lenses
  - Protective glass of the IR illuminator
  - Protective glass of the laser rangefinder

If necessary, remove dust and sand using a non-contact method whenever possible.
Clean the exterior surfaces of the optics only with cleaning agents specifically designed for optical components**.**

- Avoid getting repellent on the housing of the device. This may damage the appearance of the housing coating.

Storage

- Always store the device in its carrying case in a dry, well-ventilated space.
- Remove the Battery Pack for long-term storage.

Troubleshooting

For technical support please contact support@pulsar-vision.com.

The device does not turn on

Possible cause

The batteries are completely discharged.

Solution

Charge the batteries.

Device malfunction

Solution
In case of any malfunctions during operation, try resetting the device by long pressing the DUO button for 10 seconds.

The device does not operate on external power supply

Possible cause

USB cable is damaged.

Solution

Replace USB cable.

Possible cause

The external power supply is discharged.

Solution

Charge the external power supply.

The thermal image is blurry, with vertical stripes and uneven background

Possible cause

Calibration is required.

Solution

Carry out calibration according to Calibration section.

Black screen after calibration

Solution

If the image does not clear after calibration, you need to recalibrate.

When the device is turned on, the calibration frequency is at first higher, then decreases (if the automatic calibration mode is enabled)

Possible cause
After turning on the device, it takes some time for the microbolometer temperature to stabilize. This is normal and is not a defect.

Colored lines appeared on display or image has disappeared

Possible cause

The device was exposed to static electricity during operation.

Solution

After exposure to static electricity, the device may either reboot automatically, or require turning off and on again.

The image is too dark

Possible cause

Brightness or contrast level is too low.

Solution

Adjust the brightness or contrast level in the Quick Menu.

Poor image quality / Detection range reduced

Possible cause

Problems described may arise in adverse weather conditions (snow, rain, fog etc.).

The device is not focused

Possible cause
Wrong settings.
Solution
Adjust the device according to the Getting Started section.
Check the outer surfaces of the lenses and the eyepieces and, where necessary, wipe away dust, condensation, frost, etc. In cold weather, you can use special anti-fogging coatings (e.g., the same as for corrective glasses).

Smartphone or tablet cannot be connected to the device

Possible cause

Password in the device was changed.

Solution

Delete network and connect again inserting the password saved in the device.

Possible cause

There are too many Wi-Fi networks in the area where the device is located which may cause signal interference.

Solution

To ensure stable Wi-Fi performance, move the device to an area with few or no Wi-Fi networks.

Solution

Switch the device's Wi-Fi band.

Possible cause

The device has a 5 GHz network enabled, but the smartphone only supports 2.4 GHz.

Solution

Switch the device's Wi-Fi band to 2.4 GHz.

Wi-Fi signal is missing or interrupted

Possible cause

Smartphone or tablet is out of range of a strong Wi-Fi signal. There are obstacles between the device and the smartphone or tablet (e.g., concrete walls).

Solution

Relocate smartphone or tablet into the Wi-Fi signal line of sight.

The thermal image of the object being observed is missing

Possible cause

The object is behind glass, which obstructs thermal vision.

Solution

Remove the glass.

There are several light or black dots (pixels) on device's displays or Microbolometer

Solution

The presence of such pixels is associated with the manufacturing technology of displays and microbolometer. It is not a defect.

When using the device at below zero temperatures the image quality is worse than at positive temperatures

Possible cause

In warm climates, objects in the background of a thermal image heat up differently because of thermal conductivity, generating a high temperature contrast and a sharper thermal image.

In cold climates, objects in the background of a thermal image will cool down to roughly the same temperature, which leads to a greatly reduced temperature contrast and a degraded image quality. This is normal for all thermal imaging devices.

Rangefinder will not measure distance

Possible cause

There is an object in front of the receiver or emitter lens preventing signal transmission.

Solution

Make sure that: the lenses are not blocked by your hand or fingers; the lenses are clean.

Possible cause

The device is not being held steadily when measuring.

Solution

Keep the device steady when measuring.

Possible cause
Distance to the object exceeds 1500 m.

Solution

Pick an object at a distance not longer than 1500 m.

Possible cause

Low reflection ratio (for example, tree leaves).

Solution

Pick an object with higher reflection ratio (see point **Additional Information** in section Using the Laser Rangefinder.

Large measurement error

Possible cause

Inclement weather conditions (rain, mist, snow).

Possible cause

Measurement distance is less than 10 m.

Solution

Perform the measurement at a distance greater than 10 m.

There is no thermal imaging or digital image

Possible cause

Lens cover closed.

Solution

Open the covers of the thermal imaging and digital channels.

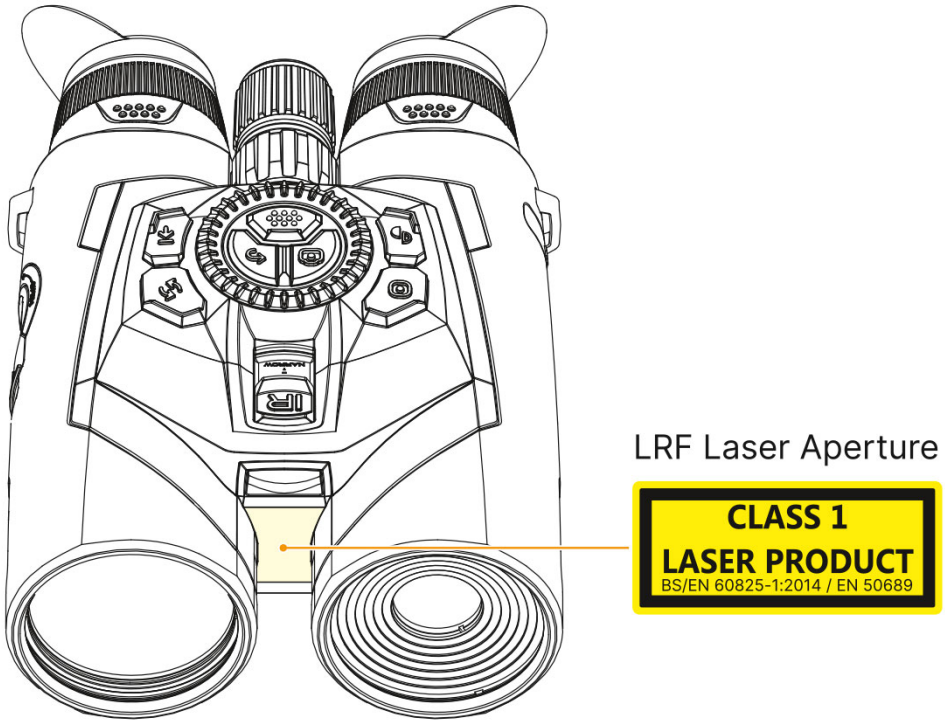
Legal compliances and disclaimers

Attention! Avilume multispectral imaging binoculars require a license if exported outside your country.

Electromagnetic Compliance

This product complies with EU Standard EN 55032:2015, Class A.

Warning! Operation of this equipment in a residential environment could cause radio interference.



Caution – use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Updates of the Product. The manufacturer reserves the right at any time, without mandatory prior notice to the Customer, to make changes to the package contents (subject to the applicable laws, if any), design and characteristics that do not impair the quality of the Product.

Repair. Repair of the product is available within 5 years after purchase of the product.

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