MERGER DUO Manual

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There is no thermal imaging or digital image
The image of the digital channel is overexposed when direct sunlight hits the binocular lens
Legal compliances and disclaimers

Specifications

Model	**NXP50**
SKU	77455
Microbolometer	
Type	uncooled
Resolution, pixels	640×480
Pixel Pitch, µm	17
Sensor NETD, mK	< 25
System NETD, mK	< 18
Frame rate, Hz	50
Digital Sensor	
Type	CMOS
Resolution, pixels	1920×1200
Optical Characteristics	
Lens, mm:	
– Thermal imaging channel	F50 F/1.0
– Digital channel	F50 F/1.4
Magnification, x:	
– Thermal imaging channel	3-24

– Digital channel	2-16
Digital zoom	x1, x2, x4, x8
Minimum Focus Distance, m/y	5 / 5.47
Eye relief, mm/inch	12 / 0.47
Exit pupil diameter, mm/inch	5 / 0.2
Field of view (HxV), degrees / m@100m:	
– Thermal imaging channel	12.4/21.8
– Digital channel	17.5/30.7
Diopter adjustment, D	-4/+3
Interpupillary distance adjustment, mm	63-74
Range of detection (deer type object), m/y:	
– Thermal imaging channel	1800 / 1970
– Digital channel	–
Display	
Type	AMOLED
Resolution, pixels	1280×960
Operational Characteristics	
Power supply, V	3.7
Battery type / Capacity / Output voltage	Li-Ion Battery Pack APS3 / 3200 mAh / DC 3.7 V (removable) Li-Ion Battery Pack / 4000 mAh / DC 3.7 V (built-in)
External power supply	5V
Operating time on Battery Pack (at t=22°C), h*	7
Degree of protection, IP code (IEC60529)	IPX7

Operating temperature range, °C /° F	-25 ... +50 / -13 ... 122
Dimensions (without IR-Illuminator), mm / inch	207×140×73 / 8.15×5.5×2.87
Weight (with battery, without IR-Illuminator), kg / oz	1.2 / 35.3
Video Recorder	
Video / photo resolution, pixel	1280x960
Video / photo format	.mp4 / .jpg
Built-in memory	64 Gb
Wi-Fi Channel**	
Frequency	2.4/5 GHz
Standard	IEEE 802.11 b/g/n/ac
Detachable IR-Illuminator	
Type/Wavelength, nm	LED/940

* Actual operating time depends on the extent of using Wi-Fi, integrated video recorder, IR illuminator and operating observation channels.

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

About the device

Description

Merger Duo multispectral binoculars are made with the external design of classic daytime binoculars and provide comfortable viewing with both eyes.

The device allows you to quickly switch between thermal imaging and monochrome night digital channels, as well as supports PiP (Picture in Picture) multispectral mode, when the image of one channel is displayed in the main window, and the second – in the PiP “window”.

Merger Duo devices do not require an external light source and are not affected by bright light exposure in thermal imaging mode.

A thermal imaging channel can be used both at night-time and during the day in adverse weather conditions (fog, smog, rain), as well as having the obstacles (branches, tall grass, dense bushes etc.) hindering the target detection.

In black and white digital channel, the device allows observation both day and night. In night conditions (absence of starlight, moonlight), it is recommended to use an infrared illuminator.

Merger Duo binoculars are perfectly suited for night hunting, observation, trail orientation, identifying hazards, rescue operations, etc

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To get started, see the sections:

Battery Charging

Battery Installation

IR Illuminator Mount

Powering on and Image Setting

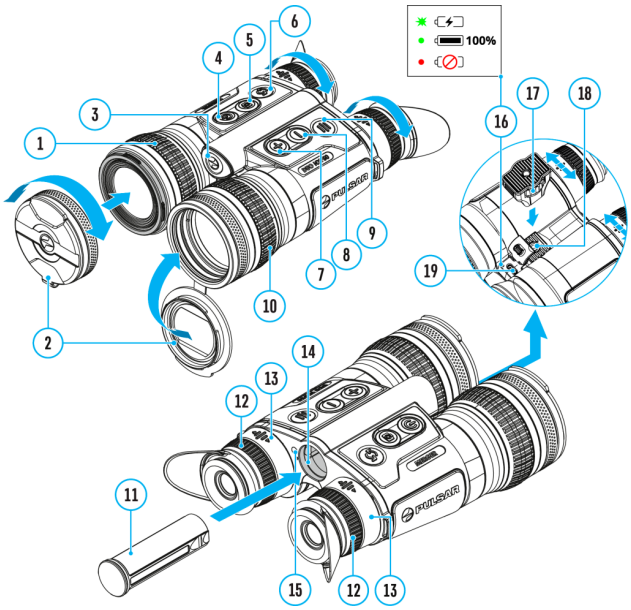
Image Modes (Thermal Imaging/Digital/Multispectral PiP)

Stream Vision 2

Package contents

- Multispectral binoculars
- IR-Illuminator
- APS3 Battery Pack
- APS battery charger
- Power adapter
- USB Type-C cable with USB Type-A adapter
- Carrying case with straps
- Neck strap
- Quick-Start guide
- Lens cloth
- Warranty card
- Tripod adapter

Components and controls



1. Digital channel lens focus ring
2. Removable lens covers
3. Battery release button
4. Power ON/OFF/Calibration button
5. REC button
6. MODE button
7. UP/ZOOM navigation button
8. DOWN navigation button
9. MENU button
10. Thermal imaging channel lens focus ring
11. Battery APS 3
12. Eyepiece dioptre rings
13. Eyepieces
14. Battery compartment
15. Proximity sensor
16. LED indication of battery charge in the device
17. Tripod adapter
18. Socket for mounting a tripod adapter and IR illuminator
19. USB Type-C port

Features

- 3 modes of operation: thermal imaging, black-and-white digital and multispectral PiP
- Microbolometer with a resolution of 640×480 pixels
- Digital sensor with a resolution of 1920×1200 pixels
- AMOLED displays with a resolution of 1280×960 pixels
- Classic daytime binocular design
- 8-color display palette
- 3 calibration modes: manual, semi-automatic and automatic
- Long detection distance (up to 1800 m) in thermal imaging mode
- Smooth digital zoom x1 – x8
- 3 levels of sensitivity enhancement (in thermal imaging and multispectral PiP modes): Normal, High, Ultra
- “Picture-in-Picture” mode (in thermal and digital modes)
- Display functions turn off with the proximity sensor
- Defective Pixel Repair function
- Device firmware update using the free Stream Vision 2 App
- Wide operating temperature range -25 °C – +50°C (-13 °F – +122 °F)
- Completely waterproof IPX7
- Tripod mount
- Invisible IR illuminator for enhanced image detail in the digital channel

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 Stream Vision 2 App

Battery Pack

- Quick Change Li-Ion Battery Pack APS 3
- 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 the built-in and removable 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.
- It is not recommended to charge the batteries with a charger connected to the USB port of a computer or laptop. It can damage the computer.
- 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, the built-in and removable batteries should be partially charged – from 50 to 80%.

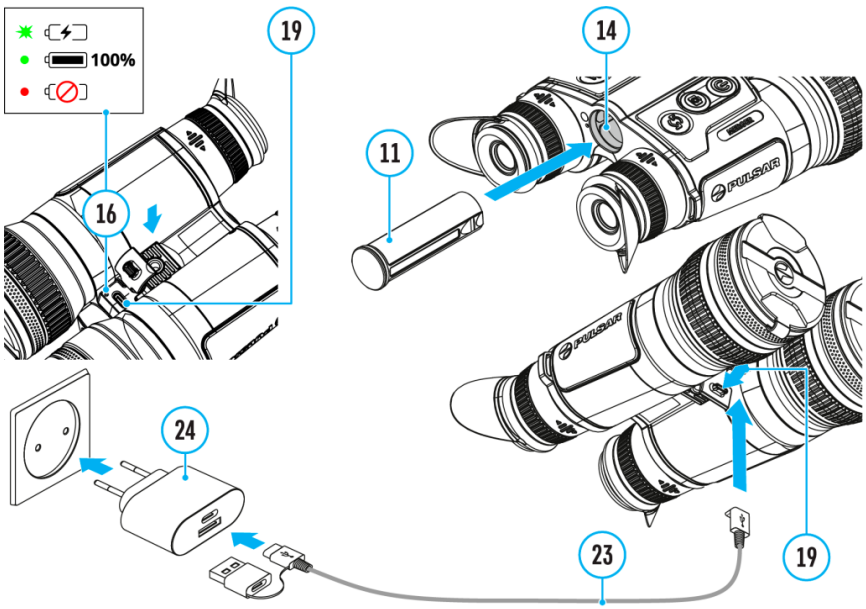
- Batteries should be charged at an ambient temperature of 0 °C ... +35 °C. Otherwise, battery life will be significantly reduced.
- When using batteries at sub-zero ambient temperatures, the battery capacity decreases, this is normal and not a defect.
- Do not use batteries at temperatures outside the range of -25 °C ... +50 °C – 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

Merger Duo binoculars are supplied with a removable and rechargeable APS3 lithium-ion battery pack and a built-in rechargeable lithium-ion battery. The batteries should be charged before first use.

The icons 1 2 in the status bar will flash when the battery is low. The batteries need to be charged.

Option 1



1. **Install** the APS 3 battery **(11)** in the battery compartment **(14)** of the device.
2. Connect the USB Type-C cable **(23)** to the USB Type-C connector **(19)** of the device.

3. Connect the other end of the USB cable **(23)** to the Power Adapter **(24)** by removing the USB Type-A adapter.
4. Plug the Power Adapter **(24)** into a 100-240 V socket.
5. Wait until the batteries are fully charged (indication in the status bar: ; 1 – built-in battery, 2 – removable battery).

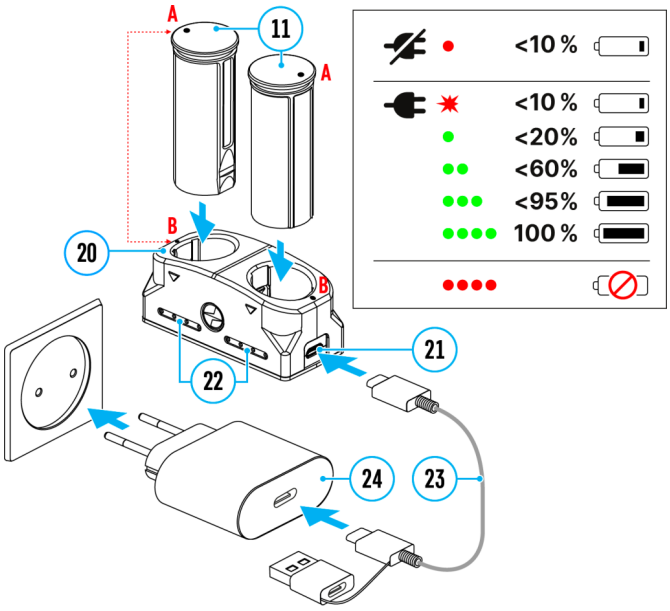
Note: next to the USB Type-C connector **(19)** on the device body there is a light-emitting diode **(16)** to indicate the battery charge level when the device is switched off.

(16) LED indication	**Battery status**
	Batteries are charging
	Batteries are charged
	One of the batteries is defective. The device must not be used. The defective battery should be replaced. Contact Pulsar service to replace the internal battery.
–	There is no external battery in the device, or the device is switched on

Attention! When charging rechargeable batteries via a USB Type-C connector **(19)** in the device body section:

- Charging priority is given to the built-in battery.
- When the device is off, both batteries are charged at the same time. When using the device, the external battery is discharged first.
- Built-in and removable batteries support USB Power Delivery fast charging technology when using the USB Type-C cable and power adapter supplied with the device.

Option 2



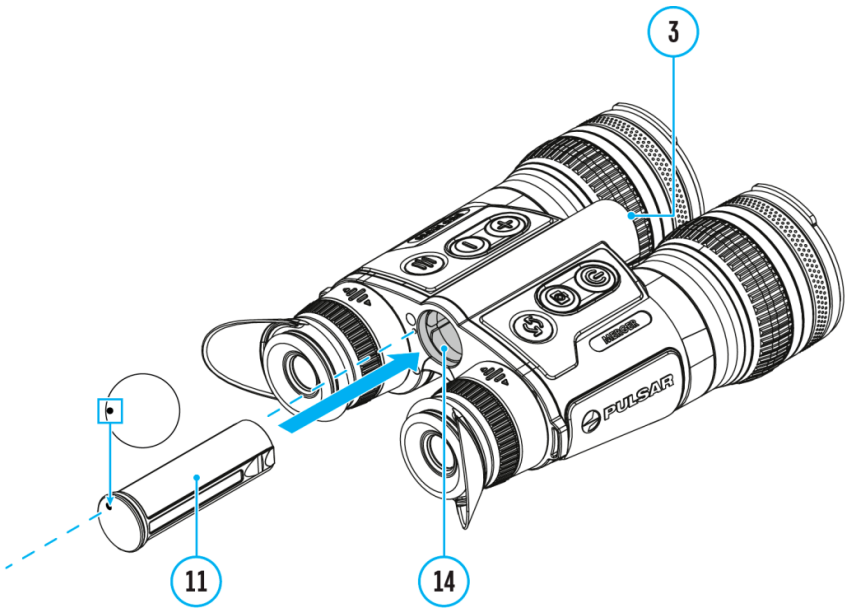
1. Insert the Battery Pack **(11)** along the rail into the APS charger **(20)** slot as far as it will go. The APS charger is supplied with your device or purchased separately.
2. Point **A** on the battery and point **B** on the charger should match.
3. Connect the USB Type-C plug of the USB cable **(23)** to the port **(21)** of the charger **(20)**.
4. Connect the second plug of the USB cable **(23)** to the USB port on the power adapter **(24)**.
5. Plug the device into a 100-240 V socket.
6. The LED indicator **(22)** will display battery charge status.
7. Wait until the battery is fully charged (LED indication **(22)**: ●●●●).
8. Two batteries* can be charged at the same time: the second slot is designed for it.

(22) LED Indicator**	**Battery Charge Status**
✸	Battery level is from 0% to 10%. Charger is connected to a power supply.
●	Battery level is from 0% to 10%. Charger is not connected to a power supply.
●	Battery level is from 10% to 20%.
●●	Battery level is from 20% to 60%.
●●●	Battery level is from 60% to 95%.
●●●●	Battery completely charged. Charging will automatically stop. The battery can be disconnected from the charger.
●●●●	Defective battery. Do not use the battery.

* Purchased separately.

** LED indicator displays the current battery charge status for 30 seconds when the APS charger is not plugged in. When the power is being supplied, the indicator is constantly displaying the current battery charge status, the LEDs are additionally flickering to display the battery charging process.

Battery installation



Attention! Before installing the battery, make sure that there is an undamaged rubber insulating ring on the battery. The ring is designed to protect your device from moisture getting inside. Damage to the device due to a missing ring is not covered by the warranty. To replace or purchase a ring, contact your **local distributor.**

1. Install the battery **(11)** into the battery compartment **(14)**. A pictogram in the form of a “dot” on the battery should be on the left.
2. You will hear a click when the battery is placed correctly.
3. To remove the battery from the device, press the Battery Release button **(3)**.

Switching and changing the batteries

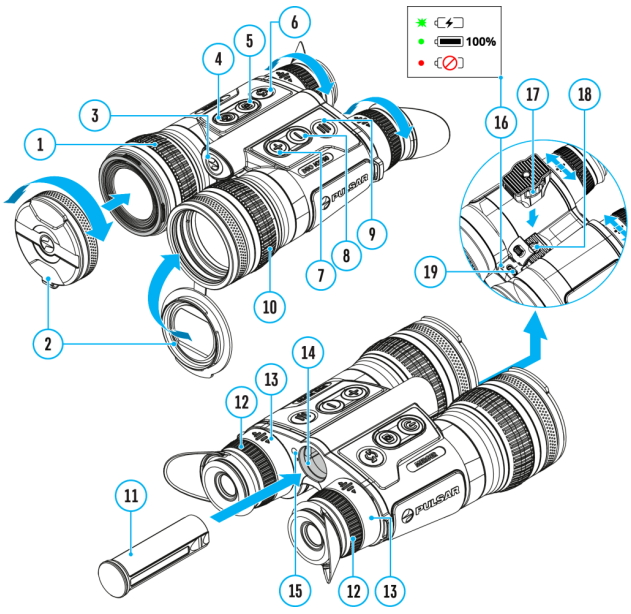
Merger Duo devices are powered by 2 batteries: built-in Battery Pack and removable Battery Pack APS3.



1. If there are two batteries in the device at the same time, two battery icons are displayed in the status bar (1 – built-in battery, 2 – removable battery). The device battery is displayed in white, inactive – in grey.
2. When there is no removable battery in the device, only one icon for the built-in battery displays in white in the status bar.
3. When both batteries are fully charged, the device is powered by the removable battery. If there is low removable battery level, the device will switch to the built-in battery.
4. Battery charge level is displayed in % above the icon in the status bar while charging.
5. It is possible to replace the removable battery even while the device is on.

Attention! When installing a removable battery with a sufficient charge level, the device will automatically switch to it.

External power supply



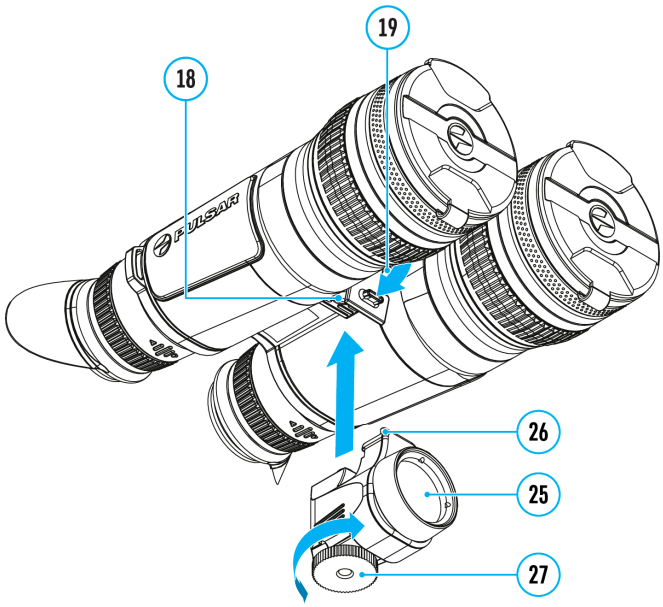
Power can be supplied from an external source such as a 5 V power bank.

1. Connect the external power supply to the USB Type-C port **(19)** of the device.
2. The device switches to external power source, while built-in Battery Pack and removable Battery Pack APS3 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 APS3 battery is not connected, only the built-in battery will be charged.
5. When the external power supply is disconnected, the device switches to the internal battery pack without powering off.

Warning! Charging the built-in battery and the APS3 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

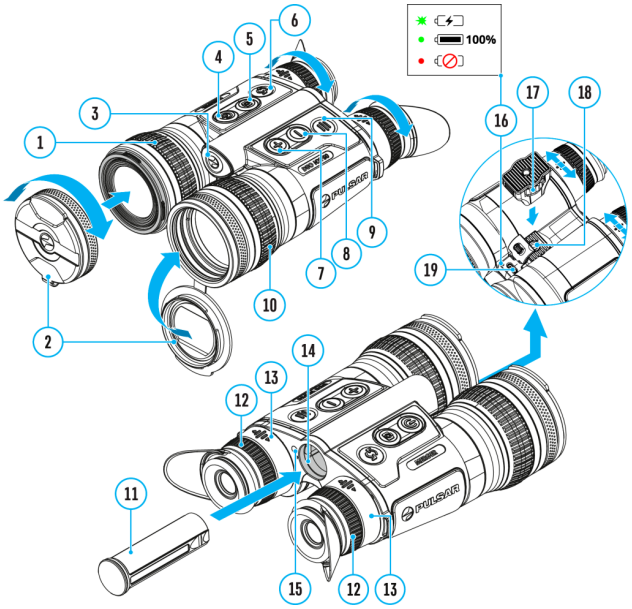
IR illuminator mount



1. Open the rubber plug of the USB type-C connector **(19)** of the device.
2. Insert the type-C plug of the IR illuminator **(26)** into the type-C connector **(19)**. The tripod screw **(27)** should fit into the tripod socket **(18)**.
3. Tighten the tripod screw **(27)** as far as it will go.
4. Adjust the light spot position in the field of vision of the digital channel by tilting the IR illuminator lens forcefully **(25)**.
5. To remove the IR illuminator, unscrew the tripod screw **(27)** and disconnect the IR illuminator from the type-C connector **(19)** of the device.

Note: the hole in the tripod screw **(27)** can be used to **mount the device on a tripod.**

Powering on and image settings



1. Open the lens covers **(2)**.

2. Press the **ON/OFF (4)** button briefly to power the device on.

3. Adjust the interpupillary distance by moving the eyepieces **(13)** farther or closer to each other. It takes some effort to move the eyepieces.

4. Adjust the symbol sharpness on the displays by rotating the eyepiece dioptre rings **(12)**. In future, it will not be necessary to rotate the eyepiece dioptre rings, regardless of the distance and other conditions.

5. Briefly press the **MODE** button **(6)** to select the desired **image mode**: thermal or digital.

6. To focus on the observation object, rotate the lens focusing rings of the thermal imaging **(10)** and digital **(1)**

7. Long press the **MODE** button **(6)** to activate the PiP multispectral mode. Briefly press the **MODE** button **(6)** to select the image mode of the PiP window: thermal or digital.

8. In thermal imaging and multispectral PiP Td modes:

- Select the **calibration mode**: **manual (M), semi-automatic (SA)** or **automatic (A)** in the main menu (enter the menu by long pressing the **MENU** button **(9)**).

- Calibrate the thermal image by briefly pressing the **ON/OFF** button **(4)** (when calibration mode **SA** or **M** has been selected). Close the thermal channel lens cover before manual calibration.
- Select the required **amplification level** for the thermal image (“Normal” N, “High” H, “Ultra” U) by short pressing the **DOWN (8)**
- Activate the **smoothing filter** in the main menu to improve the thermal image as the amplification level increases.
- Fast switch between the “White hot” **palette** of the thermal image and the palette selected in the main menu by long pressing the **DOWN (8)** button.

9. In digital and multispectral PiP Dt **modes with a connected** IR illuminator**:**

- Shortly press the **DOWN (8)** button to turn on the IR illuminator.
- Shortly press the **DOWN (8)** button to select one of three power levels of the IR illuminator. An increase in power level is required with the increasing distance to the observation object. This increases the discharge rate.
- To turn off the IR illuminator, press and hold the **DOWN (8)**

10. Adjust the brightness, display contrast, smooth digital zoom in the **quick menu** (activate by briefly pressing the **MENU** button **(9)**).

11. Power the device off with a long press of the **ON/OFF** button **(4)**.

Notes:

- To prevent accidental decamouflage of the user, the displays automatically turn off when the observer moves the device away from the face.
- When the device approaches the face, the displays will automatically turn on.
- The proximity sensor can be disabled/enabled in the **“General settings”** section of the main menu.

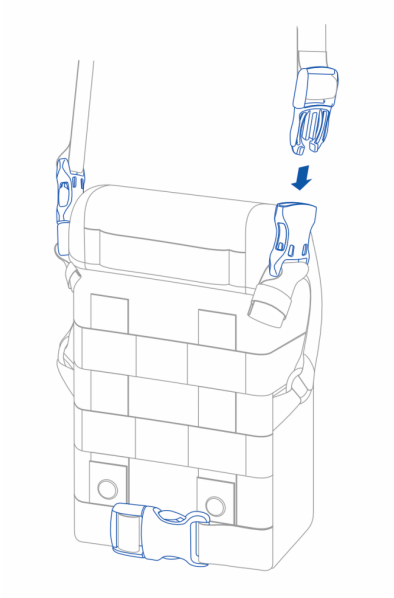
Observation conditions: time of day, weather, different observation objects affect the image quality. Custom settings for brightness, display contrast as well as the function of adjusting the microbolometer sensitivity level will help to achieve the desired quality in a particular situation.

Warning! Never point the lens at intensive energy sources such as laser radiation emitting devices or the sun. It can damage electronic components in the device. The warranty does not cover damage arising from failure to comply with operating instructions.

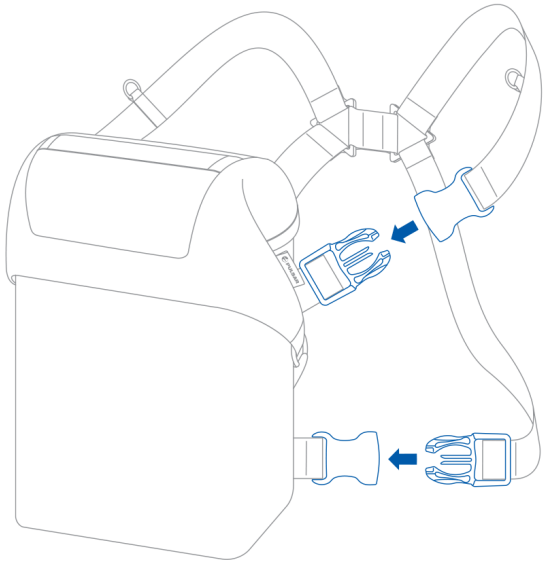
Installation of straps on the carrying case and device

The carrying case comes with 2 straps:

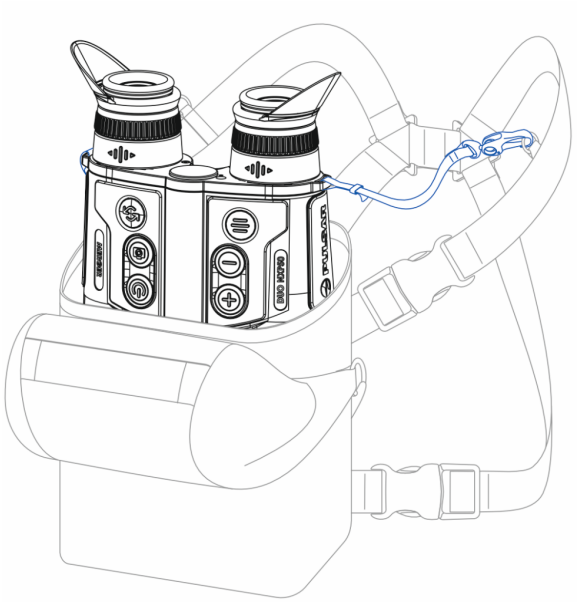
1. 2-point strap for carrying the case on your shoulder.

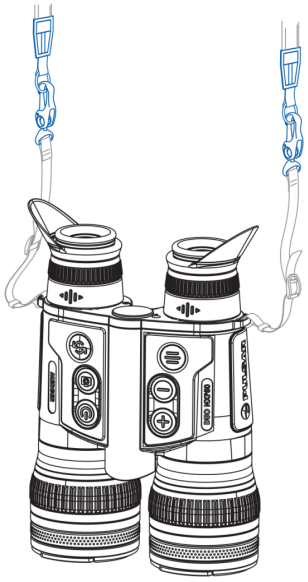


2. 4-point strap for comfortable carrying of the case on the chest during intensive movement and uniform weight distribution.



The binoculars are equipped with safety straps with carabiners that can be hooked onto the rings on the 4-point strap or on the neck strap. The length of the safety belts can be adjusted.





Button operation

Operation	Button
Power device on	short press
Power device off	long press for 3 secs

Turn display off (if the **proximity sensor** is off)	long press for less than 3 secs
Turn display on (if the **proximity sensor** is off)	short press
Calibrate the microbolometer (in thermal imaging and multispectral PiP Td modes)	short press
Image modes switching (thermal/digital)	short press
PiP multispectral mode activation	long press
PiP window image mode switching (thermal/digital)	short press
Control discrete digital zoom	short press
PiP on/off (in thermal and digital modes)	long press
Switching amplification levels (in thermal imaging and multispectral PiP Td modes)	short press
Turn on/off the White Hot palette (in thermal imaging and multispectral PiP Td modes)	long press

Video Recorder	**Button**
Start/pause/resume video recording	short press
Stop video recording	long press
Switch to video / photo	long press

Capture Photo	short press

Main Menu	**Button**
Enter main menu	long press
Navigation upwards/rightwards	short press
Navigation downwards/leftwards	short press
Confirm selection	short press
Exit submenu without confirming selection	long press
Exit menu (switch to viewing mode)	long press

Quick Menu	**Button**
Enter quick menu	short press
Switch between quick menu options	short press
Increase value	short press
Decrease value	short press
Exit quick menu	long press

IR-Illuminator **(In digital and multispectral PiP Dt modes)**	**Button**
Activate the IR Illumanator	short press
Changing the power level	short press
Turn off the IR illuminator	long press

Interface

Status bar



The status bar is at the bottom of the image and shows information on the actual operating status of the device, including:

1. Colour Mode (displayed only in thermal imaging and Multispectral PiP modes):

– White hot

– Black hot

2. Image mode:

Digital mode

Thermal imaging mode

Multispectral PiP Digital

Multispectral PiP Thermal

Multispectral PiP Digital disabled

Multispectral PiP Thermal disabled

The image channel can be disabled in the “Viewing Channel Activation” sub-item of the General Settings section.

3. IR illuminator power level (e.g. Level 3)

4. Amplification level (e.g., Normal; displayed only in thermal imaging and Multispectral PiP modes)

5. Smoothing Filter (displayed when the function is on; displayed only in thermal imaging and Multispectral PiP modes)

6. Calibration mode (a countdown timer :05 will appear instead of the calibration icon when in automatic calibration mode with 5 seconds remaining until automatic calibration; displayed only in thermal imaging and Multispectral PiP modes)

7. Microphone

8. Current magnification

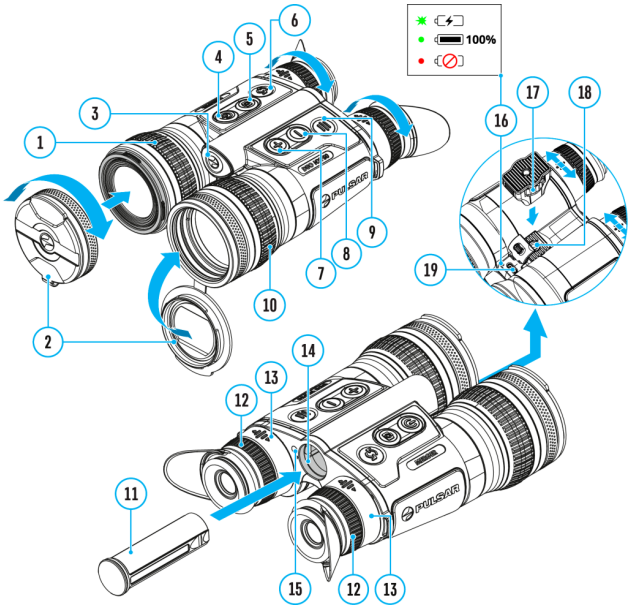
9. Wi-Fi connection

10. Clock

11. Power supply:

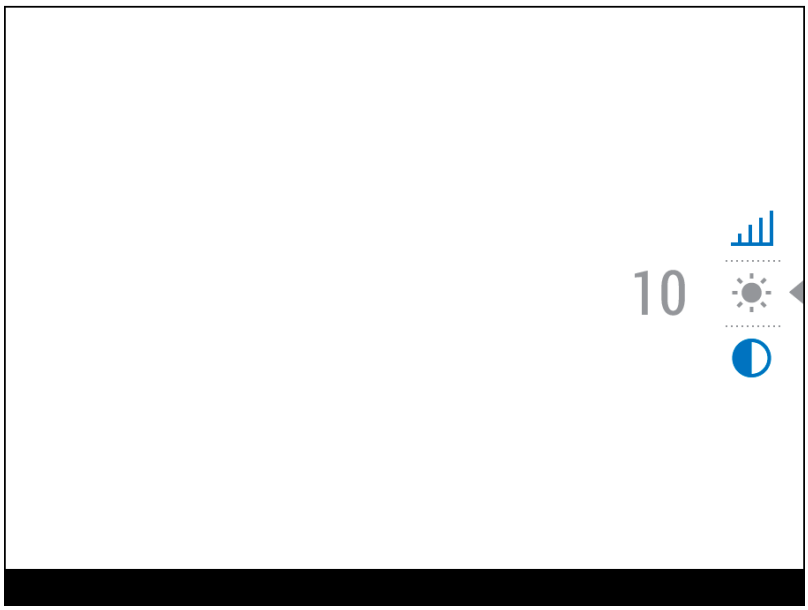
- Battery discharge level (when the device is powered by a built-in or removable battery).
- External battery power indicator (when the device is powered by an external power supply).
- Battery indicator with current percentage of charge (when charging from an external power source).

Quick menu



The quick menu is used to quickly access the settings for brightness, contrast, smooth digital zoom and use the stadiametric rangefinder.

- Enter the menu with a short press of the **MENU (9)** button.
- To toggle between the functions below, press successively the **MENU (9)** button.



Brightness – press briefly the **UP (7)/DOWN (8)** buttons to change display brightness from 0 to 20.

Contrast – press briefly the **UP (7)/DOWN (8)** buttons to change display contrast from 0 to 20.

Smooth digital zoom – press the **UP (7)/DOWN (8)** buttons to change digital zoom.

Smooth digital zoom is in 0.1x increments.

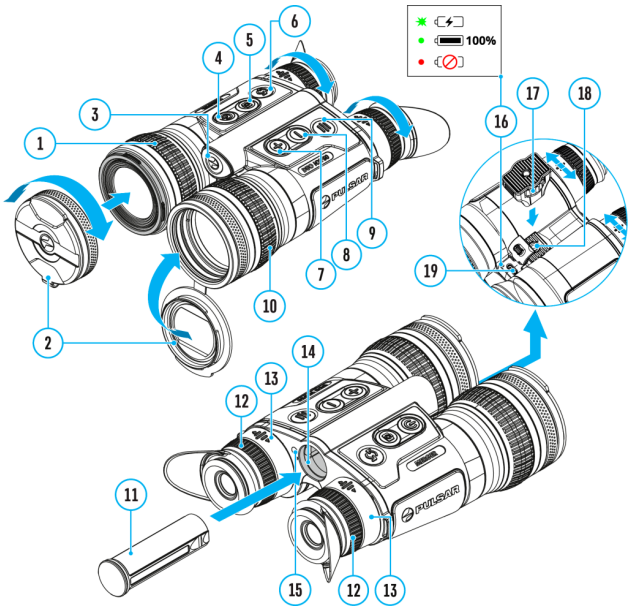
Note: the magnification value is reset to the base value when the device is switched off.

Stadiametric Rangefinder – change the position of special marker lines to determine the distance to the object being observed by pressing the **UP (7)/DOWN (8)** buttons (for more details see the Stadiametric Rangefinder section).

- To exit quick menu, press and hold down the **MENU (9)** button or wait 5 sec for automatic exit.

Main menu

Enter the main menu

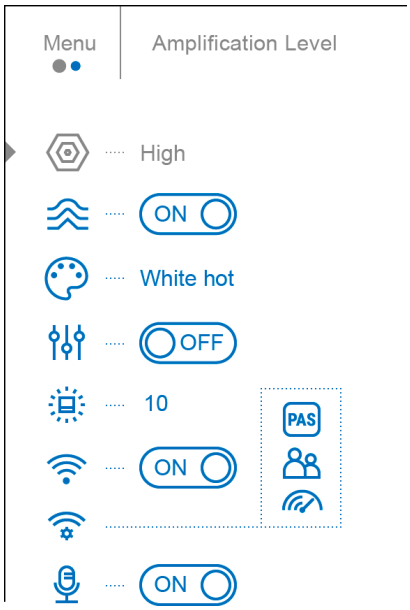


1. Enter the main menu with a long press of the **MENU (9)** button.
2. Press the **UP (7)/DOWN (8)** buttons to switch between the menu options.
3. Enter a menu option with a brief press of the **MENU (9)** button.
4. Exit the menu with a long press of the **MENU (9)** button.
5. Automatic exit takes place in 10 sec of inactivity (buttons are not pressed).

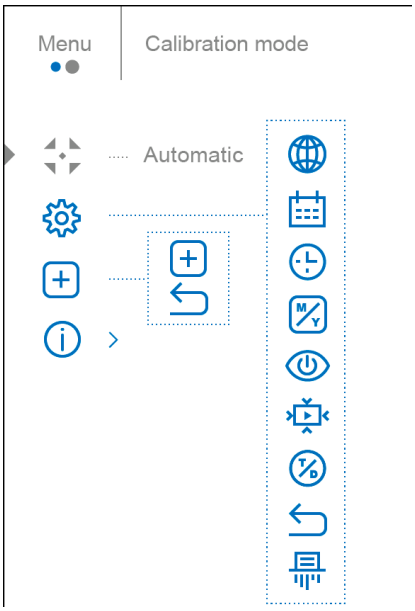
Note: When entering the main menu, the background image darkens to enhance the menu visibility. This is normal and not a defect.

General View of the Menu

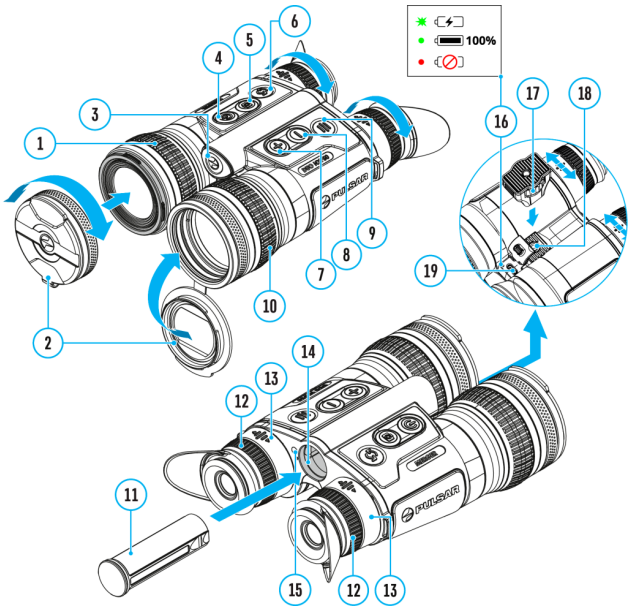
Tab 1



Tab 2



Amplification level



Available in thermal imaging and multispectral PiP modes

Sensitivity enhancement levels (Normal N, High H, Ultra U) are software algorithms that enhance the quality of detection and recognition in various observation conditions. When the temperature contrast decreases (fog, precipitation, high humidity), it is recommended to increase the amplification level.

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

Normal



High



Ultra



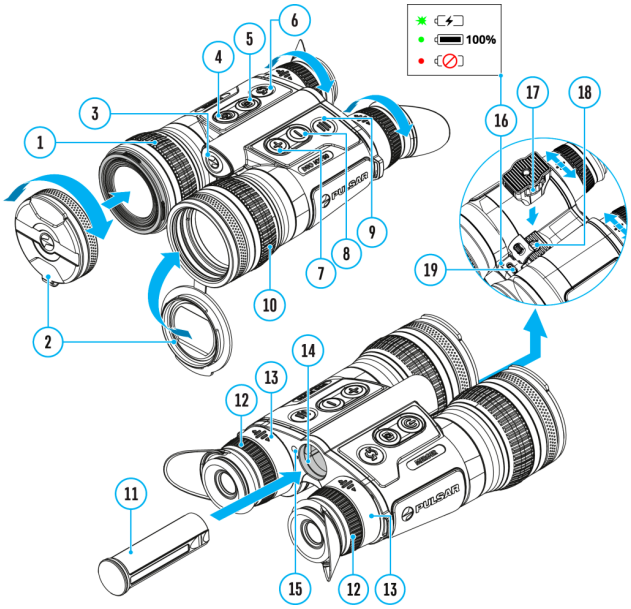
Option 1:

Press the **DOWN (8)** button briefly to switch the amplification level.

Option 2:

1. Press and hold the **MENU (9)** button to enter the main menu.
2. Use the **UP (7)/DOWN (8)** buttons to select the **Amplification Level** icon.
3. Press the **MENU (9)** button briefly to enter the Amplification Level submenu.
4. Use the **UP (7)/DOWN (8)** buttons to select one of three amplifying levels of sensitivity (Normal N, High H, Ultra U).
5. Press the **MENU (9)** button briefly to confirm the selection.

Smoothing filter



Available in thermal imaging and multispectral PiP modes

Used to reduce digital distortion while maintaining a high level of sensitivity.

Smoothing Filter Off

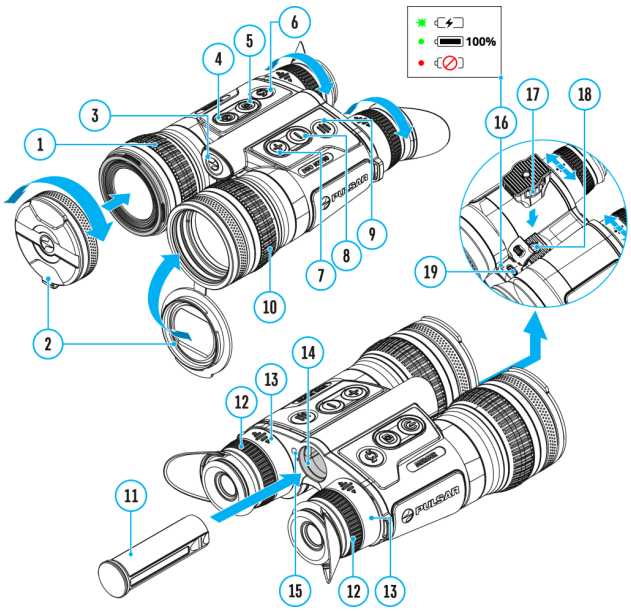


Smoothing Filter On



1. Press and hold the **MENU (9)** button to enter the main menu.
2. Use the **UP (7)/DOWN (8)** buttons to select the **Smoothing Filter** icon.
3. Press the **MENU (9)** button briefly to turn the filter on/off.

Colour modes



Available in thermal imaging and multispectral PiP Td **modes**

White hot is the default display mode.

To select another palette:

1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select the **Color Modes** icon with the **UP (7)/DOWN (8)** buttons.
3. Press briefly the **MENU (9)** button to enter submenu.
4. Select the desired palette with the **UP (7)/DOWN (8)** buttons.
5. Confirm your selection with a brief press of the **MENU (9)** button.

Note: you can also switch from a selected color palette to the **White hot** palette with a long press of the **DOWN (8)** button.

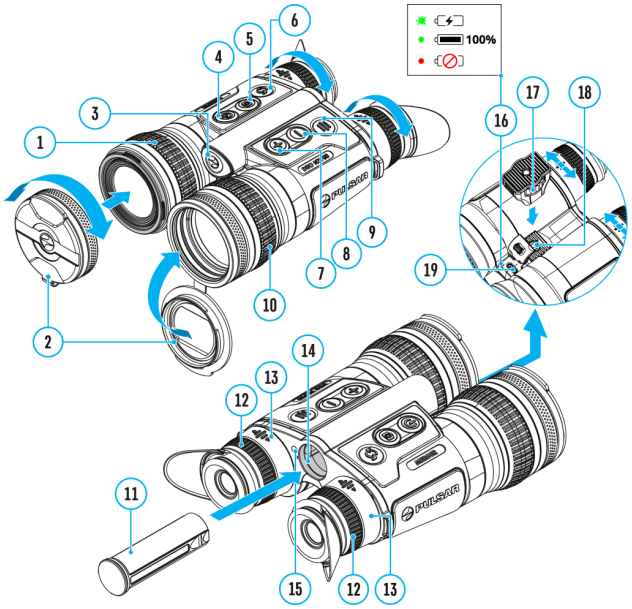
Tip: to preserve brightness and contrast values when switching palettes, activate **User Mode**.



- White hot – a black and white palette where black = cold; white = hot
- Black hot – a black and white palette where white = cold; black = hot
- Red Hot
- Red Monochrome
- Rainbow
- Ultramarine
- Violet
- Sepia

Attention! The device should not be used to accurately measure temperature. The images generated are based on temperature contrast rather than true temperature readings.

User mode

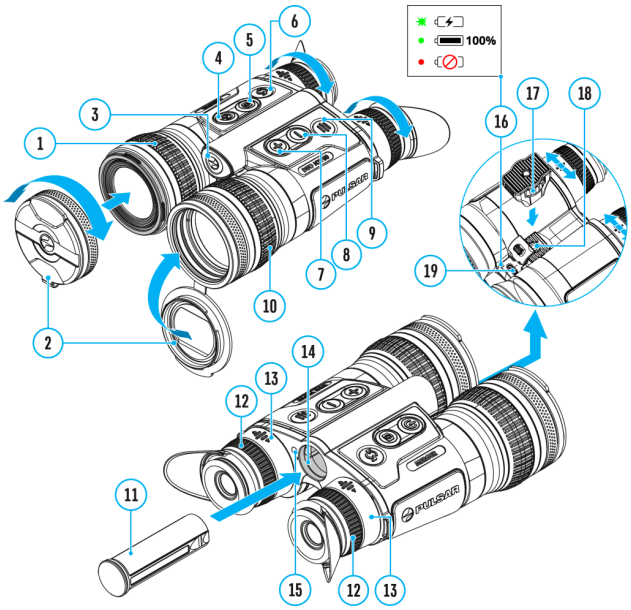


Available in thermal imaging and multispectral PiP modes

The User Mode function saves selected brightness and contrast settings in the device's memory providing optimal image quality for the next use of the thermal imager immediately, with no additional adjustments needed.

1. Press and hold the **MENU (9)** button to enter the main menu.
2. Use the **UP (7)/DOWN (8)** buttons to select the **User Mode** icon.
3. Press the **MENU (9)** button briefly to turn the mode on/off.

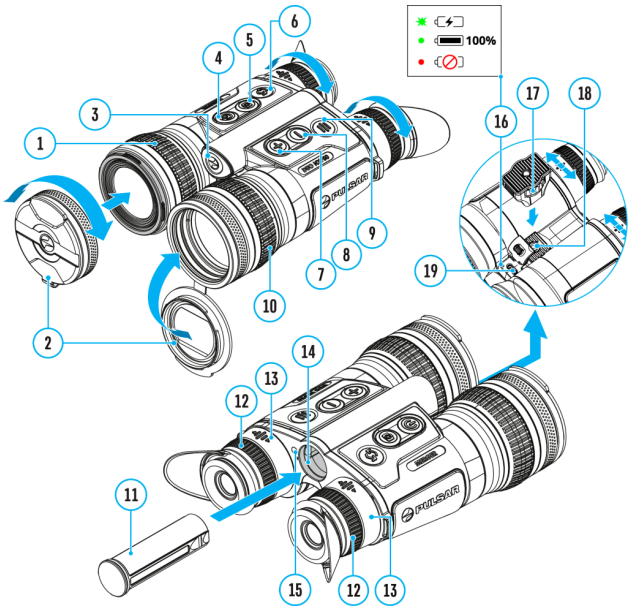
Icon brightness



Icon brightness

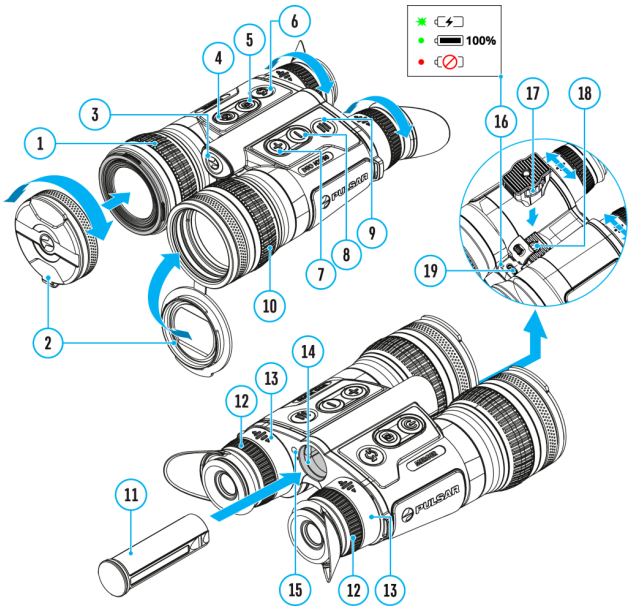
1. Press and hold the **MENU (9)** button to enter the main menu.
2. **Use the UP (7)/DOWN (8) buttons to select the Icon Brightness icon** .
3. Press the **MENU (9)** button briefly to enter the submenu.
4. Use the **UP (7)/DOWN (8)** buttons to select the desired brightness level from 0 to 10.
5. Press the **MENU (9)** button briefly to confirm the selection.

Wi-fi activation



1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select the **Wi-Fi Activation** menu option with the **UP (7)/DOWN (8)** buttons.
3. Turn Wi-Fi on/off with a short press of the **MENU (9)** button.

Wi-fi settings



This menu option allows you to set up your device for operation in a Wi-Fi network.

1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select the **Wi-Fi Settings** menu option with the **UP (7)/DOWN (8)** buttons.
3. Press briefly the **MENU (9)** button to enter submenu.
4. Select the desired menu item with the **UP (7)/DOWN (8)** buttons.

Password Setup

This menu option allows you to set a password to access your binoculars from an external device.

The password is used to connect an external device (i.e. smartphone) to your thermal imager.

1. Press briefly the **MENU (9)** button to enter the **Password Setup** PAS submenu.
2. The unique password only for your device will appear on the image.
3. Use the **UP (7)/DOWN (8)** buttons to set the desired password using the **UP** button to increase and the **DOWN** button to decrease the values.
4. Switch between digits with a short press of the **MENU (9)** button.
5. Save the password and exit the submenu with a long press of the **MENU (9)** button.

Access Level Setup

This menu option allows you to set required access level of the Stream Vision 2 application to your device.

- Access level **Owner.** The Stream Vision 2 user has the complete access to all device's functions.
- Access level **Guest**. The Stream Vision 2 user has the access only to the real time video stream from the device.

1. Press briefly the **MENU (9)** button to enter the **Access Level Setup** submenu.
2. Select the access level with the **UP (7)/DOWN (8)** buttons.
3. Press and hold the **MENU (9)** to confirm your selection and exit from the submenu.

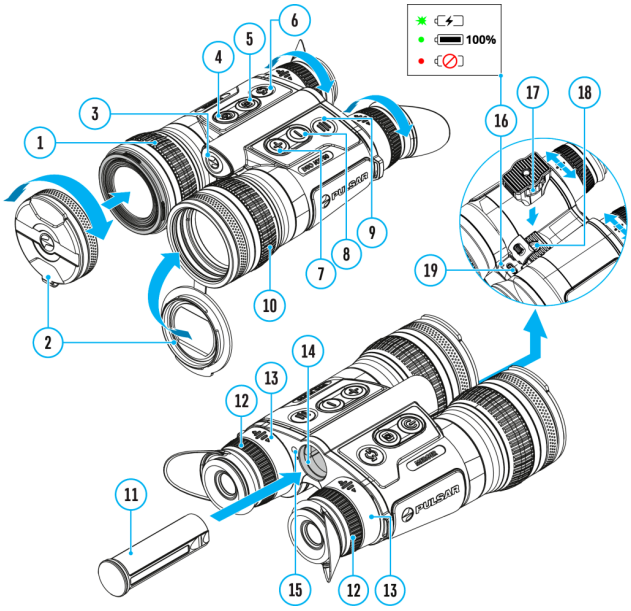
Wi-Fi Band

This setting helps to solve smartphone connection issues in the following cases:

- If your smartphone does not support 5 GHz Wi-Fi band, switch to 2.4 GHz.
- Many Wi-Fi networks cause interference. In this case, switching between Wi-Fi bands can improve the connection between the device and the smartphone.

1. Press briefly the **MENU (9)** button to enter the **Wi-Fi Band** submenu.
2. Press the **UP (7)/DOWN (8)** buttons to select the WiFi bandwidth – **5 GHz** or **2.4 GHz**.
3. Confirm your selection with a short press of the controller **MENU (9)** button.

Microphone

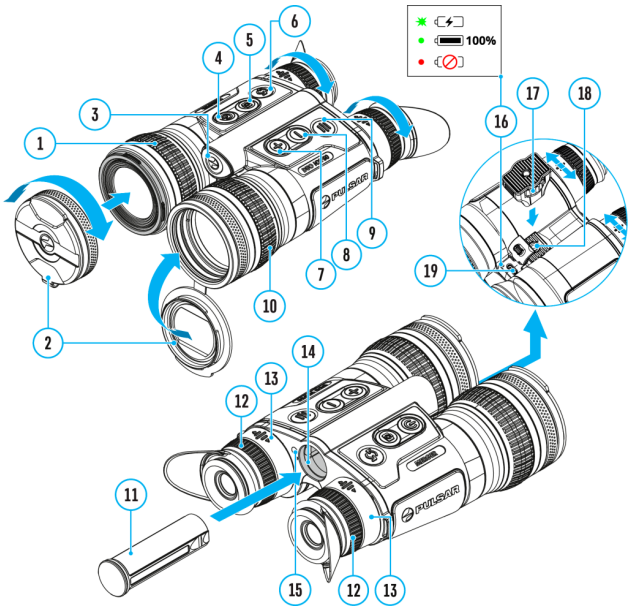


Turning on/off Microphone

This item allows you to enable (or disable) the microphone for recording sound during video recording.

1. Press and hold the **MENU (9)** to enter the main menu.
2. Select the **Microphone** menu item with the **UP (7)/DOWN (8)** buttons.
3. To turn on the microphone, briefly press the **MENU (9)** button. On
4. To turn off the microphone, briefly press the **MENU (9)** button. Off

Calibration mode



Calibration mode selection.

Calibration enables the device to equalize the microbolometer background temperature and eliminate the image flaws (such as vertical bars, phantom images, etc.).

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

The selected calibration mode is displayed in the status bar (see **Status Bar** section).

Select the required mode in the Calibration Mode menu item:

1. Press and hold the **MENU (9)** button to enter the main menu.
2. Use the **UP (7)/DOWN (8)** buttons to select the **Calibration Mode** icon.
3. Press the **MENU (9)** button briefly to enter the submenu.
4. Use the **UP (7)/DOWN (8)** buttons to select one of the calibration modes described below.
5. Press the **MENU (9)** button briefly to confirm the selection.

M mode (Manual)

- Close the lens cover **(2)** of the thermal imaging channel.
- Press the **ON/OFF (4)** button briefly.
- Open the lens cover **(2)** after the calibration is completed.

SA mode (Semi-Automatic)

- The user independently determines the need for calibration (according to the image being observed).
- Press the **ON/OFF (4)** button briefly to activate calibration.

- There is no need to close the lens cover because an internal shutter covers the microbolometer automatically.

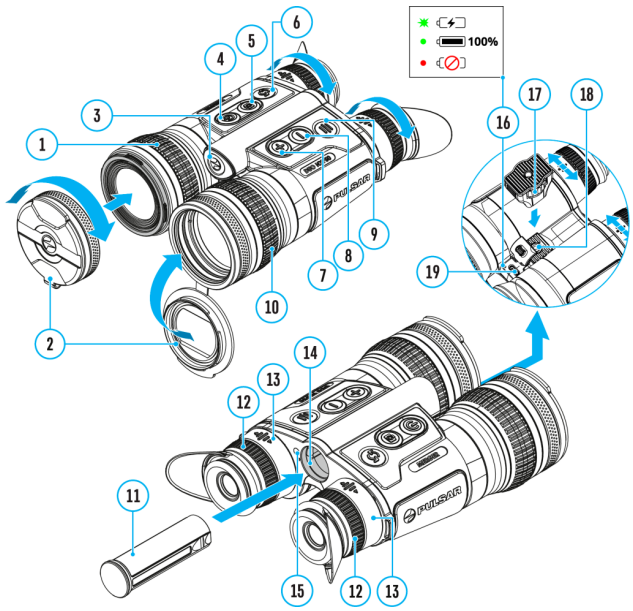
A mode (Automatic)

- The device is calibrated autonomously according to firmware algorithms.
- There is no need to close the lens cover because an internal shutter covers the microbolometer automatically.
- In this mode, the user can still choose to calibrate the device using the **ON/OFF (4)** button if required (as in the **SA** mode).
- A countdown timer :05 will appear instead of the calibration icon when in automatic calibration mode with 5 seconds remaining until automatic calibration.

Notes:

- During calibration, the image on the display briefly freezes for up to 1 second.
- The selected calibration mode is saved after restarting the device.

General settings



1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select option **General Settings** with the **UP (7)/DOWN (8)** buttons.
3. Press briefly the **MENU (9)** button to confirm.

The following settings are available:

Language

Selecting interface language

1. Select option **Language**  with the **UP (7)/DOWN (8)** buttons.
2. Press briefly the **MENU (9)** button to confirm.
3. Select one of the available interface languages with a short press of the **UP (7)/DOWN (8)** buttons: English, German, Spanish, French, Russian, Italian, Portuguese, Dutch, Danish, Norwegian, Swedish, Polish, Czech, Hungarian.
4. Press briefly the **MENU (9)** button to confirm.

Date

Date setup

1. Select option **Date**  with **UP (7)/DOWN (8)** buttons.
2. Press briefly the **MENU (9)** button to confirm. Date format is displayed as: YYYY/MM/DD (year/month/day)
3. Select the correct values for the year, month and date with a short press of the **UP (7)/DOWN (8)** buttons.
4. Switch between digits with a short press of the **MENU (9)** button.
5. Save selected date and exit the submenu with a long press of the **MENU (9)** button.

Time

Time setup

1. Select option **Time**  with **UP (7)/DOWN (8)** buttons.
2. Press briefly the **MENU (9)** button to confirm.
3. Select the desired time format with a short press of the **UP (7)/DOWN (8)** buttons: 24 or PM/AM.
4. Switch to hour setup with a brief press of the **MENU (9)** button.
5. Select hour value with a brief press of the **UP (7)/DOWN (8)** buttons.
6. Switch to minute setup with a brief press of the **MENU (9)** button.
7. Select minute value with a brief press of the **UP (7)/DOWN (8)** buttons.
8. Save selected time and exit the submenu with a long press of the **MENU (9)** button.

Units of Measure

Selection of units of measurement

1. Select option **Units of Measure**  with **UP (7)/DOWN (8)** buttons.

2. Press briefly the **MENU (9)** button to confirm.
3. Select the desired unit of measurement – meters or yards – with **UP (7)/DOWN (8)** buttons.
4. Press briefly the **MENU (9)** button to confirm.
5. Exit to general settings submenu takes place automatically.

Proximity Sensor

This feature allows you to disable/enable the display to turn off automatically when the device moves away from the user's face.

When the proximity sensor is off, the display can be turned on/off by pressing the **ON/OFF (4)** button**.**

By default, the proximity sensor is on.

1. Use the **UP (7)/DOWN (8)** buttons to select **Proximity Sensor** .
2. Press the **MENU (9)** button briefly to turn the sensor on/off.

Video Compression

When set to ON, standard video compression is applied so the video file size is reduced.

When set to OFF, minimal video compression is applied. In this case, the quality of the recorded video is better, but its size is significantly increased.

Warning! Larger video file sizes result in shorter recording times. This may lead to longer download times for video files through the Stream Vision 2 app.

Enable/disable video compression:

1. Select the **Video Compression** menu item with the **UP (7)/DOWN (8)** buttons.
2. To turn on video compression, briefly press the **MENU (9)** button. On
3. To turn off video compression, briefly press the **MENU (9)** button. Off

Viewing Channel Activation

This submenu allows you to turn off one of the image channels (thermal imaging or digital) if it is not used.

Turning off the image channel will save battery power.

An icon with a disabled channel will be displayed in the status bar: TD or DT .

Turn on/off the image channel:

1. Use the **UP (7)/DOWN (8)** buttons to select the **Viewing Channel Activation** menu item.
2. Press the **MENU (9)** button briefly to enter the submenu.
3. Use the **UP (7)/DOWN (8)** buttons to select the image mode: thermal imaging or digital.
4. Confirm your selection with a short press of the **MENU (9)** button.
5. Turn on/off the image channel by briefly pressing the **MENU (9)** button.

Default Settings

Restore default settings

1. Select option **Default Settings** with **UP (7)/DOWN (8)** buttons.
2. Press briefly the **MENU (9)** button to confirm.
3. With a short press of the **UP (7)/DOWN (8)** buttons select *"Yes"* to restore default settings or *"No"* to abort.
4. Confirm selection with a brief press of the **MENU (9)** button.

- If *"Yes"* is selected, display will show *"Do you want to restore default settings?"* with *"Yes"* and *"No"* dialogue options. Select *"Yes"* to restore default settings.
- If *"No"* is selected, action is aborted and you return to the submenu.

The following settings will be restored to their original values before changes made by the user:

- **Video recorder mode** – Video
- **Amplification Level** – Normal
- **Smoothing Filter** – Off
- **User Mode** – Off
- **Calibration mode** – automatic
- **Language** – English
- **Microphone** – Off
- **Wi-Fi** – Off (default password)
- **Magnification** – Off (no digital zoom)
- **PiP** – Off
- **Color mode** – White Hot
- **Unit of measurement** – Metric
- **Video Compression** – Off

- **Wi-Fi Band** – 2.4 GHz
- **Proximity Sensor** – On
- **Viewing Channel Activation** – both channels are on

Attention! When restoring the factory defaults the date, time and user pixel map are saved.

Format

This item allows you to format the Flash-card (memory card) of the device (this will delete all files from the memory card).

Formatting should be carried out in case of a memory card error.

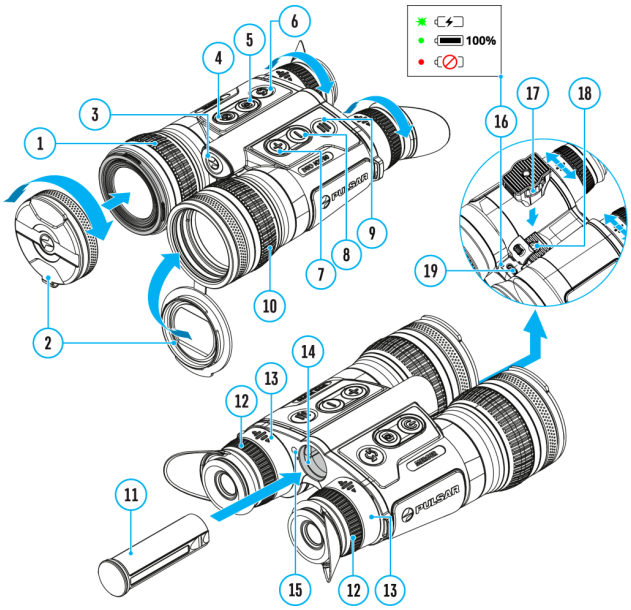
Before formatting, make sure you transfer all footage to other media.

1. Select option **Format**  with **UP (7)/DOWN (8)** buttons.
2. Press briefly the **MENU (9)** button to confirm.
3. With a short press of the **UP (7)/DOWN (8)** buttons select *"Yes"* to format the memory card or *"No"* to return to the submenu.
4. Confirm selection with a short press of the **MENU (9)** button.

- If *"Yes"* is selected, display will show *"Do you want to format memory?"* with *"Yes"* and *"No"* dialogue options. Select *"Yes"* to format the memory card.
- If *"No"* is selected, formatting is aborted and you return to the submenu.

How to fix dead pixels of a thermal imaging microbolometer

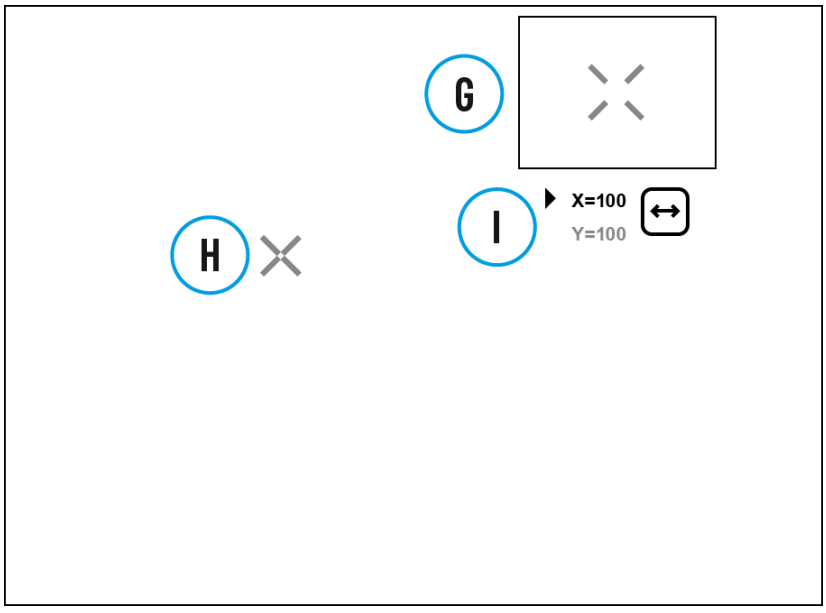
Defective pixel repair



When using the device, defective (dead) pixels may appear on the microbolometer. These are bright or dark points of a constant brightness that are visible on the thermal image.

Defective pixels on the microbolometer can increase in size relative to the digital-zoom power.

Merger Duo binoculars allow the user to remove any defective pixels on the display, as well as cancel removal, via the device's firmware.



Step 1. Enter the menu to fix the defective pixels

1. Select the thermal imaging mode for the main window by briefly pressing the **MODE (6)** button.
2. Press and hold the **MENU (9)** button to enter the main menu.

3. Use the **UP (7)/DOWN (8)** buttons to select the **Defective Pixel Repair** menu item.
4. Press briefly the **MENU (9)** to open the submenu.
5. Select the **Defective Pixel Repair** option by briefly pressing the **MENU (9)** button.

Step 2. Select the defective pixel

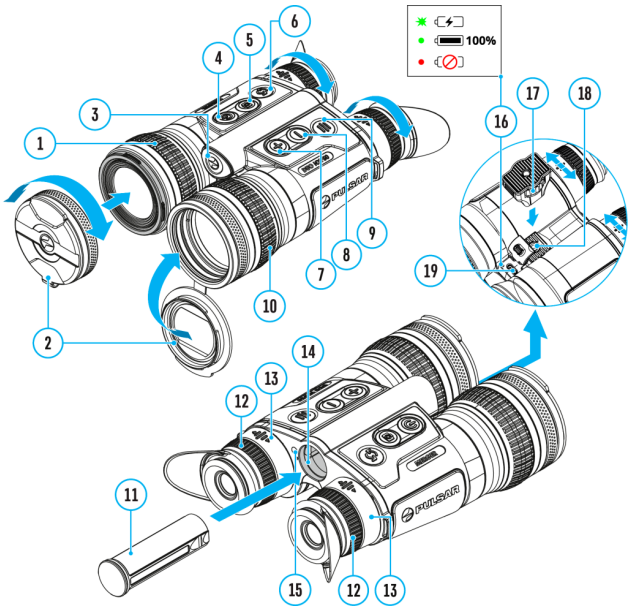
1. A marker **(H)** will appear on the left side of the image.
2. A "magnifier" **(G)** will appear on the right side of the image – an enlarged image in a frame with a fixed marker , designed for easier detection of a defective pixel and to match the pixel with the marker, and horizontal and vertical arrows for X and Y axes **(I)** showing the marker's movement.
3. With a short press of the **UP (7)/DOWN (8)** buttons move the marker to align it with a defective pixel.
4. Switch the direction of the marker from horizontal to vertical and vice versa with a short press of the **MENU (9)** button**.**
5. Align the defective pixel with the fixed cross in the frame – the pixel should disappear.

Step 3. Remove the defective pixel

1. Delete the defective pixel with a short press of the **ON/OFF (4).**
2. Once the pixel has been successfully deleted an *"OK"* message will briefly appear on the screen.
3. Then, by moving the marker across the image, you can delete the next defective pixel.
4. Exit the Defective Pixel Repair submenu with a long press of the **MENU (9).**

Warning! On each of the two displays of the device, 1-2 pixels in the form of bright white or coloured (blue, red) dots are allowed. They are not removed and are not a defect.

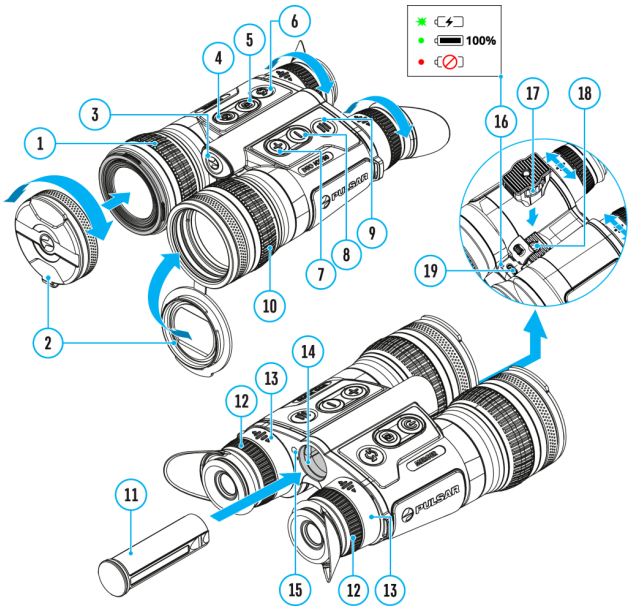
Restore default pixel map



This option allows you to cancel deletion of the defective pixels and return them to the original state.

1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select the **Defective Pixel Repair** menu item with the **UP (7)/DOWN (8)** buttons.
3. Press briefly the **MENU (9)** button to open the submenu.
4. Select **Restore Default Pixel Map** menu item with the **UP (7)/DOWN (8)** buttons.
5. Press briefly the **MENU (9)** button.
6. Using the **UP (7)/DOWN (8)** buttons, select *"Yes"* if you wish to return to default defective pixel pattern, or *"No"* if you do not.
7. Confirm selection with a short press of the **MENU (9)** button.

Device information



This option allows the user to view the following information about the device:

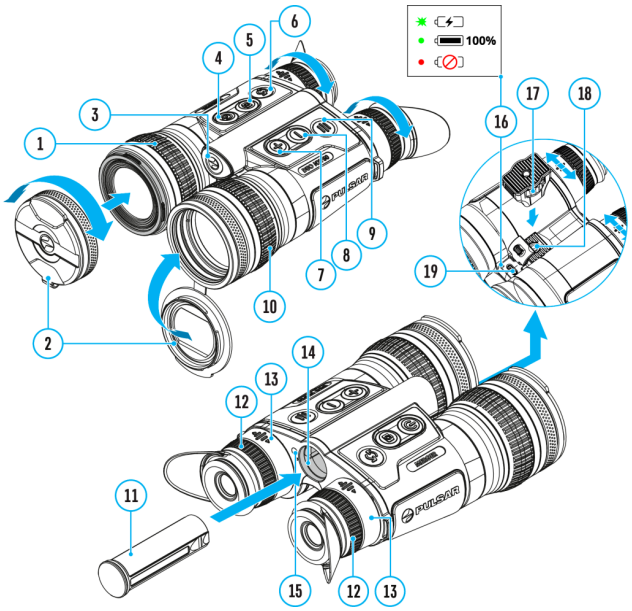
- Full name
- SKU number
- Serial number
- Firmware version
- Hardware version
- Service information

To display information, do the following:

1. Press and hold down the **MENU (9)** button to enter the main menu.
2. Select option **Device Information** ⓘ with the **UP (7)/DOWN (8)** buttons.
3. Press briefly the **MENU (9)** button to confirm.

Functions

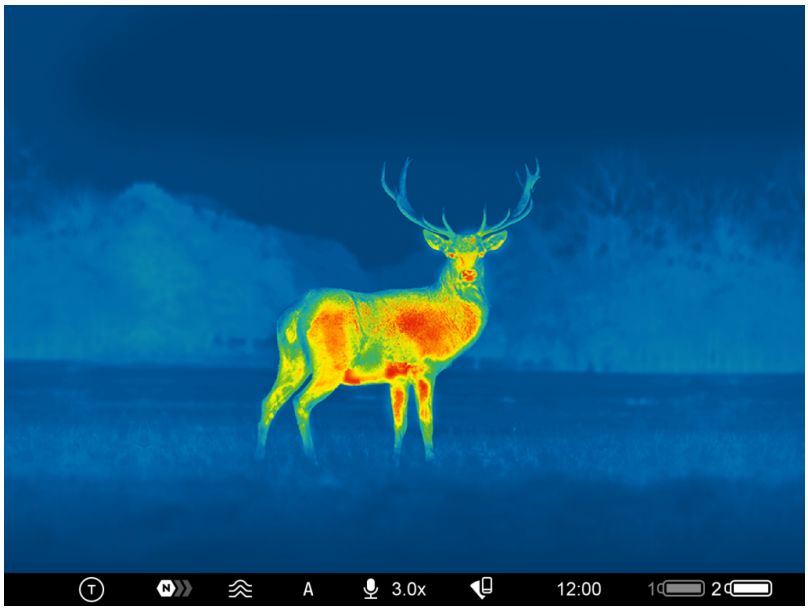
Image modes (Thermal Imaging/Digital/Multispectral Pip)



The device has 3 image modes: thermal imaging, digital and multispectral PiP mode.

- Quickly switch between thermal and digital modes by briefly pressing the **MODE (6)** button.
- Activate the multispectral PiP mode by a long press of the **MODE (6)** button.
- In the multispectral PiP mode, the image channels in the PiP window are switched by briefly pressing the **MODE (6)** button.

Thermal Imaging Mode



The device displays an image from a thermal imaging microbolometer when using the thermal imaging mode.

This mode allows you to use the device both at night-time and during the day in adverse weather conditions (fog, snow, haze) when there are obstacles (branches, tall grass, dense bushes etc.) that make it difficult to detect the target.

In thermal imaging mode, the riflescope does not need an external light source and is resistant to high light levels.

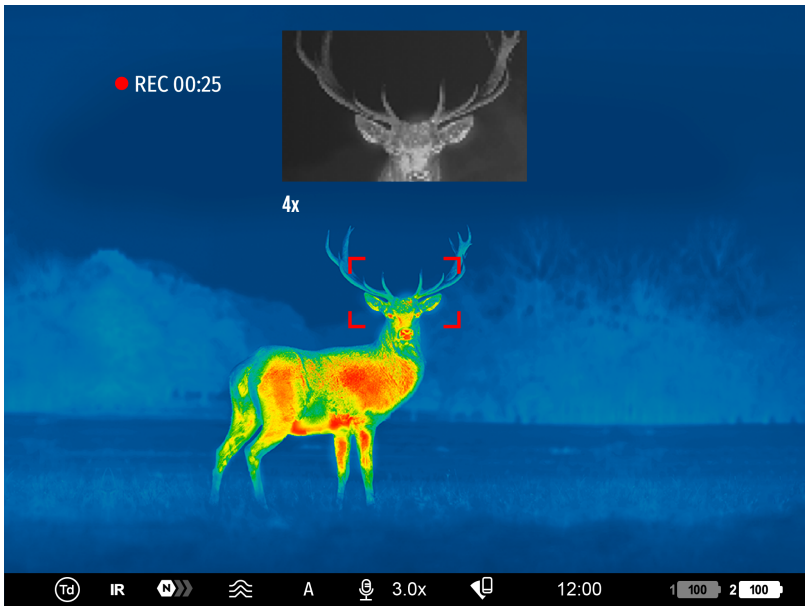
Digital Mode

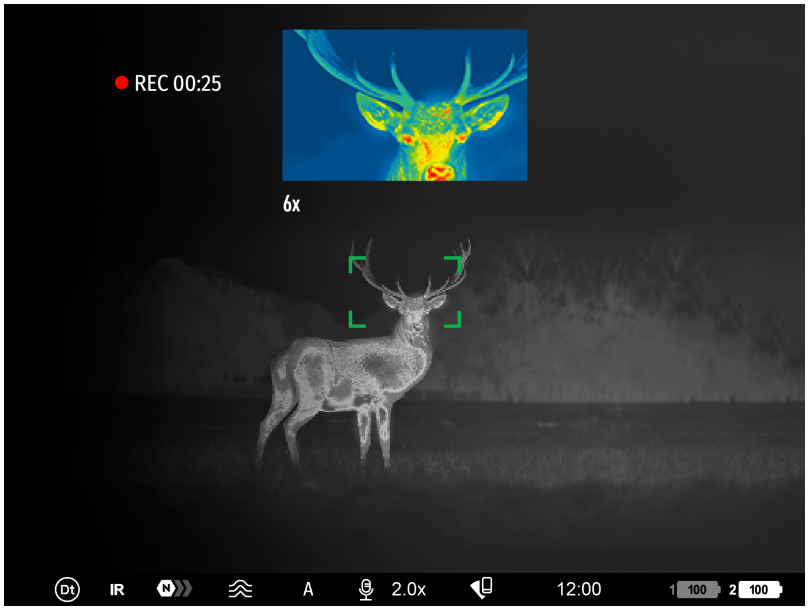


In digital mode, the device generates a black and white image from a digital sensor.

In this mode, the device allows observation both day and night. In night conditions (absence of starlight, moonlight), it is recommended to use an infrared illuminator ith a wavelength of 940 nm.

Multispectral PiP

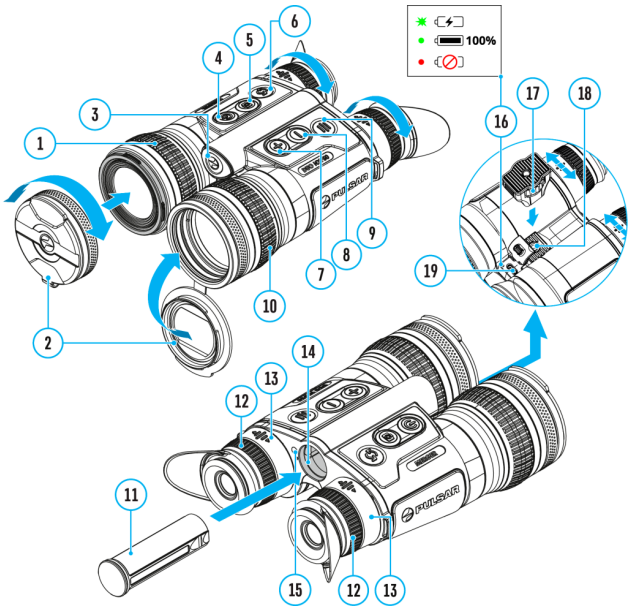




In the multispectral PiP mode, the image of one channel is displayed in the main window, and the image of the second channel is displayed in the PiP window.

In this mode, digital zoom is applied only to the PiP window. The magnification in the main window is set to base.

Video recording and photography



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

Before using the photo and video functions, read the **Date** and **Time** subsections of the **General Settings** section.

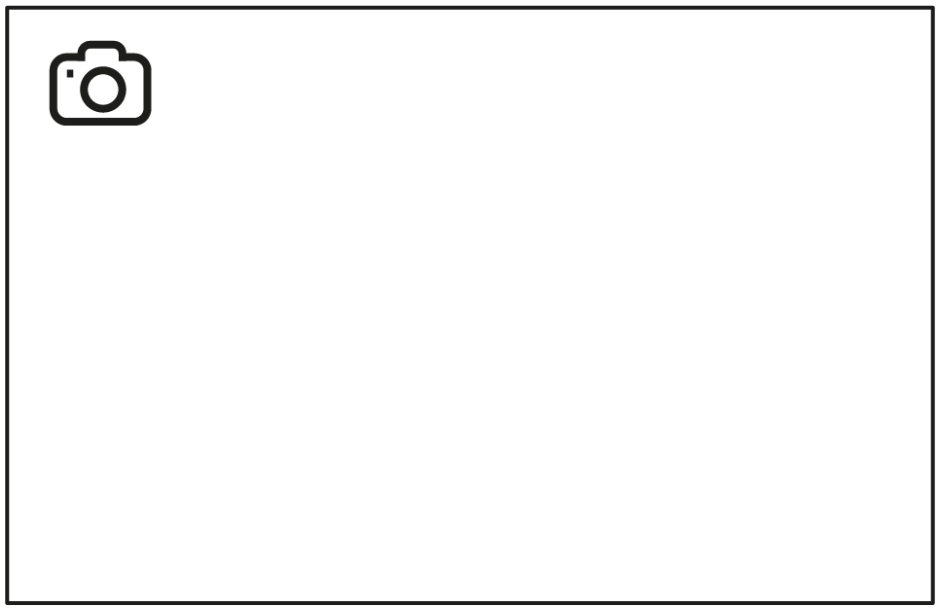
For information on how to watch recorded photos and videos, see the Stream Vision 2 user manual: Android, iOS.

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 (5)** button. Switching between the modes is cyclical (**Video** → **Photo** → **Video**...).

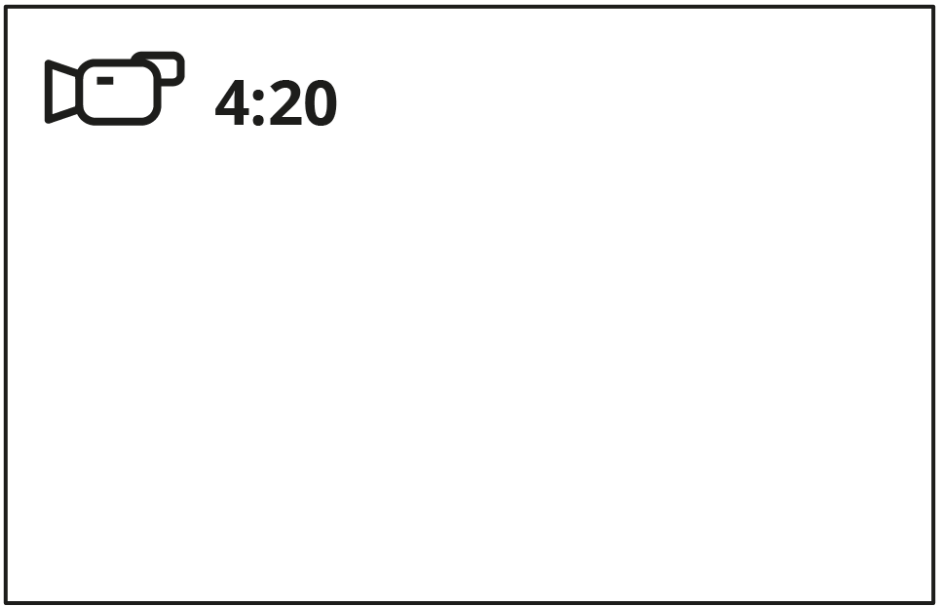
Photo mode. Capturing an image



1. Switch to the **Photo** mode with a long press of the **REC (5)** button.

2. Press the **REC (5)** button briefly to capture a photo. The icon flashes – the photo file is being saved to the built-in SD card.

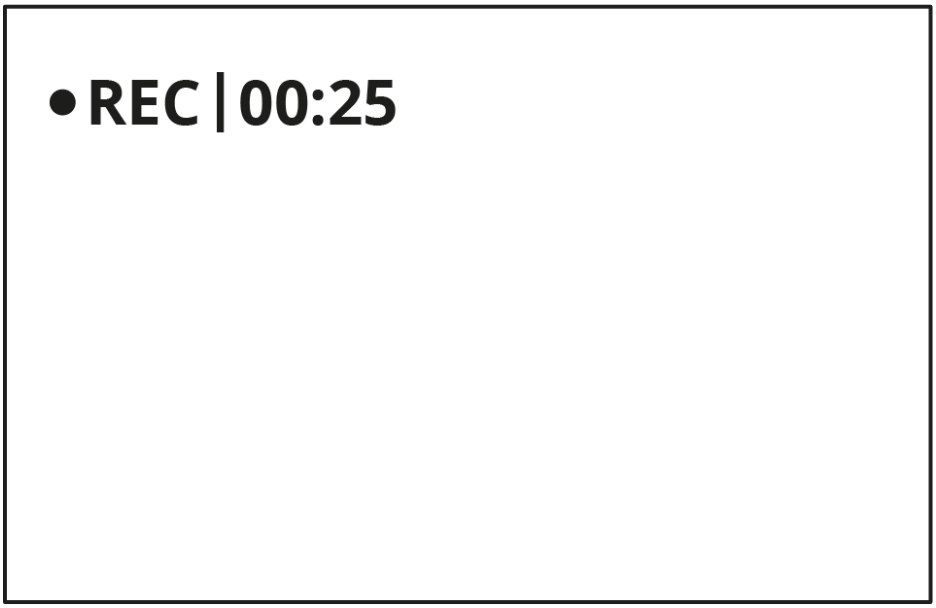
Video mode. Recording a video



1. Switch to the **Video** mode with a long press of the **REC (5)** button.

2. Press the **REC (5)** button briefly to start video recording.

3. When the video recording starts, the icon will disappear, instead of it the **REC** icon as well as the video recording timer displayed in the MM:SS (minutes:seconds) format will appear ●REC | 00:25.



4. Pause/continue recording by briefly pressing the **REC (5)** button.

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

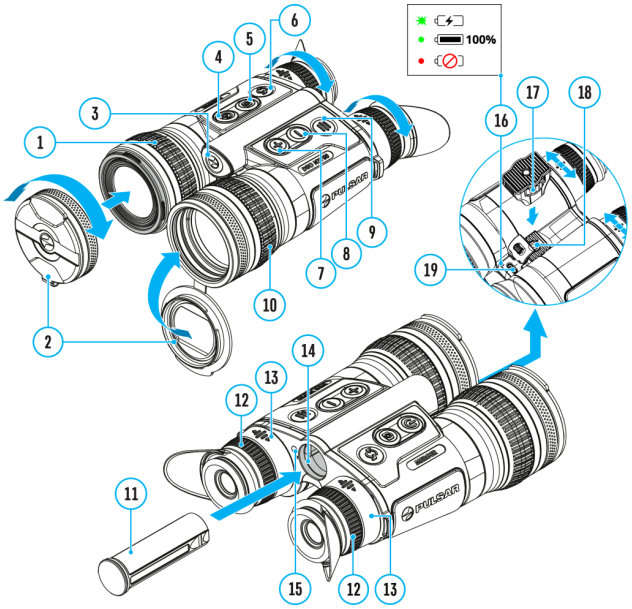
Video files are stored in the built-in memory card:

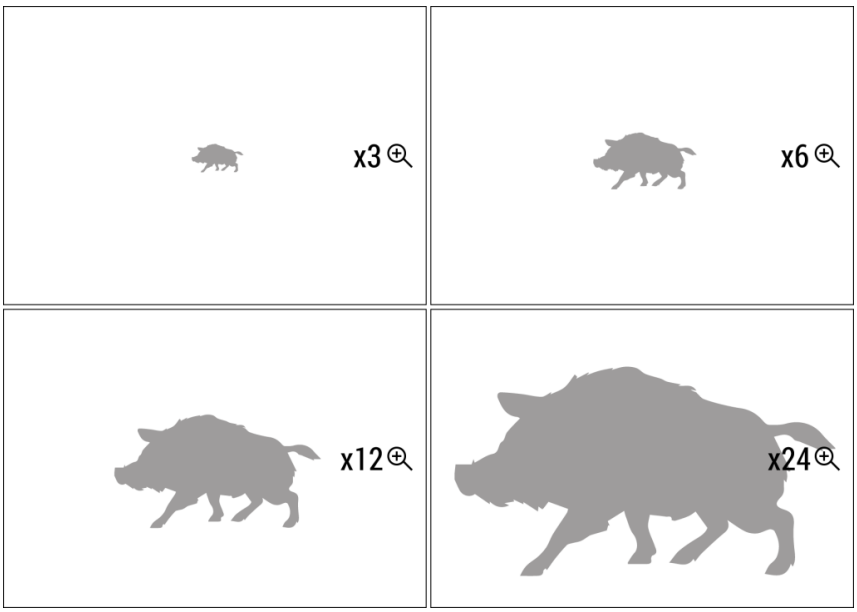
- After turning off the video recording;
- Upon powering the device off if recording was on;
- When the memory card is overfilled during recording (Memory Full message appears).

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 **General Settings** section of the main menu.
- When the **Display Off** function is activated, video recording continues to run in the background.

Discrete digital zoom



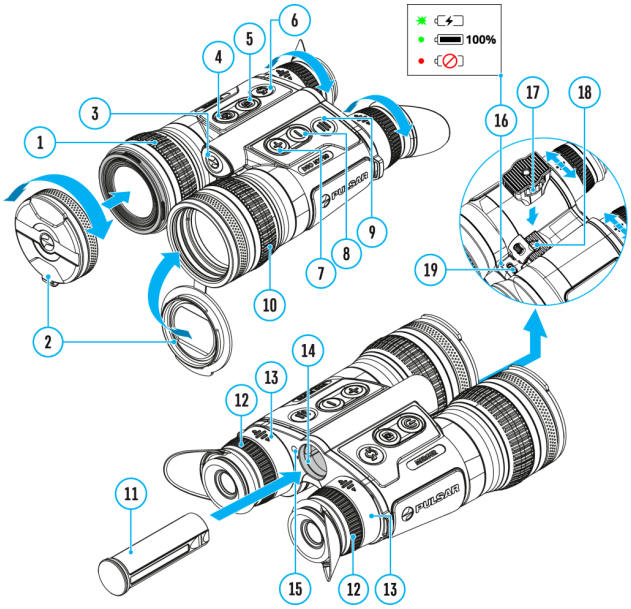


The device allows you to quickly increase the basic magnification (please refer to the **Magnification** line in the **Specifications** table) by 2, 4 or 8 times.

- To operate the discrete digital zoom, press successively the **UP/ZOOM (7)** button.
- The digital zoom will not be saved after the device is re-started.

Note: the magnification value is reset to the base value when the device is switched off.

PIP function

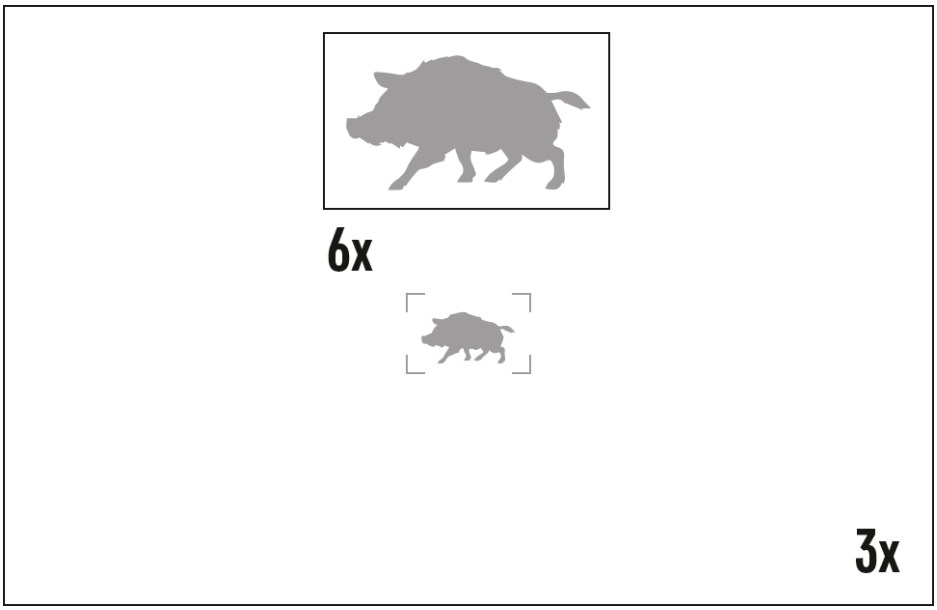


Available in thermal imaging and digital mode

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

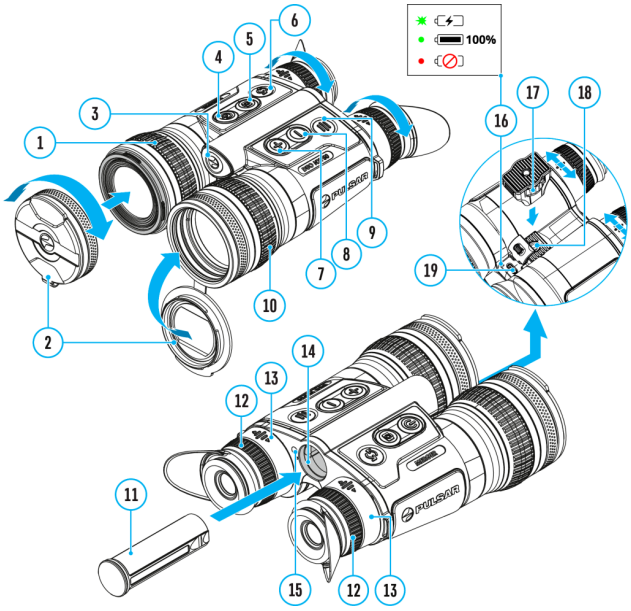
In this mode, the same image channel is displayed in the main window and the PiP window.

To use the multispectral PiP mode, see **Image Modes (Thermal Imaging/Digital/Multispectral PiP)**.

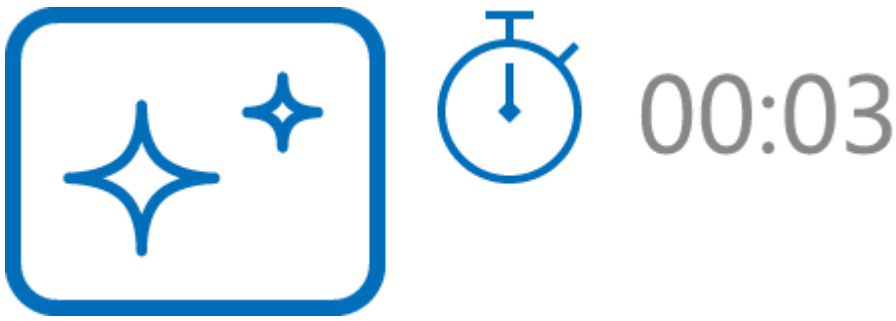


- Turn on/off the PiP function with a long press of **UP/ZOOM (7)** button.
- Change zoom ratio in the PiP window with a short press of **UP/ZOOM (7)** button.
- The zoomed image is displayed in a dedicated window, while the image in the rest of the screen is displayed at base magnification.
- When PiP 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.

Display-Off function



This function darkens the screen, which aids the user's concealment. However, the device stays on.



The displays can be turned off automatically if the **proximity sensor** is turned on or by pressing the **ON/OFF (4)** button if the proximity sensor is turned off.

The proximity sensor is turned on:

1. When the device moves away from the user's face, the displays will turn off.
2. When the device approaches the user's face, the displays will turn on again.
3. While holding the **ON/OFF (4)** button, a countdown icon 00:03 will appear on the displays and the device will turn off.

The proximity sensor is turned off:

1. When the device is on, press and hold the **ON/OFF (4)** button. The displays will turn off, the current time and the **"Display off"** icon will appear.
2. Turn the displays back on with a short press of the **ON/OFF (4)** button.
3. When you press and hold the **ON/OFF (4)** button, the displays show the **"Display off"** icon with a countdown. Pressing & holding the button down for the duration of the countdown will power the device off completely.

Wi-fi function

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

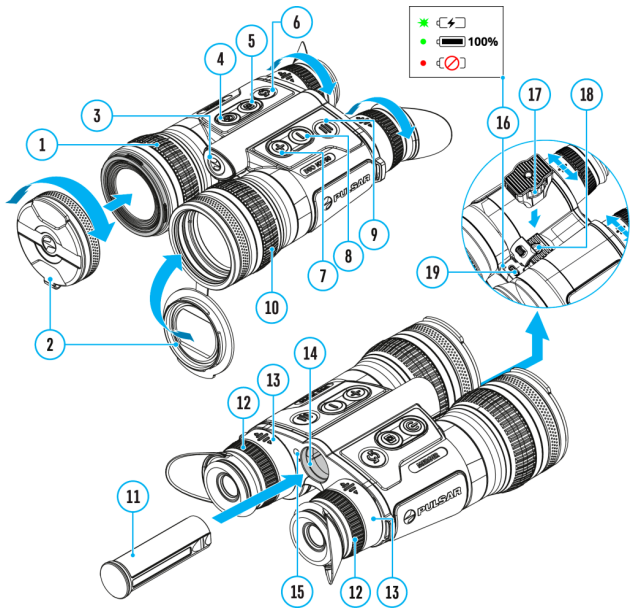
- Turn on the wireless module in the **WI-Fi Activation** menu option.

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 “MERGER_XXXX”, where XXXX – is the last four digits of device’s 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. The battery icons will turn red and flash. To use the Wi-Fi function again, you need to charge the batteries.
- When Wi-Fi is on, the power supply will switch to the internal battery after the external battery reaches a 20% charge level.

Stadiametric rangefinder



Merger Duo binoculars are equipped with a stadiametric rangefinder which allows the user to determine the approximate distance to an object of a known size with reasonable accuracy.



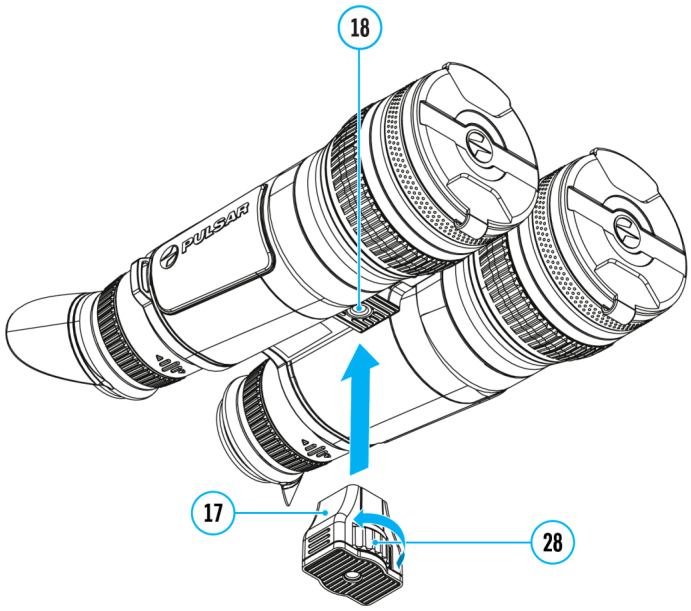
1. Select the **Stadiametric Rangefinder** function with short presses of the **MENU (9)** button until the icon is selected.
2. You will see on the display: measurement bars, icons of three reference objects and respective distances for the three objects.
3. Position the lower fixed bar under the object being ranged.
4. By pressing the **UP (7)/DOWN (8)** buttons, move the upper horizontal bar relative to the lower fixed bar until the object fits entirely between the two bars. The distance to the object is automatically recalculated as you move the upper line.
5. Exit the rangefinder mode with a long press of the **MENU (9)** button or wait 10 seconds to exit automatically.

Notes:

- There are three predefined values for the reference objects: Hare – 0.3 m height, Boar – 0.7 m height, Deer – 1.7 m height.
- Before it appears on the display, a measured distance value is rounded up to 5m for larger values and rounded down to 1m for smaller values.
- To select the unit of measurement (Meters or Yards), go to the General Settings menu item ⇒ **Units of Measure** submenu.

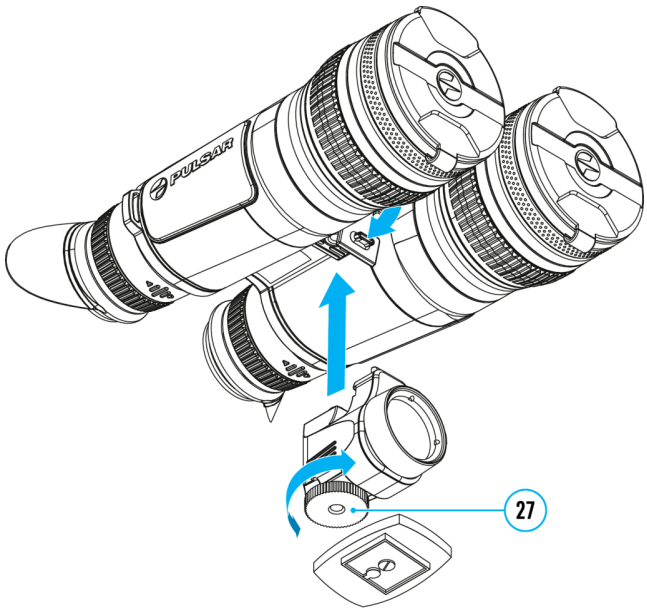
Installing the device on a tripod

Using a tripod adapter



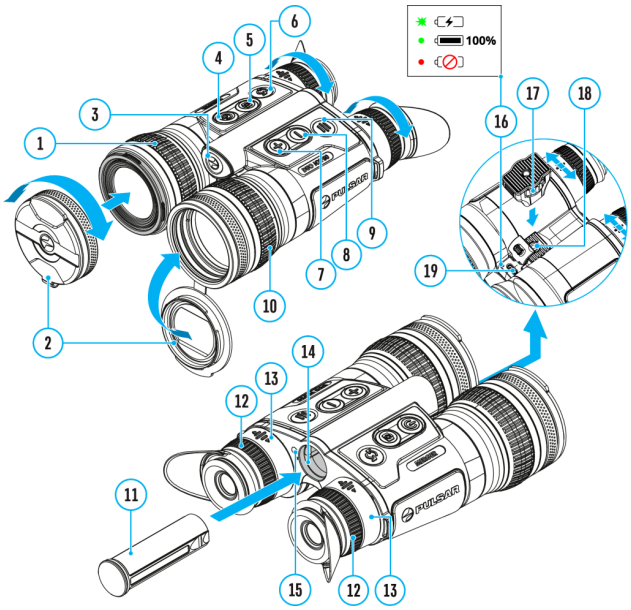
1. Attach the tripod adaptor **(17)** to the socket **(18)**.
2. Screw the adapter wheel **(28)** clockwise until it stops.
3. Secure the adaptor with the device on a tripod.

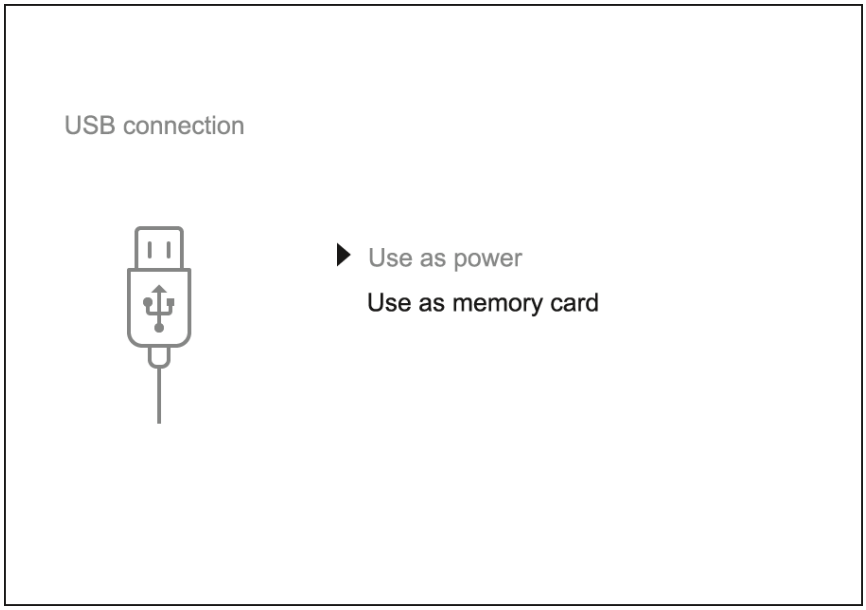
Using an IR illuminator



1. Install the IR illuminator on the device.
2. Screw the tripod adapter platform to the hole in the tripod screw **(27)**.
3. Install the device with the platform on a tripod.

USB connection





1. Connect one end of the USB cable to the USB Type-C **(17)** connector of the device, the other one to the port on your computer using a USB Type-A adapter.
2. Turn the device on with a short press of the **ON/OFF (4)** button (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. Two connection modes will appear on the image: **Power** and **Memory Card** (external memory).
5. Select connection mode with **UP (7)/DOWN (8)** buttons.
6. Confirm selection with a short press of the **MENU (9)** button.

Power

- In this mode, when a computer is used as an external power supply, the icon 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.

Memory Card

- 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.

USB Disconnection

- When the USB is disconnected from the device connected as the **Power** mode, the device continues operating from the rechargeable batteries if they are sufficiently charged.
- If the device is in **Memory Card** mode and is disconnected from USB, the device will remain on.

Software

Stream vision 2



Install the Stream Vision 2 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 WiFi.

We recommend using the latest version – Stream Vision 2.

Mobile App
STREAM VISION 2

You can find further guidelines on Stream Vision 2 **here.**

Download from Google Play

Download from App Store

Find answers to frequently asked questions about using Stream Vision 2 here.

Stream Vision 2 Manual

Android

iOS

Firmware update

1. Download the free Stream Vision 2 App in Google Play or App Store.
2. Connect your Pulsar device to your mobile device (smartphone or tablet).
3. Launch Stream Vision 2 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.

Find answers to frequently asked questions about using Stream Vision 2 here.

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 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.
- Check the lenses of the eyepieces and objectives. If necessary, remove dust and sand from the optics (it is preferable to use a non-contact method). Cleaning of the exterior surfaces of the optics should be done with cleaners designed especially for this purpose.
- 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.

Answers to frequently asked questions about the devices can also be found in the FAQ section.

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 ON/OFF 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 Mode** 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 sensor 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 **Powering on and Image Setting** 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.

More information on solving problems with connection to Stream Vision 2 by following the link.

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.

More information on solving problems with connection to Stream Vision 2 by following the link.

The image of the object being observed is missing in the thermal imaging mode

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, microbolometer or digital sensor

Solution
The presence of such pixels is associated with the manufacturing technology of displays and microbolometers or digital sensors. It is not a defect.

When using the device at below zero temperatures the thermal 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.

There is no thermal imaging or digital image

Possible cause
Lens cover closed.
Solution
Open the covers of the thermal imaging and digital channels.

Possible cause
Channel is turned off.
Solution
Turn on the desired channel in the **“Viewing Channel Activation”** item of the **General Settings** section in the main menu.

The image of the digital channel is overexposed when direct sunlight hits the binocular lens

Possible cause

If direct sunlight hits the binocular digital channel lens during daytime observation, the image may be overexposed. The device has a highly sensitive digital sensor and is intended primarily for night observation.

Solution

Do not use the device in both modes (digital and thermal imaging) opposite the sun, as well as in digital mode at night in front of bright oncoming light sources (car headlights, street lamps, etc.). Deterioration in image quality when using the device in this way is not a defect.

Legal compliances and disclaimers

Attention! A license is required for the Merger Duo multispectral binoculars when exporting 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.

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.

Limitation of Liability. Subject to mandatory applicable laws and regulations: manufacturer will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities (if any), arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. Manufacturer's sole undertaking is limited to providing the product(s) and related services in accordance with the terms and conditions of concluded transactions, including provisions established in warranty. The provision of products sold and services performed by Manufacturer to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party (other than Distributor, Dealer, Buyer). Manufacturer's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to Manufacturer for the product(s) and/or service(s).

MANUFACTURER WILL NOT BE LIABLE FOR LOST REVENUES OR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES, EVEN IF THE MANUFACTURER KNEW OR SHOULD HAVE KNOWN THAT SUCH DAMAGES WERE POSSIBLE AND EVEN IF DIRECT DAMAGES DO NOT SATISFY A REMEDY.

