Trail 2 LRF

Manual

Content

Specifications

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

XQ50

Model Trail 2 LRF	XQ50
SKU	76518
Microbolometer	
Type	uncooled
Resolution, Pixels	384x288
Frame Rate, Hz	50
Pixel Pitch, µm	17
Optical Characteristics	
Objective Lens	F50 mm, F/1.2
Magnification, x	3.5
Digital Zoom, x	3.5-14
Discrete Digital Zoom	x2/x4
Eye Relief, mm	50
Field of View (H), ° m@100m	7.5 13.1
Diopter Adjustment, D	+3/-5

Range of Detection, (Deer Type Object), m/y	1800/1968
Minimum Focusing Distance, m/y	5/5.5

Reticle

Click Value, mm@100 m (H/V)	13/13
Click Range, mm@100 m (H/V)	2600/2600

Display

Type	AMOLED HD
Resolution, Pixels	1024x768

Power Supply

Battery Type / Capacity / Output Voltage	Li-Ion Battery Pack IPS7 / 6400 mAh / DC 3.7 V
Power Supply	3-4.2 V
External Power Supply	5 V (USB)

Operational Characteristics

Max. Operating Time on Battery Pack (at t=22°C), Hours*	8
Max. Recoil Power on Rifled Weapon, Joules	6000

Max. Recoil Power on Smooth-Bore Weapon, Caliber	12
Level of Protection (acc. to IEC 60529)	IPX7
Operating Temperature, °C / °F	-25…+50 / -13…+122
Dimensions (LxWxH), mm inch	347x102x74 13.66x4.02x2.91
Weight (w/o Batteries, Mount), kg oz	0.8 28.22
Video Recorder	
Video / Photo Resolution, Pixels	1024x768
Video / Photo Format	.mp4 / .jpg
Built-In Memory	16 GB
Built-In Memory Capacity	About 5 h video or > 100 000 pictures
Wi-Fi Channel**	
Frequency	2.4 GHz
Standard	802.11 b/g
Characteristics of the Rangefinder	
Wavelength, nm	905

Measurement Range, m/y**	1000/1094
Measurement Accuracy, m	+/-1

* The actual operating time depends on the intensity of using Wi-Fi, video recorder, laser rangefinder.

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

XP50

Model Trail 2 LRF	XP50
SKU	76519
Microbolometer	
Type	uncooled
Resolution, Pixels	640x480
Frame Rate, Hz	50
Pixel Pitch, μm	17
Optical Characteristics	
Objective Lens	F50 mm, F/1.2
Magnification, x	2
Digital Zoom, x	2-16
Discrete Digital Zoom	x2/x4/x8
Eye Relief, mm	50
Field of View (H), °	12.4
m@100m	21.8
Diopter Adjustment, D	+3/-5
Range of Detection, (Deer Type Object), m/y	1800/1968
Minimum Focusing Distance, m/y	5/5.5
Reticle	

Click Value, mm@100 m (H/V)	21/21
Click Range, mm@100 m (H/V)	4200/4200
Display	
Type	AMOLED HD
Resolution, Pixels	1024x768
Power Supply	
Battery Type / Capacity / Output Voltage	Li-Ion Battery Pack IPS7 / 6400 mAh / DC 3.7 V
Power Supply	3-4.2 V
External Power Supply	5 V (USB)
Operational Characteristics	
Max. Operating Time on Battery Pack (at t=22°C), Hours*	8
Max. Recoil Power on Rifled Weapon, Joules	6000
Max. Recoil Power on Smooth-Bore Weapon, Caliber	12
Level of Protection (acc. to IEC 60529)	IPX7
Operating Temperature, °C / °F	-25…+50 / -13…+122

Dimensions (LxWxH), mm inch	351x102x74 13.82x4.02x2.91
Weight (w/o Batteries, Mount), kg oz	0.8 28.22
Video Recorder	
Video / Photo Resolution, Pixels	1024x768
Video / Photo Format	.mp4 / .jpg
Built-In Memory	16 GB
Built-In Memory Capacity	About 5 h video or > 100 000 pictures
Wi-Fi Channel**	
Frequency	2.4 GHz
Standard	802.11 b/g
Characteristics of the Rangefinder	
Wavelength, nm	905
Measurement Range, m/y**	1000/1094
Measurement Accuracy, m	+/-1

* The actual operating time depends on the intensity of using Wi-Fi, video recorder, laser rangefinder.

** Depends on the characteristics of the object under observation and

environmental conditions.

Description

Thermal imaging riflescopes **Trail 2 LRF** are designed for the use on hunting rifles, both in the nighttime, and in the daylight in inclement weather conditions (fog, smog, rain) to see through obstacles hindering detection of targets (branches, tall grass, thick bushes etc.).

Unlike the image intensifier tube based night vision riflescopes, thermal imaging riflescopes do not require an external source of light and are not affected by bright light exposure.

Trail 2 LRF riflescopes are equipped with a high precision built-in laser rangefinder which allows distance measurement up to 1000 meters.

The **Trail 2 LRF** riflescopes have a wide range of applications including night hunting, observation and terrain orientation, search and rescue operations.

To get started, see the sections:

Battery Charging

Battery Installation

Installation of Mount

Powering on and Image Setting

Zeroing

Microbolometer Calibration

Stream Vision 2

Package Contents

- Trail 2 LRF Thermal Imaging Riflescope
- IPS7 Battery Pack
- Battery charger with mains charger
- Carrying case
- MicroUSB cable
- Mount (with screws and hex-nut wrench(-es))*
- Quick start guide
- Lens cloth
- Warranty card

* The mount may not be included in certain orders.

Features

- Built-in precise laser rangefinder
- High resolution thermal imaging microbolometer
- Rugged and light-weight magnesium alloy housing
- Long detection distance up to 1800 m
- Smooth and discrete digital zoom
- High caliber recoil resistance 12 gauge, 9.3x64, .375 H&H
- High refresh rate 50 Hz
- Zeroing profiles memorization
- Frost resistant AMOLED display
- Built-in video recorder
- Built-in Wi-Fi module
- Quick-change long-life rechargeable battery packs
- "Image Detail Boost" function
- "Picture-in-Picture" mode
- Manual contrast and brightness adjustment
- Variable electronic reticles
- Four operating modes: Forest, Rocks, Identification, User.
- Three calibration modes
- Storing photos and videos in Cloud when using the Stream Vision 2 App

Components and Controls
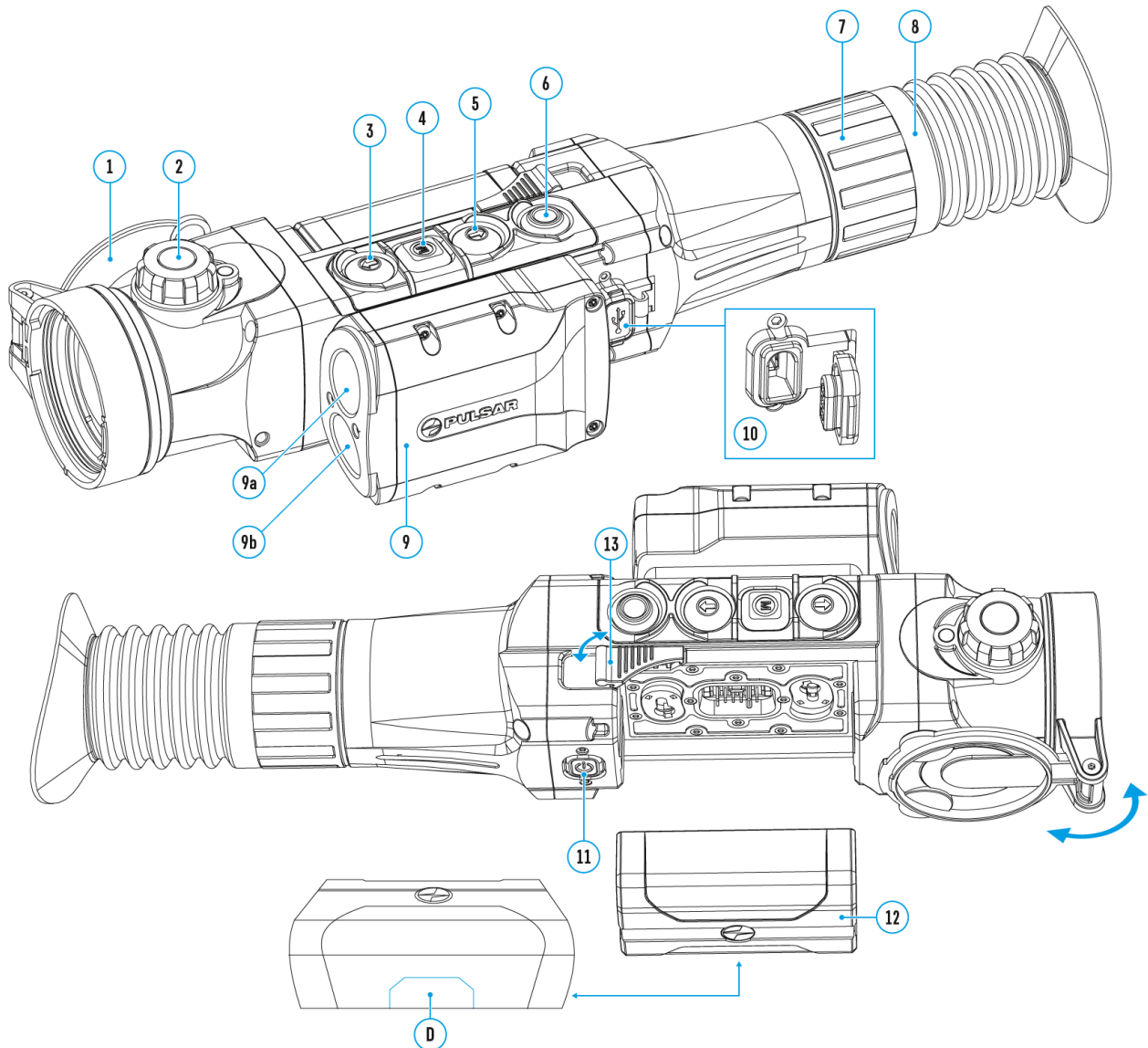
1. Lens cover

2. Lens focusing knob

3. Button UP

4. Button MENU (M)

5. Button DOWN

6. Button REC

7. Diopter adjustment ring

8. Eyeshade

9. Laser rangefinder:

9a. Laser rangefinder's emitter

9b. Laser rangefinder's receiver

10. MicroUSB port

11. Button ON/OFF/Calibration

12. Battery Pack

13. Lever for Battery Pack

Button Operation

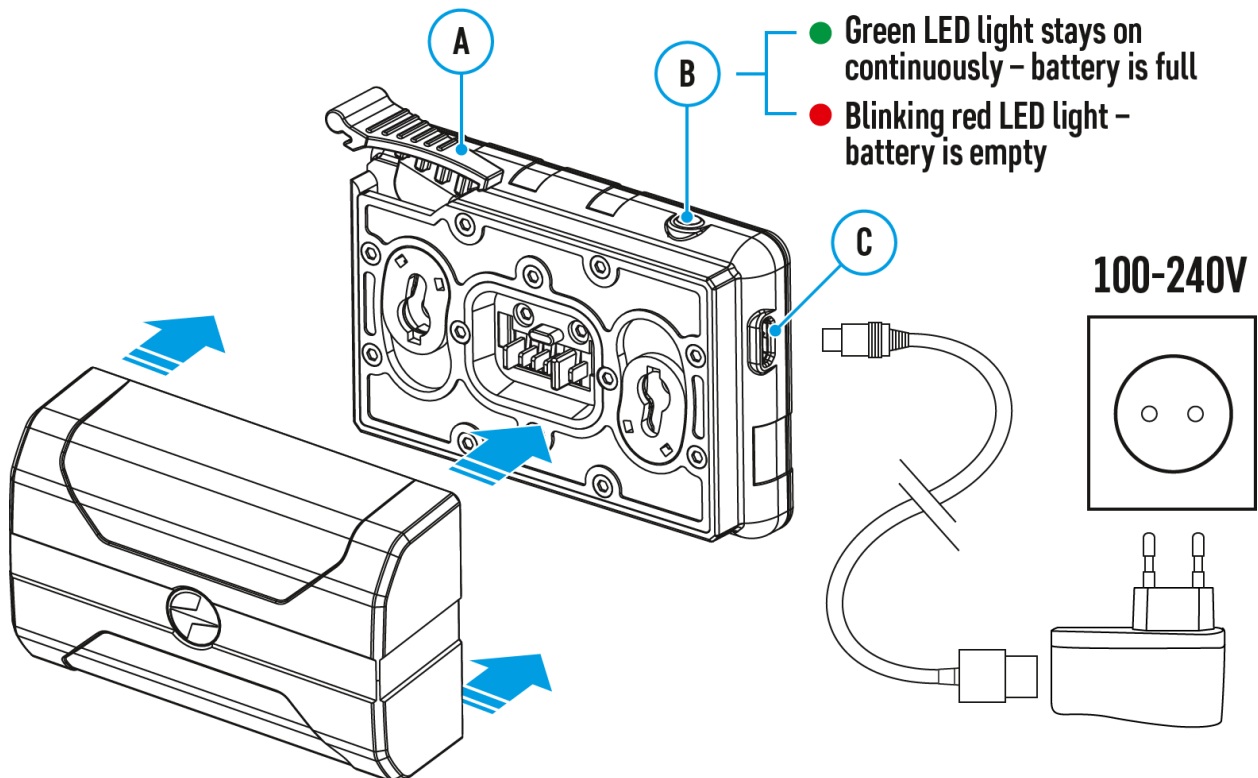| Operation	Button
Power riflescope on	⏻ short press
Power riflescope off	⏻ long press for 3 secs
Turn display off	⏻ long press for less than 3 secs
Turn display on	⏻ short press
Calibrate the microbolometer	⏻ short press
Switch color palettes	↑ short press
Control discrete digital zoom	↓ short press
PiP on/off	↓ short press
Video Recorder	**Button**
Start/pause/resume video recording	○ short press
Stop video recording	○ long press
Switch to video / photo modes	○ long press
Capture Photo	○ short press
Rangefinder	**Button**
Activate rangefinder's stand-by mode	↑ short press
Measure distance	↑ short press (in rangefinder's stand-by mode)
Activate SCAN mode	↑ long press (in rangefinder's stand-by mode)
Deactivate SCAN mode	↑ short press
Main Menu	**Button**

Enter main menu	**M**	long press
Navigation upwards/rightwards	↑	short press
Navigation downwards/leftwards	↓	short press
Confirm selection	**M**	short press
Exit submenu without confirming selection	**M**	long press
Exit menu (switch to viewing mode)	**M**	long press
Quick Menu	**Button**	
Enter quick menu	**M**	short press
Switch between quick menu options	**M**	short press
Increase value	↑	short press
Decrease value	↓	short press
Exit quick menu	**M**	long press

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.
- The batteries should be partially charged (50 to 80 %) for long-term storage.
- Do not charge battery immediately after bringing the battery from cold environment to a warm one. Wait for 30-40 minutes for the battery to get warm.
- Do not leave battery unattended while charging. Never use a modified or damaged charger.
- Charge Battery Pack at a temperature from 0 °C to +45 °C. Otherwise, battery's life will decrease significantly.
- Do not leave Battery Pack with a charger connected to the mains longer than 24 hours after full charge.
- Do not expose battery pack to high temperature or to a naked flame.
- Do not submerge battery in water.
- Do not connect external device with a current consumption that exceeds permitted levels.
- Battery Pack is short circuit protected. However, any situation that may cause short-circuiting should be avoided.
- Do not dismantle or deform Battery Pack. Do not drop or hit the battery.
- When using battery at negative temperatures, battery's capacity decreases, this is normal and is not a defect.
- Do not use battery at temperatures above those shown in the table — this may decrease the battery's life.
- Keep battery out of reach of children.

Battery Charging

Thermal imaging riflescopes are supplied with a rechargeable Li-Ion Battery Pack IPS7 which allows operation for up to 8 hours. Please remember to charge the Battery Pack before first use.

Green LED light stays on continuously – battery is full

Blinking red LED light – battery is empty

100-240V

Charging

Step 1. Install the battery into the charger

1. Lift lever **(A)** of the charger.
2. Remove protective cover from the Battery Pack.
3. Insert the battery into the charger, as shown in the figure,
4. Push the lever **(A)** to full stop.

Step 2. Check the current battery level

- Upon installation, a green LED indicator **(B)** on the charger will start to glow and begin flashing:

- once if the battery charge ranges from 0% to 50%;

- twice if the battery charge ranges from 51% to 75%;

- three times if the battery charge ranges from 75% to 100%;

- If the indicator lights green continuously, the battery is fully charged.
- You can remove the battery from the charger by lifting the lever **(A)**.
- If the indicator of the charger lights red continuously upon battery installation, probably the battery's charge level is lower than acceptable (the battery has been long in deep discharge). Keep the battery in the charger for a long time (up to several hours), remove and re-insert it.
- If the indicator starts blinking green, the battery is good;
- If the indicator keeps lighting red, the battery defective. **Do not use the battery!**

The LED indicator (B) will display the battery charge status:

LED Indicator (B)	Battery Charge Status
☀	Battery is empty
Image not found or type unknown	Battery is full

**Step 3. Connect the charger to the mains supply**

1. To charge the battery, connect the MicroUSB plug of the USB cable to port **(C)** of the charger.
2. Connect the plug of the USB cable to the mains adapter.
3. Plug the mains adapter into a 100 - 240 V socket – the battery charging process will start.

Battery Installation
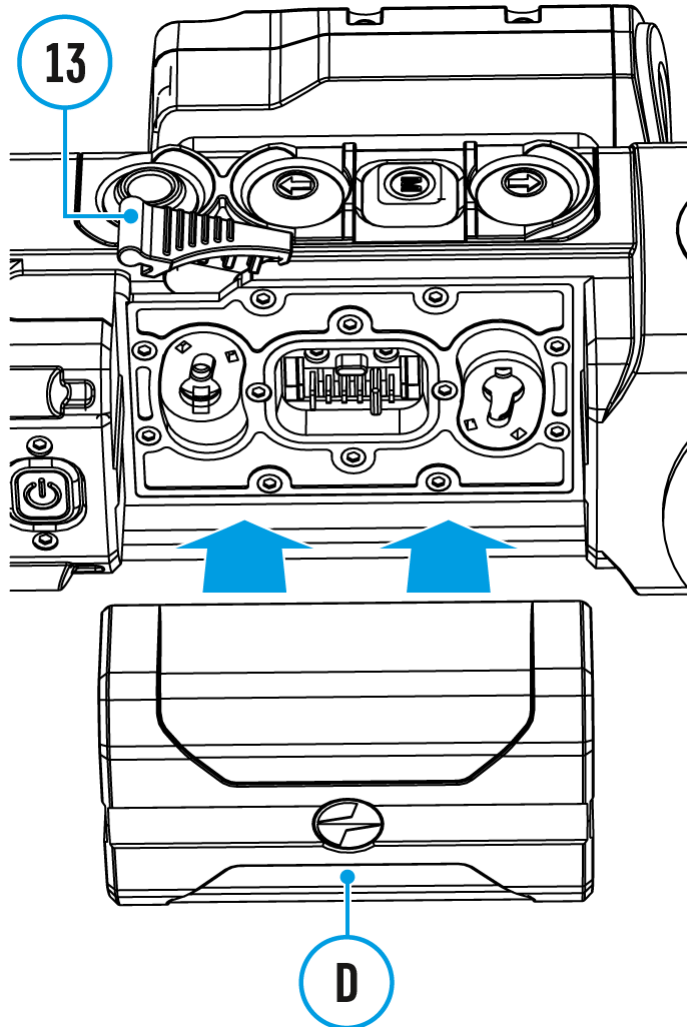
1. Remove protective cover from the Battery Pack.
2. Lift the lever **(13)**.
3. Install the battery into dedicated slot in the riflescope's housing so that element **D** is located below.
4. Lock the battery by pushing the lever **(13)** down.

External Power

Show device diagram
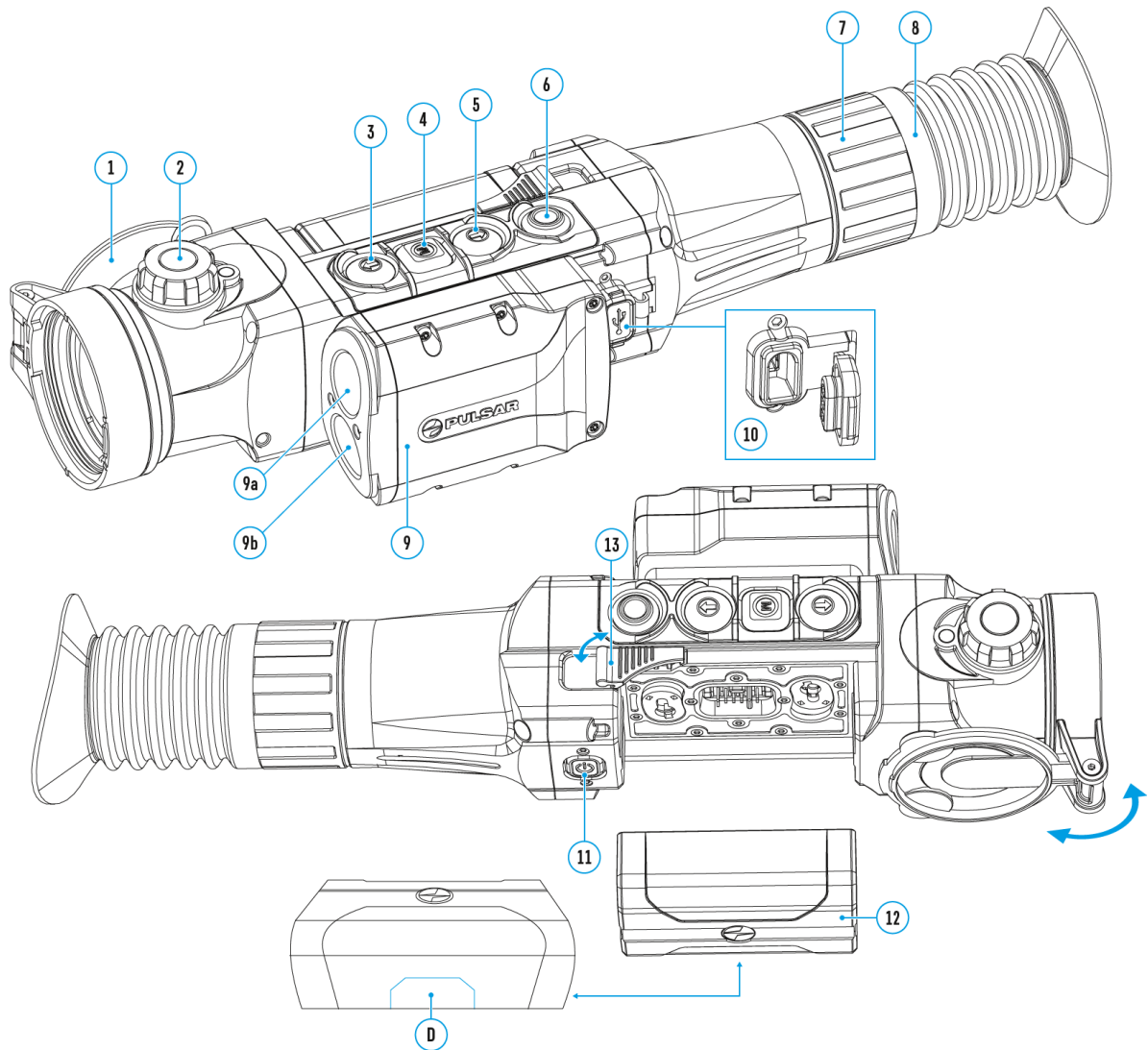
The riflescope can be powered with an external power supply such as Power Bank (5V).

1. Connect external power supply to USB port **(10)** of the riflescope.
2. The riflescope switches to operation from external power supply, and the IPS7 Battery Pack will begin charging slowly.
3. Display will show a battery icon ⚡ with charge level as a percentage.
4. If the riflescope operates on external power supply but the Battery

Pack is not installed, an icon ▬◼꞊ is shown.

5. When external power supply is disconnected, the riflescope switches to the internal IPS7 battery pack without powering off.

Attention! Charging IPS7 batteries from Power Bank at air temperatures below 0 ° C may result in reduced battery life. When using external power, connect Power Bank to the switched-on riflescope, which has worked for several minutes.

Installation of Mount

Before using the riflescope you need to install a mount (may not be included).

14

Position 1: 3 screws

Position 2: 2 screws

Position 3: 2 screws
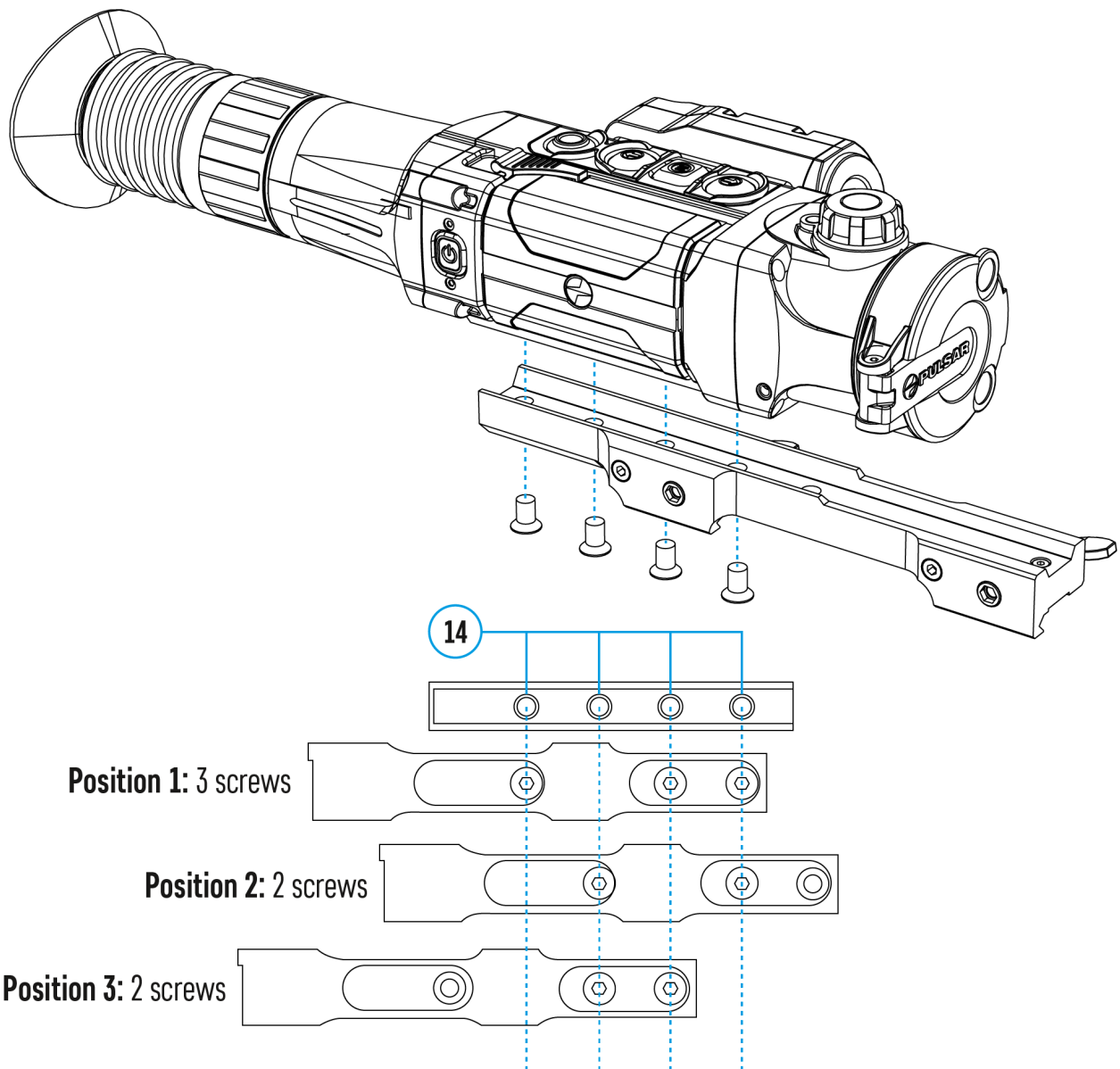
Mounting holes **(14)** in the base of the riflescope enable the mount to be installed in one of the multiple positions. The choice of the mounting position helps the user to ensure correct eye relief depending on rifle type.

1. Attach the mount to the base of the riflescope using a hex-nut wrench and screws.
2. Install the riflescope on the rifle and check if the position is suitable for you.
3. If you are happy with its position, remove the riflescope, unscrew the screws halfway, apply some thread sealant onto the thread of the screws and tighten them fully (do not overtighten). Let the sealant dry for a while.
4. The riflescope is ready to be installed on the rifle and to be zeroed.
5. After first installation of your riflescope on a rifle, please follow instructions in section **Zeroing**.

Warning!Do not point objective lens of unit at intensive sources of light such as riflescope emitting laser radiation or the sun. This may render electronic components inoperative. Warranty does not cover damage caused by improper operation.

Rifle Mounts Cataloguehttp:////e.issuu.com/embed.html?d=2020_pulsar_digital_a

Powering on and Image Settings

Show device diagram
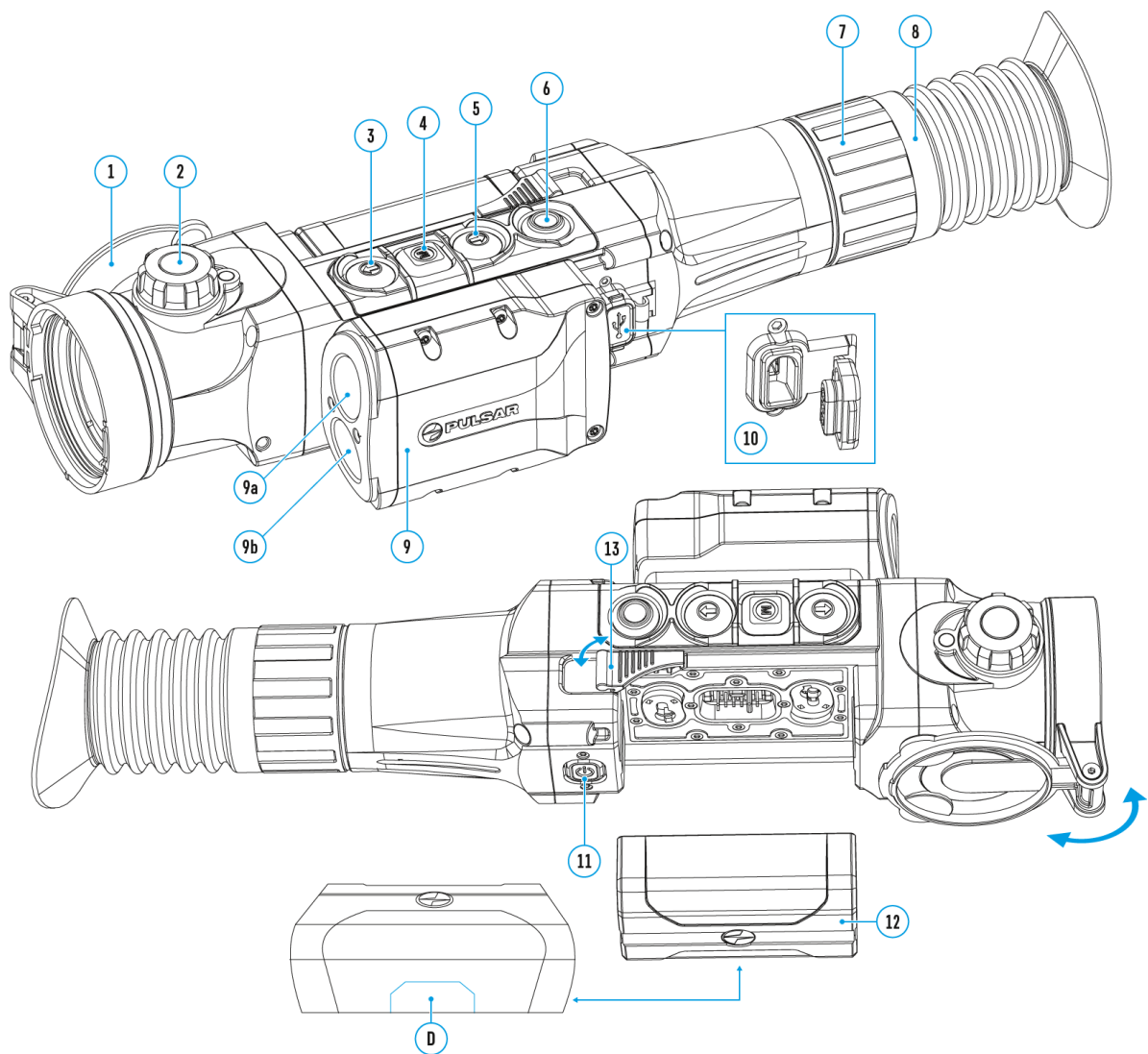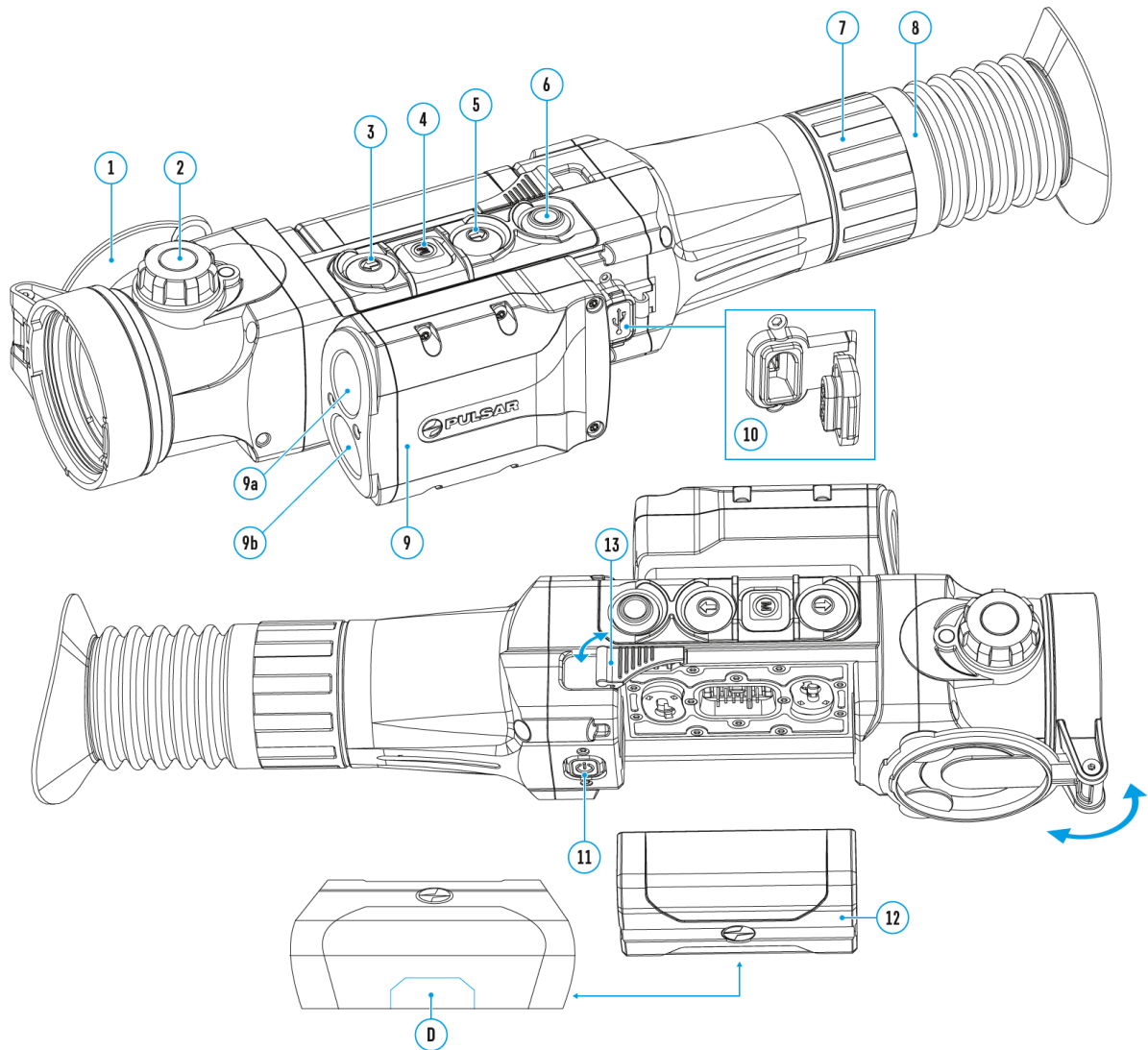
1. Open lens cover **(1)**.
2. Turn the unit on with a short press of **ON/OFF (11)** button.
3. To obtain a crisp image of icons on display, rotate diopter adjustment ring **(7)**. After this there is no need to rotate the diopter adjustment ring for distance or any other conditions.

4. To focus on an object being observed rotate lens focusing knob **(2)**.
5. To set up display brightness and contrast and smooth zoom, please refer to the section **Quick Menu Functions**.
6. After use, hold down **ON/OFF (11)** button to turn the riflescope off.

How to zero

Show device diagram

Zeroing is recommended to be done at the temperature close to the riflescope operating temperature.
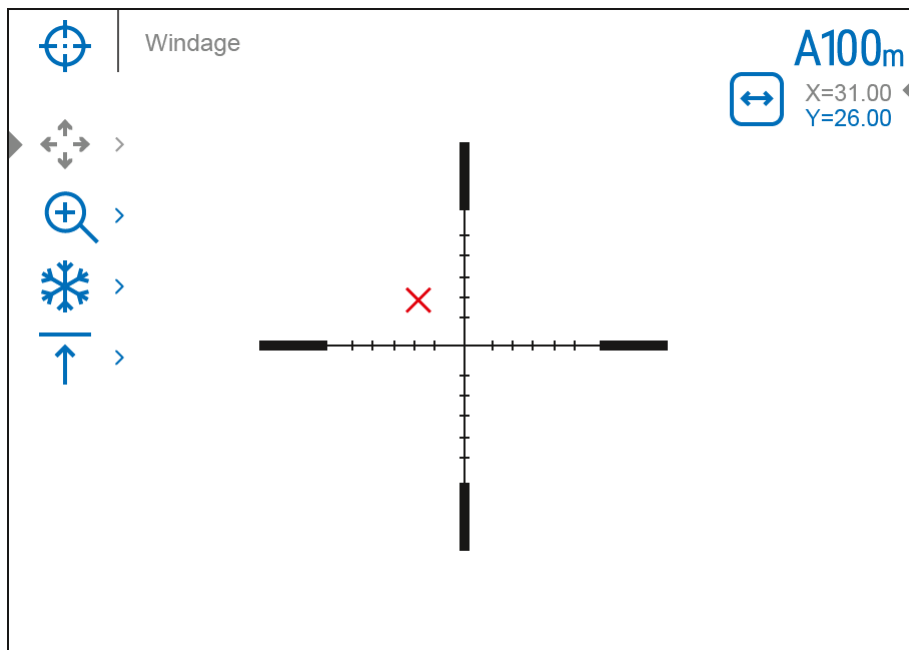
Zeroing should be done at operating temperatures, by following these steps:

Step 1. Make a shot

1. Mount your rifle with the riflescope installed on a bench rest.
2. Set a target at a certain distance.
3. Adjust the riflescope according to the instructions of section **Powering On and Image Setting**.
4. Select zeroing profile (see **Zeroing Profile** main menu item).
5. Point a rifle at the center of the target and shoot.

Step 2. Align the reticle with the impact point

1. If the point of impact does not match the aiming point (center of the riflescope's reticle), hold down **M (4)** button to enter the main menu.
2. Select submenu **Zeroing** with **UP (3)/DOWN (5)** buttons.
3. Enter submenu with a short press of **M (4)** button.
4. Add a new zeroing distance at which you are zeroing (see **Zeroing** menu item => submenu **Add New Distance**).
5. Additional menu for **Zeroing Parameters Settings** appears on the display.
6. An auxiliary cross ✕ appears in the center of display, and coordinates of the auxiliary cross X and Y appear in the top right corner.
7. Enter **Windage/Elevation** submenu with a short press of **M (4)** button.

8. Holding the reticle at the aiming point, move the auxiliary cross horizontally or vertically with **UP (3)/DOWN (5)** buttons until the auxiliary cross matches the point of impact. Switch between movement directions of the auxiliary cross from horizontal to vertical with a short press of **M (4)** button.

Zoom Zeroing function:

To improve the accuracy of zeroing, you can change the magnification in the menu ⊕. The larger the magnification, the smaller the step of shifting the reticle on the display relative to the image from the sensor.

**One-shot "Freeze Zeroing" function:**

Not to hold the reticle at the aiming point, you can use the **Freeze** function – freezing the zeroing screen (refer to **Zeroing** menu item => **Distance** submenu => **Zeroing Parameters Settings** –¦– submenu => **Freeze** submenu or short pressing of the **ON/OFF (11)** button).

Step 3. Save the coordinates

1. To save the new reticle position, press and hold the **M (4)** button. The reticle is aligned with the point of impact and the submenu exits.
2. Press and hold the **M (4)** button again to exit the zeroing settings menu - the message "Zeroing coordinates saved" appears, confirming the successful operation.
3. Take another shot — the point of impact should now match the aiming point.


Notes:

- To re-zero at any distance select the desired distance in **Zeroing** ⊕ submenu, press **M (4)** button briefly and enter **Zeroing Parameters Settings** –¦– submenu with another short press of **M (4)** button.
- After zeroing, the reticle may not be in the center of the display.
- The range of movement of the riflescope reticle allows you to successfully zero the riflescope, even on mounts that are far from ideal, minimizing the possible disadvantages of the mounts. The better the

mount is installed, the less you have to move the reticle. We recommend mounting the riflescope as low as possible.

Add New Distance

Show device diagram
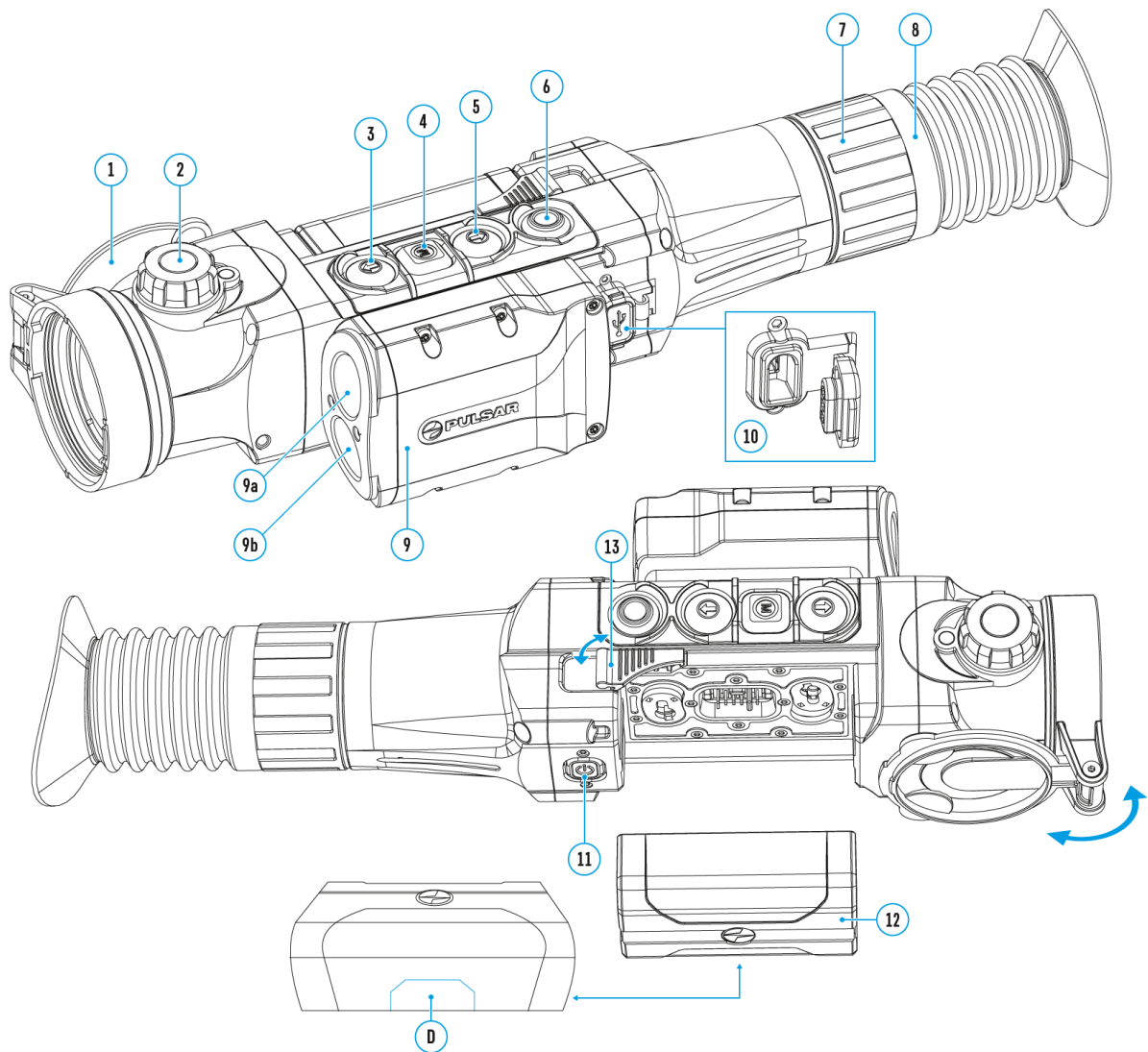
To zero your rifle, you need to set a zeroing distance first. You can zero your rifle at any distance ranging from 1 to 910m (1 to 955 yards).

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Zeroing** ⊕ Image not found or type unknown menu item.
3. Enter submenu Zeroing with a short press of **M (4)** button.
4. Enter submenu **Add New Distance** ⊕ Image not found or type unknown with a short press of **M (4)** button.

5. Set values for each digit with **UP (3)/DOWN (5)** buttons. Switch between the digits with a short press of **M (4)** button.
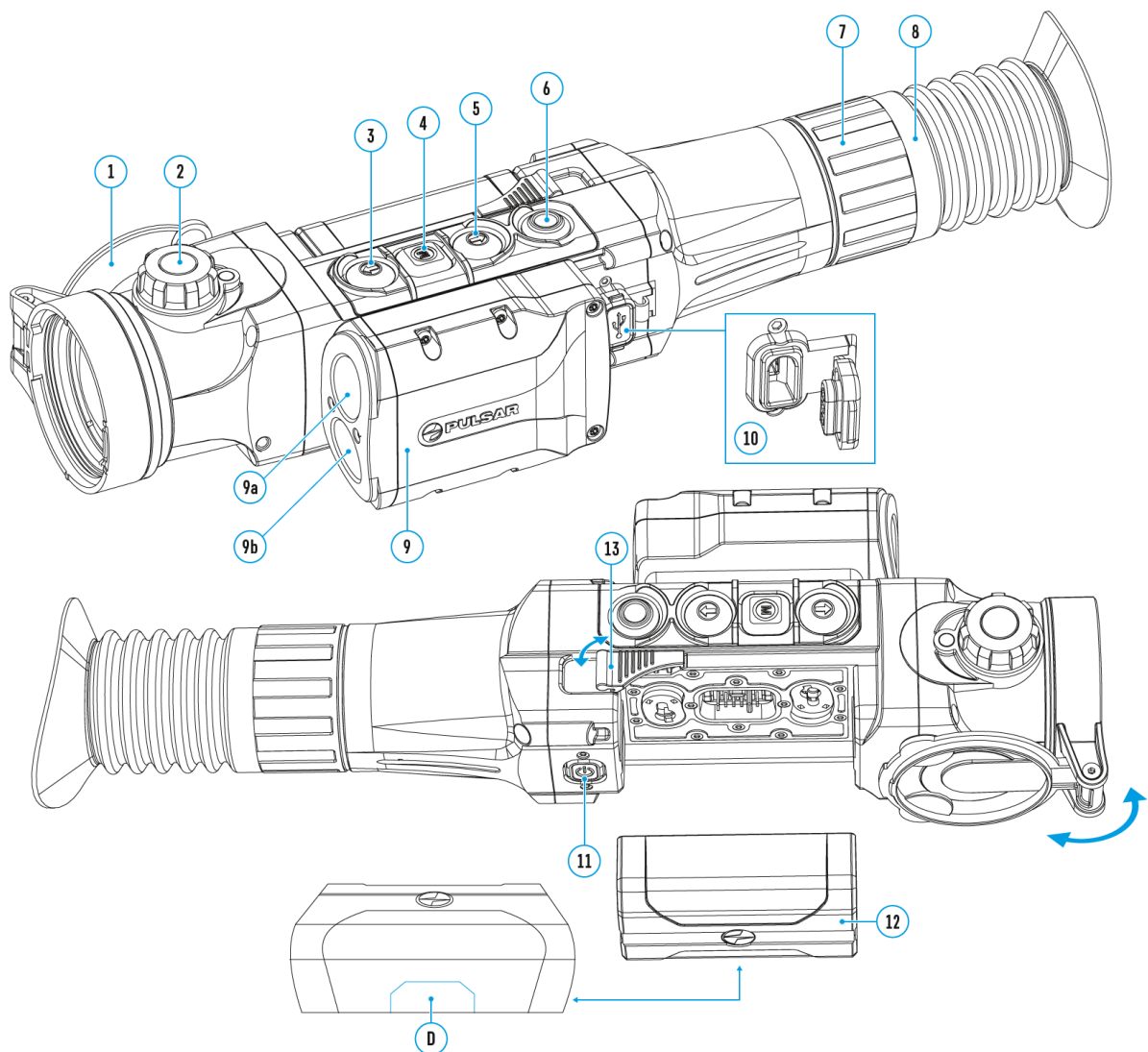
6. Having set the desired distance value, hold down **M (4)** button to save it.

The distance you set first becomes a **primary distance** – shown with an icon on the right to the distance value.

Note: max. number of zeroing distances is 10 for each profile.
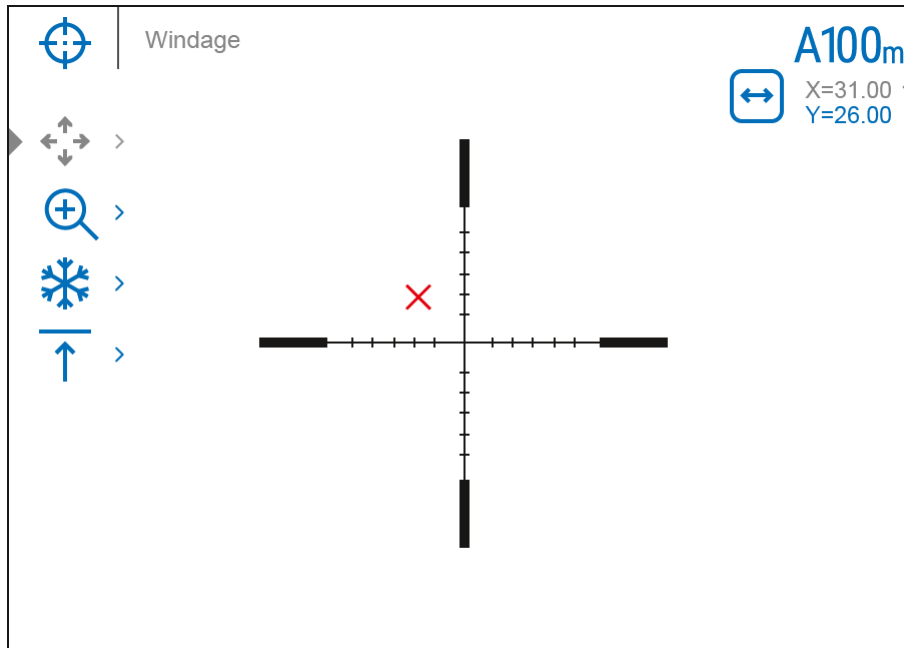
Zeroing Parameters Settings

Show device diagram

1. Press and hold **M (4)** button to enter the main menu.
2. Press **UP (3)/DOWN (5)** buttons to select the **Zeroing** ⊕ menu item and enter by briefly pressing **M (4)** button – the zeroed distances are displayed.
3. The values (e.g., +7.0) shown on the right of the distance values, stand

for the number of clicks along the Y axis, at which the reticle position at other distances differs from the reticle position in the primary distance.

4. To zero at any distance again, press **UP (3)/DOWN (5)**buttons to select the required distance and briefly press **M (4)**.

5. Press **UP (3)/DOWN (5)**buttons to select the **Zeroing Parameters Settings** ─¦─ ⊠Image not found or type unknown and enter by briefly pressing **M (4)**.

6. **Zeroing** screen, which allows the change of zeroing coordinates, will appear.

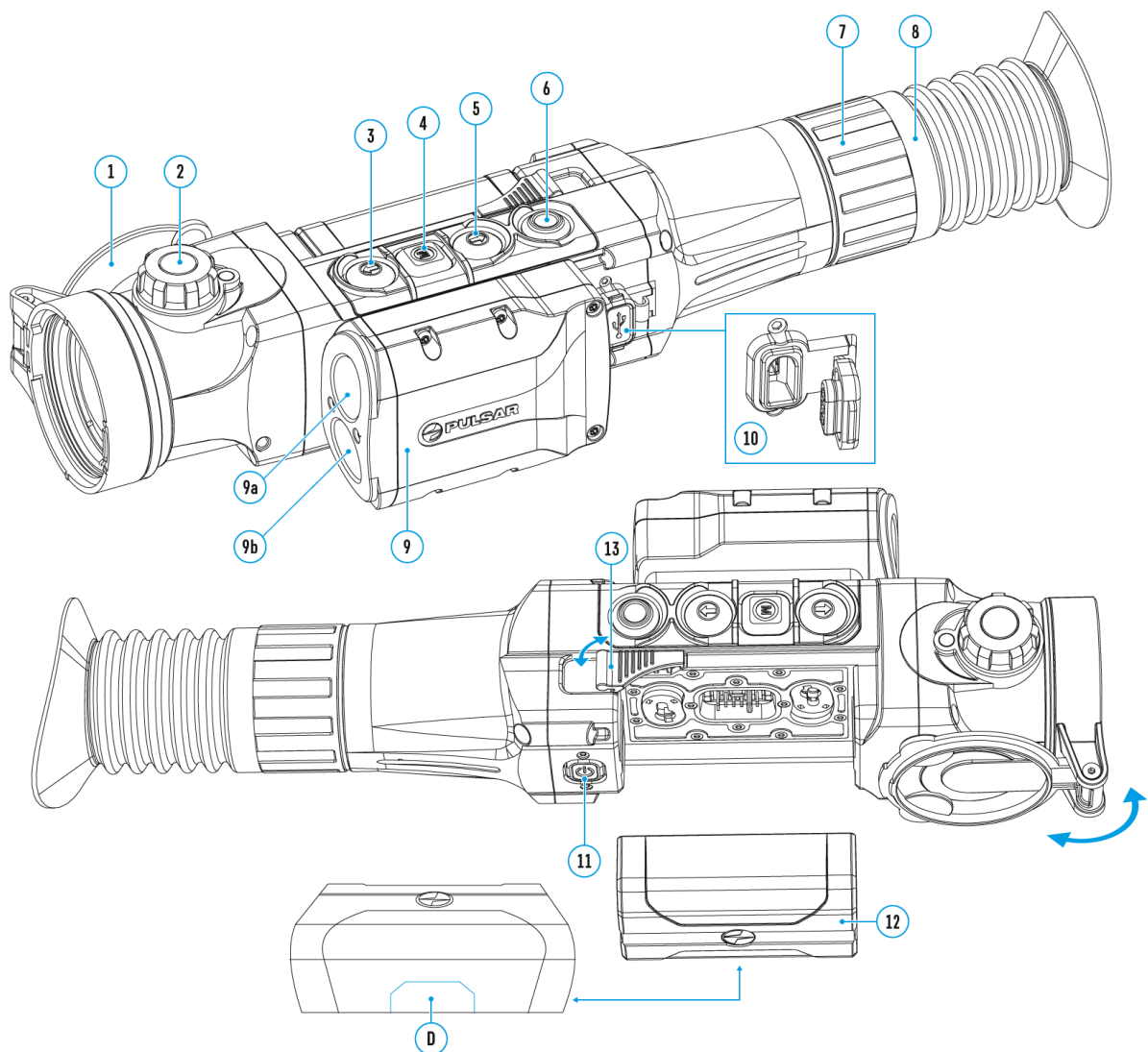# Windage/Elevation

The **Windage/Elevation** additional menu item in the **Zeroing Parameters Settings** menu allows you to adjust the reticle position. For a detailed description of the reticle adjusting, refer to the **Zeroing** section

Magnification (when Zeroing)

Show device diagram

Magnification allows you to magnify a digital zoom of the riflescope when zeroing, which reduces the minute of angle click. It improves the zeroing accuracy.

1. In the **Zeroing Parameters Settings** ┴ menu, press **UP (3)/DOWN (5)**
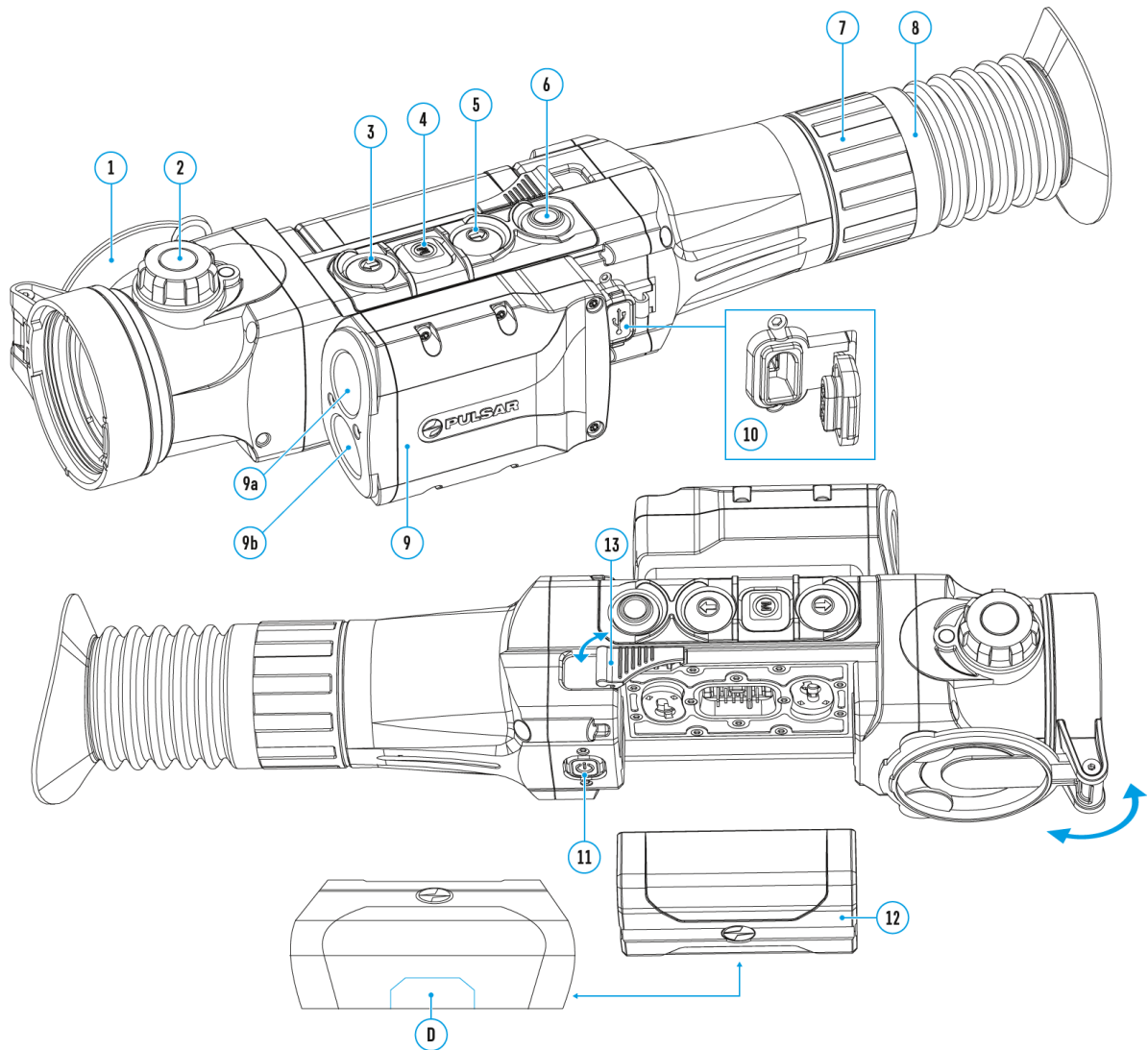
buttons to select the **Magnification** submenu item and enter by briefly pressing **M (4)** button.

2. Press **UP (3)/DOWN (5)** buttons to select a digital magnification value of the riflescope (e.g., x4).

3. Press **M (4)** button briefly to confirm your selection.

The minute of angle click when using the Magnification function is indicated in the Table of **Technical Specifications**.

Freeze

Show device diagram

The feature of the function is that there is no need to constantly keep the riflescope at the point of aiming.
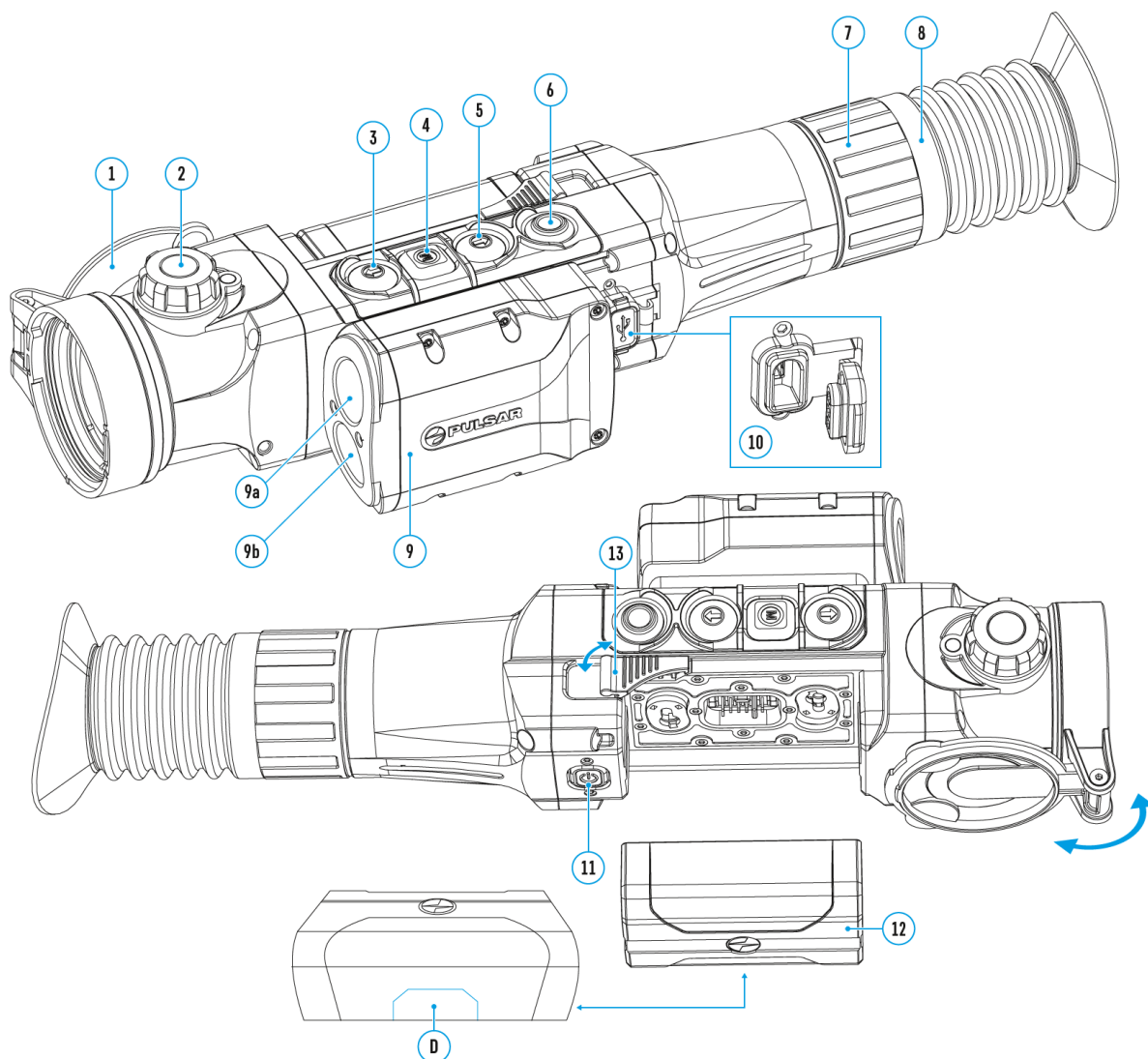
1. In the **Zeroing Parameters Settings** ‒¦‒menu, press **UP (3)/DOWN (5)** buttons to move the cursor to the **Freeze** ❄ function.

2. Align the reticle with the point of aiming and press **M (4)** or **ON/OFF (11)** button. A screenshot will be taken, an icon ❄ will appear.

3. Go to the additional **Windage/Elevation** ↔↕ submenu and adjust

the position of the reticle (see the **Zeroing** section).

4. Select the **Freeze** ❄ submenu item again and briefly press **M (4)** or **ON/OFF(11)** button - the image will "unfreeze".

Name Distance

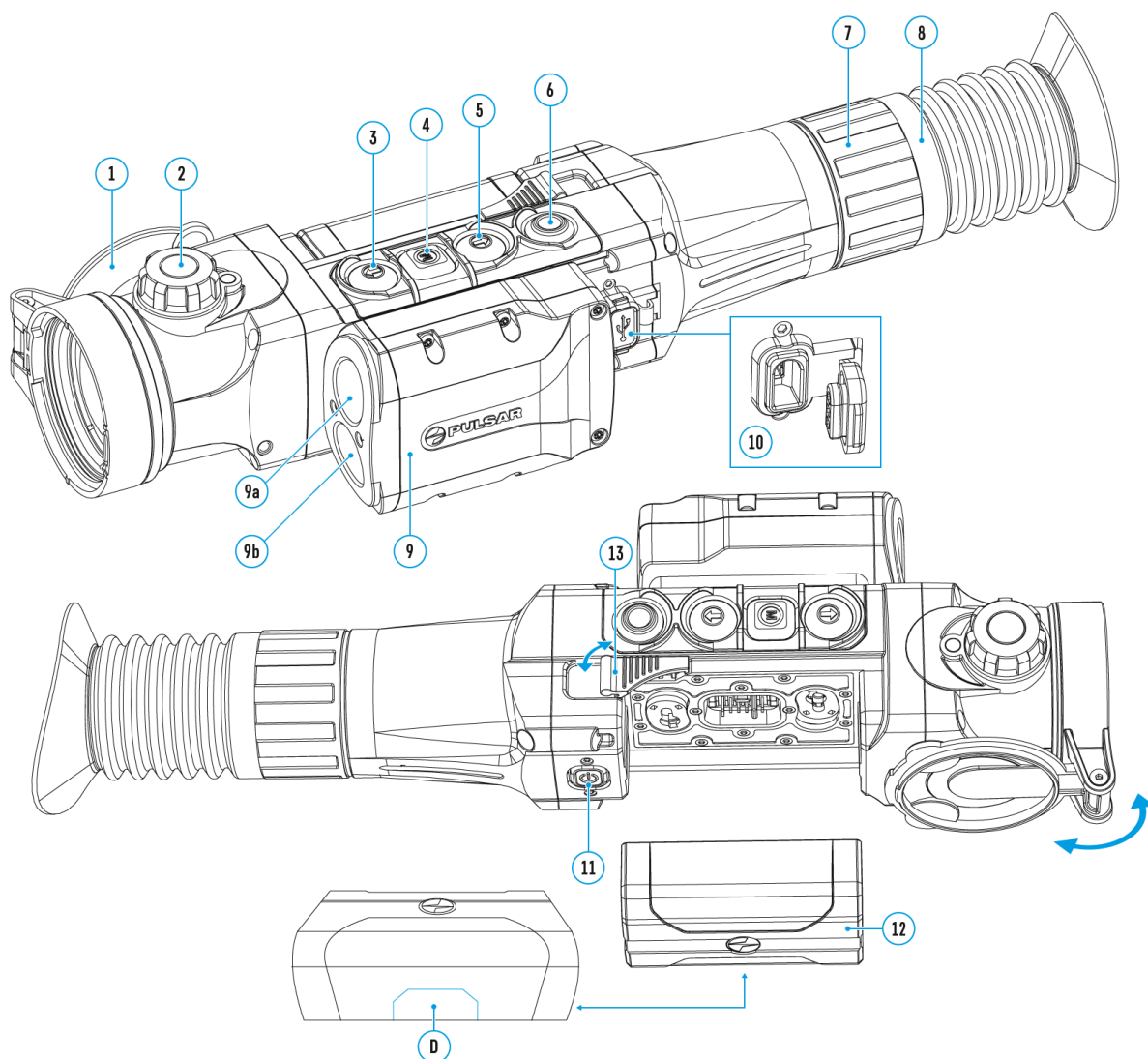## Show device diagram

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1. In the **Zeroing Parameters Settings** ‐¦‐ menu, press **UP (3)/DOWN (5)** buttons to select the **Name Distance** submenu item and enter it by briefly pressing **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select a value for each digit. Press **M (4)** button briefly to switch between digits.
3. Press and hold **M (4)** button to confirm the selection.

Change Primary Distance

Show device diagram

1. Press and hold **M (4)** button to enter the main menu.
2. Press **UP (3)/DOWN (5)** buttons to select the **Zeroing** ⊕ Image not found or type unknown menu item and enter by briefly pressing **M (4)** button – the zeroed distances are displayed.
3. Select a non-primary distance and enter the submenu for operating the distance with a brief press of **M (4)** button.
4. Select **Change Primary Distance** Image not found or type unknown ▸0◂ item .

5. Press **M (4)** button briefly.
6. Icon ▸○◂ next to the selected distance confirms the change of primary distance.

The differences of other distances from the new primary distance are recalculated as per clicks.

Delete Distance

Show device diagram

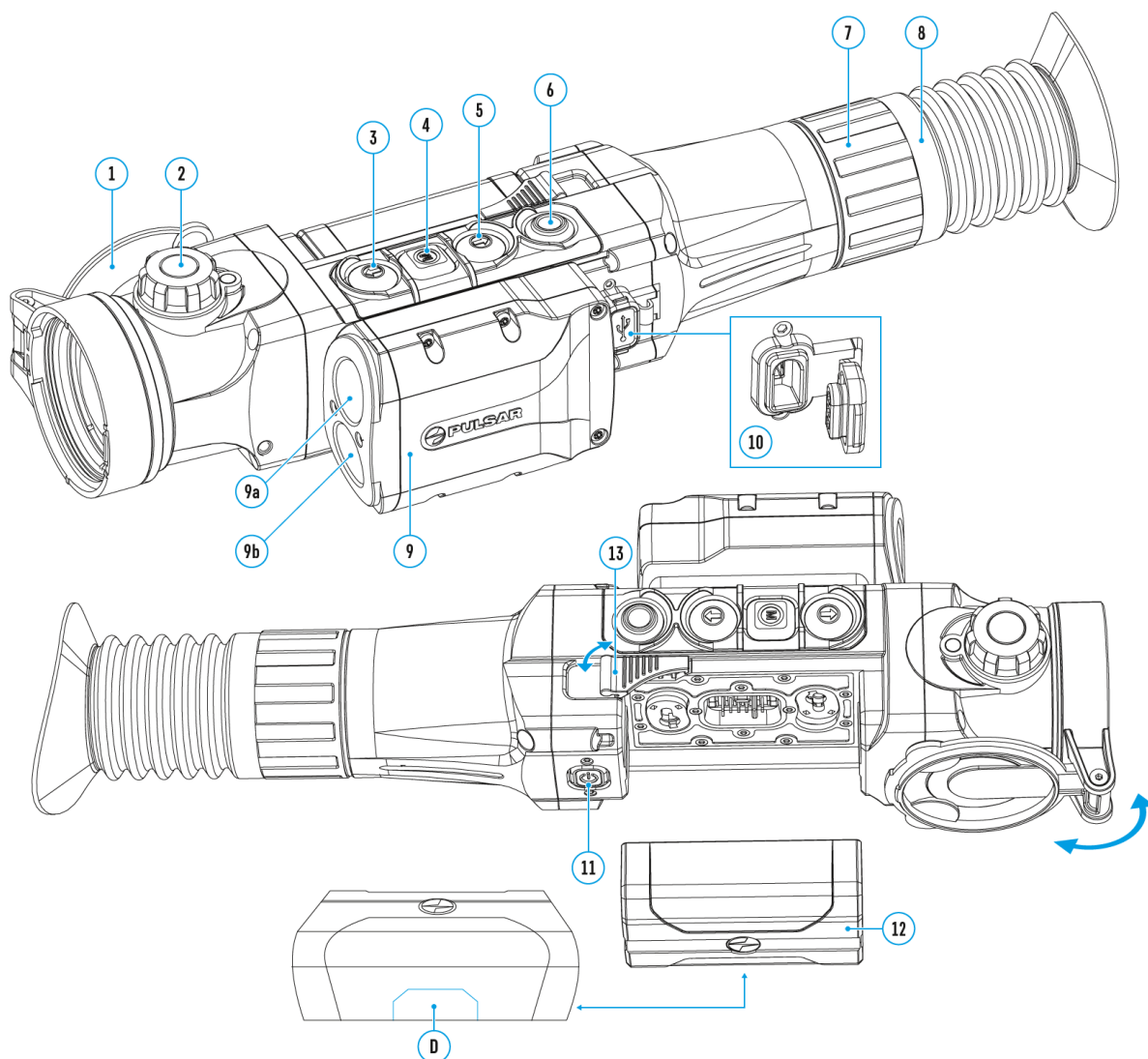
1. Press and hold **M (4)** button to enter the main menu.
2. Press **UP (3)/DOWN (5)** buttons to select the **Zeroing** ⊕ Image not found or type unknow menu item and enter by briefly pressing **M (4)** button – the zeroed distances are displayed.
3. Select the distance you wish to delete and enter the submenu for operating the distances with a brief press of **M (4)** button.
4. Select **Delete Distance** 🗑 Image not found or type unknown item.
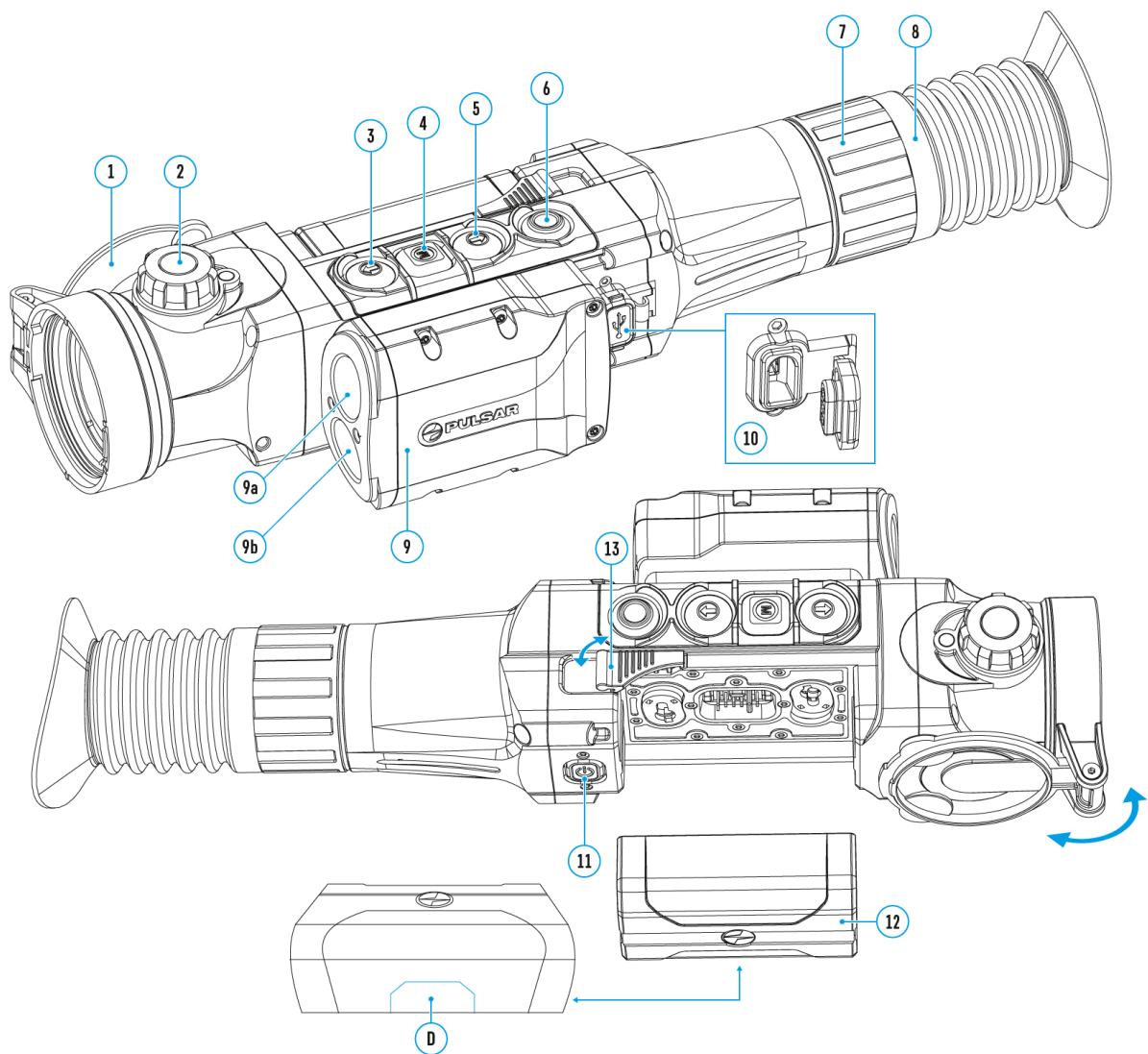
5. Select "Yes" in the appeared dialog box to delete a distance. "No" – to cancel deletion.

Attention! If the primary distance is deleted, the first distance on the list automatically becomes the new primary distance.

Microbolometer Calibration

Show device diagram

Calibration allows levelling of the background temperature of microbolometer and eliminates image flaws such as frozen image, vertical stripes etc.). There are three calibration modes: **manual (M), semi-automatic (SA)** and **automatic (A)**. Select the desired mode in the main menu option **Calibration Mode** ⁛.

Mode M (manual)

- Close lens cover and press **ON/OFF (11)** button briefly.
- Having finished calibration, open the lens cover.

Mode SA (semi-automatic)

- Calibration is activated with a short press of **ON/OFF (11)** button.
- You do not have to close lens cover (microbolometer is closed with internal shutter automatically).
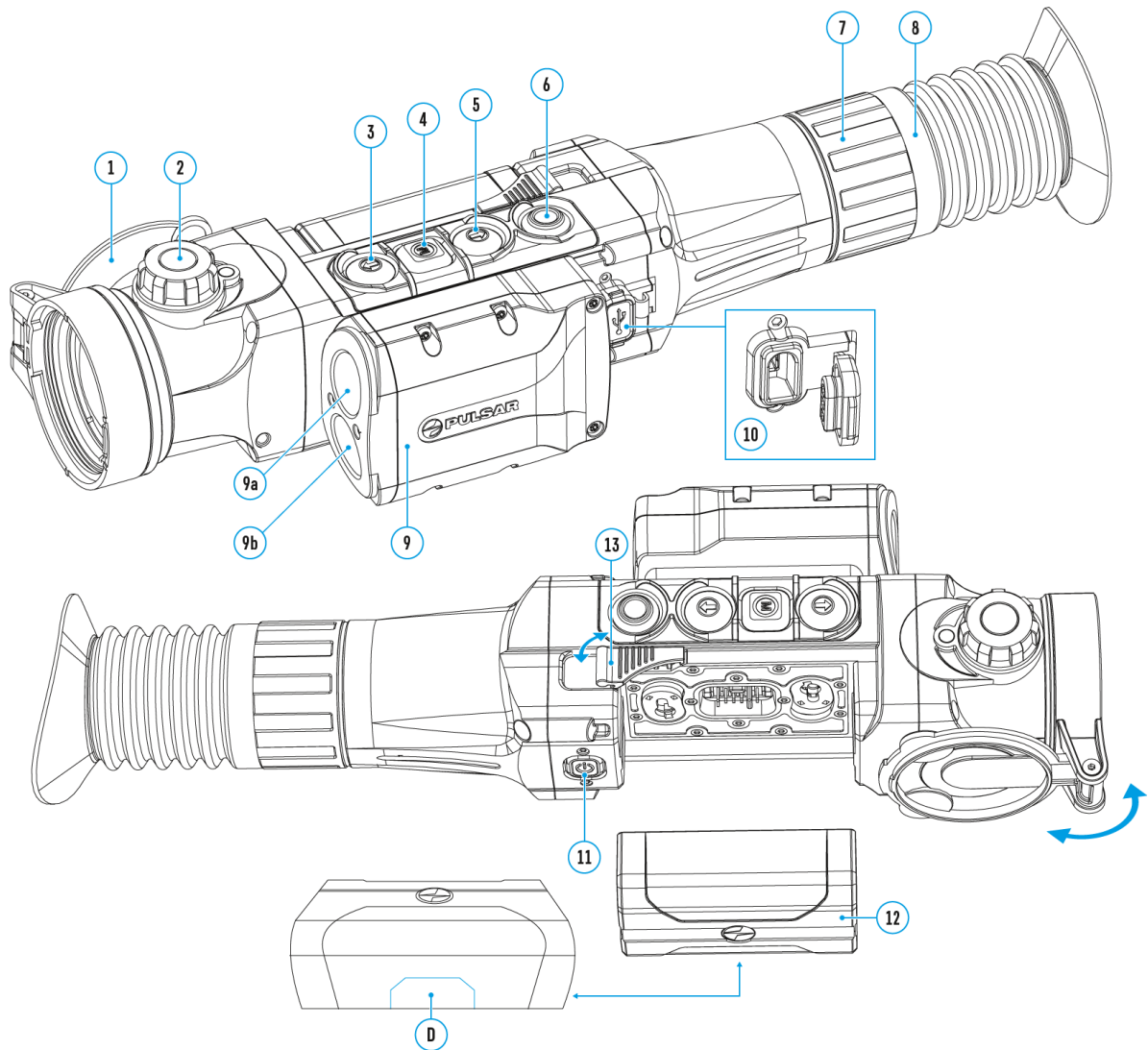
Mode A (automatic)

- The riflescope calibrates by itself according to the software algorithm.
- You do not have to close lens cover (microbolometer is closed with internal shutter automatically).
- User assisted calibration with **ON/OFF (11)** button is allowed in this mode (as in semi-automatic mode).

Note: a display image freezes until the calibration is in progress.
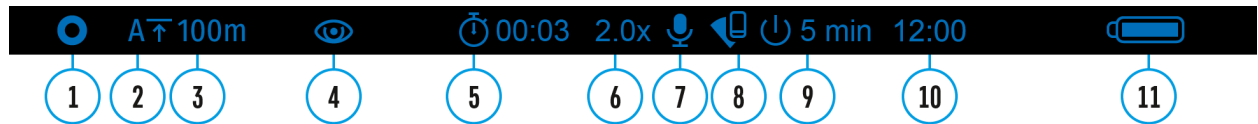
Discrete Digital Zoom

Show device diagram

The riflescope allows you to quickly increase base magnification (please refer to **Magnification** line in the **Technical Specifications** table) by two times or four times (8 times in XP models), as well as to return to the base magnification.

To operate the discrete digital zoom, press successively **DOWN (5)** button.

Status Bar
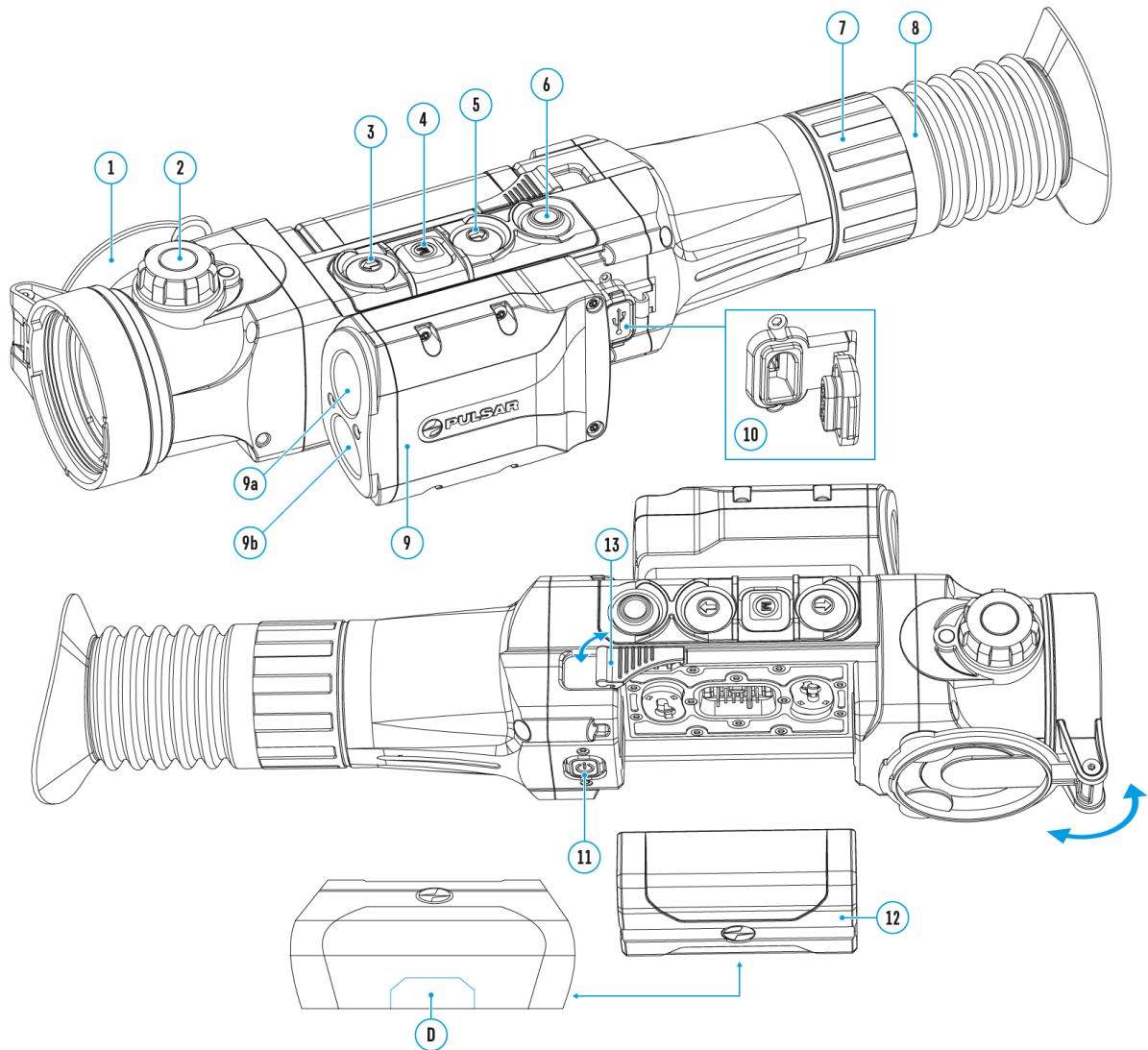
The status bar is located in the lower part of the display and shows current operating status of the riflescope, including:

1. Image inversion mode (only Black Hot)
2. Current zeroing profile (for example A)
3. Zeroing distance (for example, 100 m)
4. Operating mode (for example Forest)
5. Calibration mode (in the automatic calibration mode, three seconds before automatic calibration a countdown timer ⏱ 00:03 is shown in place of the calibration mode icon)
6. Current full magnification (for example x2.0)
7. Microphone
8. Wi-Fi connection status
9. Function "Auto shutdown" (for example 5 min)
10. Current time
11. Power indication:
    - Battery charge level ▭ (if the riflescope is powered by the Battery Pack).
    - External battery power indicator ━■= (if the riflescope is powered by an external power supply).

Quick Menu Functions

Show device diagram

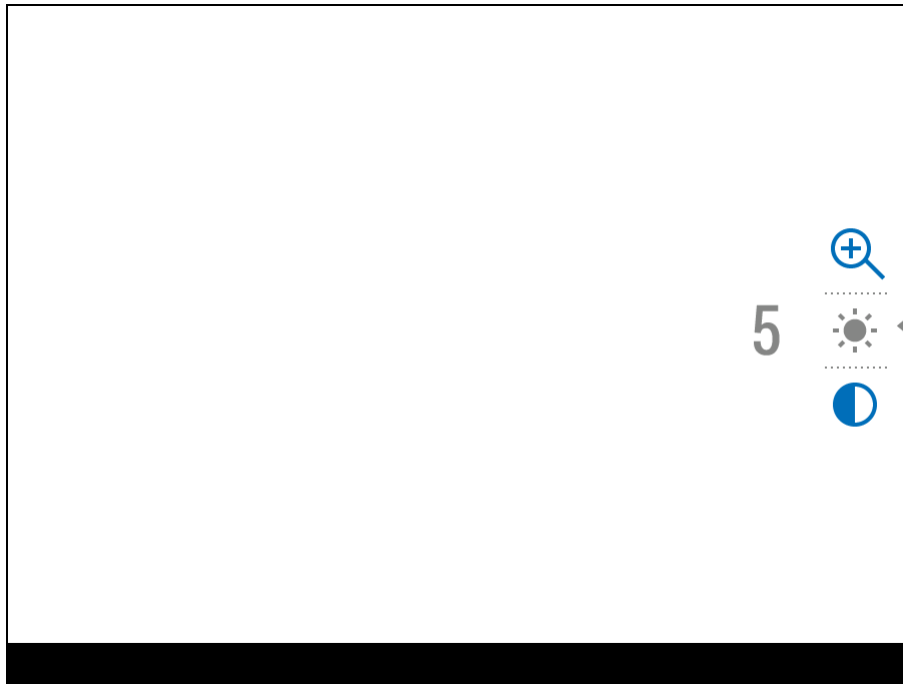The Quick Menu allows to change the basic settings (display brightness and contrast, discrete digital zoom and zeroing distance).
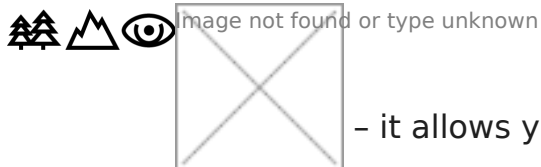
- Enter the menu with a short press of **M (4)** button.
- To select the functions below, press successively **M (4)** button.

Brightness ☀ – press **UP (3)/DOWN (5)** buttons to change display brightness from 0 to 20.

Contrast ◑ – press **UP (3)/DOWN (5)** buttons to change display contrast from 0 to 20.

Note: display brightness and contrast settings are saved in the memory when the unit is turned off.

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

A100 ↑ - information on the actual profile and zeroing distance, at which zeroing was done in this profile (for example, profile A, zeroing distance 100 m). Select zeroing distances with **UP (3)/DOWN (5)** buttons. This option is available when more than one distance is saved.

Smooth digital zoom 🔍 – press **UP (3)/DOWN (5)** buttons to change digital zoom in 0.1x increments.

- Exit the quick menu with a long press of **M (4)** button or wait 10 seconds to exit automatically.

Enter the Main Menu

Show device diagram

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select main menu options.
3. Enter a submenu of the main menu with a short press of **M (4)** button.
4. Exit a submenu with a long press of **M (4)** button.
5. Automatic exit takes place in 10 sec of inactivity.

Menu contents:

Tab 1

Menu	Mode
●●	

▶ ⌄ ····· 🌲🌲

▽ ····· ⬤ On

🗐 ····· A

┼ ›

🔆 ····· 10

📶 ····· ⬤ On

✦ ····· Automatic

⊕ ›

Tab 2

🎤 ····· (◯ On)

🎨 ····· White hot

LRF→ >

⚙ >

📶 >

((•)) >

⊞ >

ⓘ

Mode

Show device diagram

The device has four operating modes of the thermal imager: Forest (observation mode of objects within low thermal contrast conditions), Rocks (observation mode of objects within high thermal contrast conditions), Identification (high detalization mode), User (individual brightness and contrast settings).

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Mode** menu item.

3. Enter the Mode submenu with a short press of **M (4)** button.
4. Select one of the settings described below with **UP (3)/DOWN (5)** buttons.
5. A short press of the **M (4)** button confirms the selection.

🌲 Forest

This is the best mode when searching and observing within field conditions, against the background of leaves, bushes and grass. The mode is highly informative about an object being observed as well as landscape details.

⛰ Rocks

This is the best mode when observing objects after a sunny day or within urban conditions.

👁 Identification

This is the best mode when observing objects within adverse weather conditions (fog, mist, rain and snow). It allows you to recognize the characteristics of an object being observed more clearly. Zoom increase may be accompanied by insignificant image graininess.

🎚 User

It allows you to configure and save custom brightness and contrast settings, as well as one of the three modes (Forest, Rocks, Identification) as basic.

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

Image Detail Boost

Show device diagram
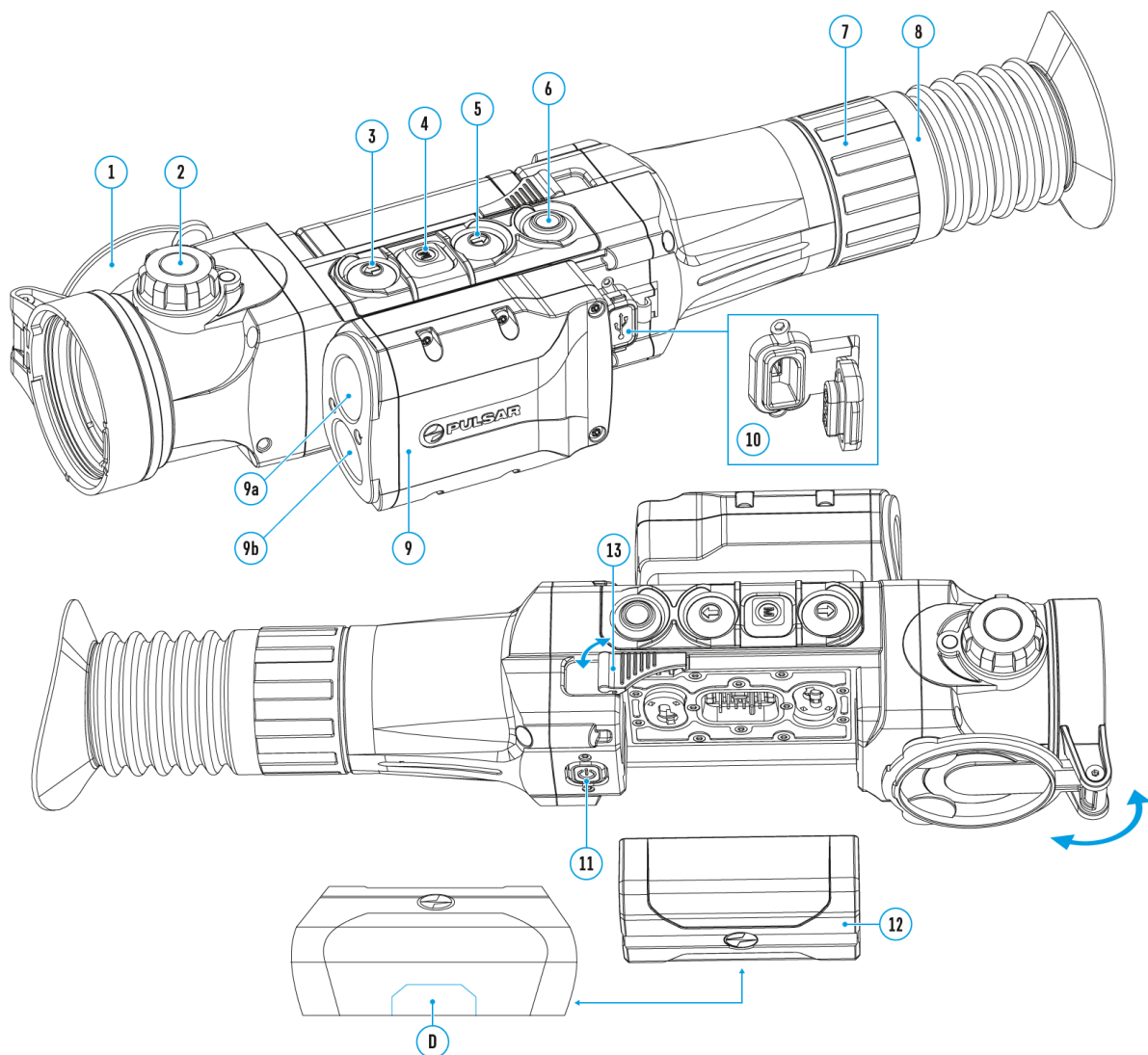
The **Image Detail Boost** ∇ function increases sharpness of the contours of heated objects, which increases their detail. The result of the function depends on the selected mode and observation conditions: the higher the contrast of objects, the more noticeable the effect. This option is enabled by default, but can be disabled in the main menu.

Turn on/off **Image Detail Boost**.

1. Enter the main menu with a long press of **M (4)** button.
2. Select the **Image Detail Boost** ▽ menu option with **UP (3)/DOWN (5)** buttons.
3. Turn Image Detail Boost on/off with a short press of **M (4)** button.

Zeroing Profile

Show device diagram
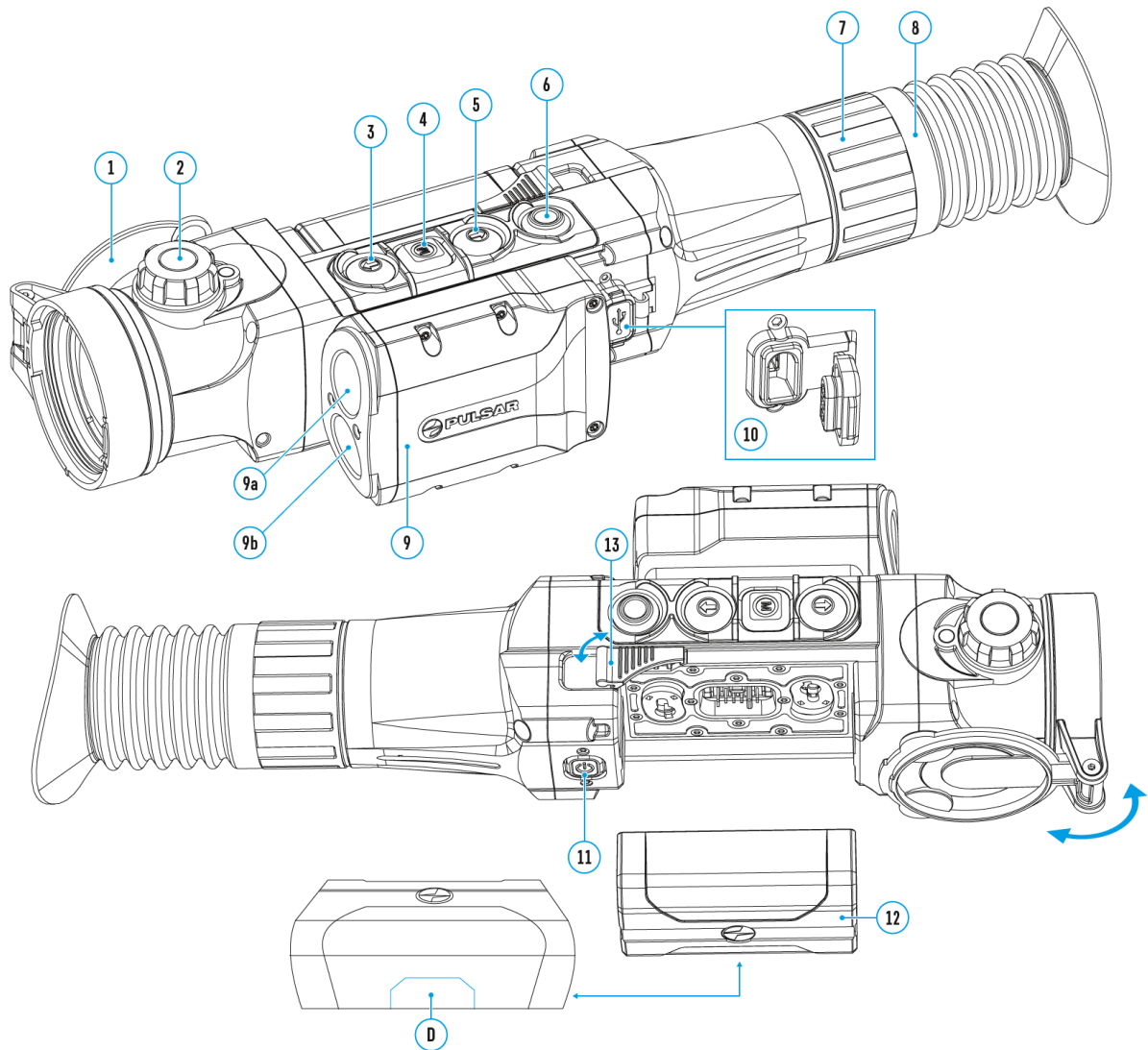
This main menu option allows you to select one of five profiles. Each profile includes the following:

- A set of zeroed distances;
- Reticle color
- Reticle type

Various profiles can be used when employing the riflescope on different

rifles and when shooting different cartridges.
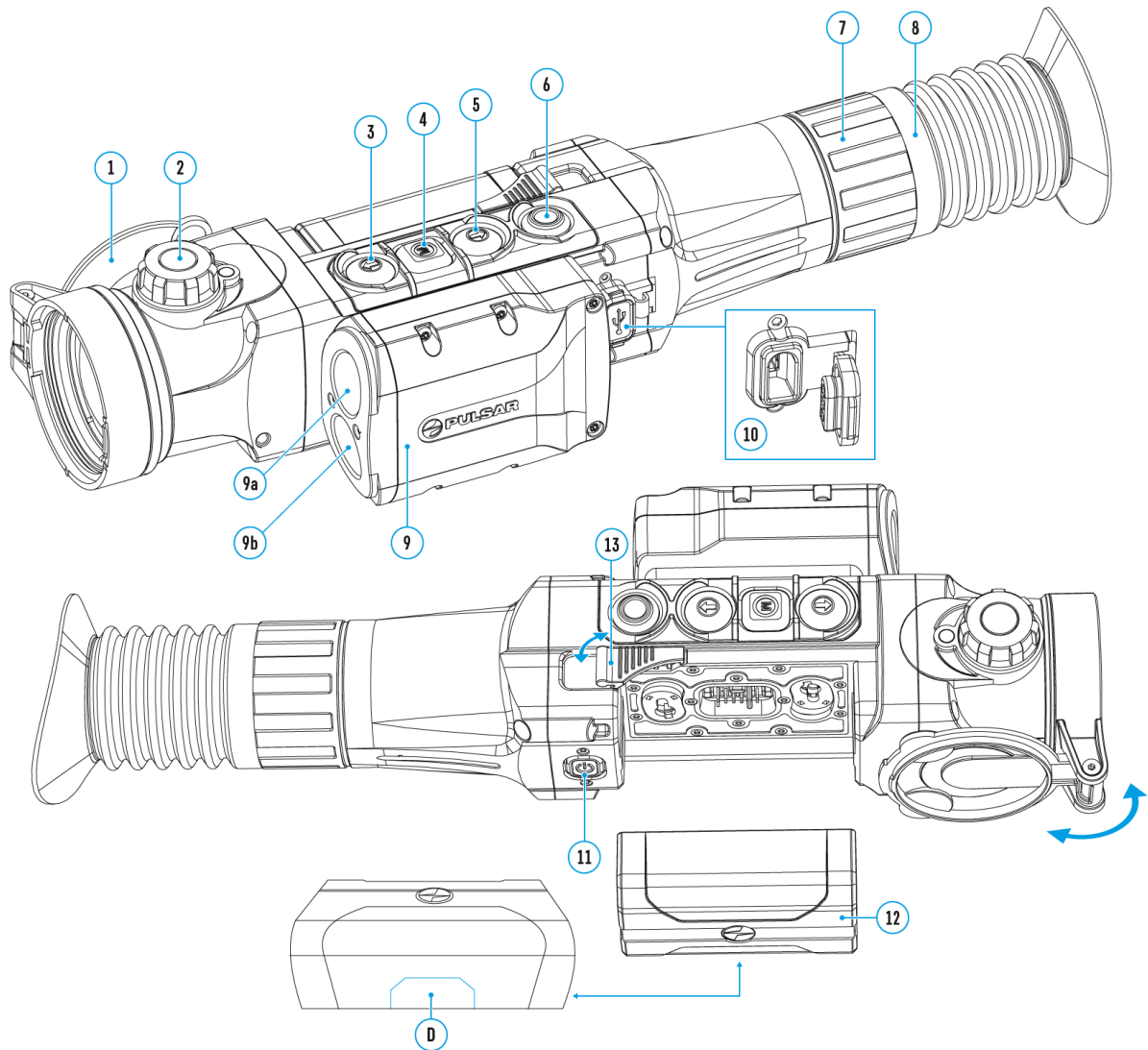
Zeroing profiles cannot be deleted. You can change the parameters of zeroing distances or delete distances within a profile.

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Zeroing Profile** menu item.
3. Enter submenu Zeroing Profile with a short press of **M (4)** button.
4. Select one of the zeroing profiles (shown with letters A; B; C; D; E) with **UP (3)/DOWN (5)** buttons.
5. Confirm your selection with a short press of**M (4)** button.

Name of the selected profile is displayed in the status bar.

Reticle Setup

Show device diagram

This main menu option allows you to select reticle shape, color and brightness.

1. Press and hold the **M (4)** button to enter the main menu.
2. Press **UP (3)/DOWN (5)** buttons to select the **Reticle Setup** ⊣¦⊢ menu item.
3. Press the **M (4)** button briefly to enter the Reticle Setup submenu.

Reticle Type

Selection of reticle shapes.

1. Enter submenu **Reticle Type** with a short press of **M (4)** button.
2. Select the desired reticle shape with **UP (3)/DOWN (5)** buttons. Reticle type changes as the cursor goes down the reticle list.
3. Confirm your selection with a short press of **M (4)** button.

Note: the riflescope supports **scalable reticles**.

Reticle Color

Selection of reticle color.

1. Press **UP (3)/DOWN (5)** buttons to select **Reticle Color** menu item.
2. Enter submenu Reticle Color with a short press of **M (4)** button.
3. Select the desired reticle color with **UP (3)/DOWN (5)** buttons.
4. Confirm your selection with a short press of **M (4)** button.

Reticle Brightness

Reticle brightness setup.

1. Press **UP (3)/DOWN (5)** buttons to select **Reticle Brightness** menu item.
2. Enter submenu Reticle Brightness with a short press of **M (4)** button.
3. Set desired reticle brightness from 0 to 10 with **UP (3)/DOWN (5)** buttons.
4. Confirm your selection with a short press of **M (4)** button.

Icon Brightness

Show device diagram
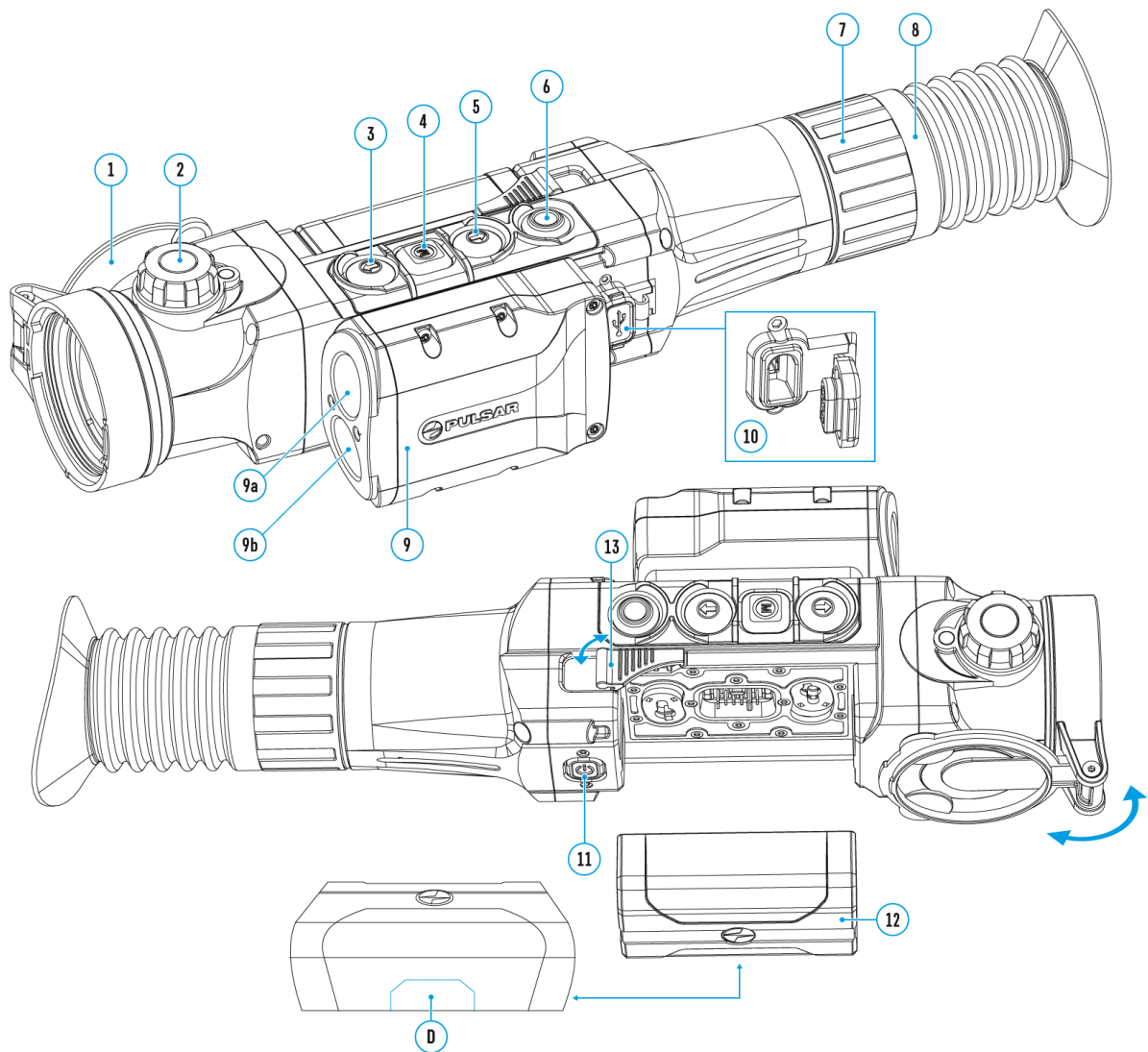
Adjust brightness level of the icons and screensavers (Pulsar, Display off) on the display.

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Icon Brightness** ⛯ menu item.
3. Enter Icon Brightness submenu with a short press of **M (4)** button.
4. Set desired graphics brightness from 0 to 10 with **UP (3)/DOWN (5)**

buttons.
5. Confirm your selection with a short press of the **M (4)** button.

Wi-Fi Activation

Show device diagram
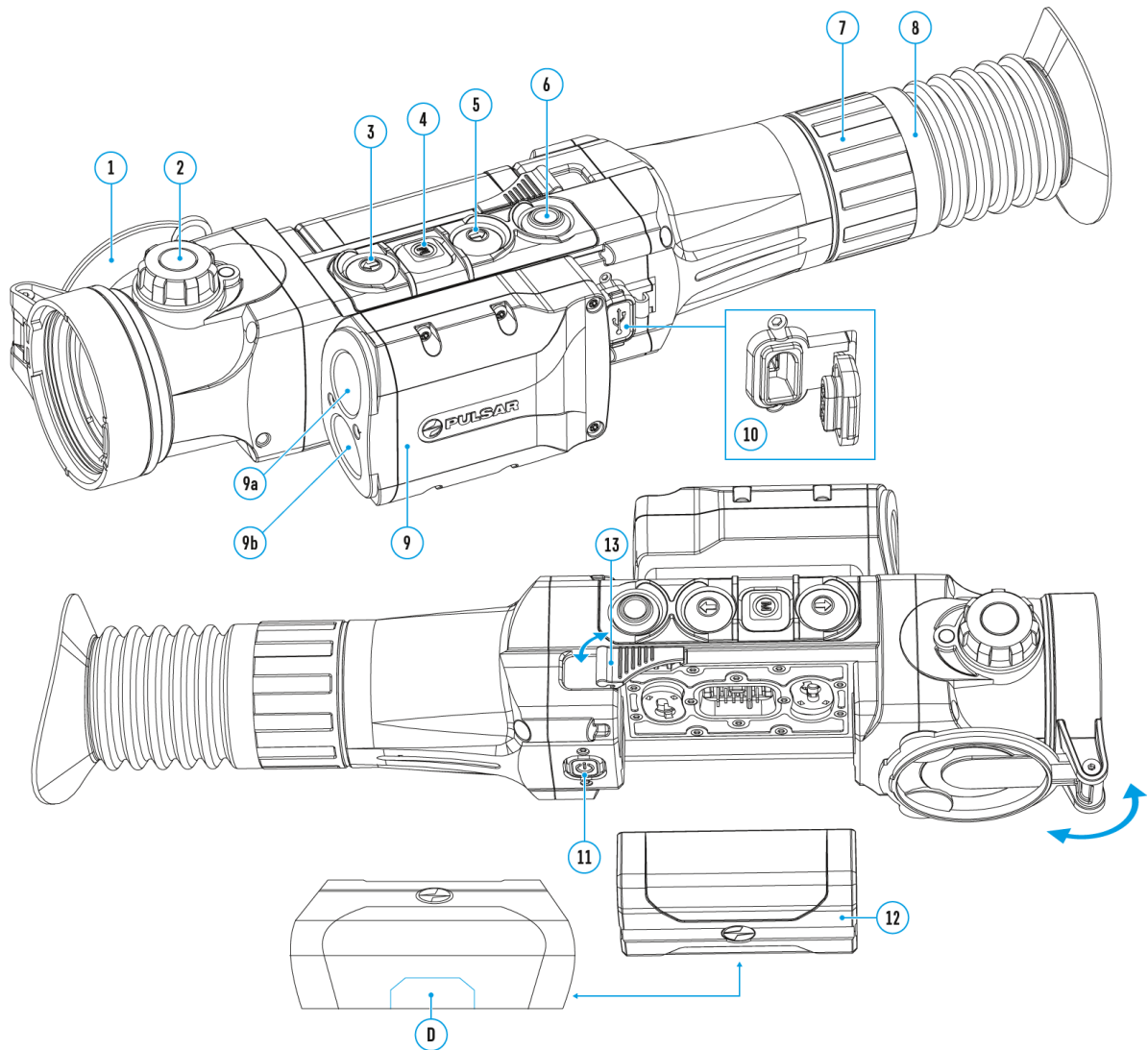
Turn Wi-Fi on/off

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Wi-Fi Activation** 📶 menu item.
3. Turn Wi-Fi on/off with a short press of **M (4)** button.

Calibration Mode

Show device diagram

Select calibration mode.

There are three calibration modes: **manual (M), semi-automatic (SA)** and **automatic (A)**.

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Calibration Mode** menu item.

3. Enter Calibration Mode submenu with a short press of **M (4)** button.
4. Select one of the below calibration modes with **UP (3)/DOWN (5)** buttons.
5. Confirm selection with a short press of **M (4)** button.

Automatic (A)

In the automatic mode the need for calibration is based on software algorithm. Calibration starts automatically.

Semi-automatic (SA)

The user determines for himself the need for calibration based on the actual image status.

Manual (M)

Manual (silent) calibration. Close lens cover before calibration.

Microphone

Show device diagram

With the microphone on, you will have audio track in your video. Microphone is off by default.

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Microphone** 🎤 menu item.
3. Turn the microphone on/off with a short press of **M (4)** button

Color Modes

Show device diagram

Color mode selection.

White Hot is a default display mode for an observed image. The Color Modes menu item allows you to select an alternative palette:

1. Enter the main menu with a long press of **M (4)** button.
2. Press **UP (3)/DOWN (5)** buttons to select **Color Modes** ⬭ menu item.
3. Enter submenu Color Modes with a short press of **M (4)** button.
4. Select one of the palettes described below with the **UP (3)/DOWN (5)** buttons.
5. A short press of the **M (4)** button confirms the selection.

- **White Hot** – a black and white palette (cold temperature corresponds to black, and hot temperature to white).
- **Black Hot** – a black and white palette (cold temperature corresponds to white, and hot temperature to black).
- **Red Hot**
- **Red Monochrome**
- **Rainbow**
- **Ultramarine**
- **Violet**
- **Sepia**

Note: you can also switch from the mode chosen in the main menu to the White Hot mode with a long press of **UP (3)** button, subsequent long press of **UP (3)** button switches back to the mode chosen in the main menu.

Rangefinder

Show device diagram
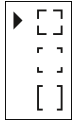
Menu item Rangefinder allows you to set up built-in rangefinder's parameters.

1. Enter the main menu with a long press of the **M (4)** button.
2. Select the submenu **Rangefinder** LRF with the **UP (3)/DOWN (5)** buttons.
3. Enter the submenu with a short press of the **M (4)** button.
4. Select the desired menu item with the **UP (3)/DOWN (5)** buttons.

Reticle Type

Selection of rangefinding reticle

1. Select the **Reticle Type** menu item with the **UP (3)/DOWN (5)** buttons.
2. Press briefly the **M (4)** button to enter submenu.
3. Select one of the three reticle shapes with the **UP (3)/DOWN (5)** buttons.
4. Confirm selection with a brief press of the **M (4)** button.
5. Selected reticle will appear on the display.
6. The reticle will disappear from the display if the rangefinder is not used longer than 4 seconds.

Target Position Angle

Function Target Position Angle (TPA) allows you to see angle of target location (angle of elevation). When the function is activated, the angle is shown continuously in LRF stand-by mode in the top right corner of the display.

1. Select **TPA** with the **UP (3)/DOWN (5)** buttons.
2. Turn **TPA** on/off with a short press of the **M (4)** button.

True Distance

Function True Horizontal Distance (THD) allows the user to measure true horizontal distance to a target based on the angle of elevation.

1. Select **THD** with the **UP (3)/DOWN (5)** buttons.
2. Turn **THD** on/off with a short press of the **M (4)** button

3. Hereinafter the message **THD** will appear above the distance readings.

General Settings

Show device diagram
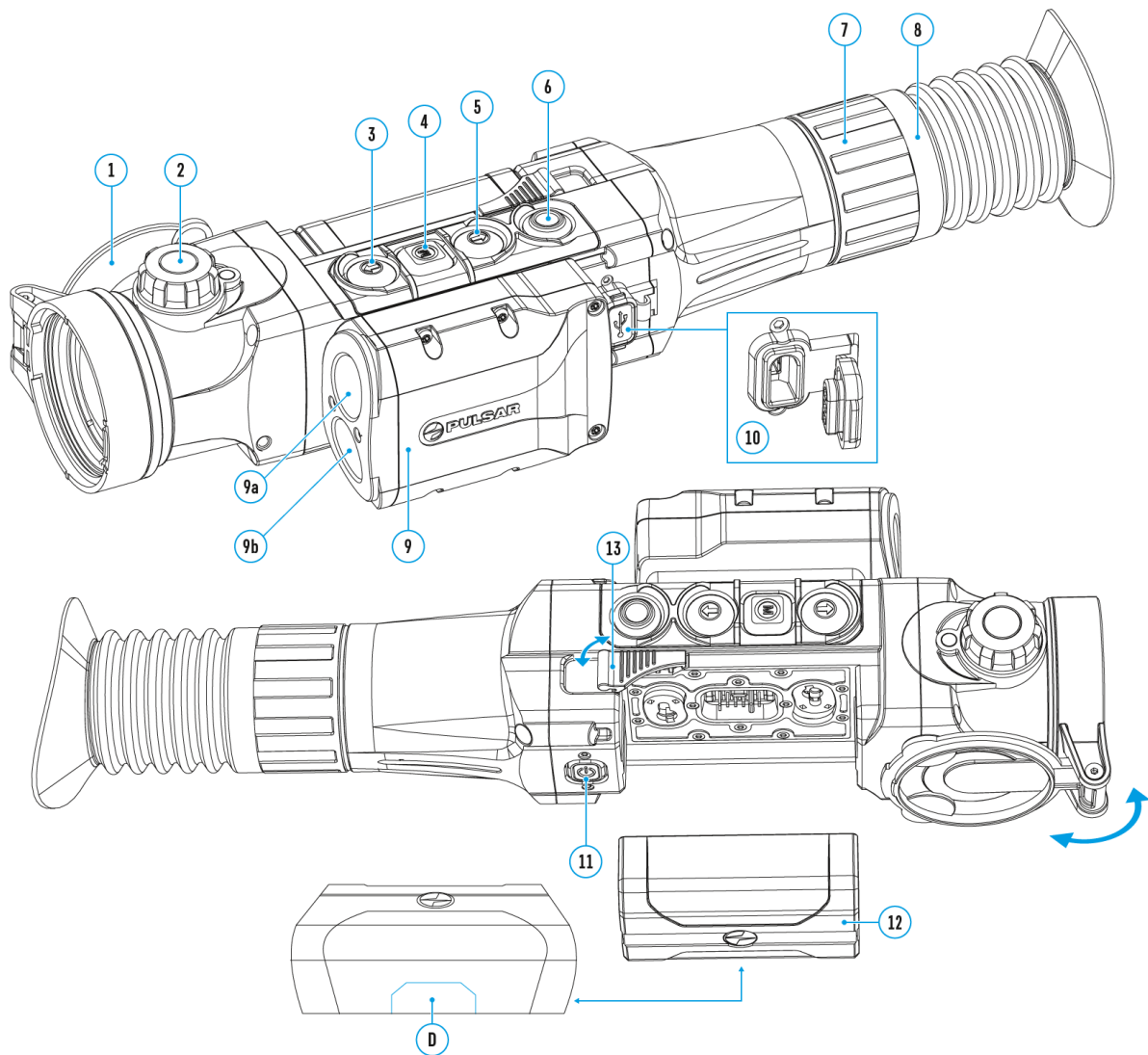
1. Press and hold down the **M (4)** button to enter the main menu.
2. Select option **General Settings** ⚙ with the **UP (3)/DOWN (5)** buttons.
3. Press briefly the **M (4)** button to confirm.

The following settings are available:

Language

Interface language selection.

1. Select option **Language** 🌐 with the **UP (3)/DOWN (5)** buttons.
2. Press briefly the**M (4)** button to confirm.
3. Select one of the available interface languages with a short press of the **UP (3)/DOWN (5)** buttons: English, German, Spanish, French, Russian, Italian, Portuguese, Dutch, Danish, Norwegian, Swedish, Polish, Czech, Hungarian.
4. Save selection and exit the submenu with a long press of the **M (4)** button.

Date

Date setup.

1. Select option **Date** 📅 with **UP (3)/DOWN (5)**.
2. Press briefly the **M (4)** 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 (3)/DOWN (5)** buttons.
4. Switch between digits with a short press of the **M (4)** button.
5. Save selected date and exit the submenu with a long press of the **M (4)** button.

Time

Time setup.

1. Select option **Time** 🕐 with **UP (3)/DOWN (5)** buttons.
2. Press briefly the **M (4)** button to confirm.
3. Select the desired time format with a short press of the **UP (3)/DOWN (5)** buttons: 24 or PM/AM.
4. Switch to hour setup with a brief press of the **M (4)** button.
5. Select hour value with a brief press of the**UP (3)/DOWN (5)** buttons.
6. Switch to minute setup with a brief press of the **M (4)** button.
7. Select minute value with a brief press of the **UP (3)/DOWN (5)** buttons.

8. Save selected time and exit the submenu with a long press of the **M (4)** button.

Units of Measure

Selection of units of measure.

1. Select option **Units of Measure** ⌶ with **UP (3)/DOWN (5)** buttons.
2. Press briefly the **M (4)** button to confirm.
3. Select the desired unit of measurement - meters or yards - with **UP (3)/DOWN (5)** buttons.
4. Press briefly the **M (4)** button to confirm.
5. Exit to general settings submenu takes place automatically.

Default Settings

Restore default settings.

1. Select option **Default Settings** ↩ with **UP (3)/DOWN (5)** buttons.
2. Press briefly the **M (4)** button to confirm.
3. With a short press of the **UP (3)/DOWN (5)** buttons select "Yes" to restore default settings or "No" to abort.
4. Confirm selection with a brief press of the **M (4)** button.
   ○ If "Yes" is selected, display will show "Do you want to restore default settings?" and "Yes" and "No" 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 returned to their defaults:

- Image boost - on
- Rangefinder's reticle – ⊏ ⊐
- Reticle selection – M56Fi*
- Side incline – on
- Wi-Fi – off (default password)
- PiP – off
- Digital zoom – initial optical zoom
- Language – English
- Calibration mode – automatic
- Microphone – off

- Zeroing profile – A
- Operating mode of video recorder – video
- "THD" – on
- Reticle color – black/red*
- Auto shutdown – off
- Reticle brightness – 10*
- Observation mode – "Forest"
- "TPA" – on
- Color palette – White Hot
- Units of measurement – meters

* These values are set for all zeroing profiles (A, B, C, D and E).

Warning: date and time settings, default pixel map and all zeroed distances are saved.

Format

This menu option allows you to format the device's memory card. All files will be deleted.

1. Select option **Format** 📟 with **UP (3)/DOWN (5)** buttons.
2. Press briefly the **M (4)** button to confirm.
3. With a short press of the **UP (3)/DOWN (5)** buttons select "Yes" to format the memory card or "No" to return to the submenu.
4. Confirm selection with a short press of the **M (4)** button.
   - If "Yes" is selected, display will show "Do you want to format memory card?" and "Yes" and "No" options. Select "Yes" to format the memory card.
   - If "No" is selected, formatting is aborted and you return to the submenu.

Wi-Fi Settings

Show device diagram

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

1. Press and hold down the **M (4)** button to enter the main menu.
2. Select the **Wi-Fi Settings** menu option with the **UP (3)/DOWN (5)** buttons.
3. Press briefly the **M (4)** button to enter submenu.
4. Select the desired menu item with the **UP (3)/DOWN (5)** buttons.

Password Setup

This submenu allows you to set a password to access your thermal riflescope from a mobile device. The password is used to connect a smartphone or a tablet to your thermal riflescope.

1. Press briefly the **M (4)** button to enter submenu **Password Setup** PAS.
2. The default password **(12345678)** will appear on the screen.
3. Set the desired password with the **UP (3)/DOWN (5)** buttons.
4. Switch between digits with a short press of the **M (4)** button.
5. Save the password and exit the submenu with a long press of the **M (4)** button.

Access Level Setup

This submenu allows you to set access levels of Stream Vision application to your riflescope.

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

1. Press briefly the **M (4)** button to enter submenu **Access Level Setup** submenu.
2. Select the access level with the **UP (3)/DOWN (5)** buttons.
3. Press and hold the **M (4)**to confirm your selection and exit from the submenu.

Device Information

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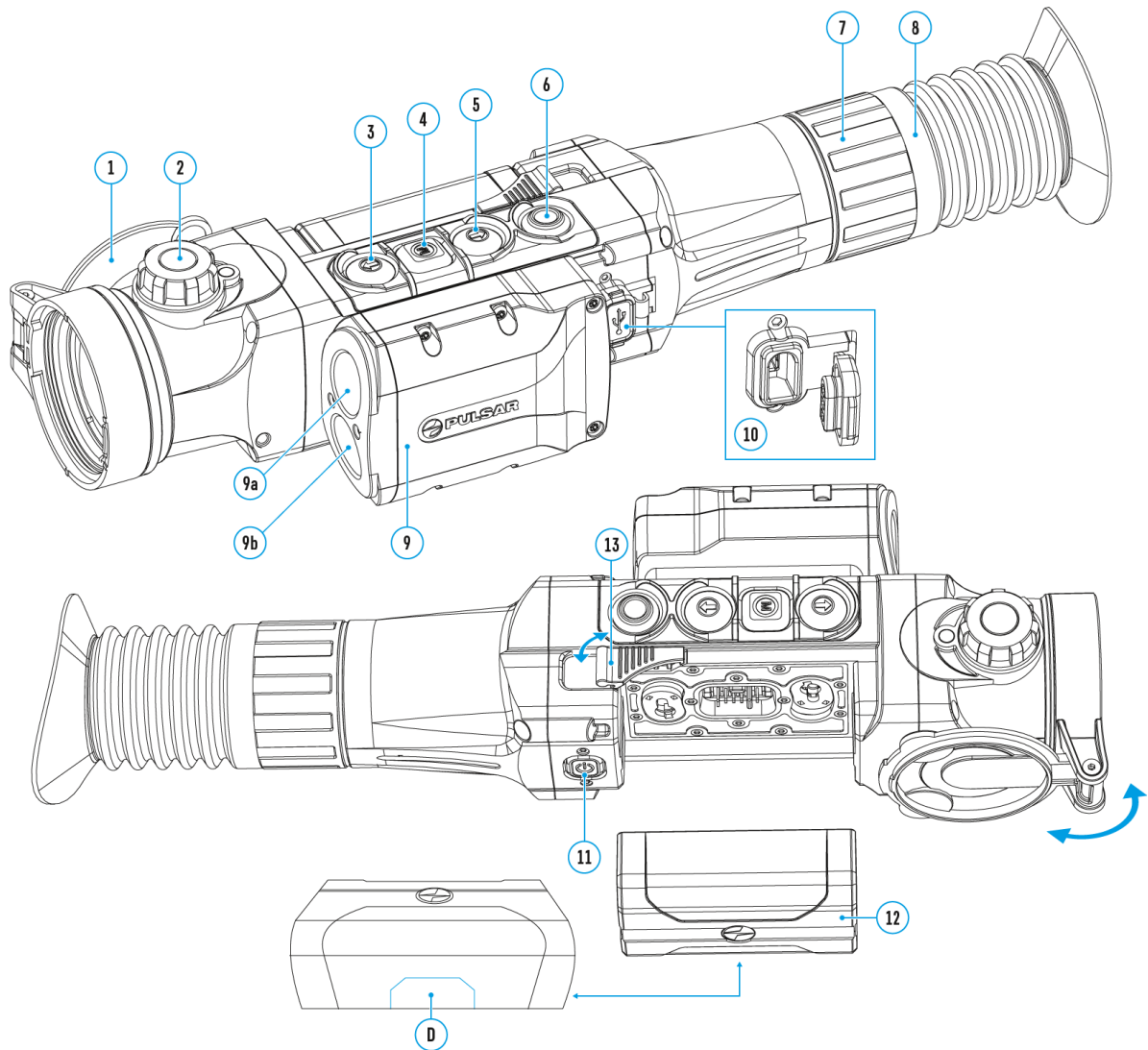
This option allows the user to view the following information about the riflescope:

- Full name
- SKU number
- Serial number
- Software version
- Hardware version

- Service information

To display information, do the following:

1. Press and hold down the **M (4)** button to enter the main menu.
2. Select option **Device Information** (i) with the **UP (3)/DOWN (5)** buttons.
3. Press briefly the **M (4)** button to confirm.

Video Recording and Photography

Show device diagram
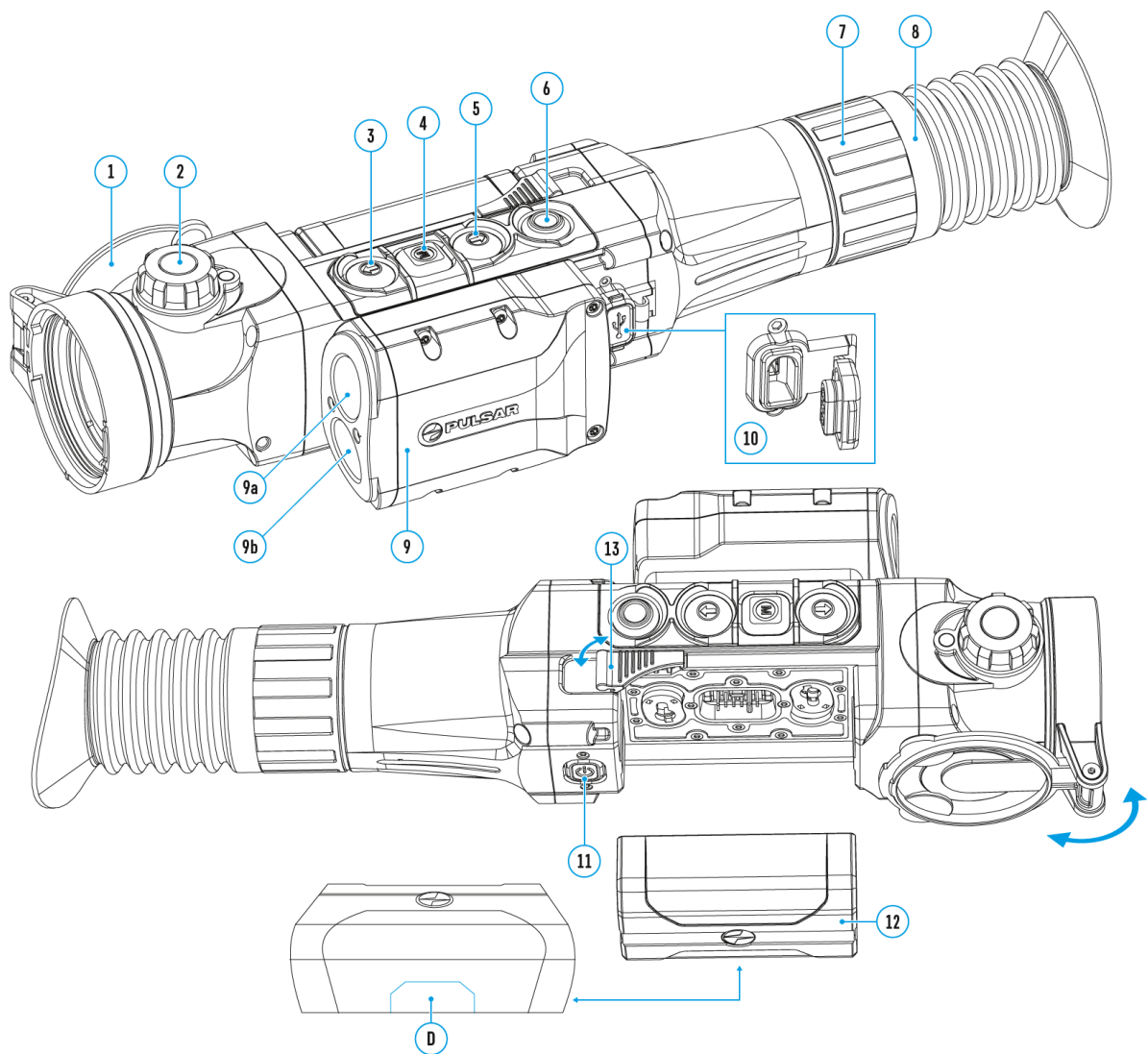
Trail 2 LRF thermal riflescopes feature video recording and photography of an image, which are saved to an internal memory card.

Before using this feature, please read the **Date** and **Time** subsections of the section **General Settings**.

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

The built-in recorder operates in two modes - **Video** and **Photo**.

Video mode. Video recording 📹

1. Switch to **Video**mode with a long press of **REC (6)** button.
2. In the top left corner you will see icon 📹 and remaining recording time in the format HH:MM (hours: minutes).
3. Start video recording with a short press of **REC (6)** button.
4. Upon start of video recording icon 📹 disappears, and icon REC and recording timer in the format MM:SS (minutes : seconds) appear instead: ●REC | 00:25.
5. Pause and resume recording video with a short press of**REC (6)** button.
6. Stop recording video with a long press of the **REC (6)** button.
7. Video files are saved to memory card after stopping the video.
8. Switch between modes **(Video-> Photo-> Video)** with a long press of **REC (6)** button.

Photo mode. Capturing an image 📷

1. Switch to **Photo** mode with a long press of **REC (6)** button.
2. Take a picture with a short press of **REC (6)** button. The image freezes for 0.5 sec and a photo is saved to memory card.

Notes:

- You can enter and operate the menu during video recording.
- Recorded videos and photos are saved to built-in memory card in the format img_xxx.jpg (photos); video_ xxx.mp4 (videos). xxx – three-digit counter for videos and photos.
- The counter for multimedia files cannot be reset.

Attention!

- Maximum duration of a recorded file is five minutes. After this time expires a video is recorded into a new file. The number of recorded files

is limited by the capacity of unit's internal memory.

- Check regularly free capacity of the internal memory, move recorded footage to other storage media to free up space on the internal memory card.
- When the Display Off function is activated, video recording is paused.

Important!

To playback video files recorded by thermal imaging devices on macOS based computers, we recommend that you use VLC video player or Elmedia player.

Download links are shown below:

VLC Video Player

http://www.videolan.org/vlc/download-macosx.html

ELMEDIA Video Player

https://apps.apple.com/us/app/elmedia-multiformat-video/id937759555?mt=12

Wi-Fi Function

Your thermal riflescope features wireless connection option (Wi-Fi) which links it with external appliances (tablet, smartphone).

- Turn on the wireless module as described in the option **Wi-Fi Activation** 🛜.

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

Connection Status	Indication in the Status Bar
Wi-Fi is off	
Wi-Fi in the riflescope is being activated	
Wi-Fi is on, no connection with mobile device	
Wi-Fi is on, mobile device connected	

- Your riflescope is detected by external appliance as "Trail_XXXX", where XXXX — is the last four digits of riflescope's serial number.
- After entering the password (**default: 12345678**) on a mobile (see the **Password Setup** subsection of the **Wi-Fi Settings** section for more information on setting a password) and setting up a connection, the icon 🛜 in the riflescope status bar changes to .

Built-In Laser Rangefinder

Show device diagram
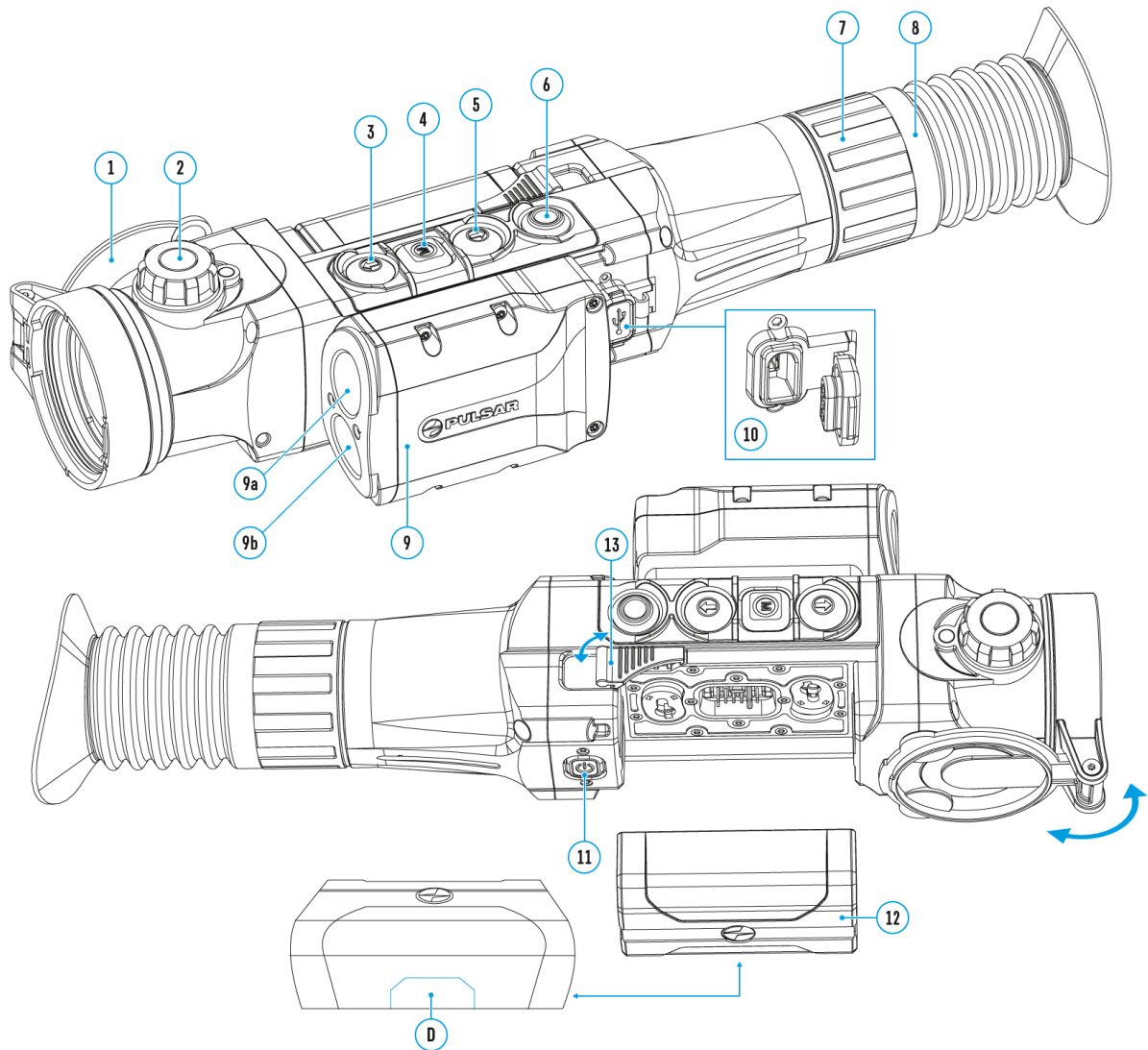
The riflescope is equipped with a built-in rangefinder **(9)**, allowing you to measure distance to objects up to 1000m away.

125 m
SCAN

[ ]
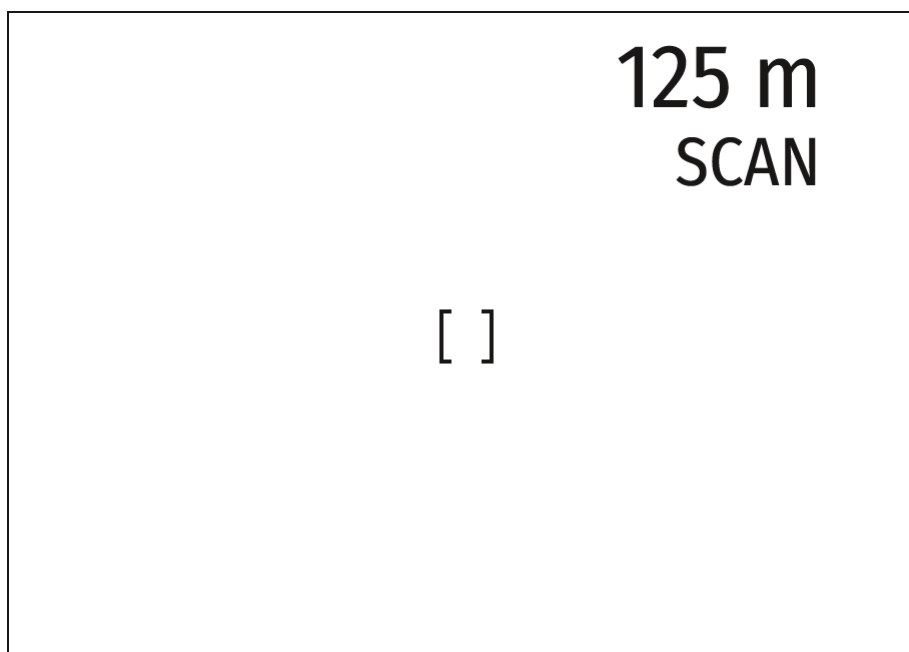
How the rangefinder works:

1. Turn on the riflescope, adjust image according to section **Powering On and Image Setting**.
2. Press **UP (3)** button — rangefinding reticle appears (and aiming reticle disappears), dashes of distance values with unit of measurement appear in the top right corner of the display , i.e. the rangefinder enters stand-by mode. ----m
3. If PiP mode is on, the aiming reticle disappears upon activation of the rangefinder, but in the PiP window remains active.
4. If PiP mode is off, the activation of the rangefinder automatically turns on the PiP window with the last digital magnification set for it and a reticle in it.
5. Point the rangefinding reticle at an object and press **UP (3)** button.
6. In the top right corner of the display you will see distance in meters (or yards depending on settings). 7 m

Notes:

- If the rangefinder is idle longer than three seconds, it turns off automatically and aiming reticle appears.
- The point of aiming of the rangefinding reticle and the aiming reticle in the PiP window might not coincide due to aiming reticle shift after zeroing.

Operation in SCAN mode:

1. Turn on the rangefinder by briefly pressing the **UP (3)** button.
2. Hold down **UP (3)** button for longer than two seconds. Measurement readings will be changing in real time as you point the riflescope at different objects. In the top right corner a message **SCAN** appears.
3. In case of unsuccessful measurement dashes will appear on the display.
4. To exit **SCAN** mode and to return to stand-by mode, press **UP (3)** button briefly.
5. To turn off the rangefinder hold the **UP (3)** button.

Notes:

- To select a rangefinding reticle, please go to submenu **Rangefinder** in the main menu.
- To select units of measurement (meters or yards) go to submenu **General Settings** in the main menu.
- While you measure the distance in the **SCAN** mode you can use the reticle of the PiP window to make a shot.

Additional Information:

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

Display-Off Function

Show device diagram

The Display-Off function deactivates transmission of image to the display by minimizing its brightness. This prevents accidental disclosure by light in the dark. In this mode the device is in stand-by and keeps running.
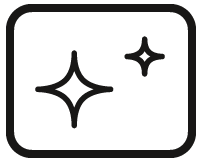
Display off

1. To activate the Display-Off function press and hold **ON/OFF (11)** button when the device is switched on. The **"Display off"** message with 3 sec countdown will appear on the screen.
2. Before the end of the countdown release the **ON/OFF (11)** button, otherwise if the countdown ends the device will be switched off.
3. To activate the display, press briefly **ON/OFF (11)** button.

PiP Function

Show device diagram

PiP (Picture in Picture) allows you to see a zoomed image in a dedicated window simultaneously with the main image.
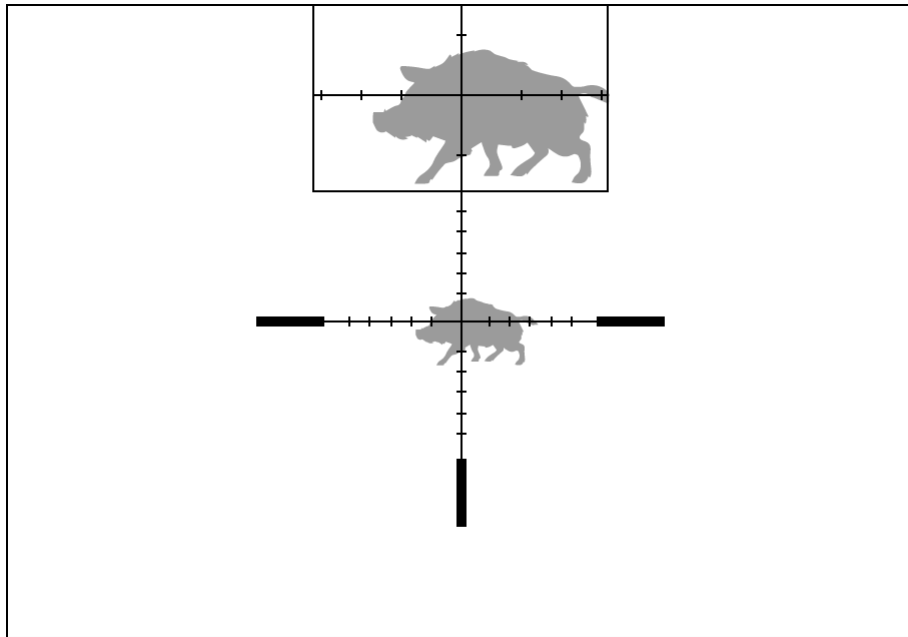
- Turn on/off the PiP function with a long press of **DOWN (5)** button.
- Change zoom ratio in the PiP window with a short press of **DOWN (5)** button.
- The dedicated small window shows zoomed image with magnification value being shown in the bottom left corner of the window.
- The main image is shown with base optical magnification.
- When PiP is turned on, you can operate the discrete and smooth digital zoom. The magnification will take place only in the dedicated window.
- When PiP is turned off, the main image retains the magnification set for the PiP window.

Scalable Reticles

Show device diagram
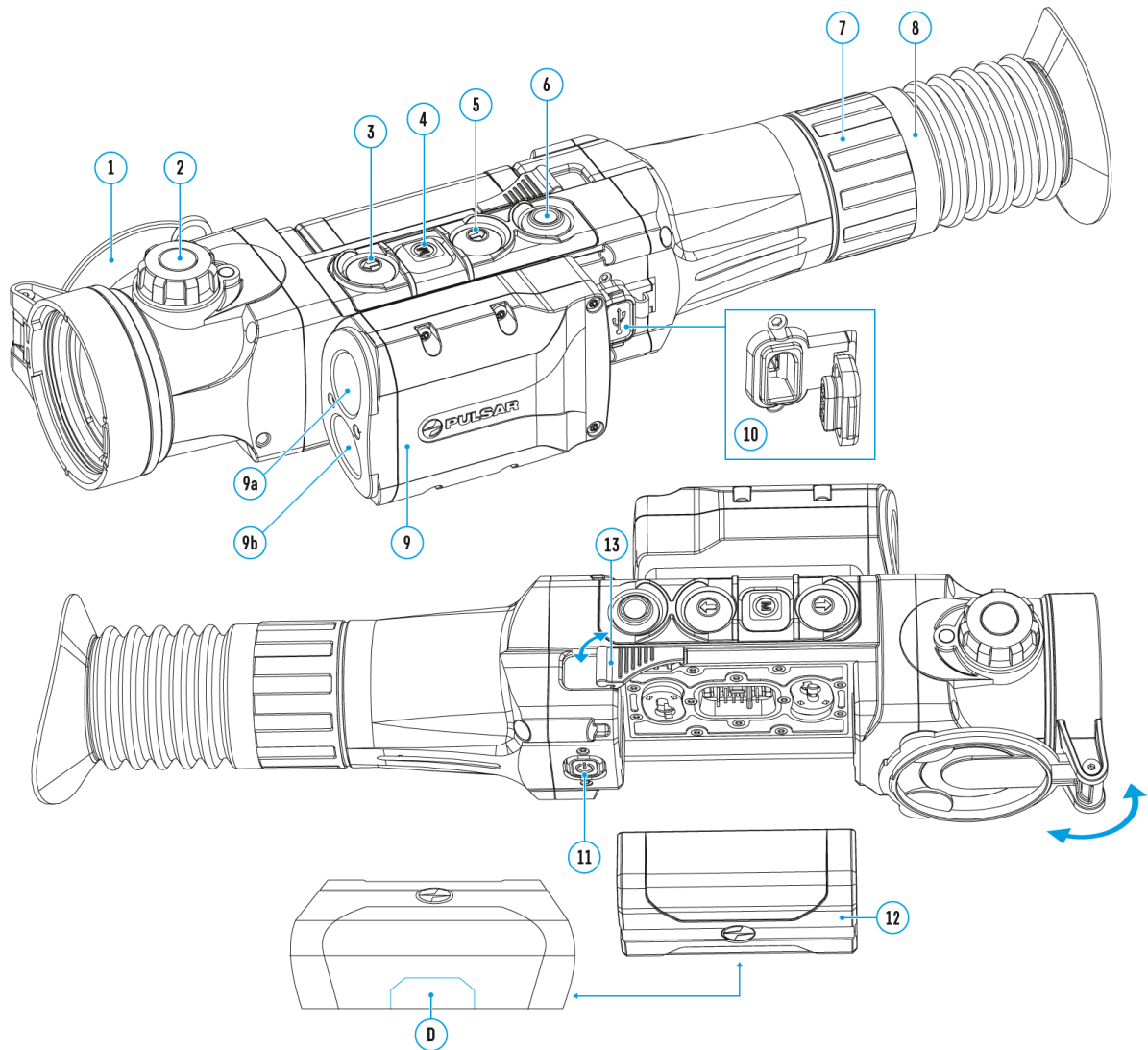
http:////e.issuu.com/embed.html?d=trail_2_lrf_reticle_catalogue&u=yukon2

This function is designed to preserve ballistic properties of the scalable reticles for all magnifications.

1. Enter the main menu with a long press of **M (4)** button.
2. Enter submenu **Reticle Setup** ─┆─with a short press of **M (4)** button.

3. Enter submenu **Reticle Type** ⊠ =::with a short press of **M (4)** button.
4. Select the reticle (please check available Scalable reticles in the Reticles catalogue in Downloads section on our **web page**).

Notes:

- When zooming in and out the image, the selected reticle on the display and in the recorded video changes its geometrical size according to the magnification selected.
- The reticle scale changes both on the main display and in the PiP mode.

Stream Vision 2

Trail 2 LRF support Stream Vision and Stream Vision 2 mobile apps that allow you to stream real-time image from your thermal imager to your smartphone or tablet via Wi-Fi. We recommend using the latest version of Stream Vision 2.

We recommend using the latest version – 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**.
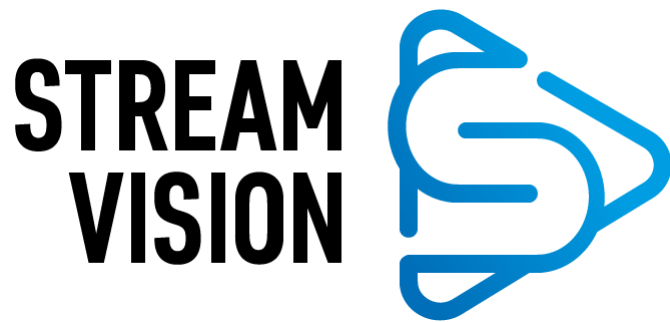
You can find further guidelines on Stream Vision **here.**

Download from Google Play

Download from App Store

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

Stream Vision 2 Manual

Android

iOS

Firmware Update

Stream Vision 2

1. Download 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 phone, please turn on mobile data transfer (GPRS/3G/4G) to download update;
- if your Pulsar device is not connected to your phone 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**.

Stream Vision

https://www.youtube.com/embed/0BIu4rr-8IY

1. Download free of charge Stream Vision App on Google Play or App Store.
2. Connect your Pulsar device to your mobile device (smartphone or tablet).
3. Launch Stream Vision and go to section "My Devices".
4. Select your Pulsar device and press "Check Updates".
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 phone, please turn on mobile data transfer (GPRS/3G/4G) to download update;
- if your Pulsar device is not connected to your phone but it's already in the "My Devices" section, you may use Wi-Fi to download update.

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

Is your firmware up to date?

Click **here** to check the latest firmware for your device.

USB Connection

Show device diagram

USB connection

▶ Use as power
Use as memory card
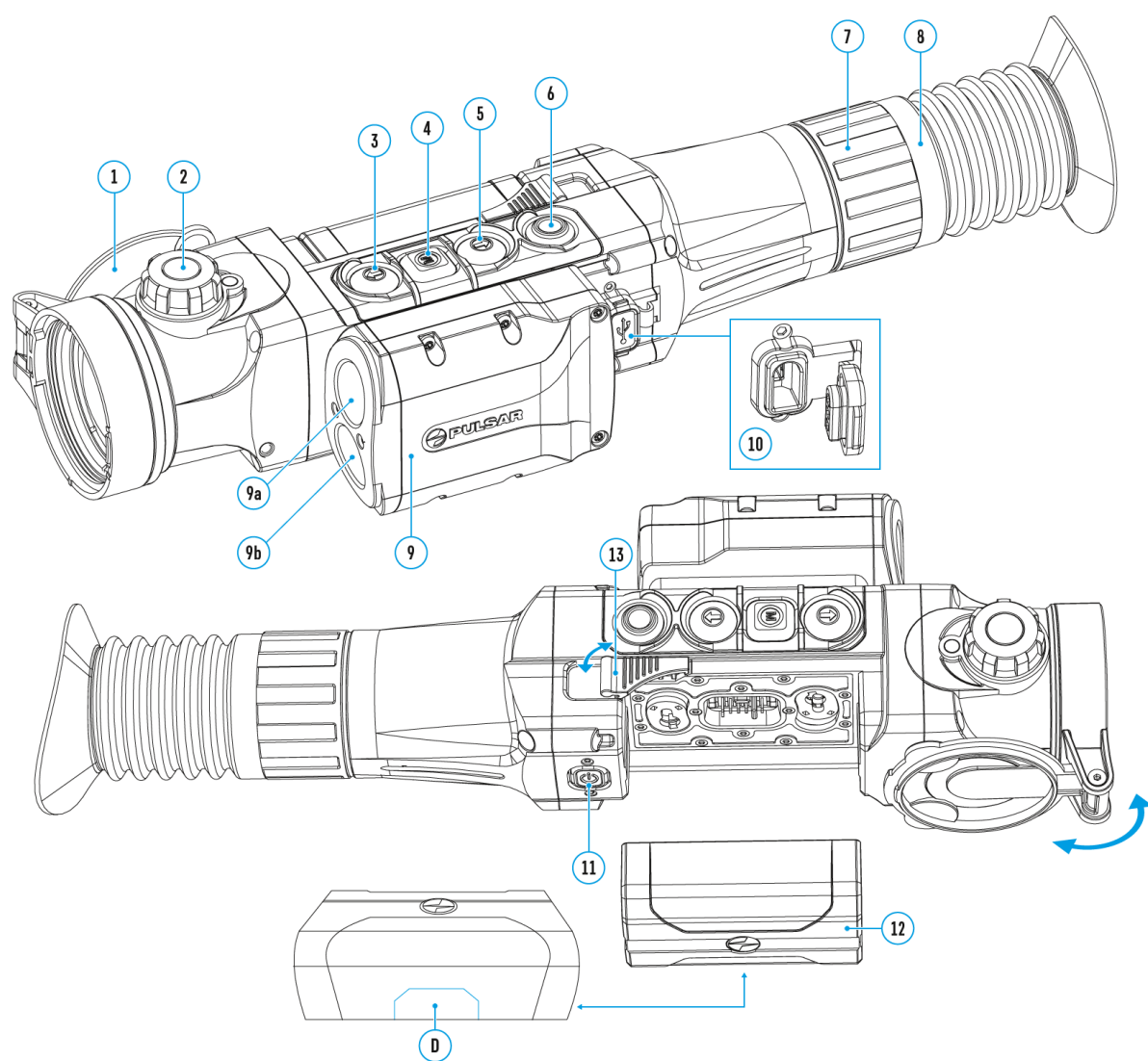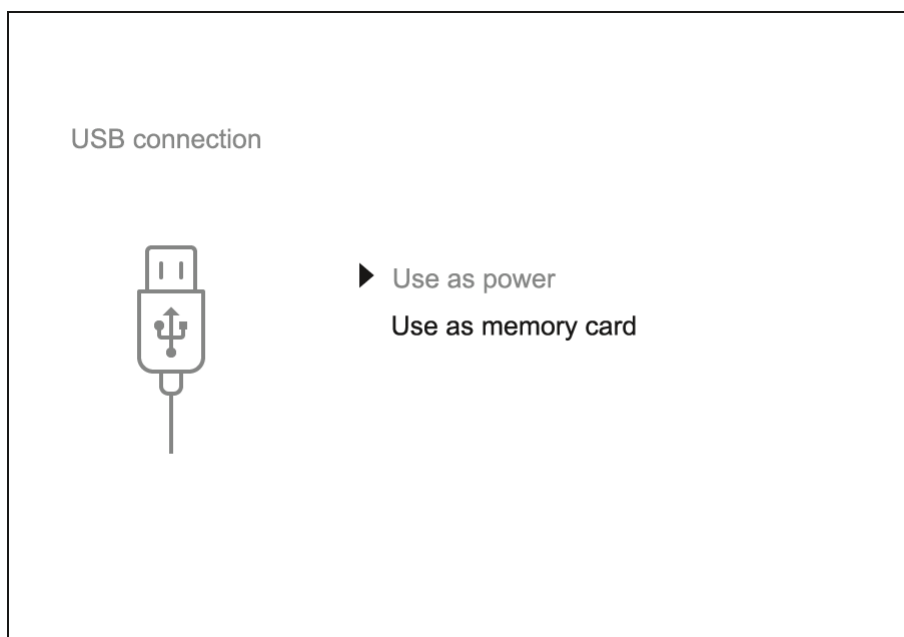
1. Connect one end of the USB cable to the Micro-USB **(10)** port of your riflescope, and the other end to the USB port of your PC/laptop.
2. Turn the riflescope on with a short press of **ON/OFF (11)** button (riflescope that has been turned off cannot be detected by your computer).
3. Your riflescope will be detected by the computer automatically; no drivers need to be installed.
4. Two connection modes will appear on the display: **Power**and **Memory Card (external memory)**.
5. Select connection mode with **UP (3)/DOWN (5)** buttons.
6. Confirm selection with a short press of **M (4)** button.

Connection modes:

Power

- In this mode PC/laptop is used as an external power supply. The status bar shows an icon ━■⁼. The device continues operating and all functions are available.
- The Battery Pack installed in the device is not being charged!
- When USB cable is disconnected from the device when in the **Power** mode, the device keeps operating with Battery Pack, if available, and it has sufficient charge.

Memory card (external memory)

- 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.
- When USB cable is disconnected from the device in **Memory Card** mode, the device remains turned OFF. Turn the device ON for further operation.

Technical Inspection

Check:

- External view (there should be no cracks on the housing).
- The state of the objective, eyepiece and rangefinder lenses (there should be no cracks, spot, dust, deposits etc.).
- The state of the Battery Pack (should be charged) and electric terminals (there should be no oxidation).
- Correct functioning of the controls.

Maintenance and Storage

Maintenance should be carried out at least twice a year, and should consist of the following measures:

- Wipe the exterior surfaces of metal and plastic parts off dust and dirt with a cotton cloth. To avoid damage to the paint coating, do not use chemically active substances, solvents, etc.
- Clean the electric terminals of the Battery Pack and riflescope's battery slot using a grease-free organic solvent.
- Check lenses of objective, eyepiece and rangefinder. If necessary, remove the particles of dust and sand (preferably without touching the lens). Clean external surfaces of the lenses with means especially designed for the purpose.
- Always store the riflescope in its carrying case in a dry, well-ventilated space. For prolonged storage, remove the batteries.

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 thermal riflescope will not turn on

Possible cause

Battery Pack is discharged.

Solution

Charge the battery.

The riflescope does not operate on external power supply

Possible cause

USB cable is damaged.

Solution

Replace USB cable.

Possible cause

External power supply is discharged.

Solution

Charge the external power supply (if necessary).

The image is blurry, with vertical stripes and uneven background

Possible cause

Calibration is required.

Solution

Carry out calibration according to section **Microbolometer Calibration**.

Black screen after calibration

Solution

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

The image is too dark

Possible cause

Brightness or contrast level is too low.

Solution

Adjust brightness/contrast in the **Quick Menu**.

The reticle is blurred and cannot be focused with the diopter knob

Possible cause

The diopter cannot be adjusted to your eyesight.

Solution

If you wear prescription glasses with a range of +3/-5, keep glasses on when looking through the eyepiece.

With a crisp image of the reticle, the image of the observed target that is at least 30 m away is blurred

Possible cause

Dust and condensate are covering the outside optical surfaces after the riflescope was brought in from the cold into a warm environment, for example.

Solution

Clean the lens surfaces with a blower and soft lens cloth. Let the riflescope dry by leaving it in a warm environment for 4 hours.

Possible cause

The objective lens is not focused.

Solution

Adjust the image by rotating the lens focusing knob.

The point of impact shifts after firing rounds

Possible cause

The riflescope is not mounted securely or the mount was not fixed with thread sealant.

Solution

Check that the riflescope has been securely mounted, make sure that the same type and caliber bullets are being used as when the scope was initially zeroed; if your riflescope was zeroed during the summer, and is now being used in the winter (or the other way round), a small displacement of the point of impact is possible.

The riflescope will not focus

Possible cause

Wrong settings.

Solution

Adjust the riflescope according to the instructions given in section **Powering On and Image Setting** and check the surfaces of the eyepiece and objective lenses and clean them if necessary from dust, condensation, frost, etc.; to prevent fogging in cold weather, apply a special anti-fog solution.

Smartphone or tablet cannot be connected to the riflescope

Possible cause

Password in the riflescope was changed.

Solution

Delete network and connect again entering the password saved in the riflescope.

Possible cause

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

Solution

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

More information on solving problems with connection by following the links: **Stream Vision FAQ**, **Stream Vision 2 FAQ**.

No Wi-Fi signal or erratic signal

Possible cause

The riflescope is beyond reliable Wi-Fi range. There are obstacles between the riflescope and the signal receiver (i.e. concrete walls).

Solution

Place your mobile device in line-of-sight of the Wi-Fi signal.

More information on solving problems with connection by following the links: **Stream Vision FAQ**, **Stream Vision 2 FAQ**.

There is no image of the observed object

Possible cause

You are looking through glass.

Solution

Remove glass from the field of view.

Poor image quality / Detection range reduced

Possible cause

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

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

Possible cause

Because of variations in thermal conductivity, observed objects (surrounding environment, background) become warm more quickly at

above-zero temperatures, which allows higher temperature contrast and, thus, the quality of the image produced by a thermal imager will be better.

At low operating temperatures, observed objects (background) normally cool down to roughly identical temperatures, which leads to lower temperature contrast, and to image quality (precision) degradation. This is normal for thermal imaging device.

Color stripes appear on the display or image disappears

Possible cause

The device has accumulated static charge during operation.

Solution

As soon as the impact of the static charge is over, the device may reboot automatically; alternatively please turn off and restart the device.

Rangefinder does not measure distance

Possible cause

In front of the receiver lens or emitter lens there is an object that prevents signal transmission.

Solution

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

Possible cause

The riflescope is not held steadily when measuring.

Solution

Keep the riflescope steady when measuring.

Possible cause

Distance to the object exceeds 1000m.

Solution

Choose an object at a distance closer than 1000m.

Possible cause

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

Solution

Choose an object with a higher reflection ratio.

Large measurement error

Possible cause

Inclement weather conditions (rain, mist, snow).

The supplied USB cable is broken

Solution

To replace the USB cable, contact your **local distributor**.

Self-repair of the cable is prohibited.

The ability to use a USB cable from other manufacturers with the device may be limited.

Legal Compliances and Disclaimers

Attention! Trail 2 LRF thermal imaging riflescopes require a license when exported outside your country.

Electromagnetic compatibility. This product complies with the requirements of European standard EN 55032: 2015, Class A.

Caution: Operating this product in a residential area may cause radio interference.

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

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 of the device is possible within 5 years.