Axion XQ LRF

Manual

Content

Specifications

You can learn more about the main parameters **here**.

XQ38 LRF

Model	XQ38 LRF
SKU	77428
Microbolometer	
Type	uncooled
Resolution, Pixels	384x288
Pixel Pitch, µm	17
Frame Rate, Hz	50
Optical Characteristics	
Optical Magnification, x	3.5
Smooth Digital Zoom	3.5-14
Digital Zoom, x	2/4
Lens Focus, mm	38
Relative Aperture, D/f'	1.2
Minimum Focus Distance, m	3
Eye Relief Diameter, mm	3.5
Angular Field of View (Horizontal x Vertical), degree	9.8x7.4
Linear Field of View, m at 100 m	17.2
Eyepiece Focus Range, Diopter	+4 / -5

Detection Distance for Deer-Sized Objects, m/y	1350/1476
Display	
Type	AMOLED
Resolution, Pixels	1024x768
Operational Characteristics	
Power Supply, V	3 - 4.2
Battery Type/Capacity/Nominal Output Voltage	APS 5 Li-ion Battery Pack / 4900 mAh / DC 3.7 V
External Power Supply	5-15 V (USB Type-C)
Battery Run Time at t=22°C, hours	7
Degree of Protection, IP Code (IEC60529)	IPX7
Operating Temperature Range, °C	-25 to +40
Dimensions, mm/inch	167x74x73 / 6.57x2.91x2.87
Weight (without battery), kg/oz	0.38/13.4
Characteristics of the Rangefinder	
Wavelength, nm	905
Measurement Range, m/y*	1000/1094
Measurement Accuracy, m	1

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

Description

Axion XQ LRF thermal imaging monoculars are designed for use both at night-time and during the day and provide exceptional image quality even in adverse weather conditions (fog, smog, rain) and beyond obstacles like branches, tall grass, dense foliage, etc. known to hinder target detection.

Unlike night-vision devices based on electron-optical converters, thermal imaging devices do not need an external light source and are resistant to bright light.

Axion XQ LRF thermal imagers are designed for various applications including hunting, observation, security, terrain orientation, search and rescue operations, etc.

Axion XQ LRF thermal imagers are equipped with a built-in laser rangefinder with a range of up to 1000 m and a measurement accuracy of ± 1 m.

To get started, see the sections:

Battery Charging

Battery Installation

Powering on and Image Setting

Built-In Laser Rangefinder

Package Contents

- Axion XQ LRF thermal monocular
- APS 5 rechargeable battery
- 2 battery-locking covers
- Battery charger
- Power adapter
- USB Type-C cable
- Carrying case
- Hand strap
- Quick reference user manual
- Lens cleaning cloth
- Warranty information
- Tripod adapter

Features

- 384x288 microbolometer sensor resolution
- 17-micron pixel pitch
- 1024x768 AMOLED display resolution
- Compact and lightweight
- Functional and ergonomic design
- 8-color display palette
- 3 calibration modes: Manual, Semi-Automatic, Automatic
- Detection range up to 1350 m/1475 yds
- Smooth digital zoom 3.5-14x
- 4 observation modes: Forest, Rocks, Identification, User
- Integrated laser rangefinder
- Display-Off function
- Defective pixel repair
- Wide operating temperature range (-25°C to +40°C)
- Fully waterproof (IPX7 rated)
- Tripod mount

Battery Pack

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

Components and Controls
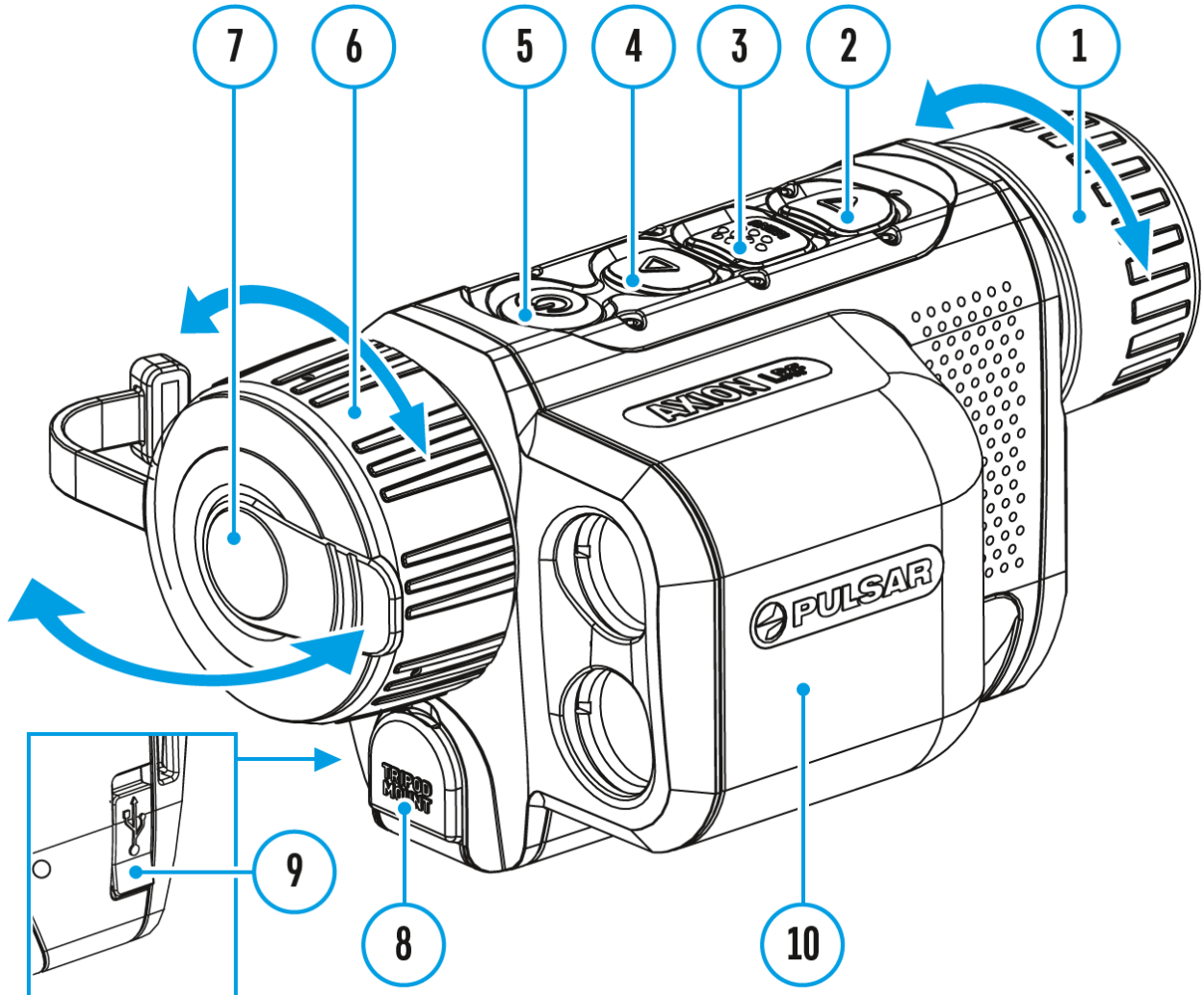
1. Eyepiece focus ring
2. DOWN/LRF button
3. MENU button
4. UP/ZOOM button
5. Power ON/OFF/CALIBRATION button
6. Lens focus ring
7. Lens cover
8. Tripod adapter socket
9. USB Type-C connector
10. Laser rangefinder

LED indicator displays the current status of the device:

LED Indicator	Operating Mode
🟢	Device is turned on
🔴	The device is turned on/battery charge < 10%

Button Operation

Operation	Button
Power device on	⏻ short press
Power device off	⏻ long press for 3 secs
Turn display off	⏻ long press for less than 3 secs
Turn display on	⏻ short press
Calibrate the microbolometer	⏻ short press
Switch observation modes	△ short press
Control discrete digital zoom	△ long press
Quick change of color palettes	▽ long press
Laser Rangefinder	**Button**
Turn on rangefinder	▽ short press
Single distance measurement	▽ short press
Activate rangefinder scan mode	▽ long press
Deactivate rangefinder scan mode	▽ short press
Turn off rangefinder	▽ long press
Main Menu	**Button**
Enter main menu	MENU long press
Navigation upwards/rightwards	△ short press
Navigation downwards/leftwards	▽ short press
Confirm selection	MENU short press
Exit submenu without confirming selection	MENU long press

Exit menu (switch to viewing mode)	⣿ MENU long press
Quick Menu	**Button**
Enter quick menu	⣿ MENU short press
Switch between quick menu options	⣿ MENU short press
Increase value	△ short press
Decrease value	▽ short press
Exit quick menu	⣿ MENU long press

Precautions

- Always use the APS 5 charger supplied with the device (or purchased separately) to charge APS 5 batteries. Using an unsuitable charger can cause irreparable damage to the battery and fire.
- Do not charge the battery immediately after exposure to a cold environment. Let the battery warm for at least 30 minutes before charging.
- Do not leave the battery unattended while charging.
- Do not use the charger if it has been modified or damaged.
- Do not leave the battery in a plugged-in charger after charging is complete.
- Do not expose the battery to high temperatures or open flames.
- Do not use the battery as a power source for devices that do not support APS 5 batteries.
- Do not disassemble or deform the battery or charger.
- Do not drop or strike the battery or charger.
- Protect the battery and charger from water and moisture.
- Keep the battery out of the reach of children.

Recommendations for Battery Use

- The batteries should be partially charged (50 to 80 %) for long-term storage.
- Charge at an ambient temperature of 0°C to +35°C (32°F to 95°F) or the lifespan of the battery will decrease significantly.
- Using the battery at sub 0°C (<32°F) ambient temperature decreases battery capacity. This is normal and not a defect.
- Using the battery at temperatures outside the range of -25°C to +40°C (-13°F to 104°F) may reduce battery life.
- The battery is short-circuit protected. Any situation that may cause short-circuiting should be avoided.

Battery Charging

The **Axion XQ LRF**thermal imager comes with an APS 5 rechargeable Lithium-ion battery. APS 5 batteries support USB Power Delivery fast charging technology when using a standard charging set (charger, USB Type-C cable, power adapter). Before first use, make sure the battery is fully charged.
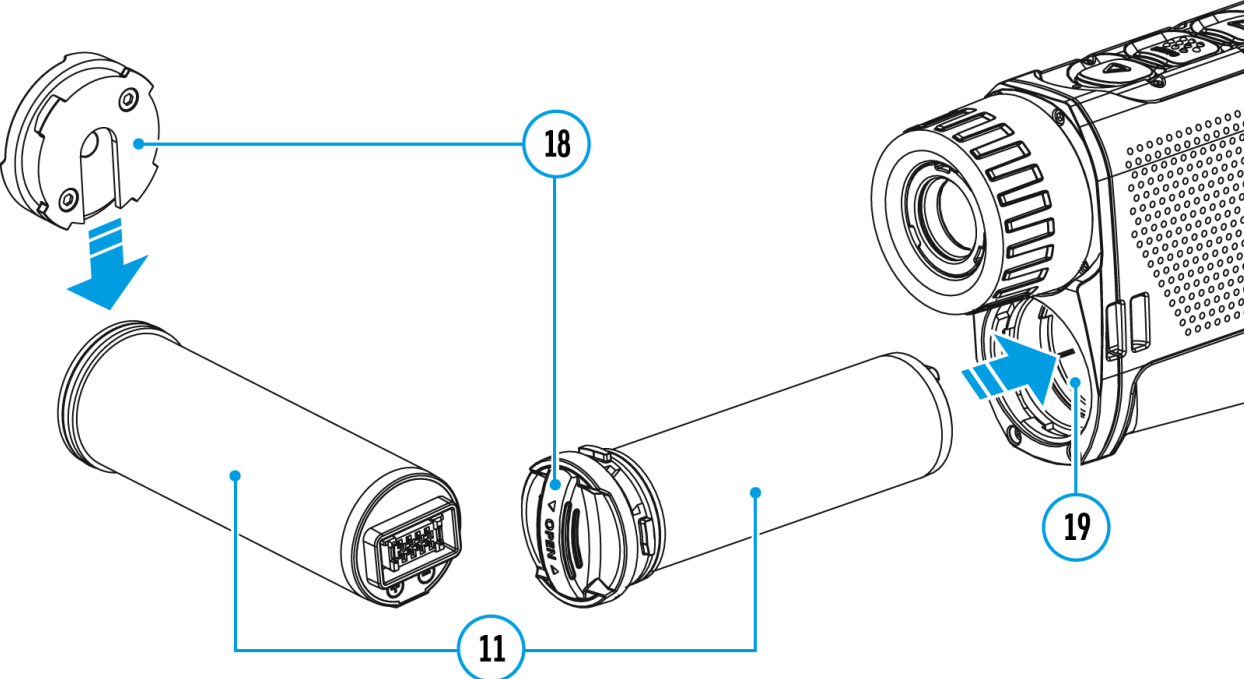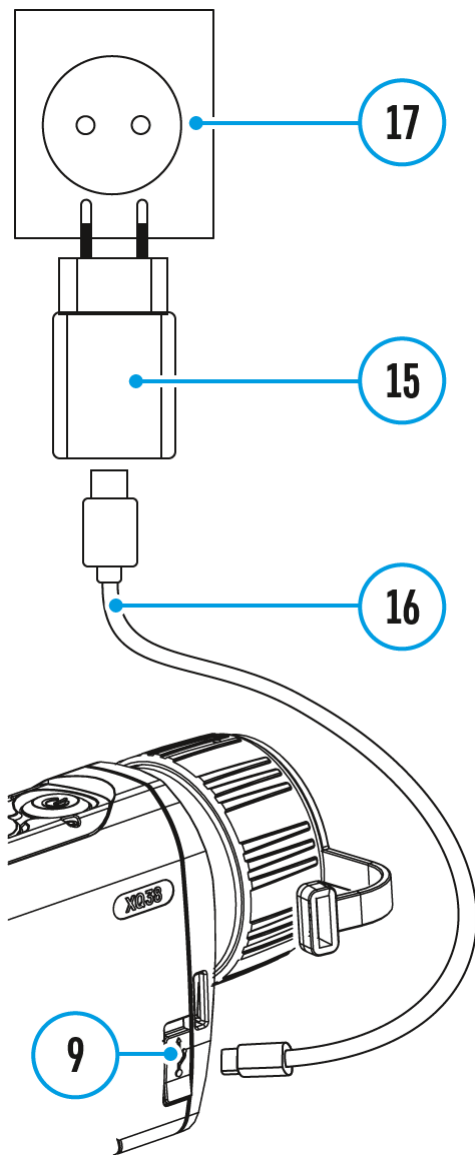
Option 1

1. **Install** the APS 5 battery **(11)** in the battery compartment **(19)** of the device.
2. Connect the USB cable **(16)** to the USB Type-C connector **(9)** of the device.
3. Connect the other end of the USB cable **(16)** to the Power Adapter **(15).**
4. Plug the Power Adapter **(15)** into a 100-240 V socket **(17).**
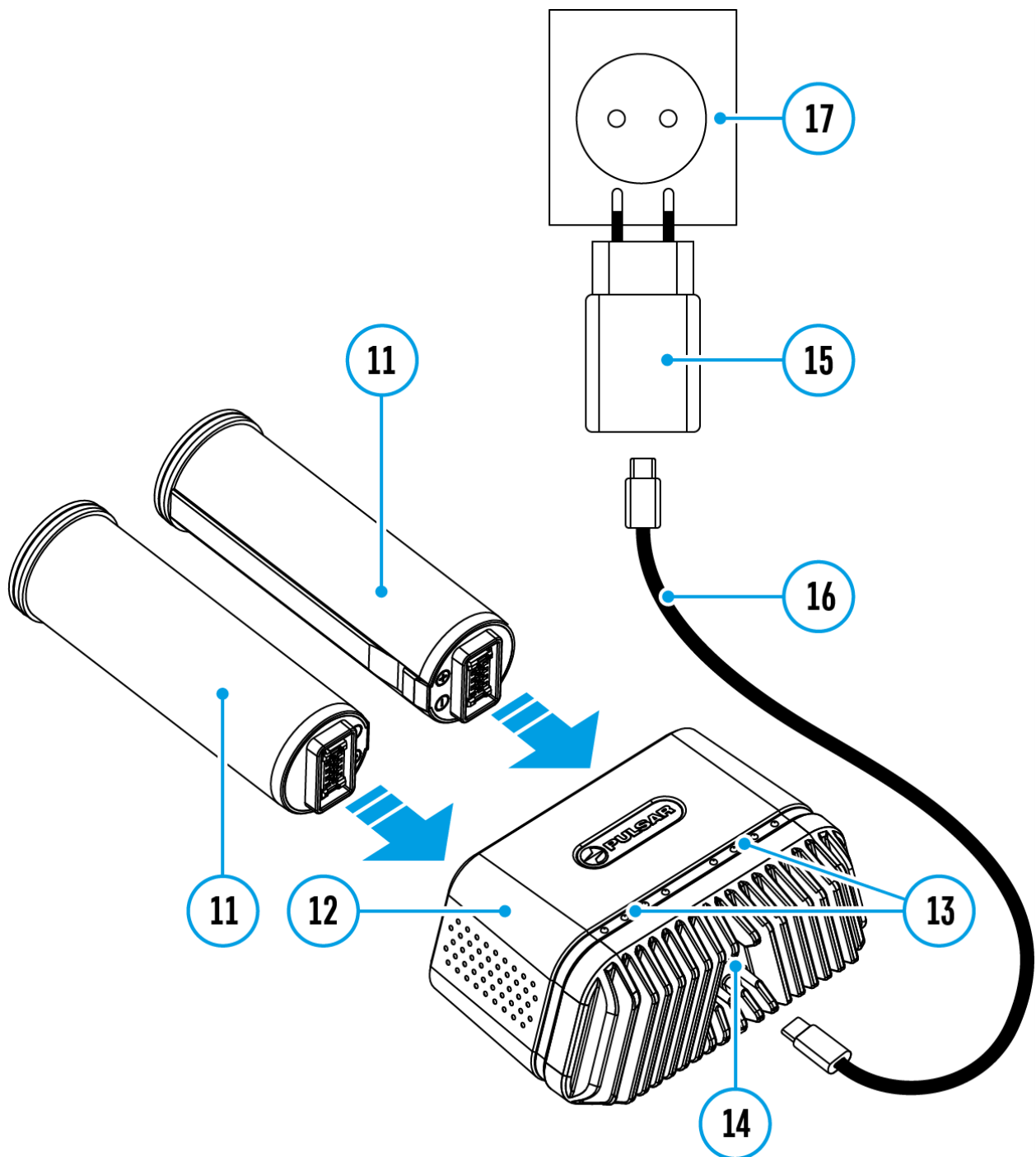
Option 2

1. Insert the APS 5 battery **(11)** along the guide into the APS 5 charger **(12)** slot as far as it will go. The APS charger is supplied with your device and sold separately.
2. Connect the plug of the USB Type-C cable **(16)** to the USB Type-C connector of the Power Adapter**(15).**
3. Plug the Power Adapter **(15)** into a 100-240 V socket **(17).**

4. Connect the other end of the USB Type-C cable **(16)** to the USB Type-C connector **(14)**of the charger.
5. LED indicators **(13)** will display the battery charge level (see Table).

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

LED indication (13) 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 (13) 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
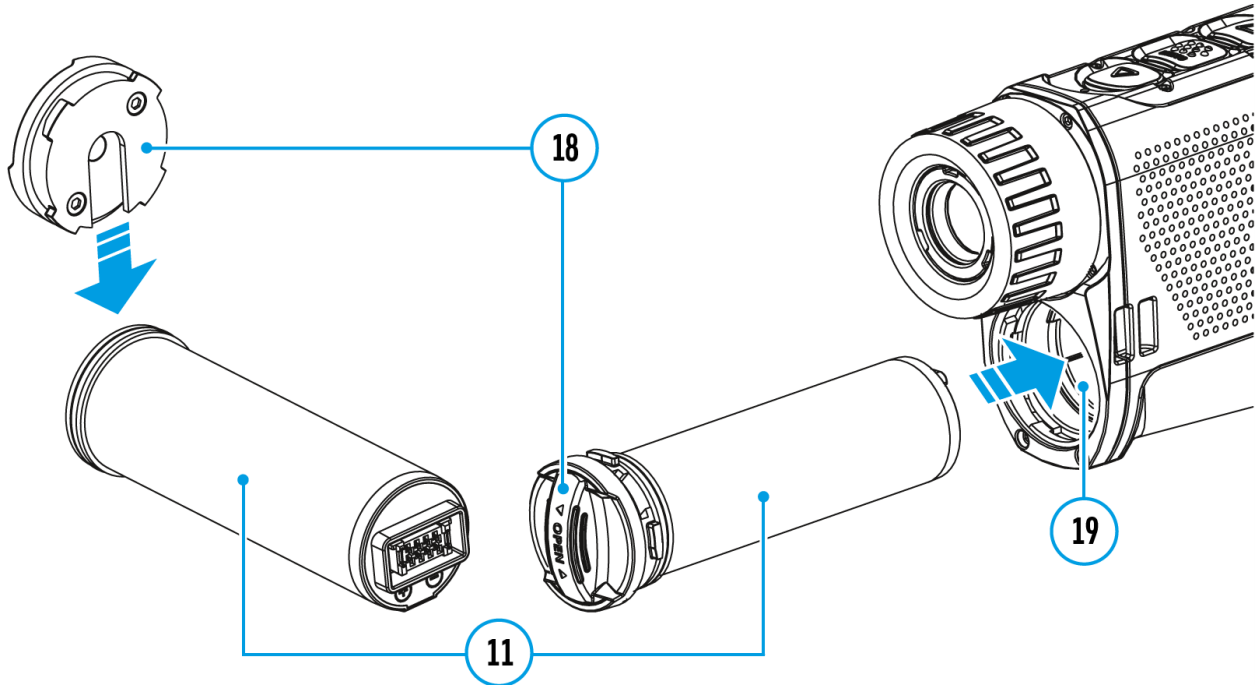
Attention! Before installing the battery, make sure that there is an undamaged rubber insulating ring on the battery. The ring is designed to protect your device from moisture getting inside. Damage to the device due to a missing ring is not covered by the warranty. To replace or purchase a ring, contact your **local distributor.**

1. Put the Lock-cover **(18)** on the rechargeable APS 5 battery **(11).**
2. Insert the APS 5 battery **(11)** along the guide into the battery compartment **(19).**
3. Lock the battery **(11)** by turning the Lock-cover **(18)**clockwise until it stops.
4. Turn the Lock-cover **(18)** counter-clockwise to remove the battery **(11).**

External Power Supply

Show device diagram
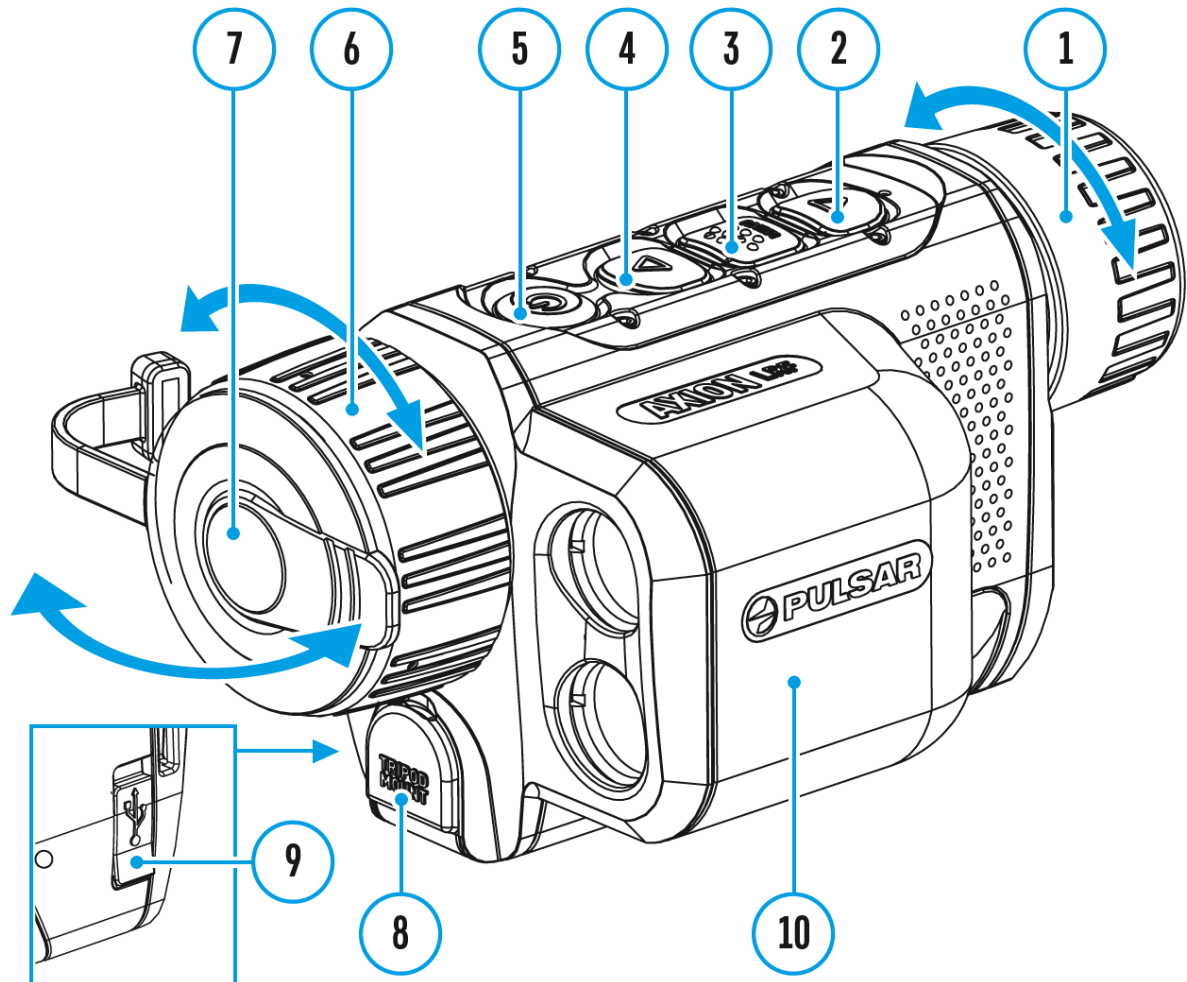
External power can be supplied from an external source, such as a Power Bank (5-15 V).

1. Connect the external power source to the USB Type-C connector **(9)** on the device.
2. The device will switch to draw power from the external source while the APS5 battery is gradually recharged.
3. A battery icon ⚡ will appear on the display showing the percentage-charged level.
4. An icon ▬■▬ will be displayed when the device is powered by an

external power source and the APS5 battery is not connected.

5. The device automatically switches to the APS 5 battery when the external power supply is disconnected.

Attention! Charging APS 5 batteries from an external source at temperatures below 0°C (<32°F) can reduce battery life. When using external power, connect the power bank to the device only after it has been turned on and working (warming) for at least several minutes.

Powering on and Image Settings

Show device diagram
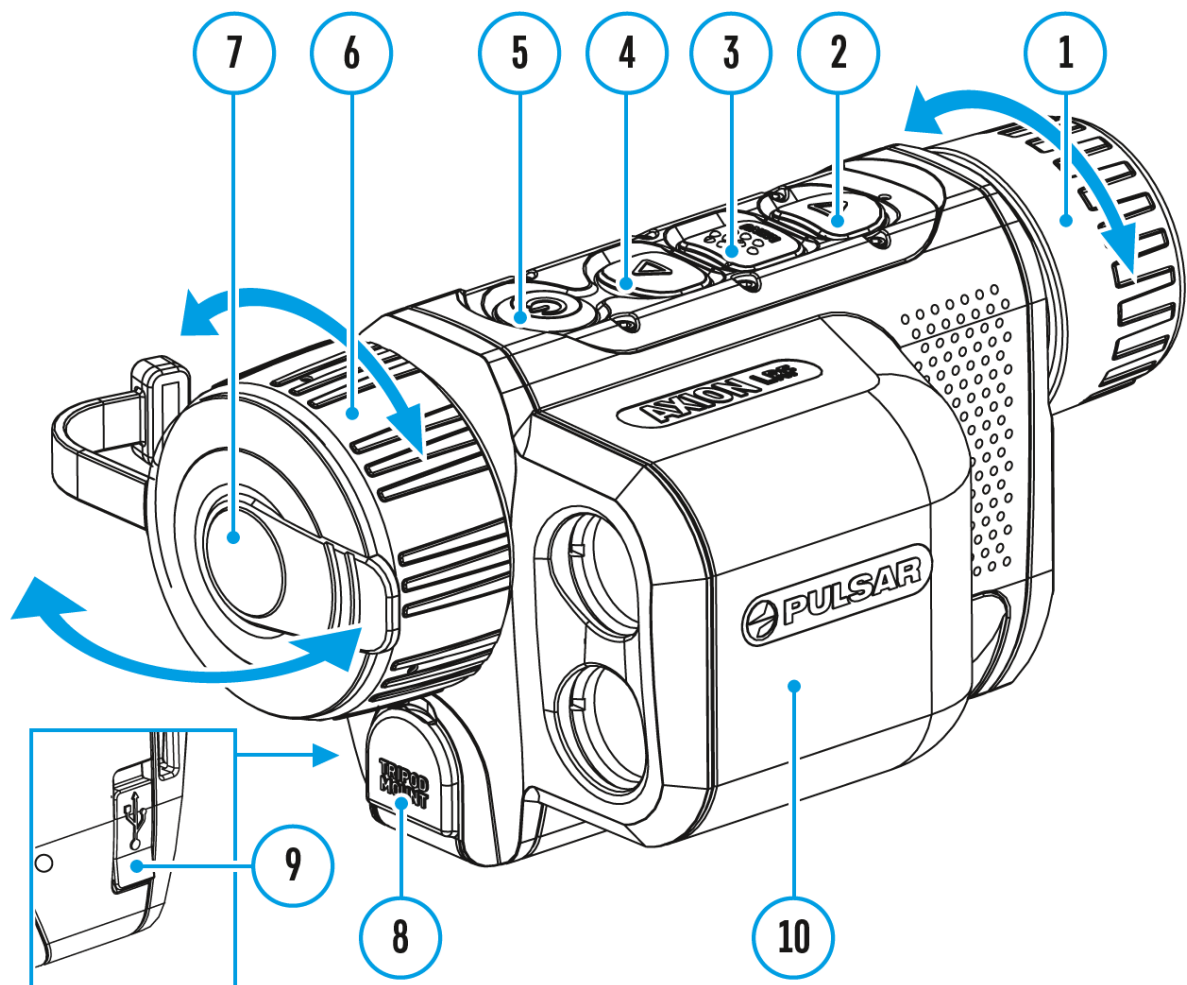
1. Open the lens cover **(7)**. The lens cover can be secured to the strap using the built-in magnet.
2. Press the **ON/OFF (5)**button briefly to turn on the device.
3. Adjust the eyepiece focus ring **(1)** of the device until the symbols on the display are sharp.
4. Rotate the lens focus ring **(6)** to focus on the object being observed.
5. Enter the main menu with a long press of the **MENU (3)** button and

select the desired calibration mode: Manual **(M)**, Semi-Automatic **(SA)** or Automatic **(A)**.

6. Calibrate the image by briefly pressing the **ON/OFF (5)** button**.** If the **SA** or **A** calibration mode has been selected the microbolometer is closed with an internal shutter automatically. However, if the **M** calibration mode has been selected you must close the lens cover before calibrating manually.

7. Select the desired observation mode **(Forest, Identification, Rocks, User)** by briefly pressing the **UP (4)**. User mode allows you to change and save user-defined brightness and contrast settings in the quick menu.

8. Enter the main menu with a long press of the **MENU (3)** button and select the desired color palette (for more details see the **Color Modes** section).

9. Activate the quick menu by briefly pressing the **MENU (3)** button to adjust the brightness, contrast and smooth digital zoom (for more details see the **Quick Menu Functions** section).

10. After use, turn the device off by a long press of the **ON/OFF (5)**

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.

Microbolometer Calibration

Show device diagram
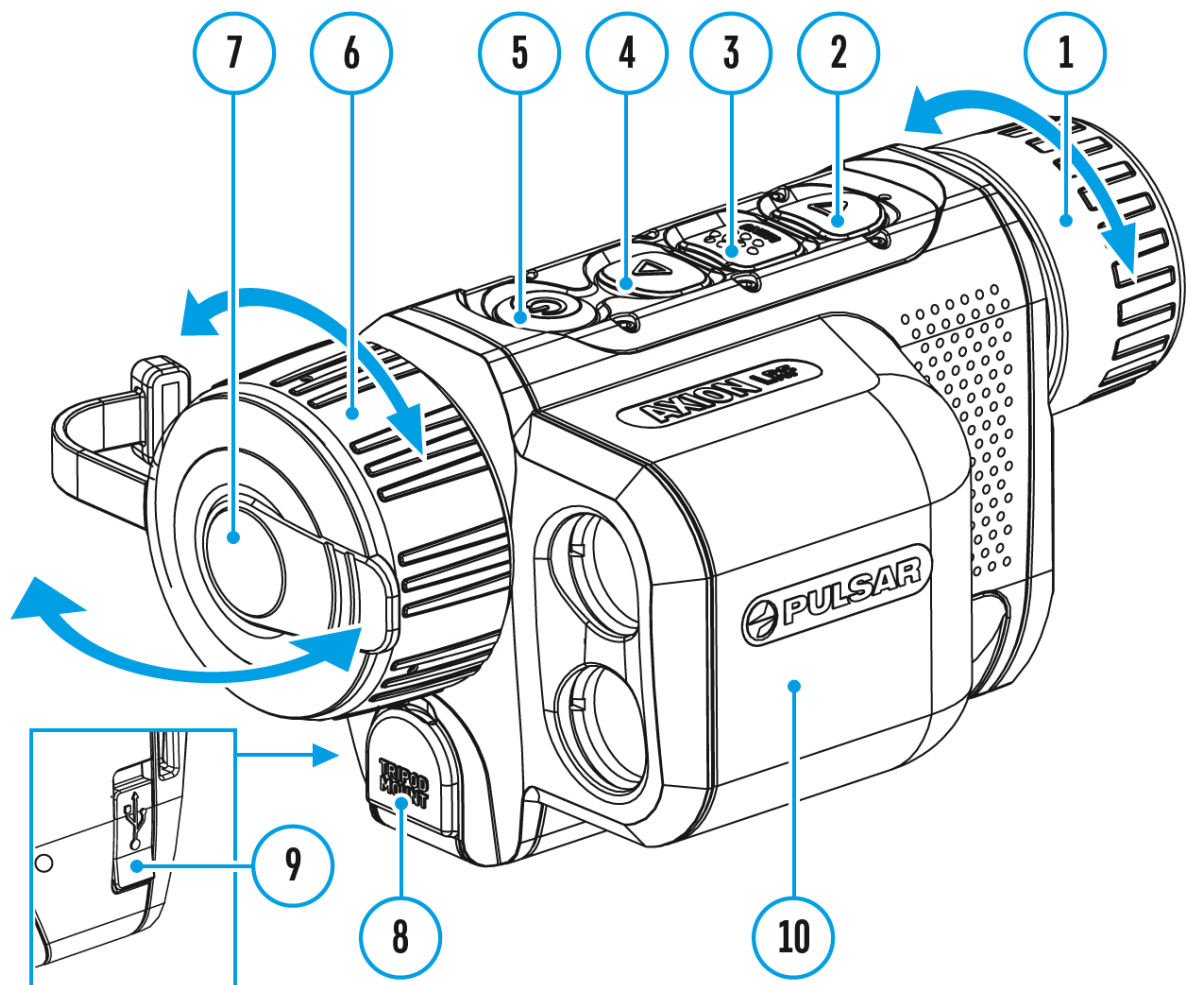
Calibration eliminates image flaws (such as vertical bars, phantom images, grainy field of view, etc.) by equalizing the microbolometer background temperature.

During calibration, the image on the display briefly freezes for up to 1 second.

There are three calibration modes: **Manual (M), Semi-Automatic (SA)**

and **Automatic (A)**.

Select the required mode in the **Calibration Mode** ⬩ menu item.

M mode (Manual).

- Close the lens cover and press the **ON/OFF (5)** button briefly.
- Open the lens cover after the calibration is completed.

SA mode (Semi-Automatic).

- Press the **ON/OFF (5)** 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 (5)** button if required (as in the **SA** mode).
- In Automatic calibration mode a countdown timer ⏱ 00:03 will appear instead of the calibration mode icon 3 seconds before automatic calibration begins.

Discrete Digital Zoom

Show device diagram
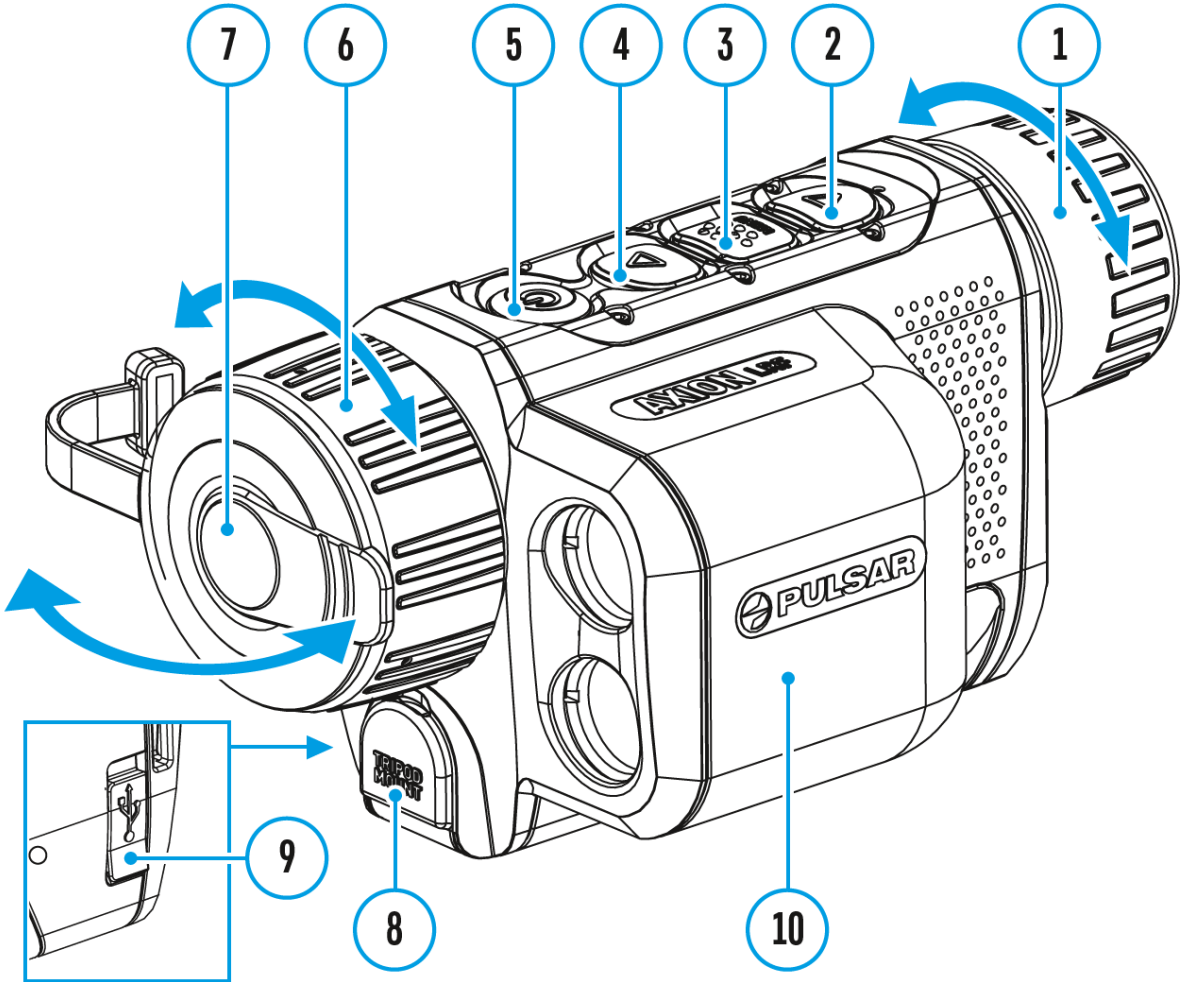
The device functionality allows you to quickly increase the base magnification by 2 or 4 times as well as return to the base magnification.

Press and hold the **UP (4)** button to change the digital zoom.

Status Bar

The status bar at the bottom of the display shows current operating statuses via icons, including:

- Color Mode (shown only when the Black Hot color mode is selected)
- Observation Mode
- Calibration Mode (in Automatic calibration mode a countdown timer ⏱ 00:03 will appear instead of the calibration mode icon 3 seconds before automatic calibration begins).
- Magnification
- Time
- Power Indication:

  - charge level if the device is powered by a battery

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

■ - no battery, the device is connected to an external power supply

Quick Menu Functions

Show device diagram
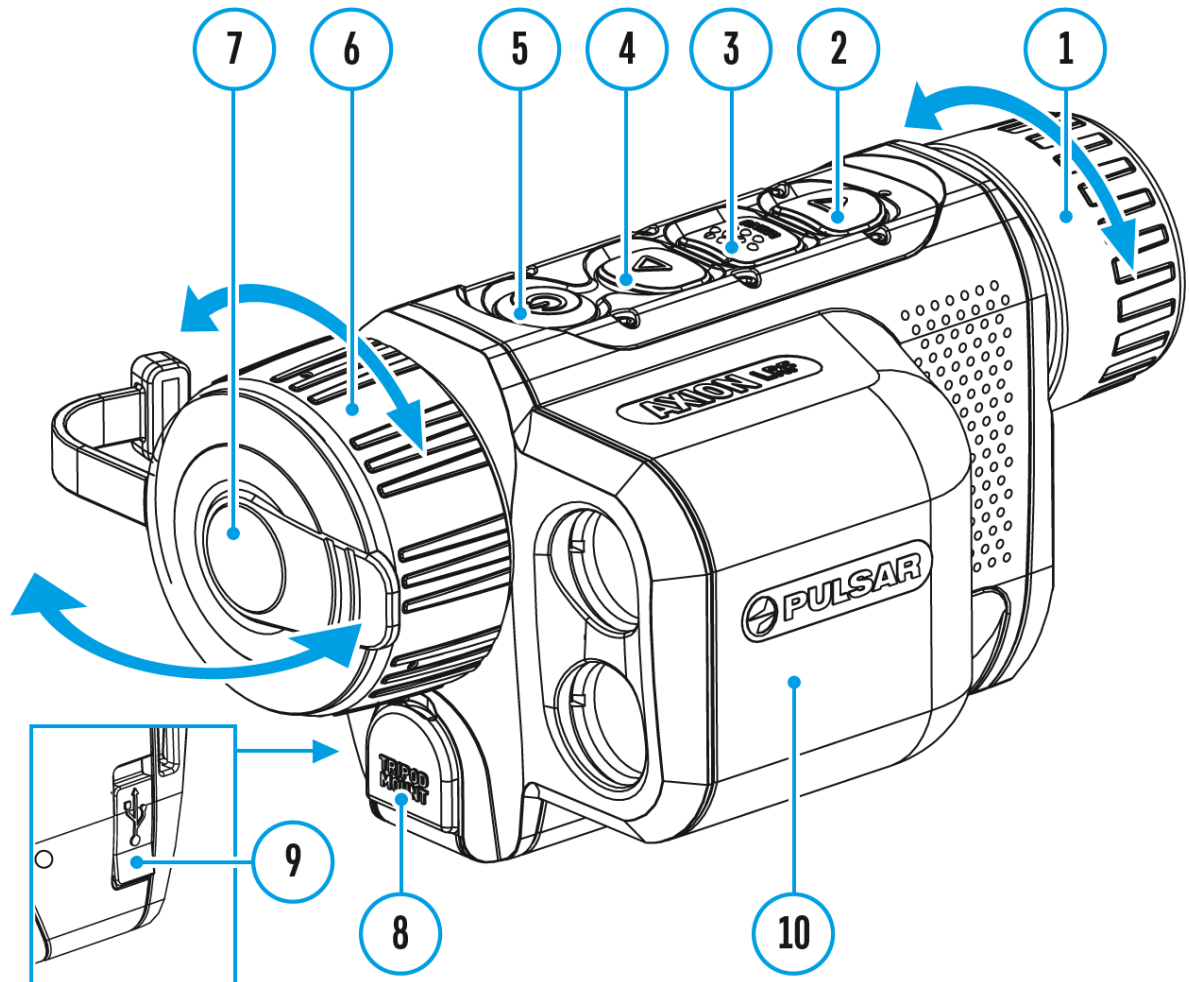
The basic settings (adjusting brightness and contrast, using the Smooth Digital Zoom) can be changed using the quick access menu.

- Enter the menu by briefly pressing the **MENU (3).**
- A short press of the **MENU (3)** button enables you to toggle between functions, as described below.
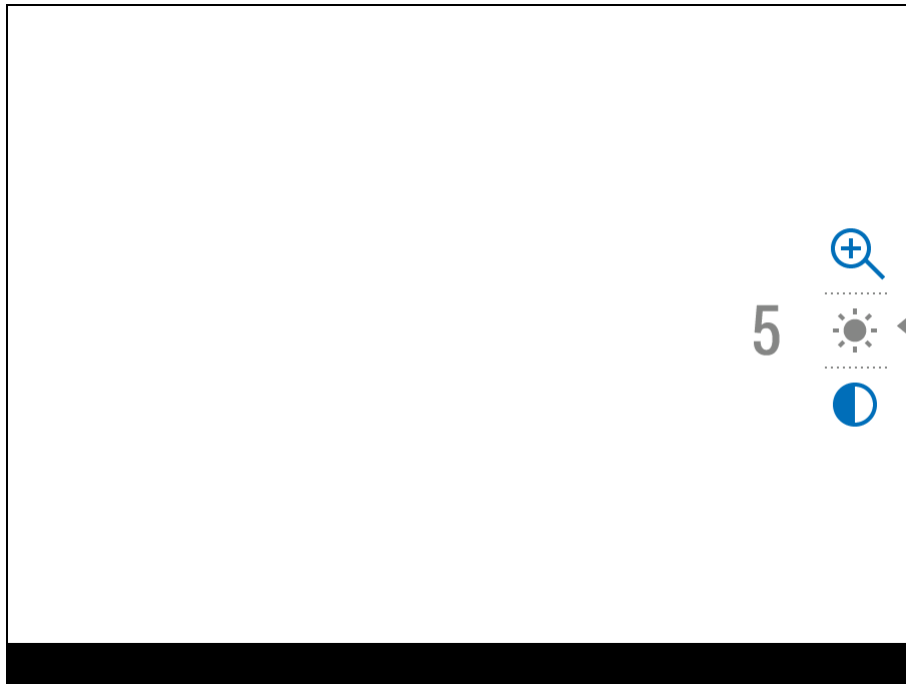
Brightness ☀ – press the **UP (4) / DOWN (2)** buttons to change display brightness from 0 to 20.

Contrast ◑– press the **UP (4) / DOWN (2)** buttons to change image contrast from 0 to 20.

Base Mode 🌲 ⛰ 👁– allows you to select one of the three other observation modes (Forest, Rocks, Identification) as the base for the User mode.

Smooth Digital Zoom ⊕ – press the **UP (4) / DOWN (2)** button to change the value of the digital zoom from 3.5 to 14. The digital zoom changes in 0.1 increments.

- Press and hold the **MENU (3)** button to exit the menu or wait for 10 seconds to exit automatically.

Enter the Main Menu

Show device diagram

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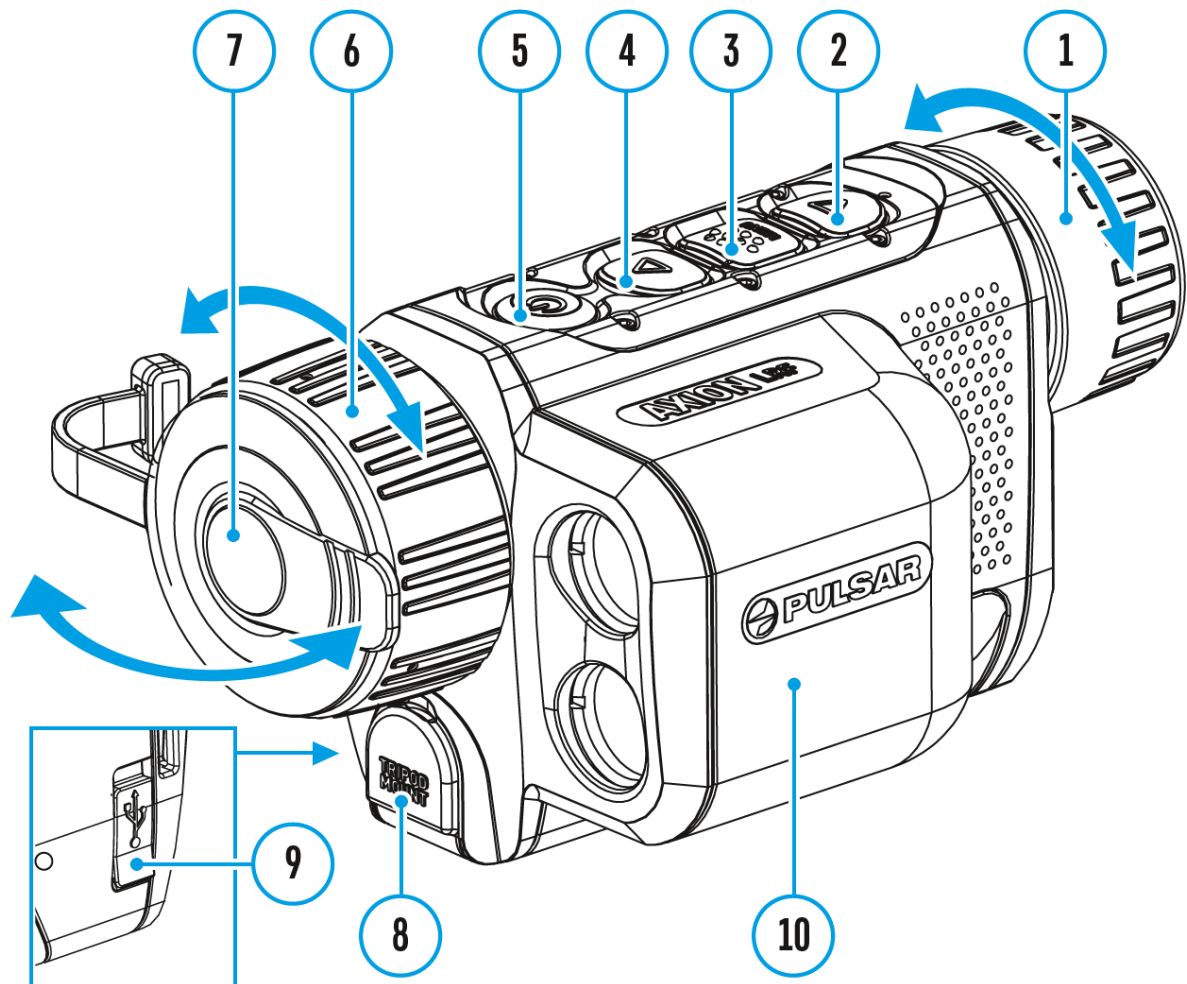
1. Enter the main menu with a long press of the **MENU (3)** button.
2. Press the **UP (4) / DOWN (2)** buttons to move through the menu items.
3. Press the **MENU (3)** button briefly to select the menu item.
4. Press and hold the **MENU (3)** button to exit the menu or wait for 10 seconds to exit automatically.

General View of Menu:

Tab 1

Menu	Mode
●●	

⌄	·····	🌲🌲
▽	·····	(○ On)
🎨	·····	White hot
◢◣◤◢	·····	Automatic
PIP	·····	(Off ○)
▦	·····	10

Tab 2

Menu	General Settings

⚙	›
LRF→	›
⊞	›
ⓘ	

Mode

Show device diagram
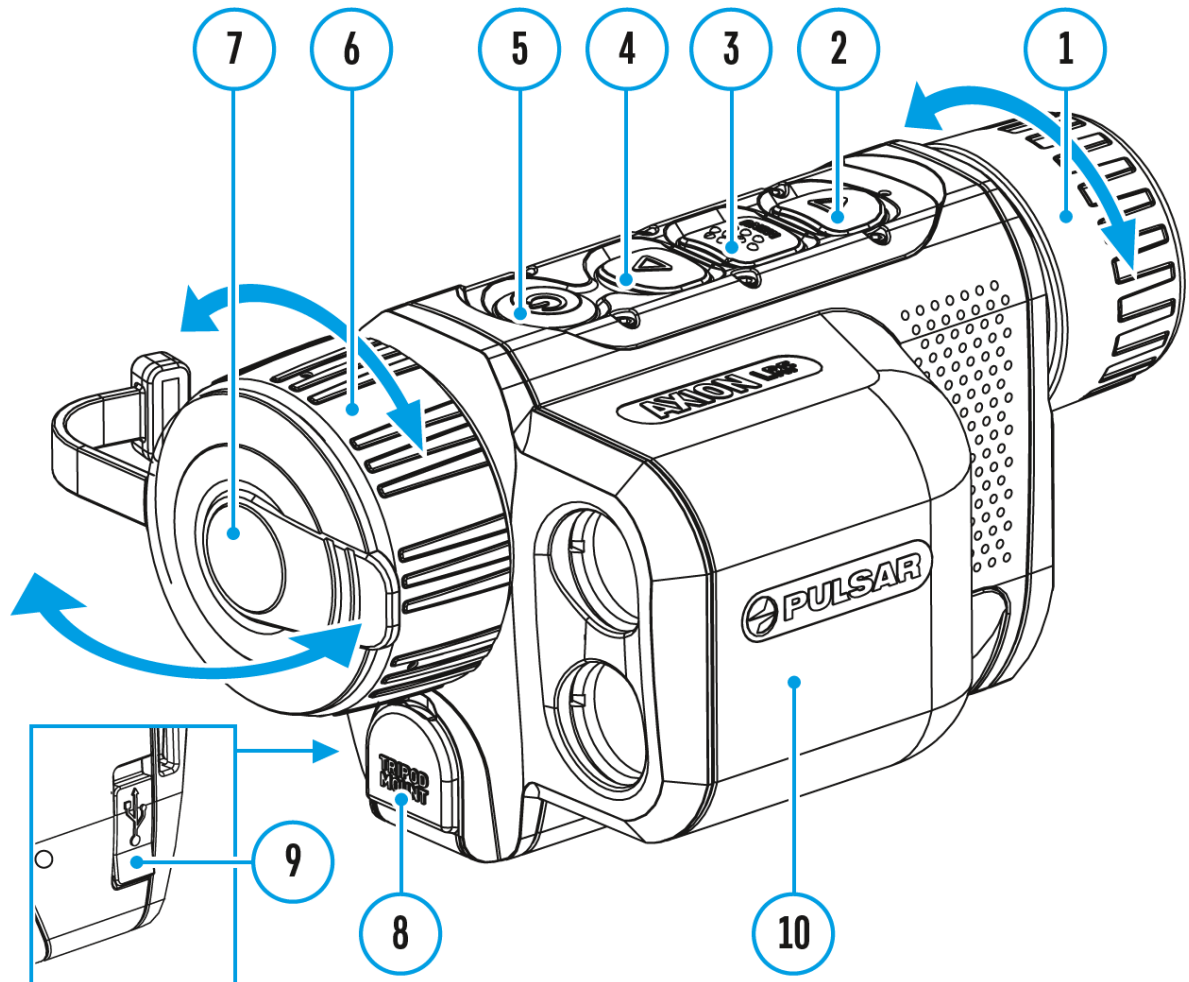
Observation mode selection

There are four observation modes: Forest (mode for low temperature contrast conditions), Rocks (mode for high temperature contrast conditions), Identification (high detail mode), and User (personalized brightness and contrast settings mode).

Option 1:

Press the **UP (4)** button briefly to switch the observation mode

Option 2:

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

🌲 **ForestMode.**The most suitable mode when searching and observing in the field against a background of foliage, shrubs and grass. This mode provides a high level of information on both the observed object and landscape details.

⛰ **RocksMode.**The most suitable mode for observing objects after a sunny day or in urban environments.

👁 **IdentificationMode.**The most suitable mode for observation in adverse weather conditions (fog, mist, rain, snow). It allows the characteristic features of objects to be more clearly recognized. The increased detail may result in a small graininess of the image.

🎛 **User Mode.**It allows you to configure and save custom brightness and contrast settings, as well as one of the three other modes (Forest, Rocks, Identification) as the base.

http:////www.youtube.com/embed/Mnt5c8ZP1PA

Image Detail Boost

Show device diagram
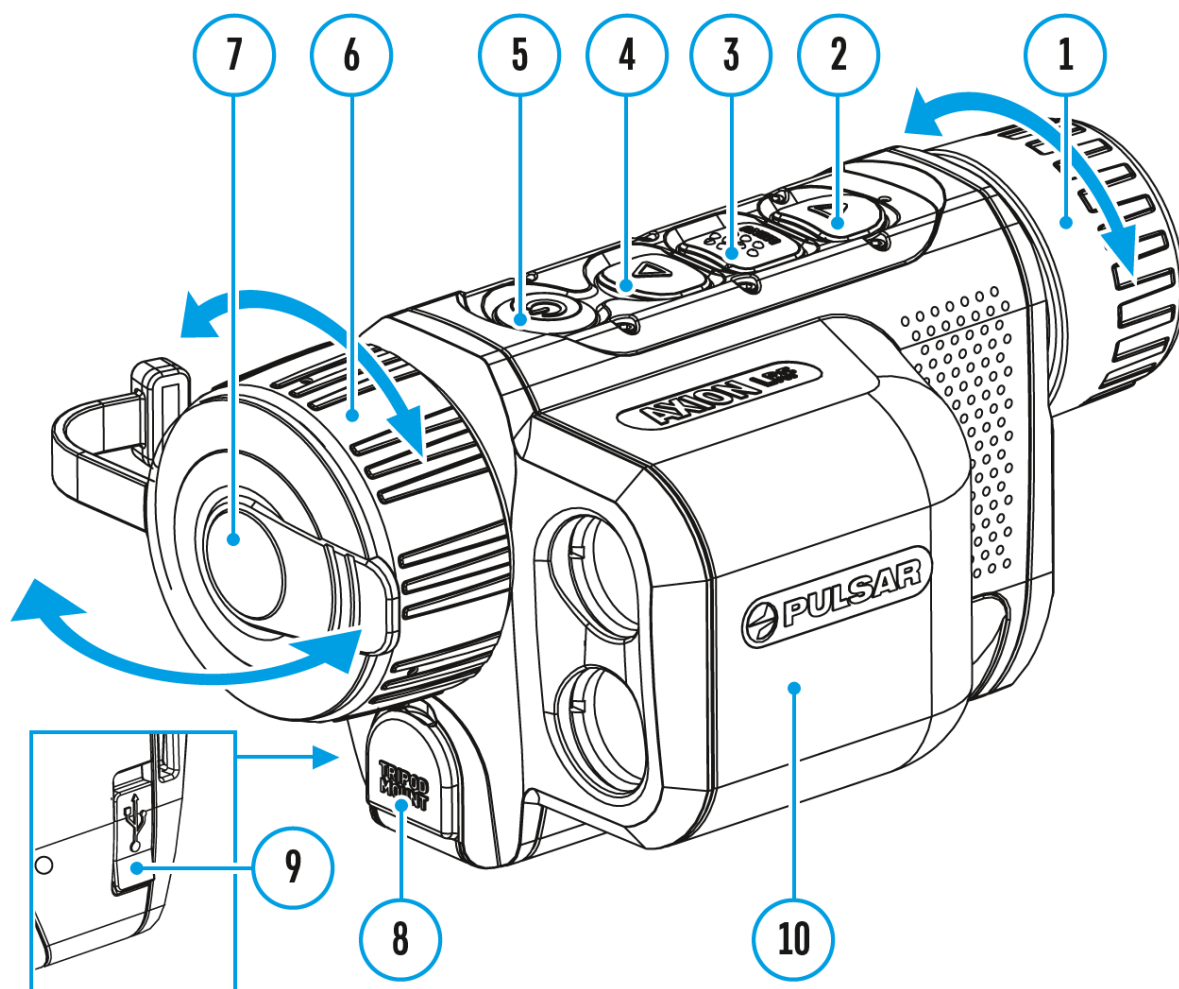
The **Image Detail Boost** ▽ function increases the contour sharpness of heated objects to improve the image detail. The results of the function depend on the selected mode and the observation conditions: the higher the object contrast the more noticeable the effect. This option is enabled by default but can be disabled in the main menu.

Enable/disable Image Detail Boost:

1. Press and hold the **MENU (3)** button to enter the main menu.

2. Use the **UP (4) / DOWN (2)** buttons to select **Image Detail Boost** ▽ icon
3. Press the**MENU (3)** button briefly to turn the function on / off.

Color Modes

Show device diagram

Color palette selection
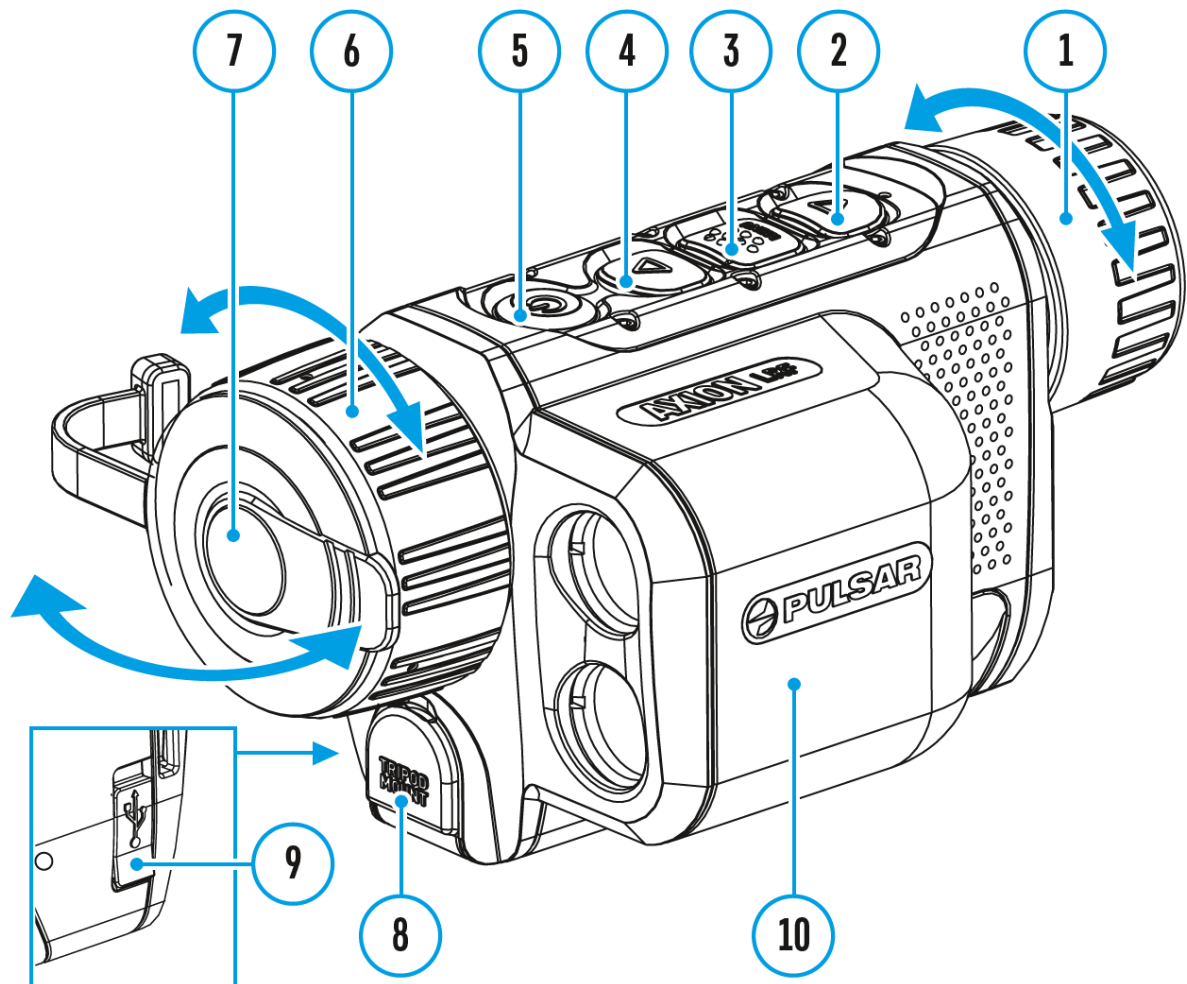
White Hot is the default display mode. To select an alternative palette, do the following:

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select **Color Modes** 🎨 icon .
3. Press the **MENU (3)** button briefly to enter the submenu.
4. Use the **UP (4) / DOWN (2)** buttons to select the desired palette.
5. Press the **MENU (3)** button briefly to confirm the selection.

- **Black Hot**– a black and white palette where white corresponds to cold temperatures and black to hot temperatures.

- **Red Hot**
- **Red Monochrome**
- **Rainbow**
- **Ultramarine**
- **Violet**
- **Sepia**

Calibration Mode

Show device diagram

Calibration mode selection.

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

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select the **Calibration Mode** icon.
3. Press the **MENU (3)** button briefly to enter the submenu.
4. Use the **UP (4) / DOWN (2)** buttons to select one of the calibration

modes described below.

5. Press the **MENU (3)** button briefly to confirm the selection.

Automatic (A). In this mode the firmware determines the need for calibration. The calibration process starts automatically.

Semi-Automatic (SA). The user determines the need for calibration based on the image quality and can act at a convenient time depending on the object being observed.

Manual (M). In the Manual (silent) calibration mode the user determines the need for calibration (as in **SA** mode) but the lens cover must be closed during calibration.

PiP Mode

Show device diagram
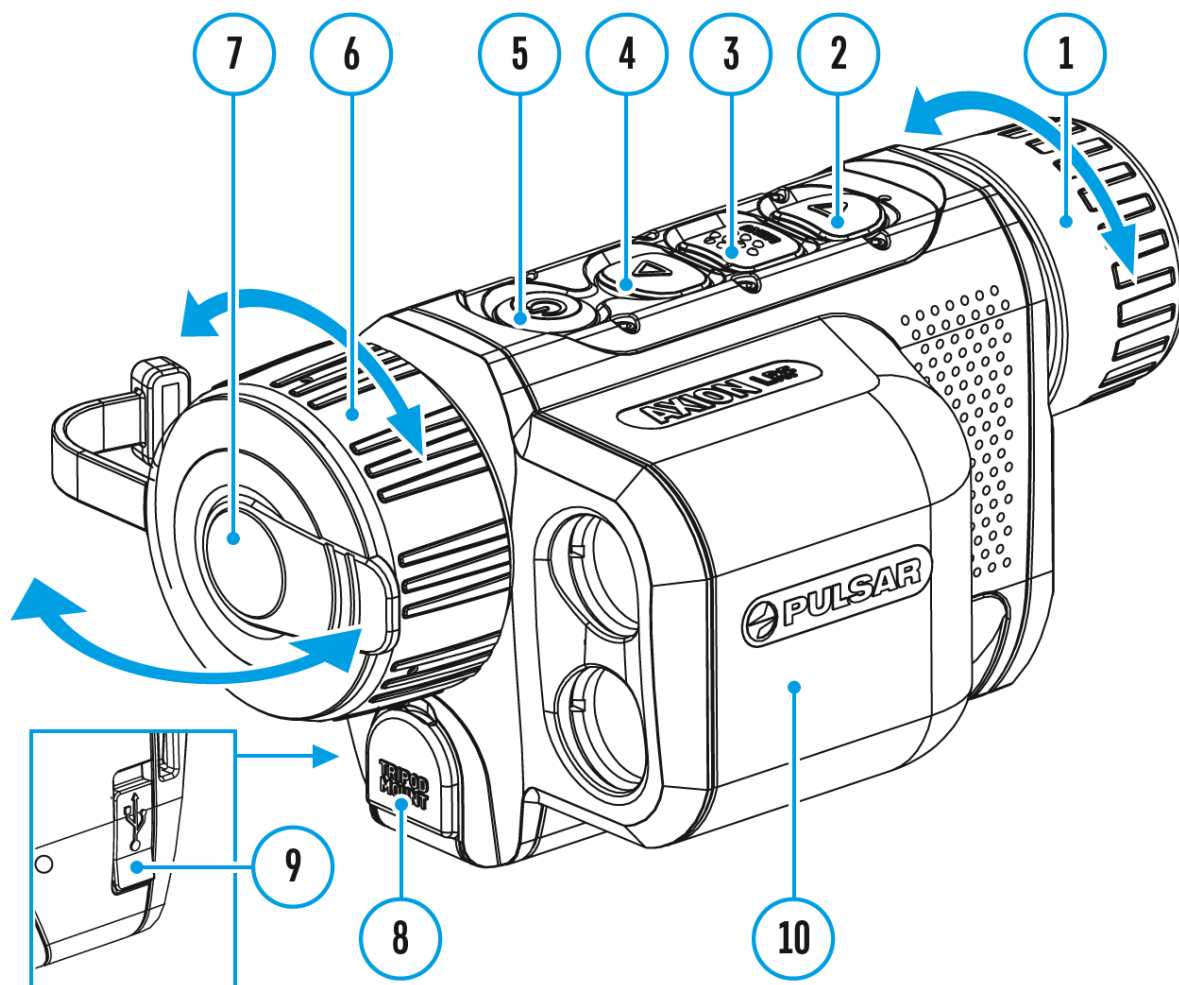
Picture in Picture mode.

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select the **PiP Mode** ⌷ icon .
3. Press the **MENU (3)** button briefly to turn on / off.

Icon Brightness

Show device diagram
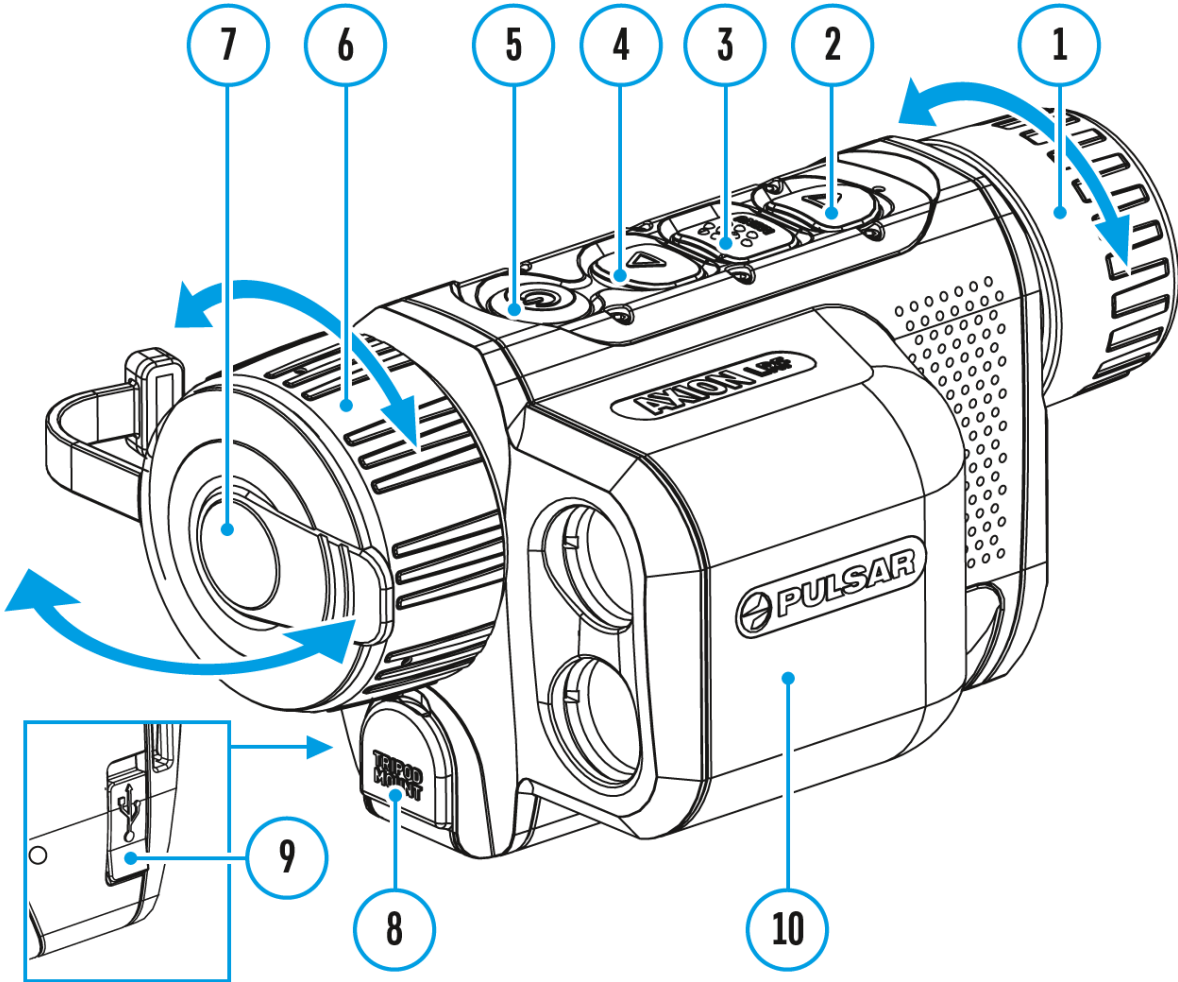
Adjust brightness level of the icons and screensavers (Pulsar, Display off) on the display.
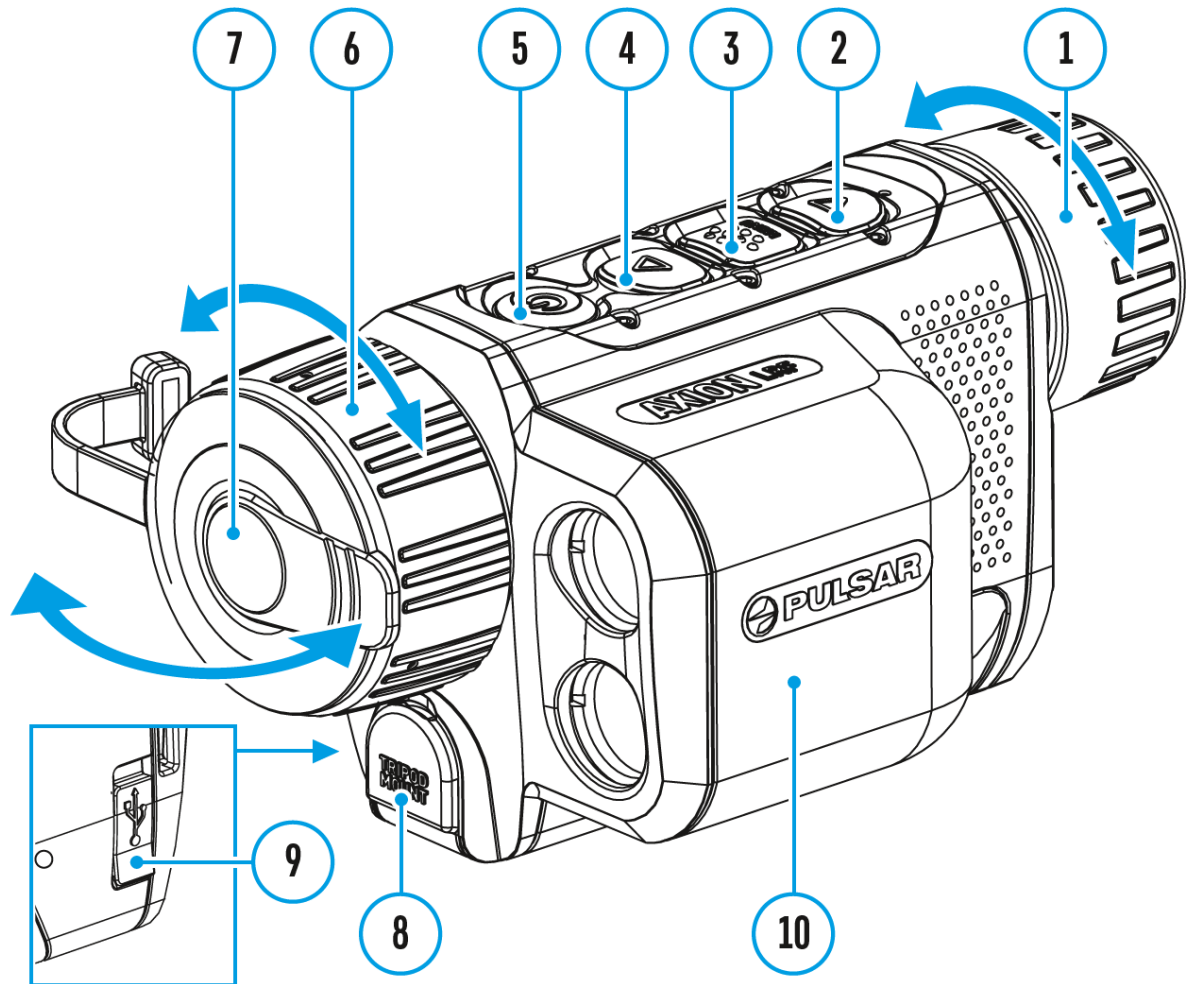
1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select the **Icon Brightness** ⚏ icon.
3. Press the **MENU (3)** button briefly to enter the submenu.
4. Use the **UP (4) / DOWN (2)** buttons to select the desired brightness level from 0 to 10.
5. Press the **MENU (3)** button briefly to confirm the selection.

General Settings

Show device diagram
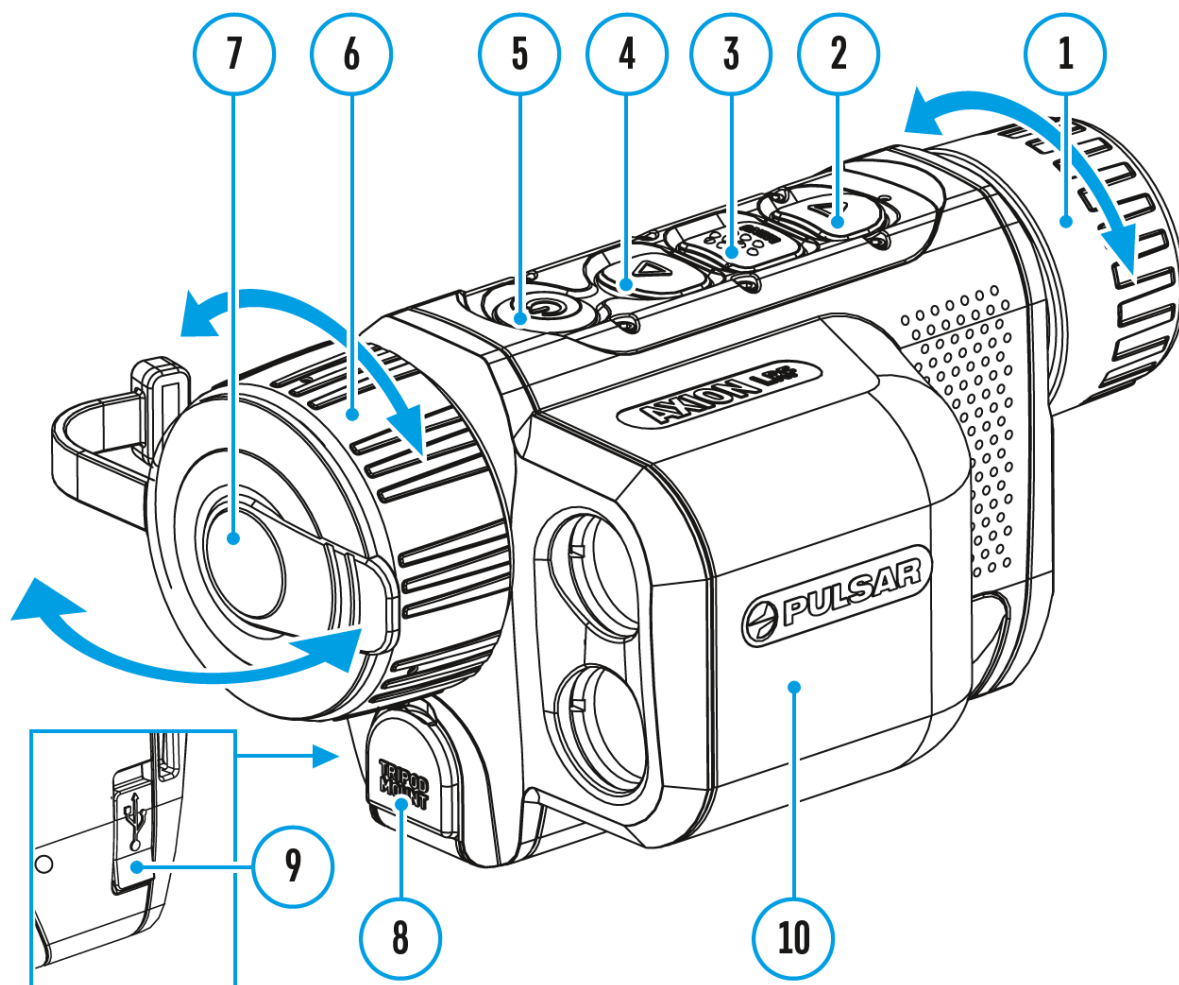
This menu section allows you to change the interface language, set the date, time, units of measure, and also return the device to factory default settings.

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select the **General Settings** ⚙ icon.
3. Press the **MENU (3)** button briefly to enter the submenu.
4. Choose the required menu item with **UP (4) / DOWN (2)** buttons.

Language

Language selection

1. Press the **MENU (3)** button briefly to enter the **Language** 🌐 menu item.
2. Use the **UP (4) / DOWN (2)** buttons to select one of the available interface languages: English, German, Spanish, French, and Russian.
3. Press the **MENU (3)** button briefly to confirm the selection.
4. Press and hold the **MENU (3)** button to save your selection and exit from the submenu.

Date

Date setting

1. Press the **MENU (3)** button briefly to enter the **Date** 📅 menu item.The date is displayed in dd/mm/yyyy format.
2. Use the **UP (4) / DOWN (2)** buttons to select the desired year, month, and date. Press the **MENU (3)** button briefly to toggle between digits.
3. Press and hold the **MENU (3)** button to save the date and exit the submenu.

Time

Time setting

1. Press the **MENU (3)** button briefly to enter the **Time** 🕐 menu item.
2. Select the time format (24-hour clock or AM / PM) by pressing the **UP (4) /DOWN (2).**
3. Press the **MENU (3)** button to select the hours.
4. Press the **UP (4) / DOWN (2)** buttons to select the hour value.
5. Press the **MENU (3)** button to select the minutes.
6. Press the **UP (4) / DOWN (2)** buttons to select the minute value.
7. Press and hold the **MENU (3)** button to save the time and exit the submenu.

Units of Measure

Rangefinder units of measure

1. Press the **MENU (3)** button briefly to enter the **Units of Measure** ⊡ menu item.
2. Press the **UP (4) / DOWN (2)** buttons to select either Meters or Yards as the unit of measure.
3. Press the **MENU (3)** button briefly to confirm your selection.
4. Exit from the submenu will happen automatically.

Default Settings

Factory reset

1. Press the **MENU (3)** button briefly to enter the **Default Settings** menu item.
2. Use the **UP (4) / DOWN (2)** buttons to select **Yes** to restore default settings or **No** to cancel.
3. Confirm your selection with a short press of the **MENU (3)**

- If Yes is selected, display will show **"Do you want to restore default settings?"** and **Yes** and **No** options. Select **Yes** to restore the default settings.
- Selecting the **No** option will cancel the reset and exit the submenu.

The following settings will be returned to their defaults before being changed by the user:

- **Observation Mode** – Forest
- **Calibration Mode** – Automatic
- **Language** – English
- **Magnification** – Standard (without digital zoom).
- **PiP** – Off
- **Color Mode** – White Hot.
- **Units of Measure** – Meters

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

Rangefinder

Show device diagram
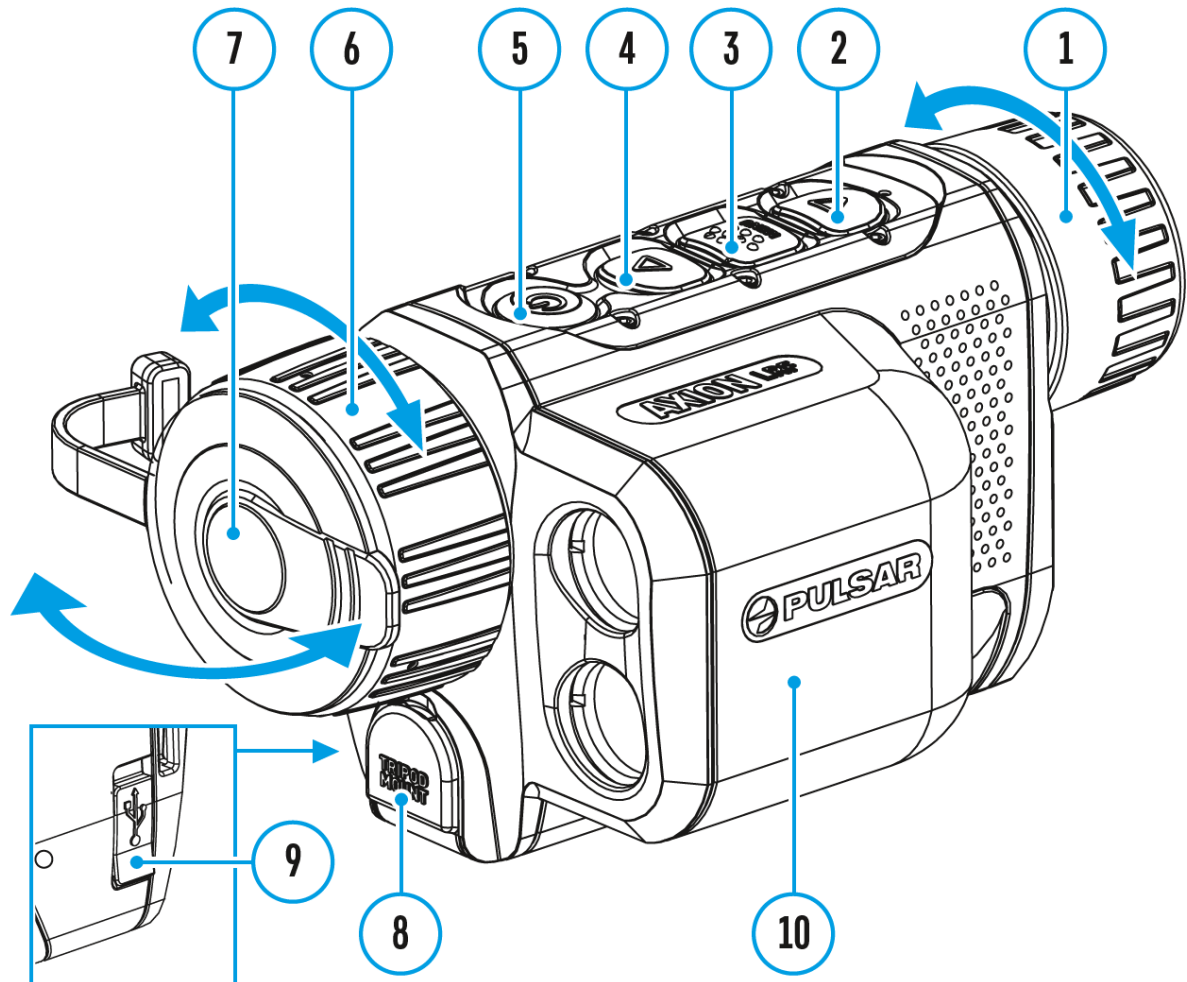
Menu item **Rangefinder** contains settings for the built-in laser rangefinder.

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Select the submenu **Rangefinder** $\underset{\rightarrow}{\text{LRF}}$ with the **UP (4) / DOWN (2)** buttons.
3. Press the **MENU (3)** button briefly to enter the submenu.

Reticle Type

1. Press the **MENU (3)** button briefly to enter the **Reticle Type** submenu.
2. Select one of the three reticle shapes ⏷ ⌐⌐ with the **UP (4) / DOWN (2)** buttons.
3. Confirm selection with a brief press of the **MENU (3)** button.

TPA

This feature allows you to determine the target position angle. When the function is activated the angle is constantly displayed in the upper right corner of the display.

1. Select **TPA** ∠ with the **UP (4) / DOWN (2)** buttons.
2. Turn **TPA** on/off with a short press of the **MENU (3)** button.

THD

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

1. Select **THD** [THD] with the **UP (4) / DOWN (2)** buttons.
2. Turn **THD** on/off with a short press of the **MENU (3)** button
3. Hereinafter the message **THD** will appear above the distance readings.

Device Information

Show device diagram
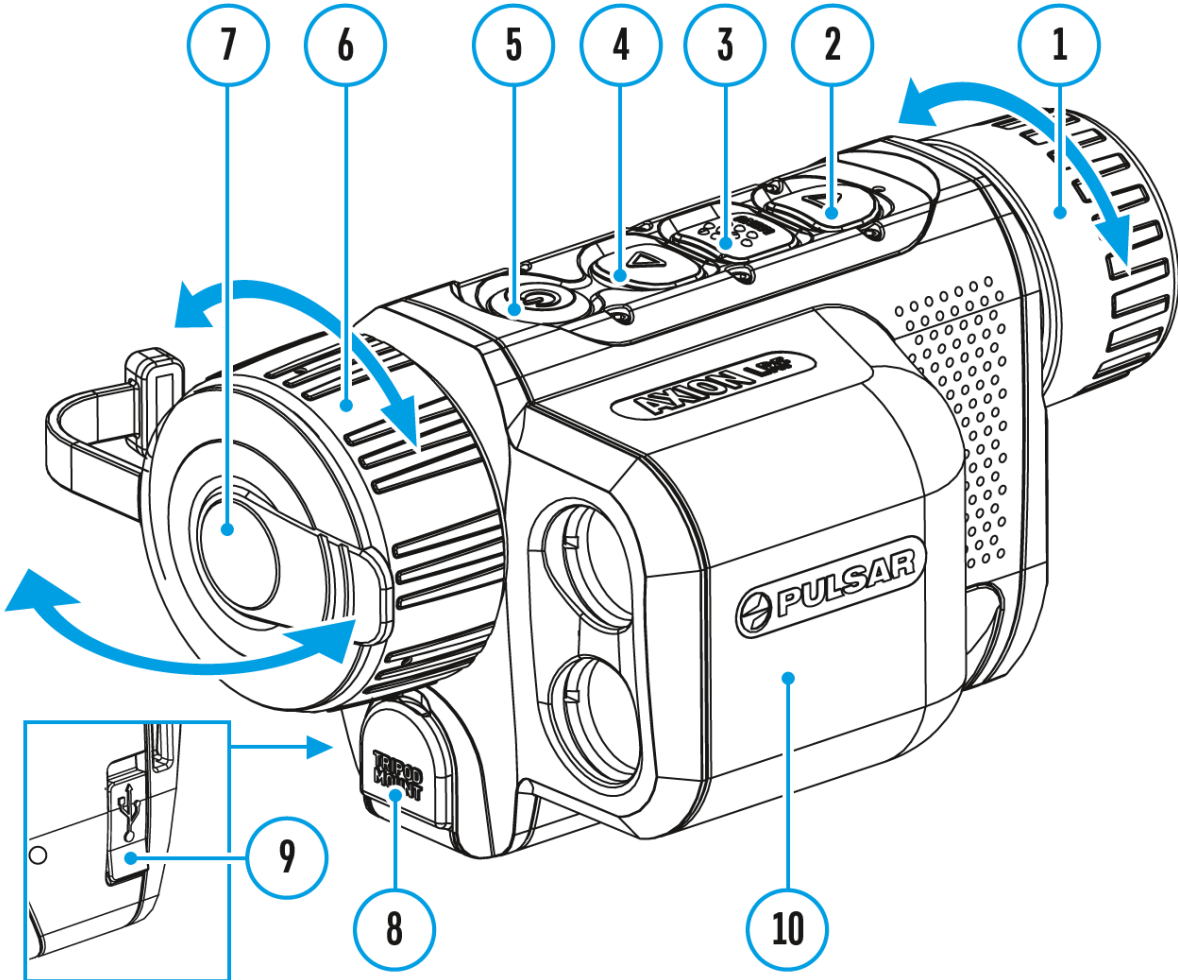
This menu item allows the user to view the following information about the device:

- SKU Number
- Firmware Version
- Device Name
- Hardware Version
- Device Serial Number
- Service Information

To display information, do the following:

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (4) / DOWN (2)** buttons to select the **Device Information** ⓘ icon.
3. Press the **MENU (3)** button briefly to view / exit the information.

Built-In Laser Rangefinder

Show device diagram
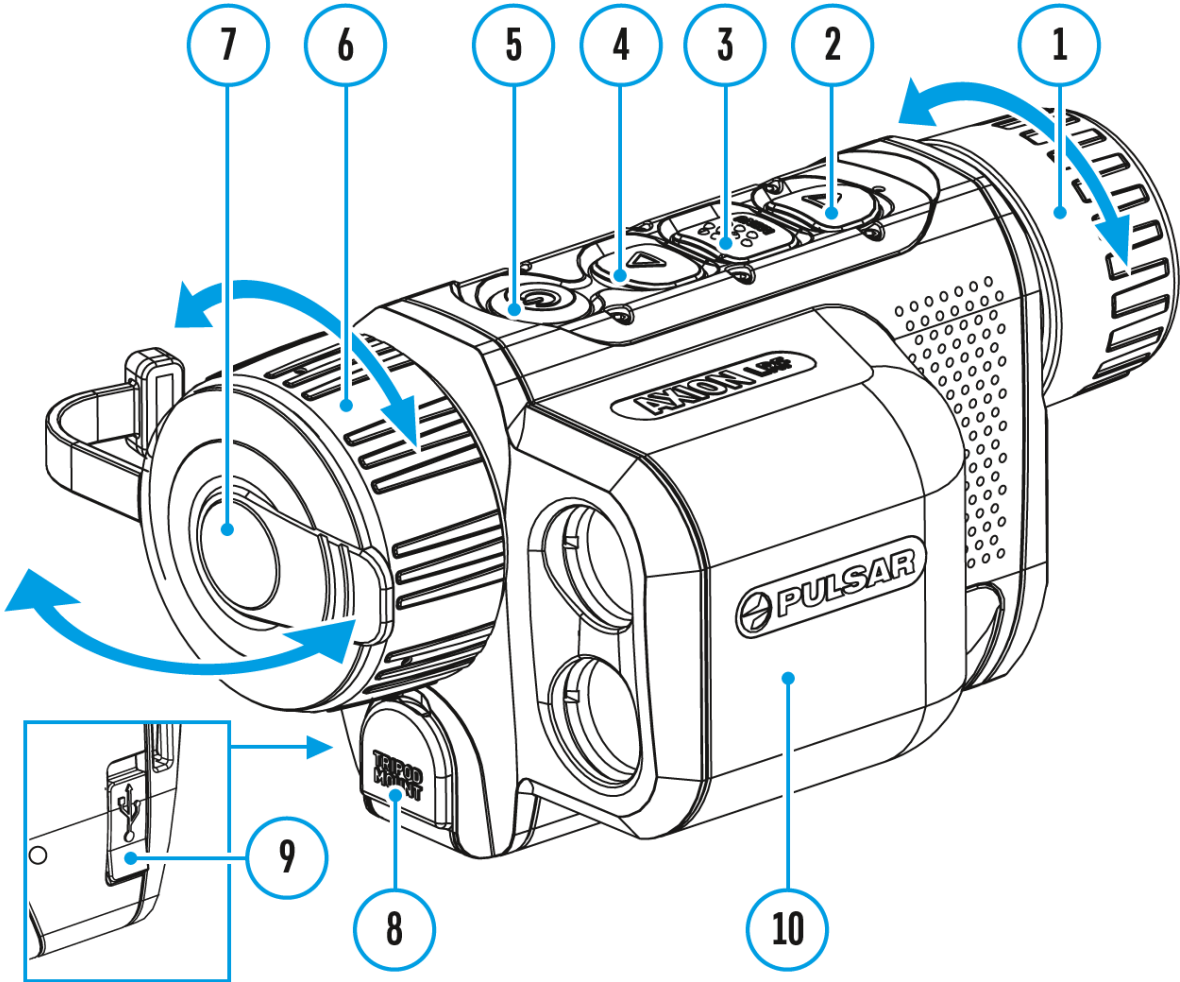
The **Axion XQ LRF**thermal imager is equipped with an integrated laser rangefinder.

125 m
SCAN

[ ]
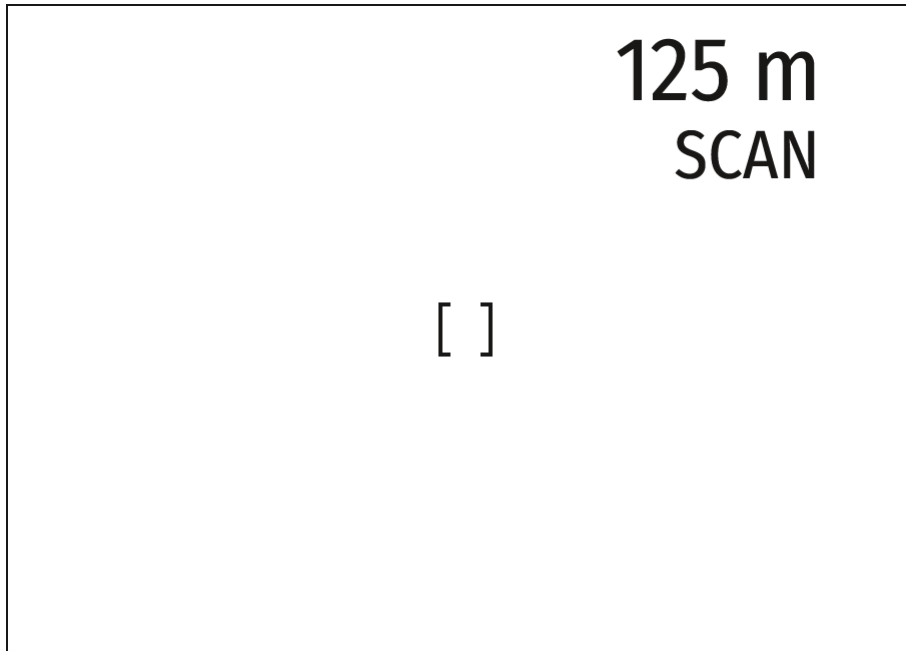
Single Measurement Mode

1. Press the **ON/OFF (5)** button briefly to power the device on.
2. Activate the rangefinder by pressing the **DOWN (2)** button briefly. A red mark appears on the display.
3. Place the rangefinder's reticle on the target. Press the **DOWN (2)** button briefly to measure the distance to the object once.
4. The measurement results are displayed in the upper right corner.
5. The rangefinder shuts down after 3 seconds of inactivity.

Scan Mode

1. Press the **ON/OFF (5)** button briefly to power the device on.
2. Activate the rangefinder by pressing the **DOWN (2)** button briefly. A red mark appears on the display.
3. Activate the scan mode by long pressing the **DOWN (2)** button to continuously measure the distance to objects.
4. The measurement results are displayed in the upper right corner.
5. Deactivate the rangefinder by long pressing the **DOWN (2).**

Notes:

- Additional rangefinder settings are available in the **Rangefinder**section of the main menu.
- To select a unit of measurement (meters or yards) go to **Units of Measure** subsection of the **General Settings** section.
- When you turn on the rangefinder, the **PiP** window turns off.

Additional Information:

- The accuracy and distance of the measurement depends on the reflection coefficient of the object surface and weather conditions. The reflection coefficient depends on the texture, color, size and shape of the object. Generally, lighter colored objects and those with a shiny surface will have a higher reflection coefficient.
- Measurement accuracy can be influenced by the light conditions, fog, haze, rain, snow, etc. The results may be less accurate when operating in sunny weather or if the rangefinder is directed towards the sun.
- It is easier and more reliable to measure the distance to large objects than to small ones.

Display-Off Function

Show device diagram

This function deactivates the image transmission to the display by minimizing its brightness. This allows the user to remain unseen. However, the device stays on.

When this function is in use, the device switches to the standby mode, which allows it to be switched on instantly.
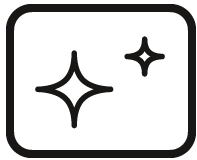
Display off ⏱ 00:03

1. When the device is on, press and hold the **ON/OFF (5)** button for less than 3 seconds. The display goes blank and the message **"Display off"**.
2. Press the **ON/OFF (5)** button briefly to turn on the display.
3. When you press and hold the **ON/OFF (5)** button, the display shows the message **"Display off"** with a countdown. Holding the button down for the duration of the countdown will power the device off completely.

PiP Function

Show device diagram
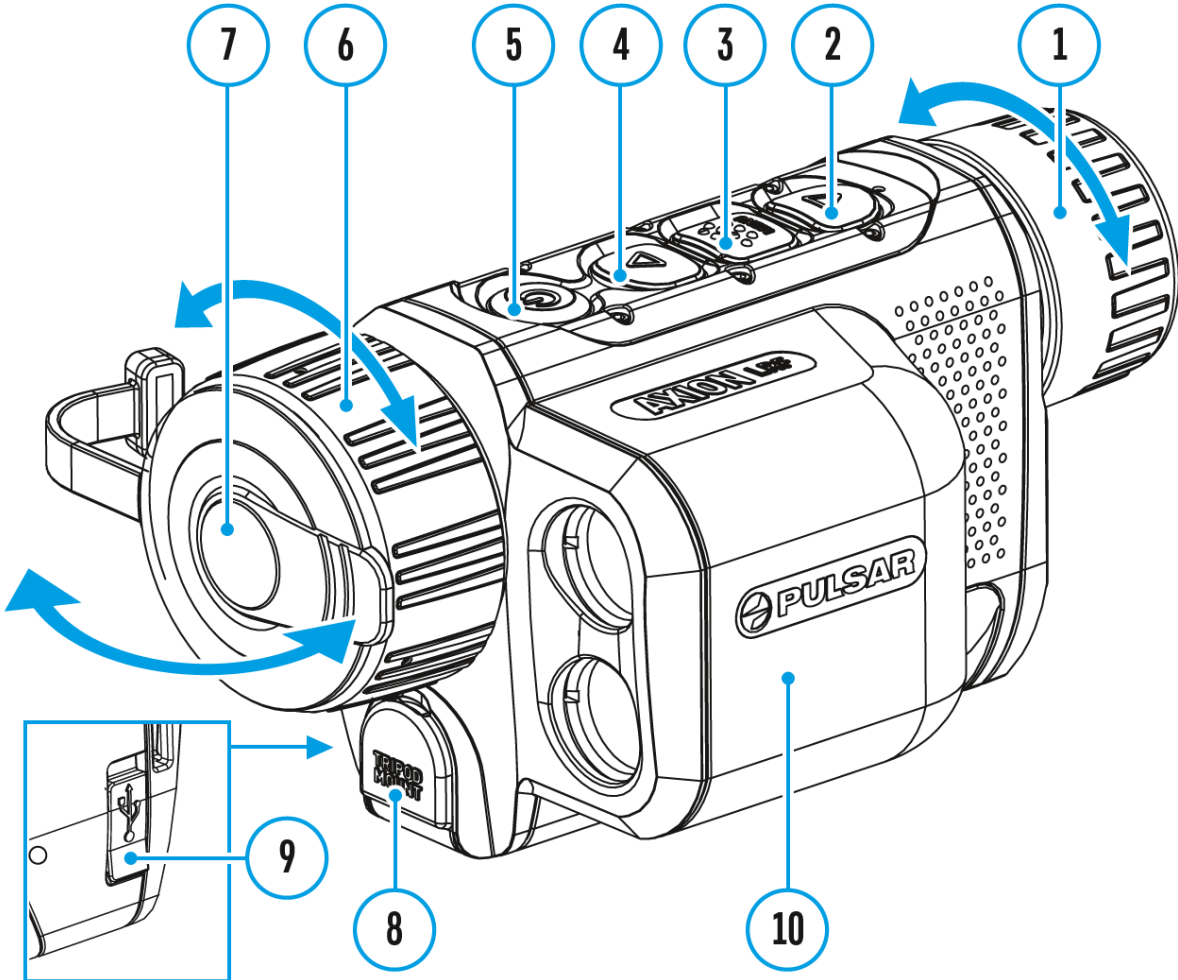
The **PiP** (Picture-in-Picture) function allows you to see both the main image and a magnified image in a dedicated window.

7x

3.5x
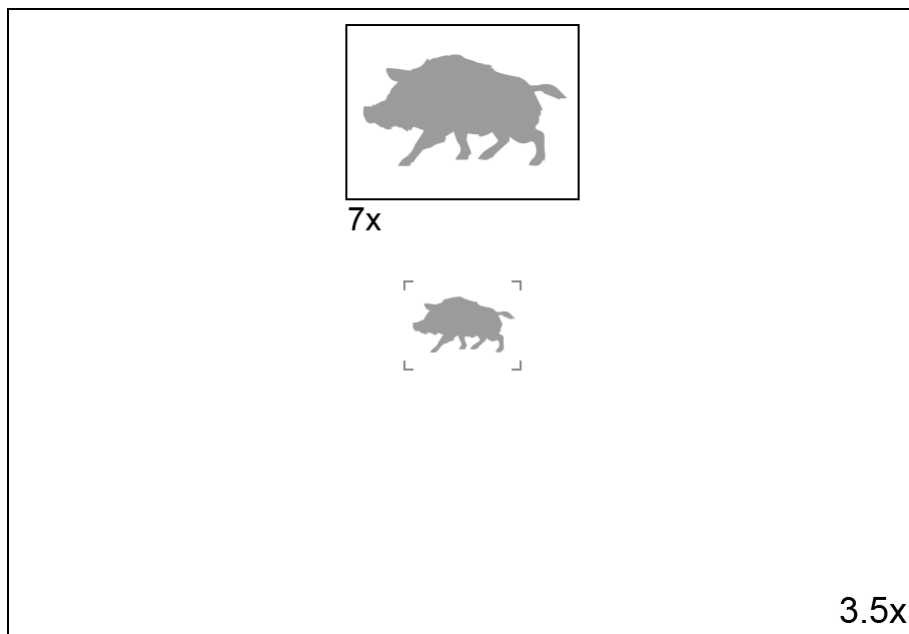
- To turn on and off the **PiP** function see the **PiP Mode** section.
- Press and hold the **UP (4)** button to change the magnification ratio in the **PiP**
- The zoomed image is displayed in a dedicated window, while the image in the rest of the screen is displayed at base magnification (3.5x).
- When the **PiP** is turned on you can control both the discrete and smooth digital zoom. In this case the zoom value changes only take place in the dedicated window.
- When the **PiP** function is turned off, the screen will display at the magnification that was set in **PiP**.

USB Connection

Show device diagram
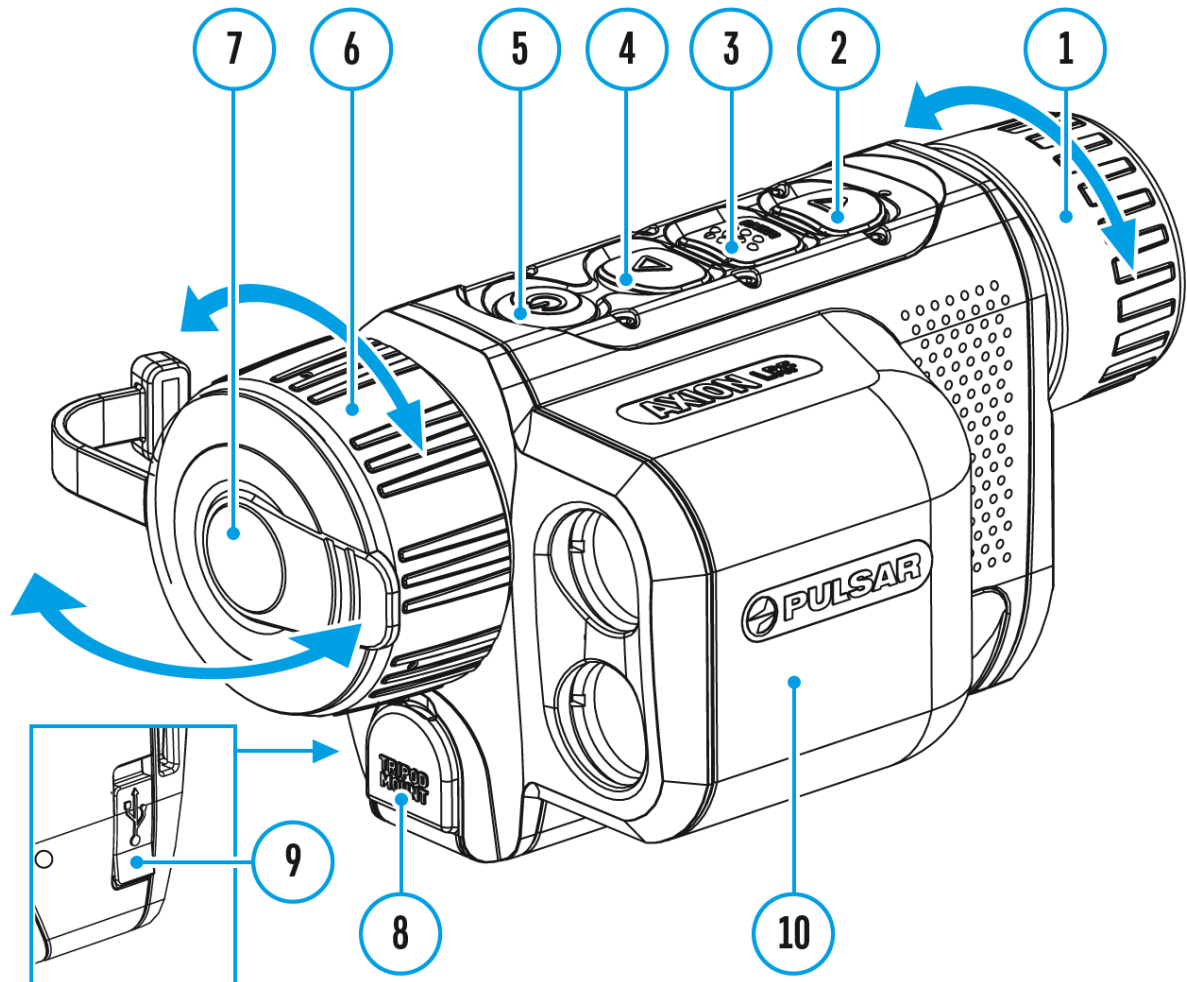
Connecting the device to a computer used as an external power source:

1. Connect one end of the USB cable to the device USB Type-C port **(9)** and the other end to the port on your computer.
2. Switch the device on with a short press of the **ON/OFF (5)**button.
3. With a computer used as an external power supply, the icon ▬◼▬ appears in the status bar. The device will continue operating and all functions are available.
4. The battery installed in the device will not be charged.
5. When disconnecting from the computer, the device will continue to

operate from the APS 5 battery (if it is present and holding enough charge).

Installing the Device on a Tripod
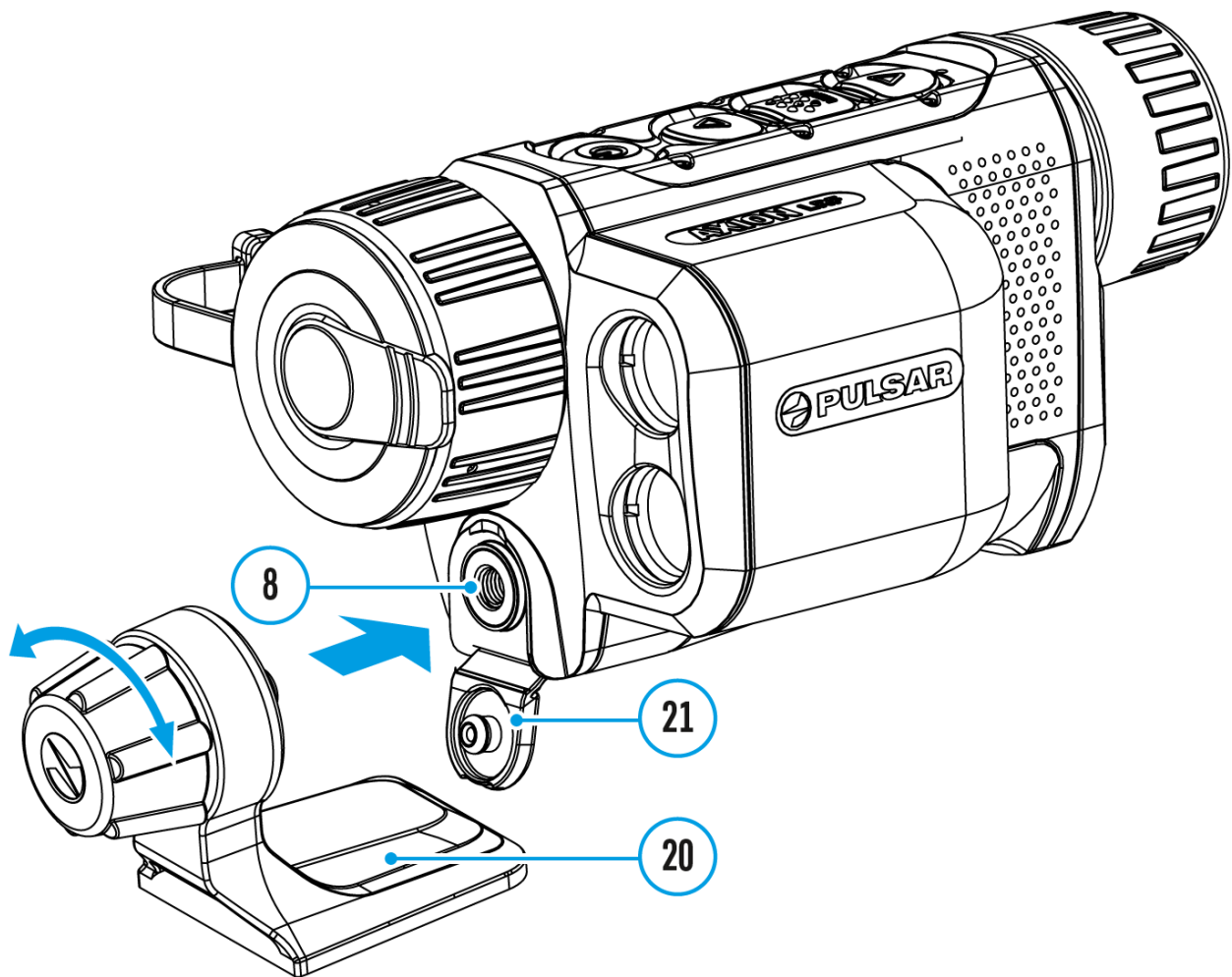
1. Open the cover **(21)** of the socket **(8).**
2. Attach the tripod adaptor **(20)** to the socket **(8).**
3. Rotate the adaptor handle clockwise until it stops.
4. Secure the adaptor with the device on a tripod.

Technical Inspection

It is recommended to carry out a technical inspection before each use of the device. Check the following:

- The device appearance (there should be no cracks on the body).
- The state of the objective, eyepiece and rangefinder lenses (there should be no cracks, grease spots, dirt or other deposits).
- The state of the rechargeable battery (should be charged) and the electric contacts (should be no signs of salts, oxidation or debris).
- The controls should be in working order.

Technical Maintenance and Storage

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

- Wipe the exterior metal and plastic surfaces with a cotton cloth to remove dust and dirt. To avoid damage to the paint coating, do not use chemically active substances, solvents, etc.
- Clean the electrical contacts of the rechargeable battery on the device using a non-greasy organic solvent.
- Check lenses of objective, eyepiece and rangefinder. If necessary, remove the particles of dust and sand (preferably using a non-contact method). Cleaning of the exterior surfaces of the optics should only be done with products specifically designed for this purpose.
- Store the device in a carrying case. 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 battery is completely discharged.

Solution

Charge the battery.

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 from an external power source

Possible cause

The USB cable is damaged.

Solution

Replace the USB cable.

Possible cause

The external power supply is discharged.

Solution

Charge the external power supply (if necessary).

The image is blurry, with vertical stripes or an uneven background

Possible cause

Calibration is required.

Solution

Perform image calibration according to the **Microbolometer Calibration** section of the manual.

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.

Poor quality image. There is noise or ghost images of previous scenes or objects

Possible cause

Manual calibration has been performed with the lens cover open.

Solution

Check the **Calibration Mode**, close the lens cover and **calibrate** the device.

Image is too dark

Possible cause

Brightness or contrast level is too low.

Solution

Adjust the brightness or contrast level in the **Quick Menu.**

Color bars appear on the display or the image disappears

Possible cause

The device was exposed to static charges during operation.

Solution

When the exposure to static charges is over, the device may either reboot automatically or require to be switched off and on again.

The image of the object being observed is missing

Possible cause

You are looking through glass.

Solution

Remove the glass or change the viewing position to avoid it.

Poor image quality / Detection range reduced

Possible cause

These problems may occur during observation in adverse weather conditions (snow, rain, fog, etc.).

The image quality during the device operation at below zero temperatures is worse than at positive temperatures

Possible cause

In positive temperature conditions, objects being observed (surroundings and background) heat up differently because of thermal conductivity, thereby generating a high temperature contrast. Consequently, the image quality produced by the thermal imager will be better.

In low-temperature conditions, objects being observed (background) 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 does 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 1000 m.

Solution

Pick an object at a distance not longer than 1000m.

Possible cause

Low reflection ratio (i.e. leaves of trees).

Solution

Pick an object with higher reflection ratio (see point **Additional Information**in section **Built-In Laser Rangefinder**).

Large measurement error

Possible cause

Inclement weather conditions (rain, mist, snow)

Legal Compliances and Disclaimers

Attention! A license is required for Axion Thermal Imager when exporting outside your country.

Electromagnetic compatibility. This product complies with the requirements of European 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.

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.