



# **Helion 2 XP**

## **Manual**

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# Specifications

You can learn more about the main parameters [here](#).

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## XP50

<b>Model</b>	<b>XP50</b>
SKU	77402
<b>Microbolometer</b>	
Type	uncooled
Resolution, Pixels	640x480
Pixel Pitch, $\mu\text{m}$	17
Frame Rate, Hz	50
<b>Optical Characteristics</b>	
Optical Magnification, x	2.5
Smooth Digital Zoom, x	2.5-20
Digital Zoom	x2/x4/x8
Objective Lens	F50 mm, F/1.0
Field of View (Horizontal), $^{\circ}$ / m@100 m	12.4 / 21.8
Eyepiece Focus Range, Diopter	$\pm 5$
Range of Detection, m/y (Deer Type Object)	1800 / 1968.5
<b>Display</b>	
Type	AMOLED
Resolution, Pixels	640x480

## Operational Characteristics

Power Supply, V	3 - 4.2
Battery Type / Capacity /Nominal Output Voltage	Li-Ion Battery Pack IPS7 / 6400 mAh / DC 3.7 V
External Power Supply	5 V (USB)
Battery Run Time at t=22°C, hours*	10
Level of Protection (acc. to IEC 60529), with Battery Installed	IPX7
Operating Temperature	-25 °C ...+50 °C / -13 °C ...+122 °F
Dimensions, mm/inch	234x55x58 / 9.21x2.17x2.28
Weight (without battery), kg/oz	0.5 / 17.64
<b>Video Recorder</b>	
Video / Photo Resolution, Pixels	640x480
Video / Photo Format	.mp4 / .jpg
Built-In Memory	16 GB
Built-In Memory Capacity	About 8 h video or > 100,000 pictures
<b>Wi-Fi Channel**</b>	
Frequency	2.4 GHz
Standard	802.11 b/g

\*Actual operating time will depend to what extent the Wi-Fi and built-in video recorder is used.

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



# Description

**Helion 2 XP** thermal imaging scopes are based on an IR sensor (uncooled microbolometer). The scopes 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.

**Helion 2 XP** thermal imaging scopes do not require an external source of light and are not affected by bright light exposure.

**Helion 2 XP** thermal imaging scopes are designed for various applications including hunting, observation, security, terrain orientation, search and rescue operations, etc.

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To get started, see the sections:

[\*\*Battery Charging\*\*](#)

[\*\*Battery Installation\*\*](#)

[\*\*Powering on and Image Setting\*\*](#)

[\*\*Microbolometer Calibration\*\*](#)

[\*\*Stream Vision\*\*](#)

# Package Contents

- Helion 2 XP Thermal Monocular
- IPS7 rechargeable battery
- Battery Charger
- Power adapter
- USB cable
- Carrying case
- Hand strap
- Quick-Start guide
- Lens cloth
- Warranty card



# Features

- 4 operating modes: Forest, Rocks, Identification, User
- 3 calibration modes: (Manual, Semi-Automatic, Automatic)
- 8 color display palettes
- Defective pixel repair
- Image Detail Boost technology
- Stadiametric rangefinder
- Display-Off function
- Functional and ergonomic design
- All-metal, light-alloy body
- Updatable firmware
- Wide operating temperature range of -25 to +50° C (-13° F to +122° F)

## Video Recording

- Built-in video with audio
- iOS and Android compatible
- Wi-Fi remote control and viewing using a smartphone

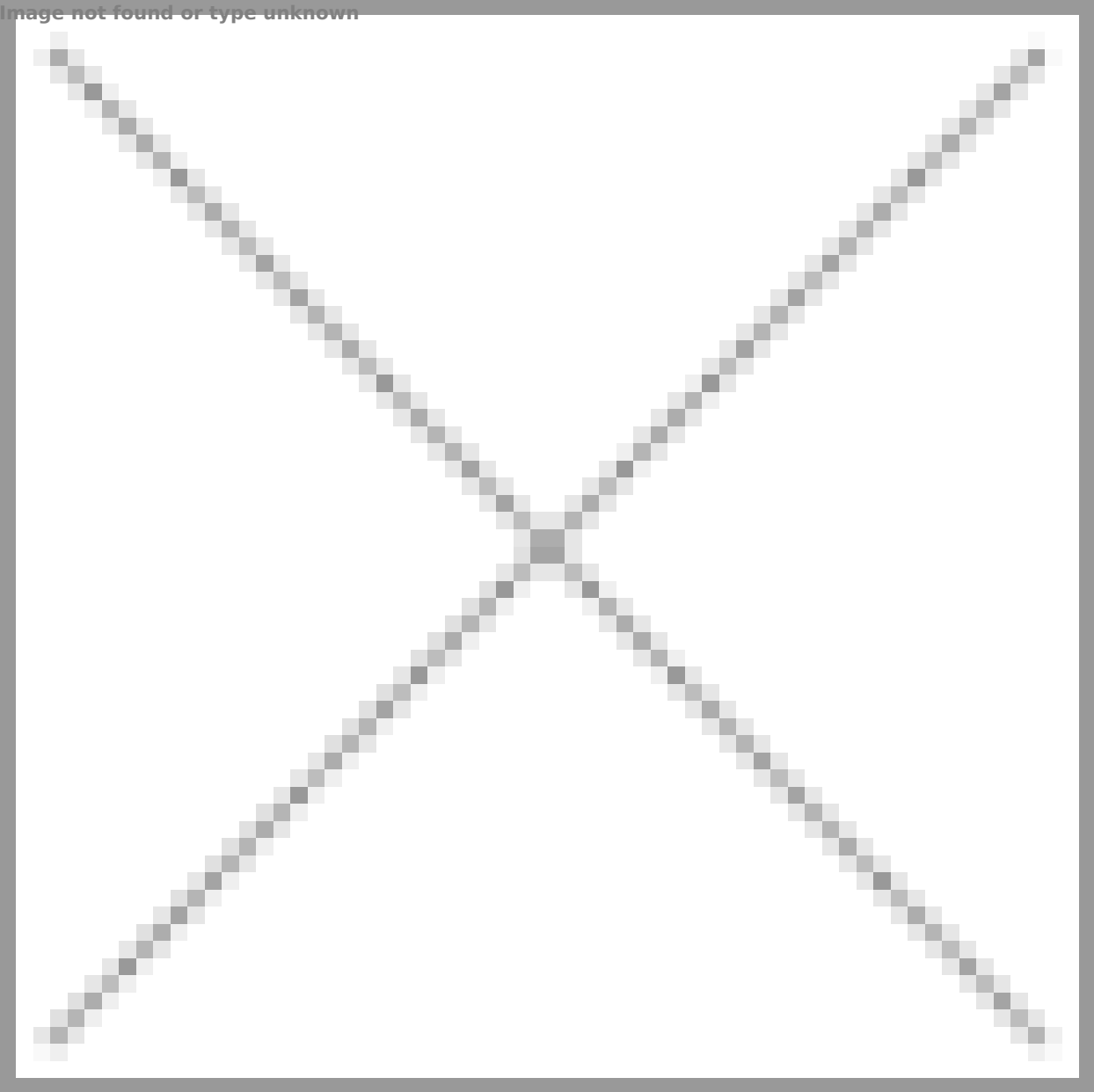
## Battery Pack

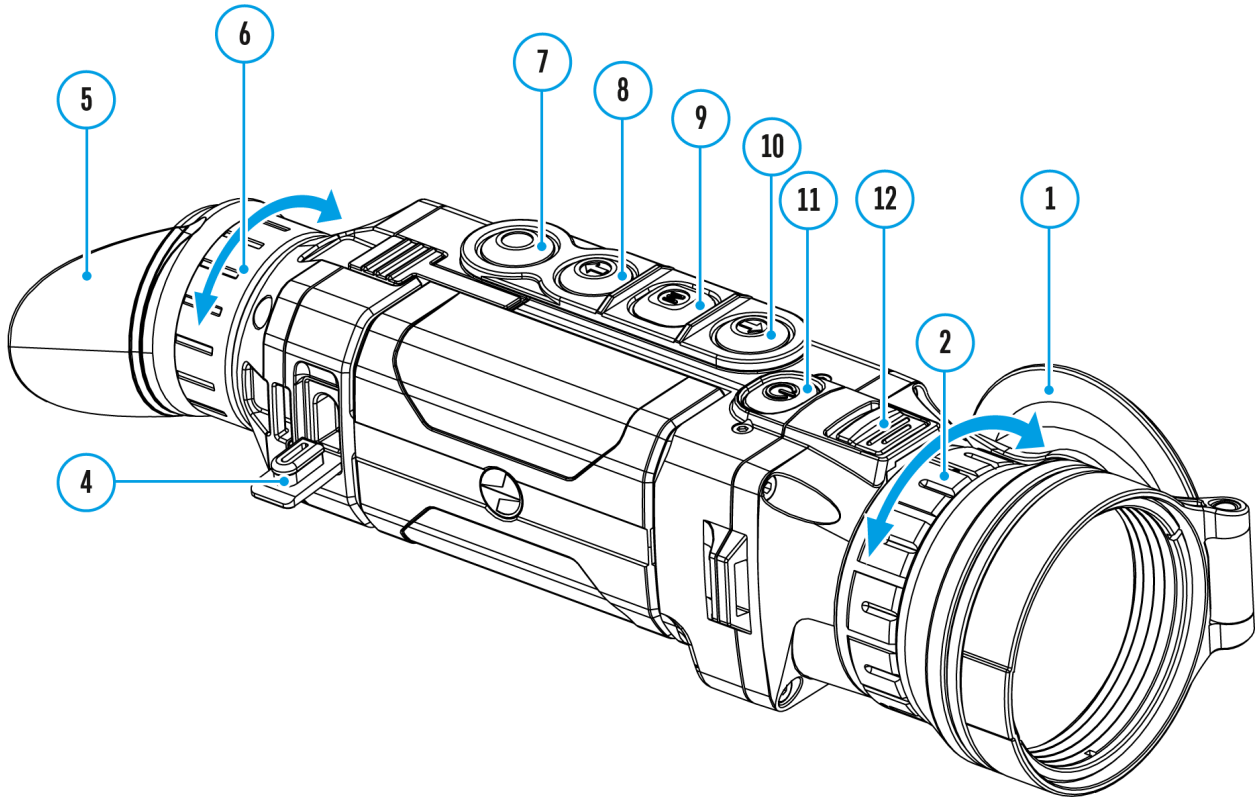
- Quick-Release Li-Ion IPS7/IPS14 battery packs
- Operating time in Wi-Fi mode up to 20 hours\*
- Operates on AA batteries\*\*
- USB charging capability for IPS7 / IPS14

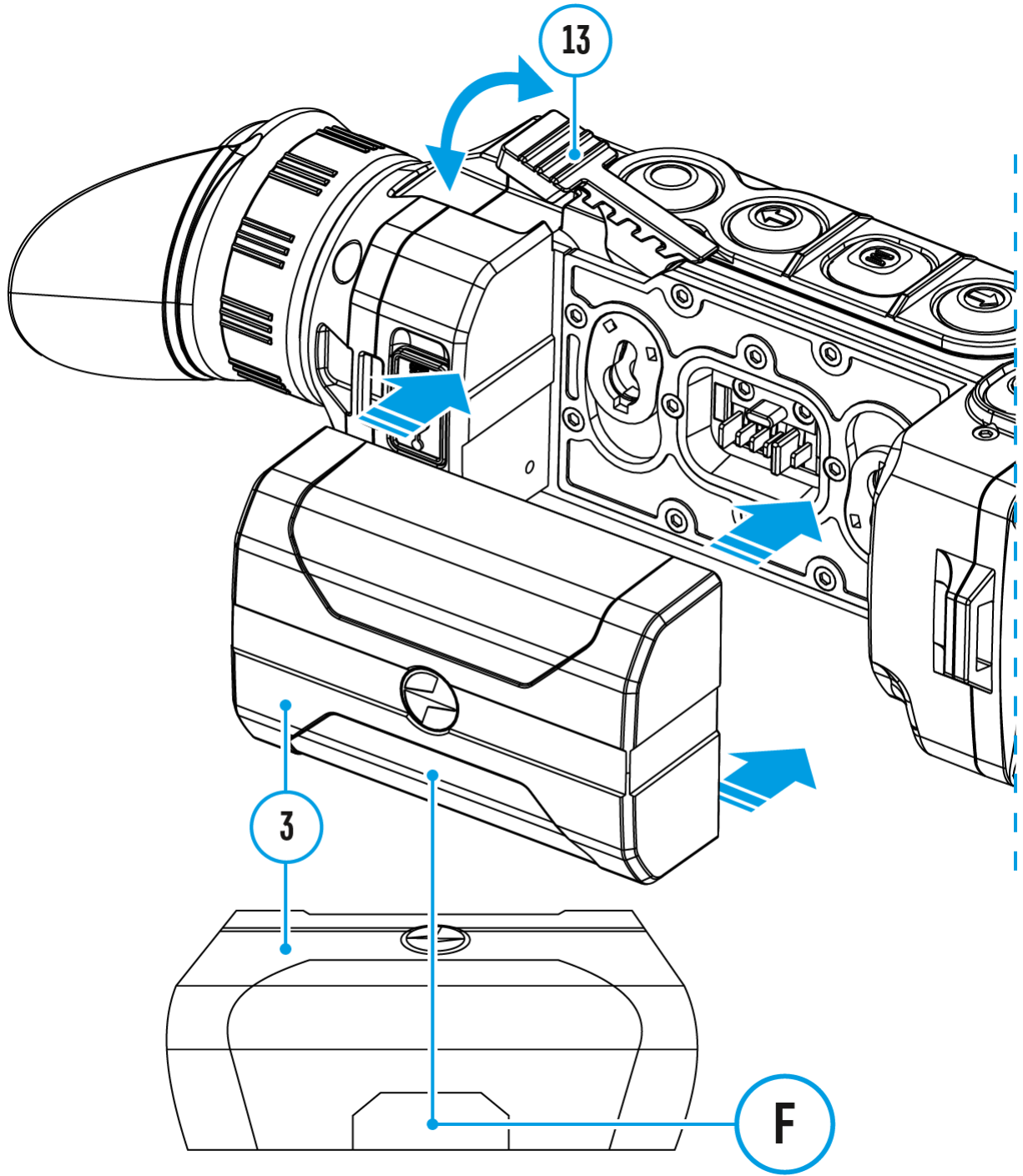
\* with IPS14 Battery Pack (purchased separately).

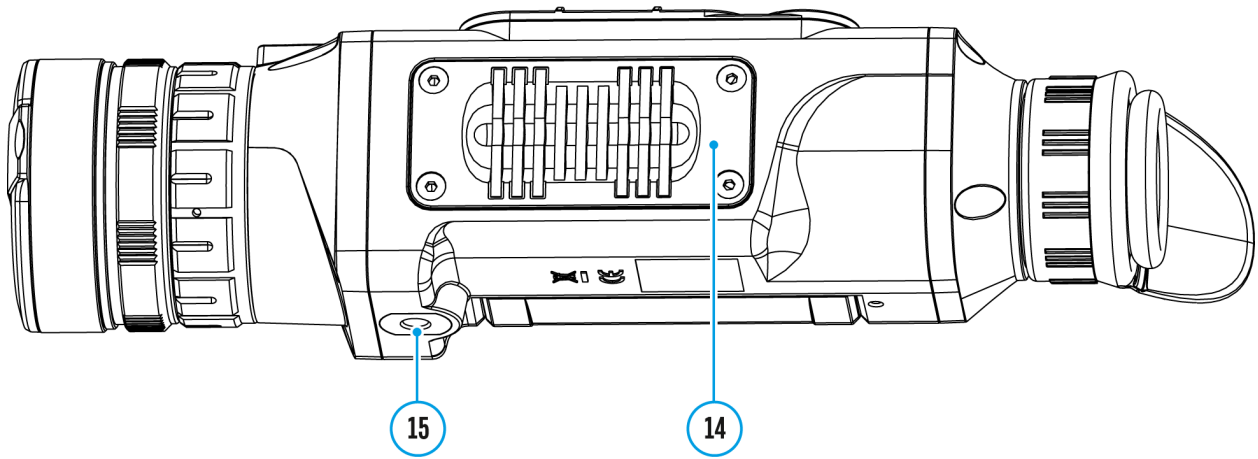
\*\* with a special battery container (purchased separately).

# Components and Controls



















1. Lens cover
2. Lens focus ring
3. Battery Pack
4. Micro-USB connector
5. Eyeshade
6. Diopter adjustment ring
7. Record button **REC**
8. Navigation button **DOWN**
9. Button **MENU**
10. Navigation button **UP**
11. **ON/OFF/Calibration** button
12. Latch for lens change
13. Lever for Battery Pack
14. Radiator cooling system
15. Tripod socket

# Button Operation

<b>Operation</b>	<b>Button</b>
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
Switch color palettes	 long press
Control discrete digital zoom	 short press
PIP on / off	 long press
<b>Video Recorder</b>	<b>Button</b>
Start/pause/resume video recording	 short press
Stop video recording	 long press
Switch to video / photo	 long press
Capture Photo	 short press
<b>Main Menu</b>	<b>Button</b>
Enter main menu	<b>M</b> long press
Navigation upwards/rightwards	 short press
Navigation downwards/leftwards	 short press
Confirm selection	<b>M</b> short press
Exit submenu without confirming selection	<b>M</b> long press

Exit menu (switch to viewing mode)	<b>M</b> long press
<b>Quick Menu</b>	<b>Button</b>
Enter quick menu	<b>M</b> short press
Switch between quick menu options	<b>M</b> short press
Increase value	<b>↑</b> short press
Decrease value	<b>↓</b> short press
Exit quick menu	<b>M</b> long press

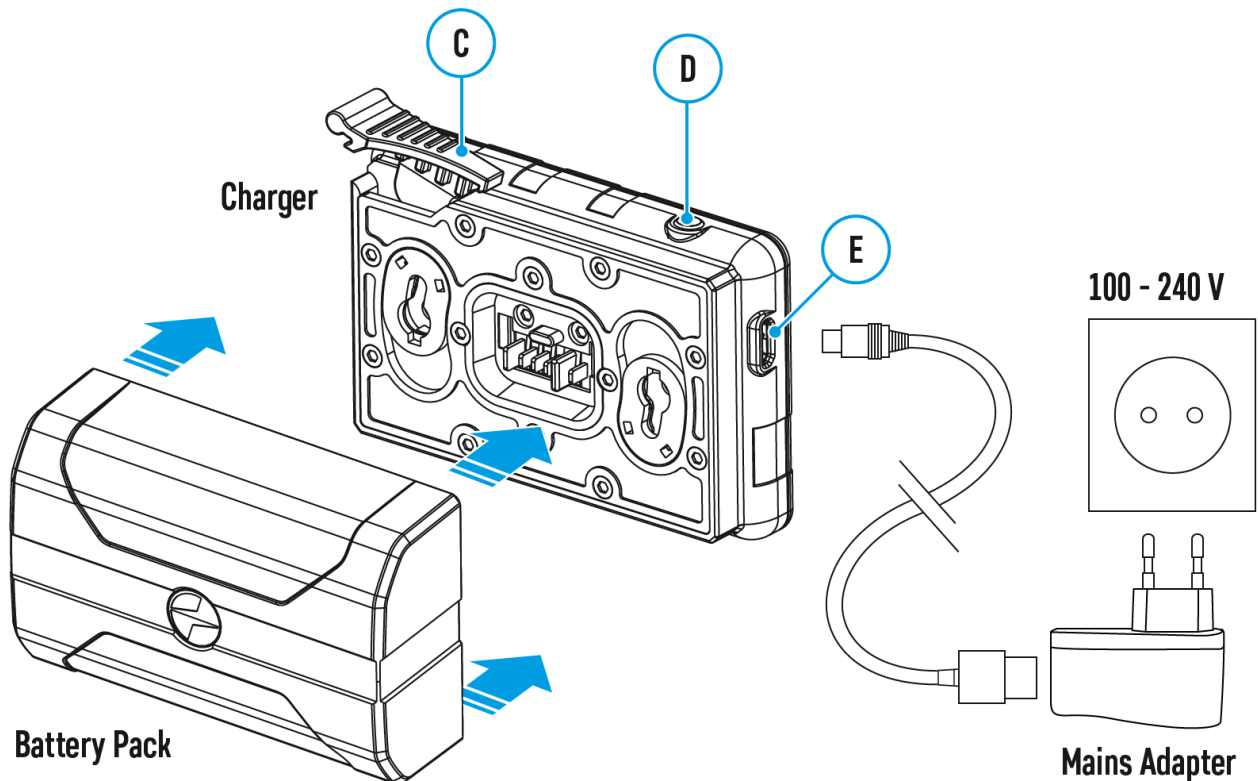
# Precautions

- 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.
- During long-term storage, the Battery Pack should be partially charged – the charge level should be between 50% and 80%.
- Do not charge the Battery Pack immediately after bringing it from a cold environment to a warm one. Wait for 30-40 minutes for the Battery Pack to get warm.
- Do not leave the Battery Pack unattended while charging.
- Never use a modified or damaged charger.
- Charge the Battery Pack at a temperature from 0° C to +45° C (32° F to +113° F), otherwise the battery life will decrease significantly.
- Do not leave the Battery Pack with a charger connected to the power adapter after charging is complete.
- Do not expose the Battery Pack to high temperatures or an open flame.
- Do not submerge the Battery Pack in water.
- Do not connect an external device with a current consumption that exceeds permitted levels.
- The Battery Pack is short circuit protected; however, any situation that may cause short-circuiting should be avoided.
- Do not dismantle or deform the Battery Pack.
- When using the Battery Pack at sub-zero (sub 32° F) temperatures the battery capacity decreases. This is normal and is not a defect.
- Do not use the Battery Pack at temperatures above those shown in the table – this may decrease battery life.
- Do not drop or hit the Battery Pack.
- Keep the Battery Pack out of the reach of children.



# Battery Charging

**Helion 2 XP** thermal imaging scopes are supplied with a rechargeable Li-Ion Battery Pack IPS7 which allows operation for up to 10 hours. Please remember to charge the Battery Pack before first use.



## Charging

### Step 1. Install the battery into the charger

1. Lift the lever **(C)** of the charger.
2. Remove the protective cover from the Battery Pack.
3. Insert the battery into the charger until it stops.
4. Lower the lever **(C)**.

### Step 2. Check the current battery level

- Upon installation, a green indicator **(D)** on the charger will start to glow

and begin flashing:

- once if the battery charge level is from 0% to 50%;
  - twice if the battery charge level is from 51 to 75%;
  - three times if the battery charge level is from 76% to 100%.
- If the indicator lights green continuously, the battery is fully charged. You can disconnect it from the charger.
  - If the indicator of the charger lights up red continuously upon battery installation, the battery charge level is probably lower than acceptable (the battery has been in deep discharge for too long). In this case, keep the battery in the charger for a long time (up to several hours), then remove and re-insert it.
  - If the indicator then starts blinking green, the battery is good.
  - If the indicator keeps lighting up red it's defective. **Do not use the battery!**

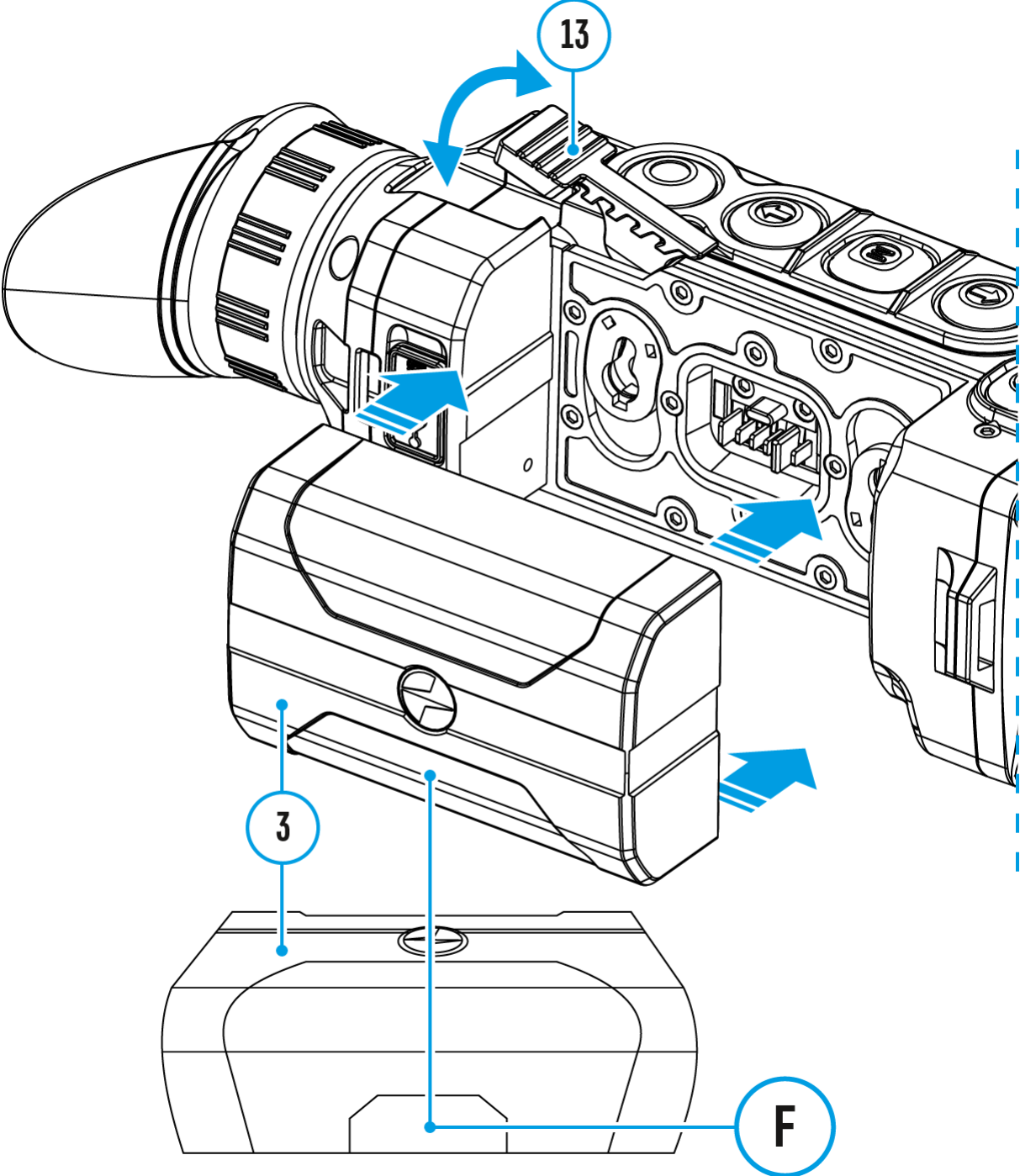
**The LED indicator (D) will display the battery charge status:**

LED Indicator	Battery Charge Status
	Battery is empty
	Battery is full

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

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

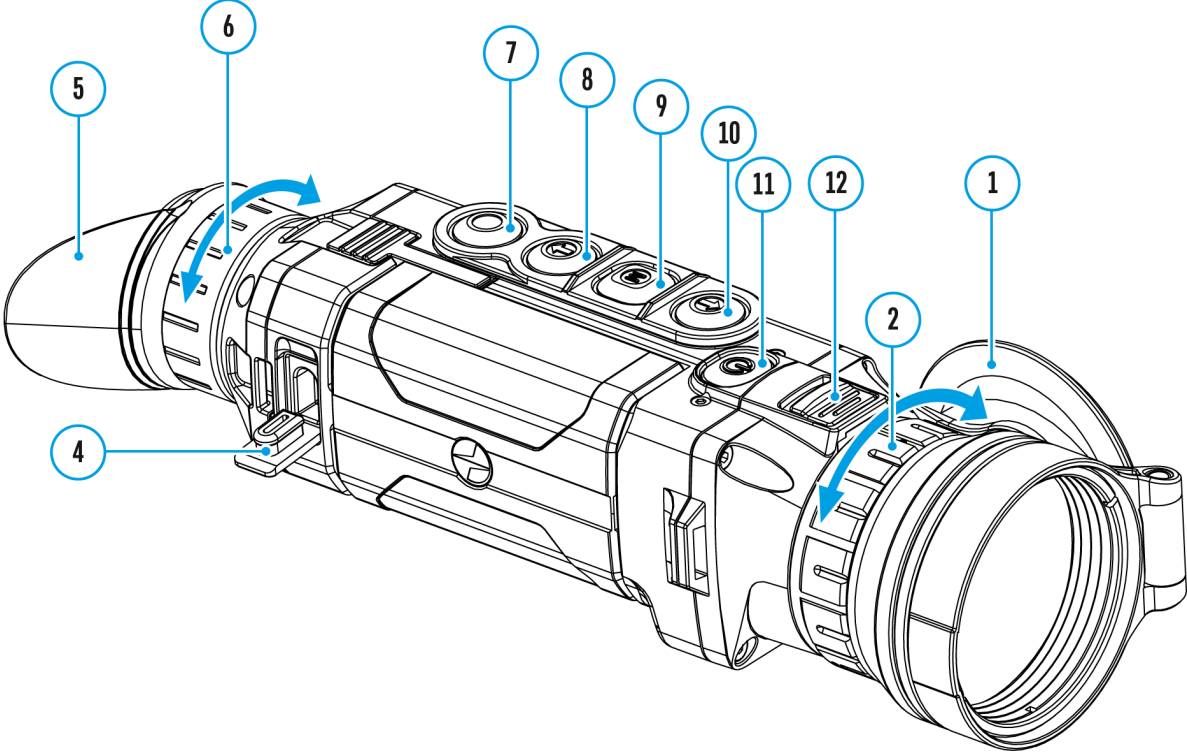
# Battery Installation

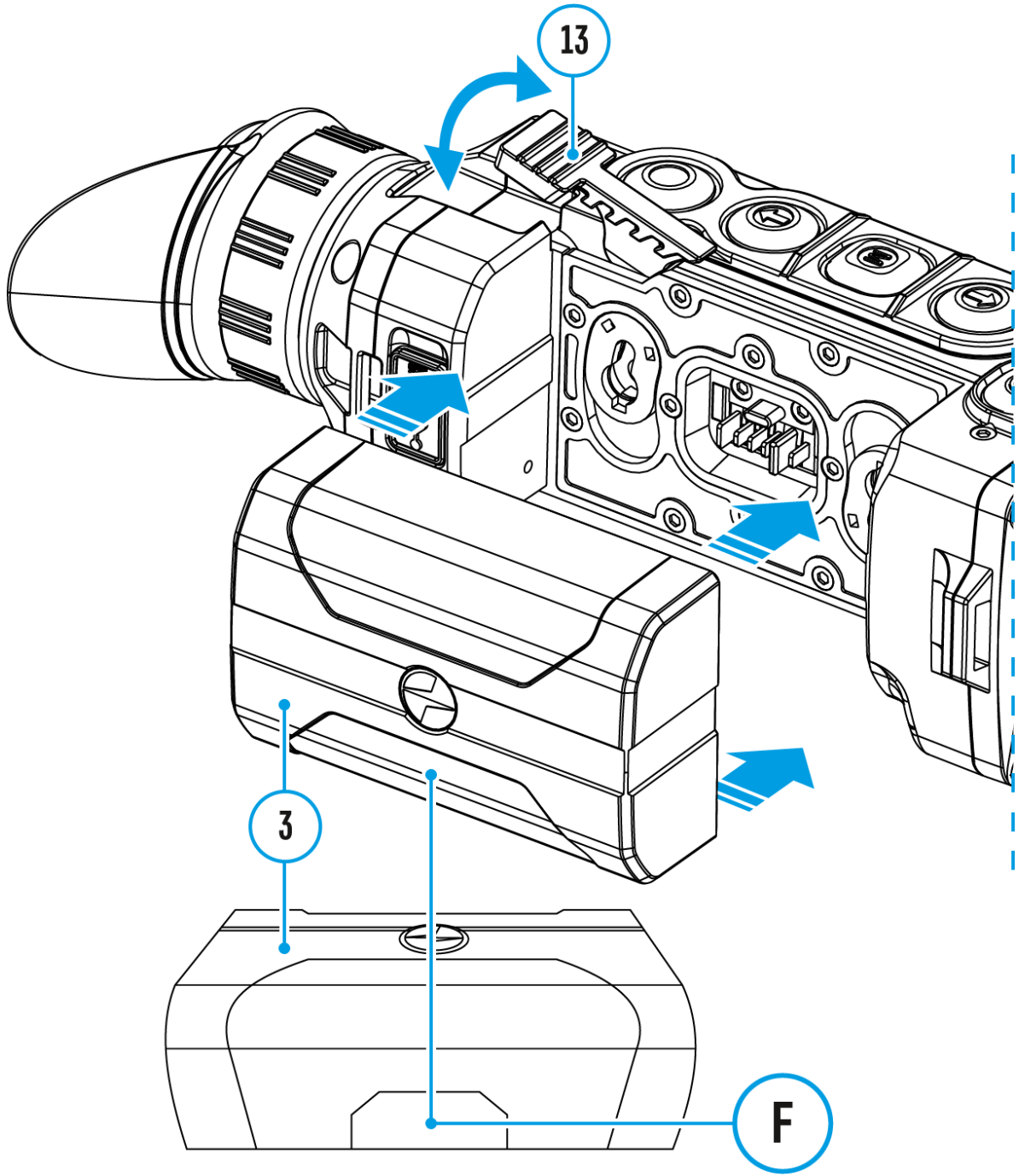


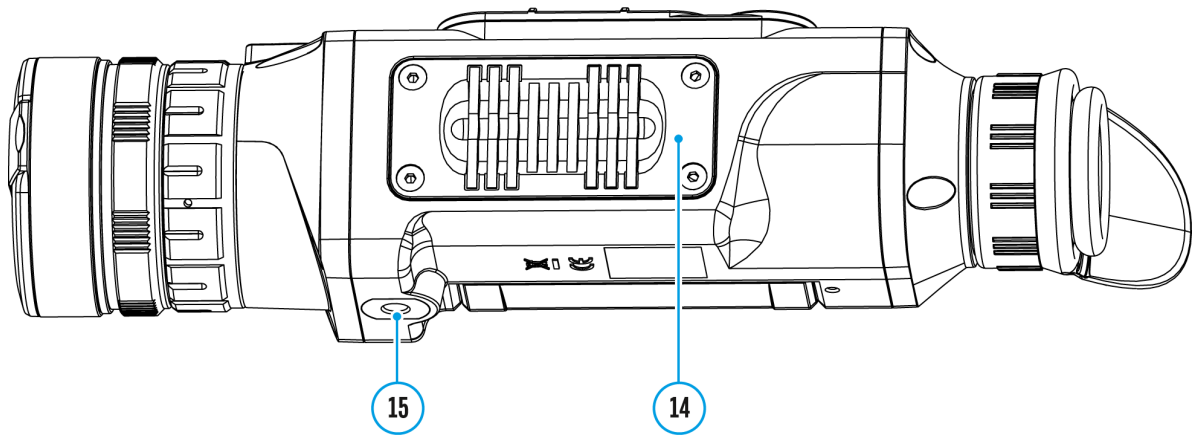
1. Lift the lever(**13**).
2. Insert the battery (**3**) into the dedicated slot in the device body until it stops so that element **F** is located below.
3. Lock the battery (**3**) by lowering the lever (**13**).

# External Power Supply

Show device diagram









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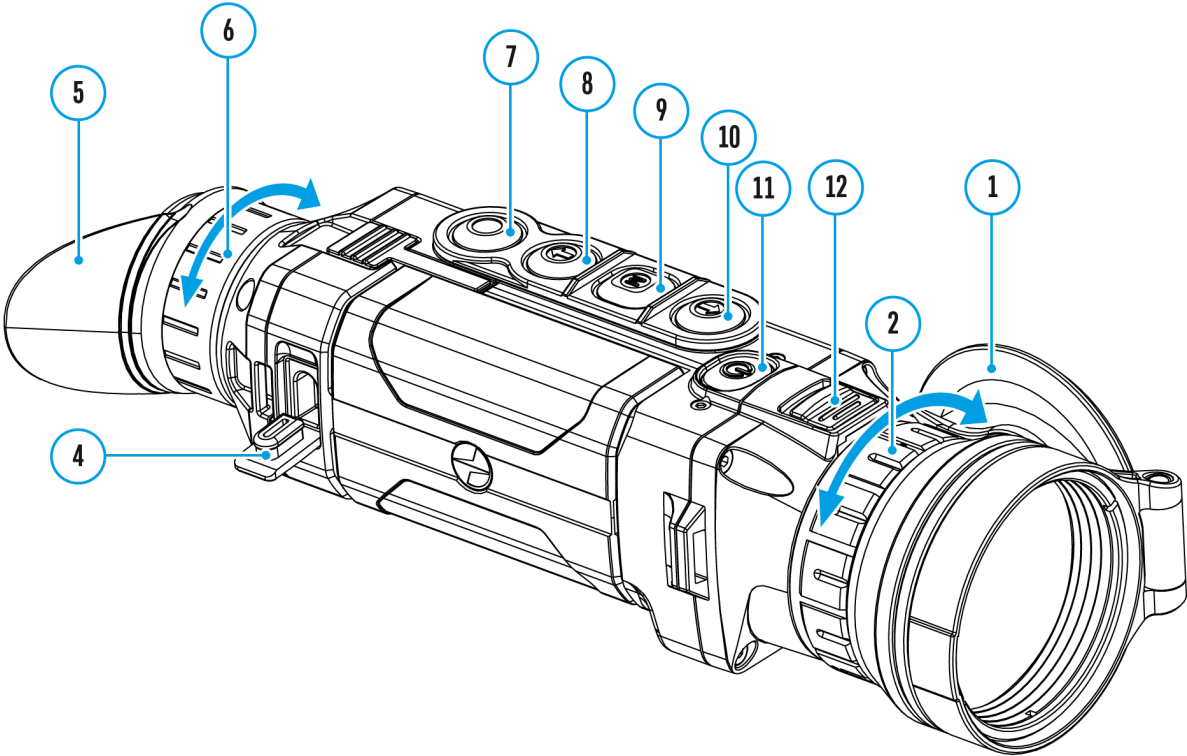
The thermal imaging scope can be supplied from an external power source such as Power Bank (5 V).

1. Connect the external power source to the USB port **(4)** of the device.
2. The device will switch to operation from the external power supply and the IPS7 Battery Pack will be gradually recharged.
3. The battery icon  will appear on the display showing the percentage charge level.
4. If the device operates on external power supply but the IPS7 Battery Pack is not installed, the icon  is shown.
5. When external power supply is disconnected, the device will switch to the internal IPS7 Battery Pack without powering off.

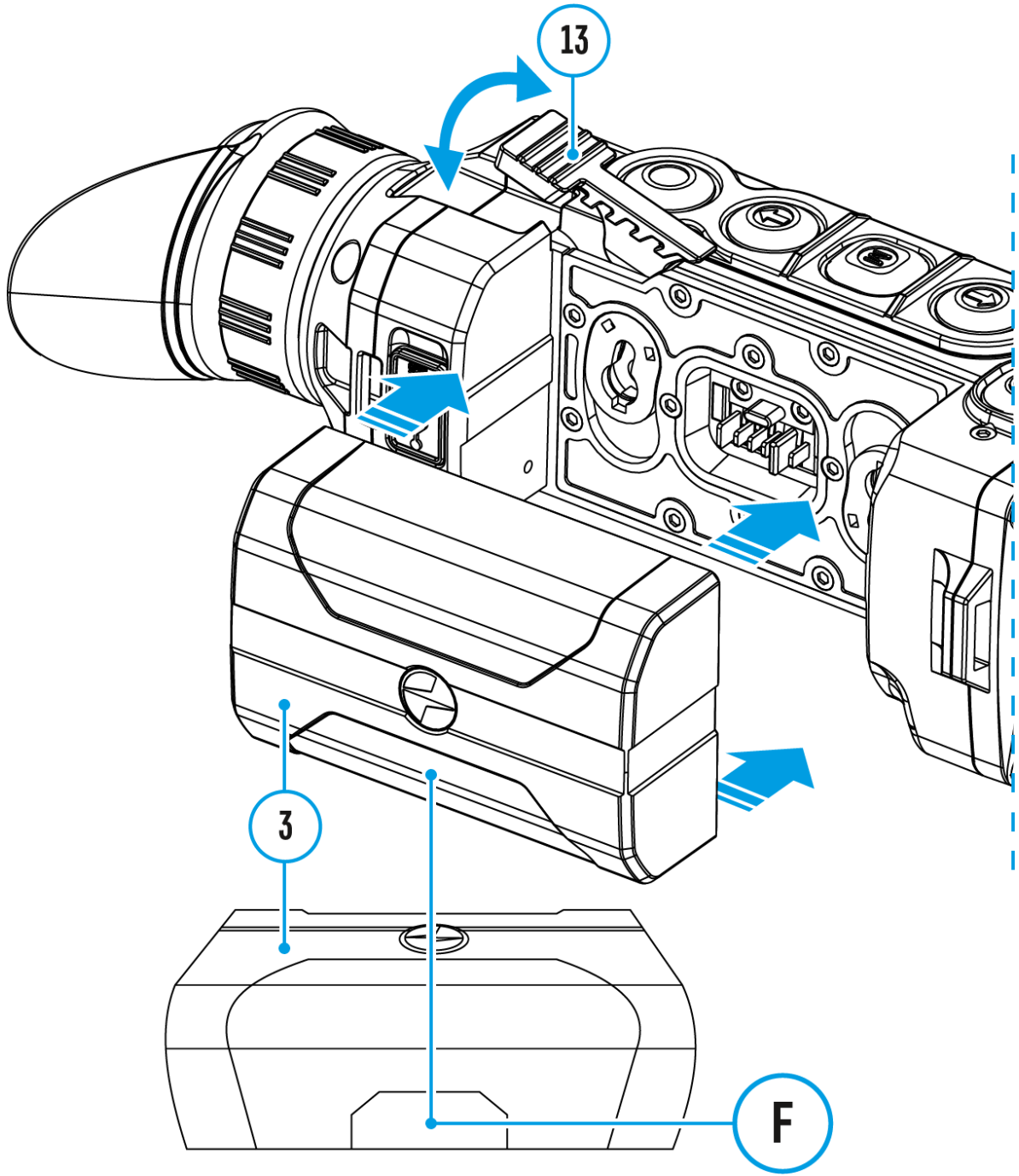
**Warning!** Charging IPS7 / IPS14 batteries at air temperatures below 0° C (32° F) may reduce battery life. When using external power, connect the Power Bank to the device after it has been turned on and working for several minutes.

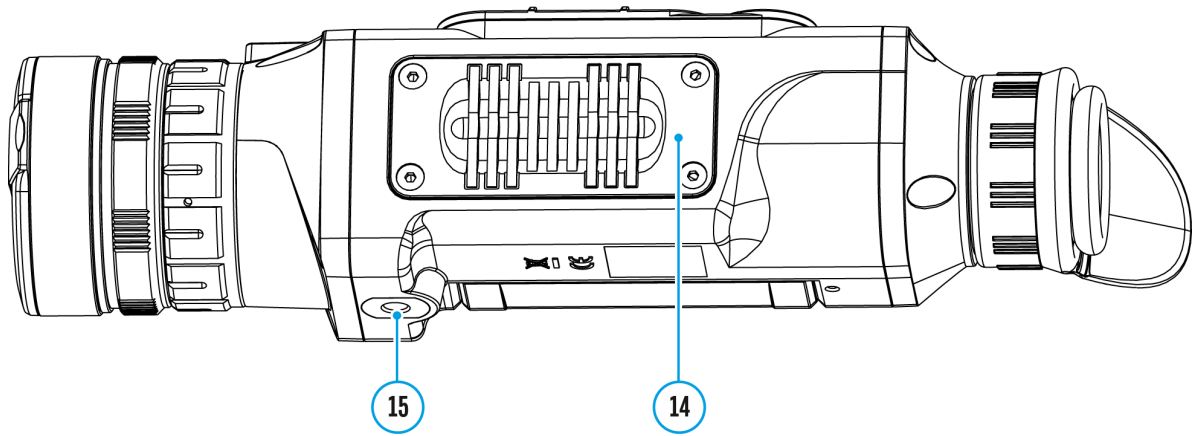
# Powering on and Image Settings

Show device diagram









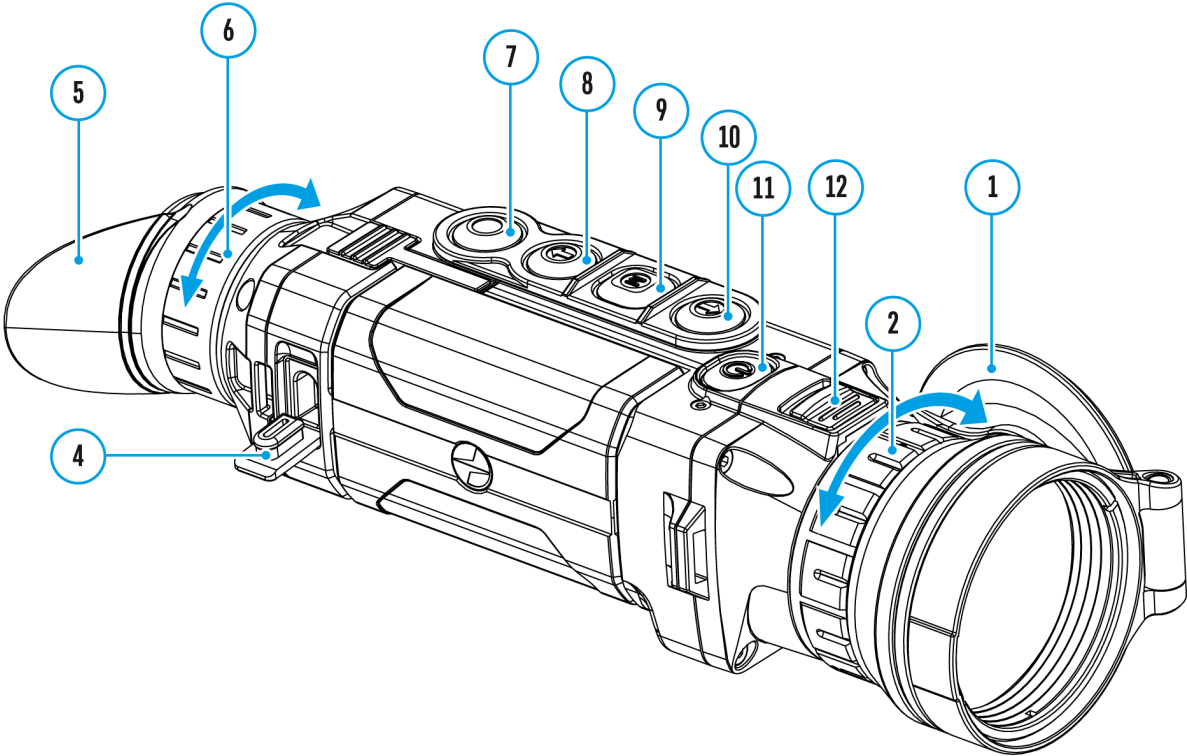
1. Open the lens cover **(1)**.
2. Turn the device on with a short press of the **ON/OFF (11)**.
3. To obtain a crisp image of the icons on the display, rotate the diopter adjustment ring **(6)**. After this, there is no need to rotate the diopter adjustment ring for distance or any other conditions.
4. To focus on the object being observed, rotate the lens focus ring **(2)**.
5. To set up display brightness and contrast and smooth digital zoom, please refer to the **Quick Menu Functions** section.
6. After use, turn the device off by a long press of the **ON/OFF (11)** button.

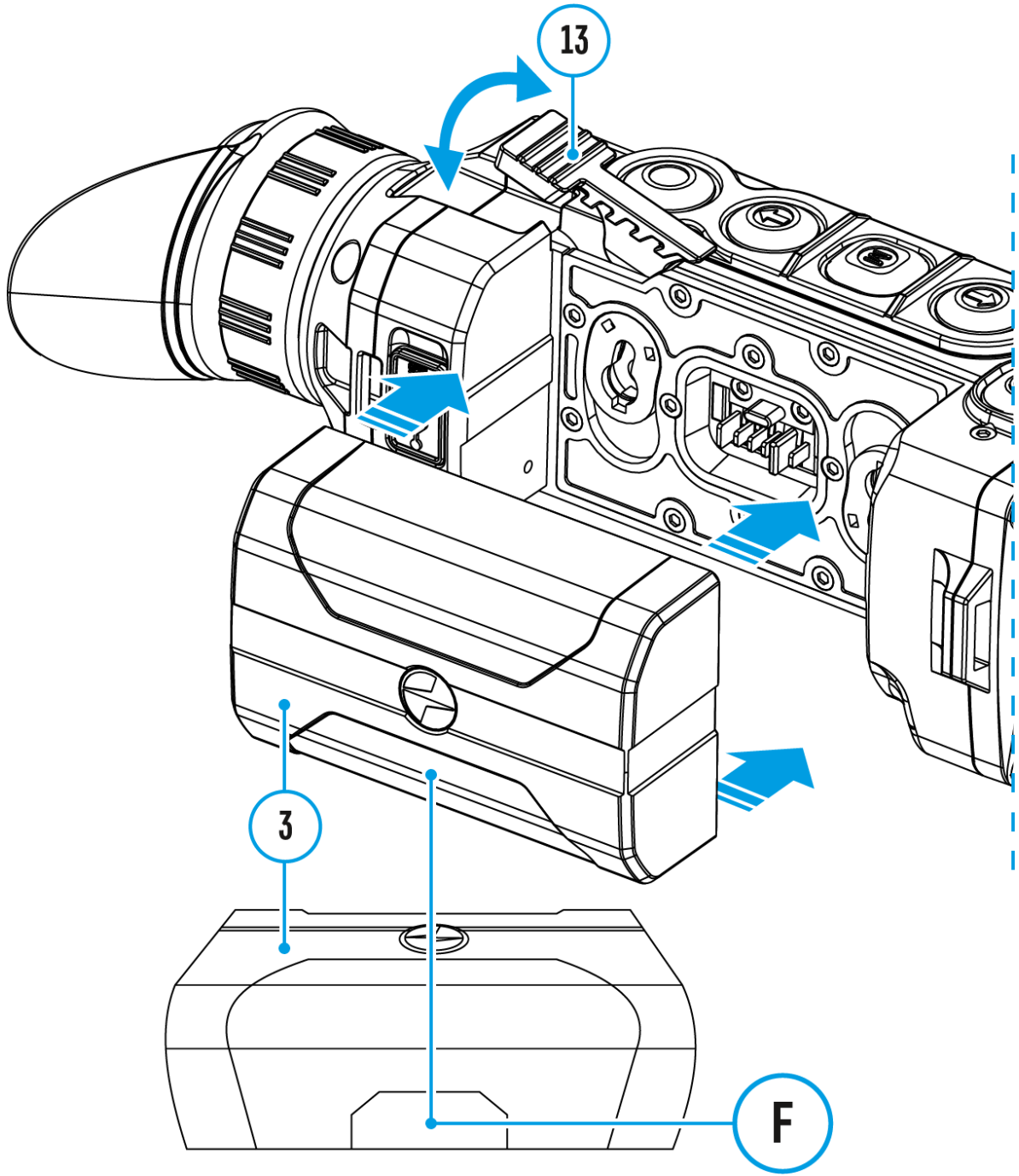
**Warning!** Never point the lens at intensive energy sources such as laser radiation emitting devices or the sun. It can damage electronic components in the device. The warranty does not cover damage arising from failure to comply with operating instructions.

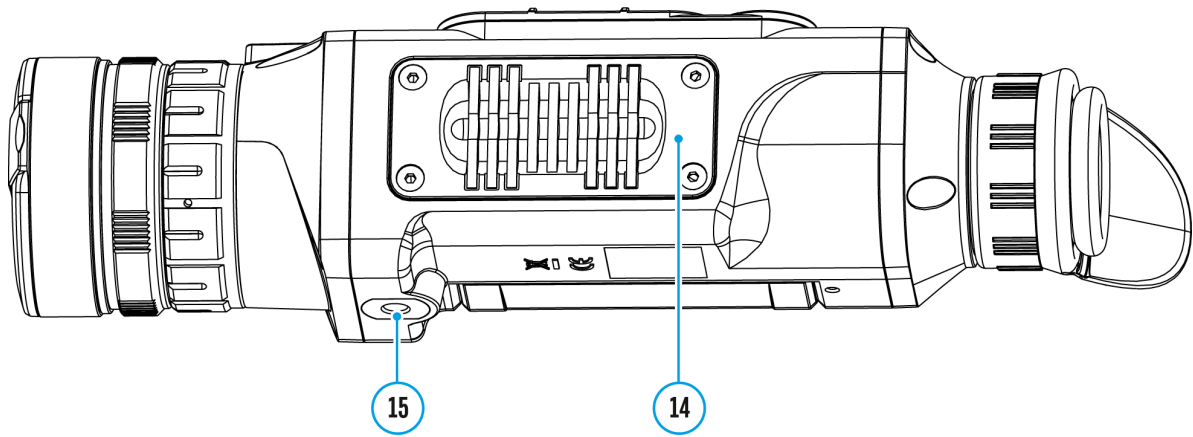
**Warning!** The radiator cooling system **(14)** becomes warm during operation: this is normal and allows an increase in the sensitivity of the device.

# Microbolometer Calibration

Show device diagram







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

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

Select the desired mode in the menu option **Calibration Mode** .

#### **M Mode (Manual).**

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

#### **SA Mode (Semi-Automatic).**

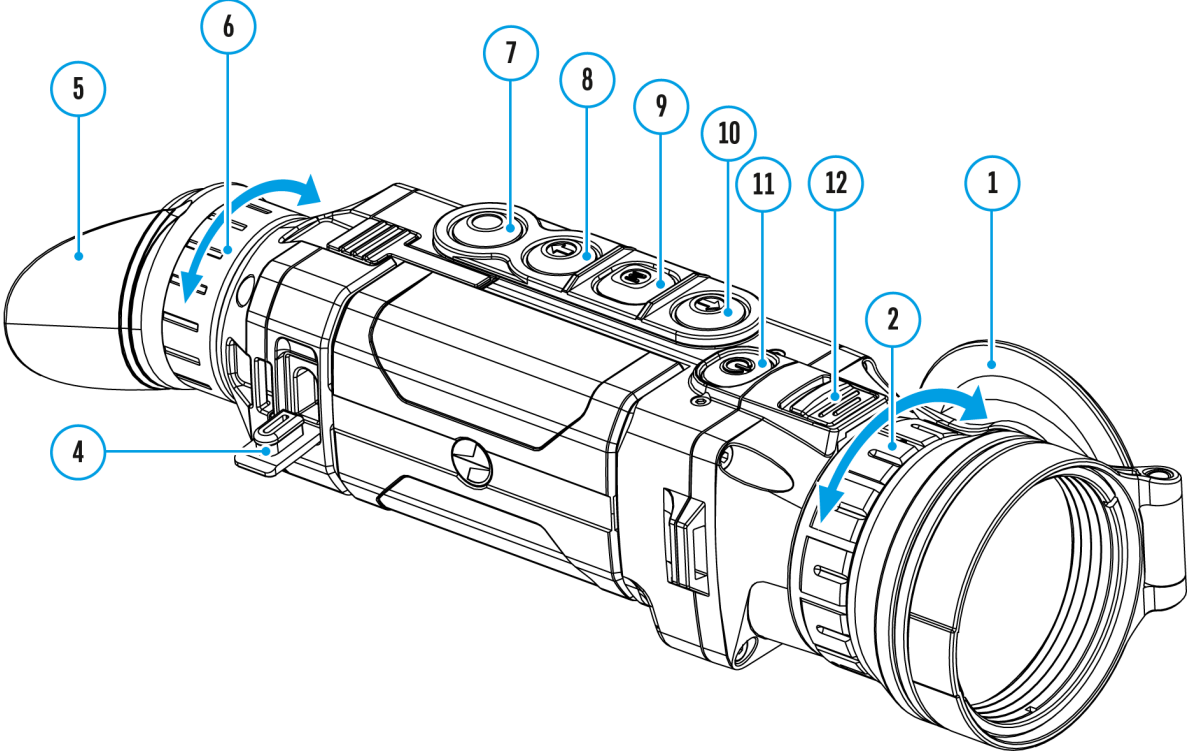
- Calibration is activated with a short press of the **ON/OFF(11)** button.
- You do not have to close the lens cover (the microbolometer is closed with an internal shutter automatically).

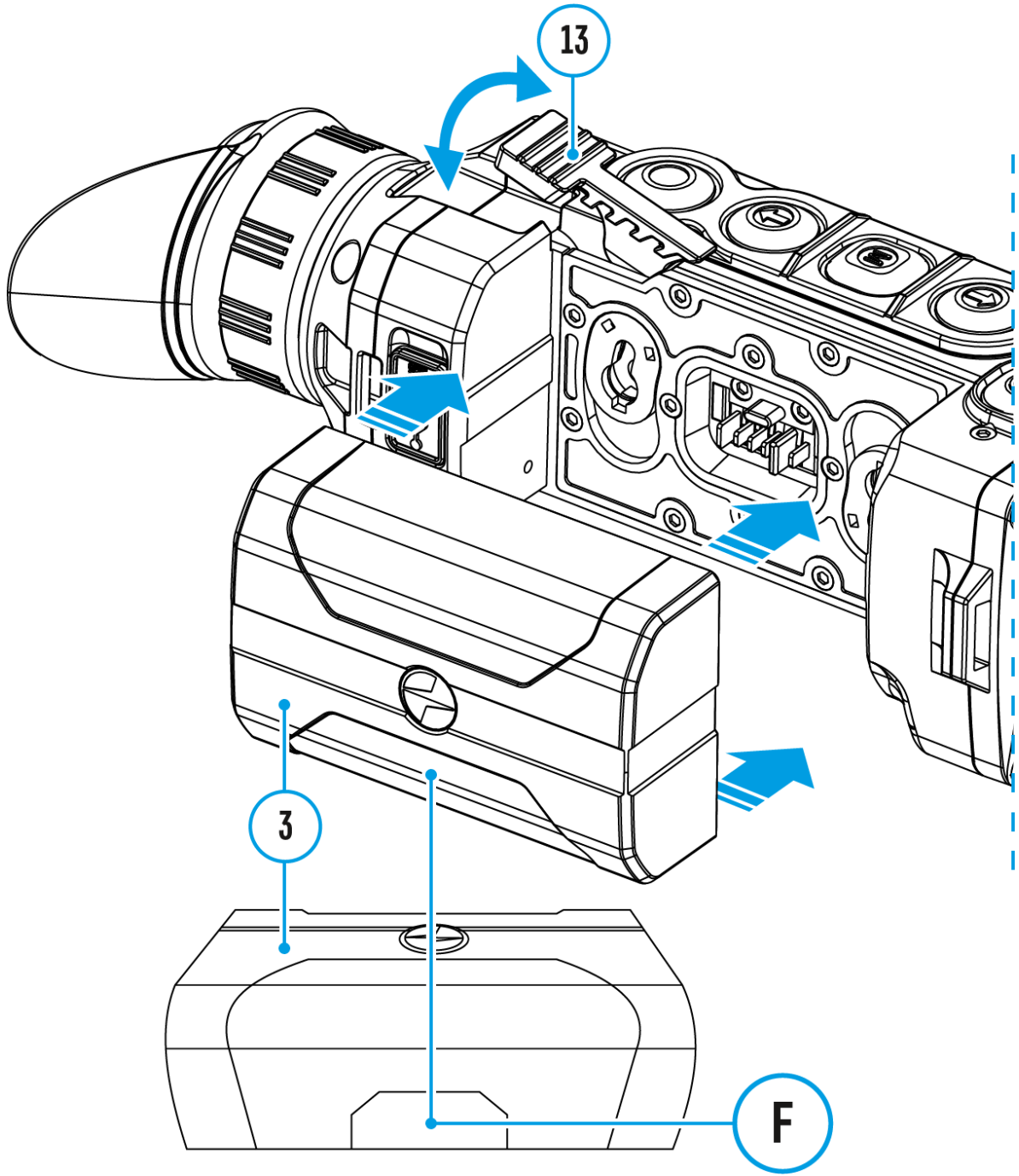
#### **A Mode (Automatic).**

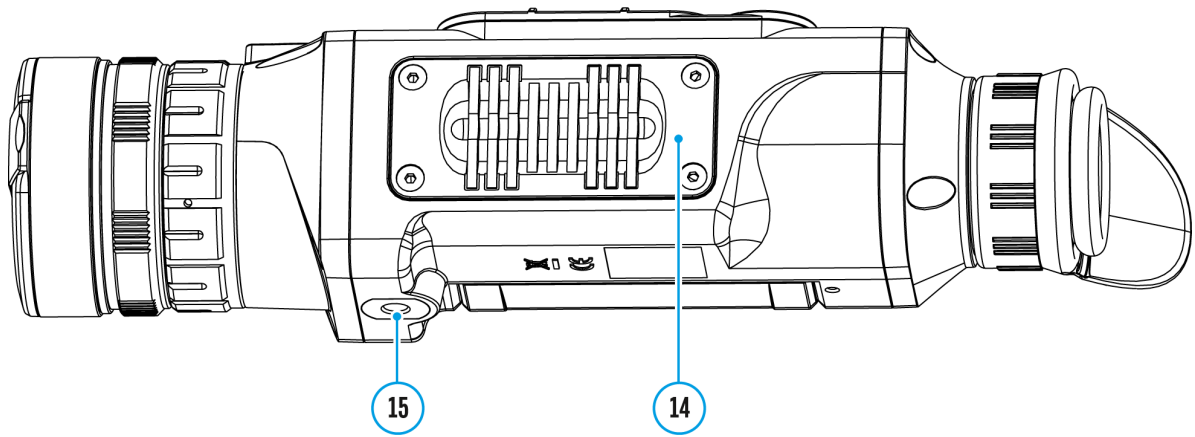
- The device calibrates by itself according to the firmware algorithm. You do not have to close the lens cover (the microbolometer is closed with an internal shutter automatically).
- User assisted calibration with the **ON/OFF(11)** button is also allowed in this mode (as in the **Semi-Automatic** mode).

# Discrete Digital Zoom

Show device diagram







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




To operate the discrete digital zoom, press successively the **DOWN (8)** button.



# Status Bar

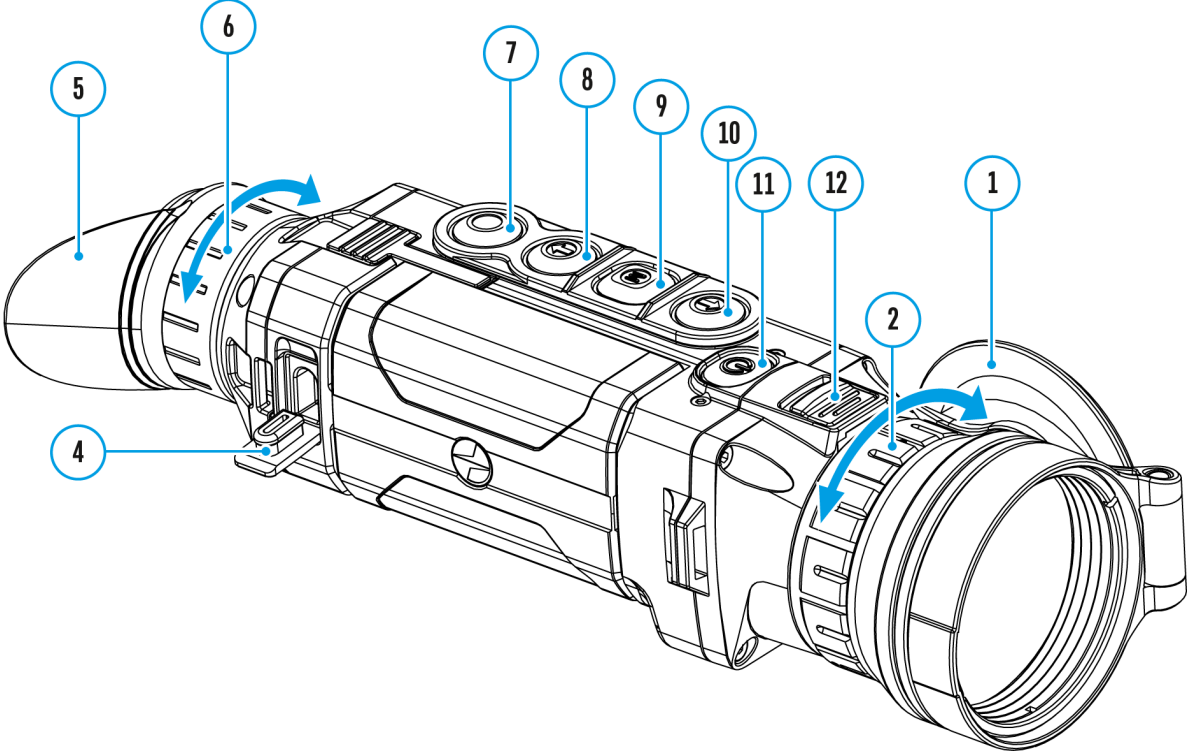


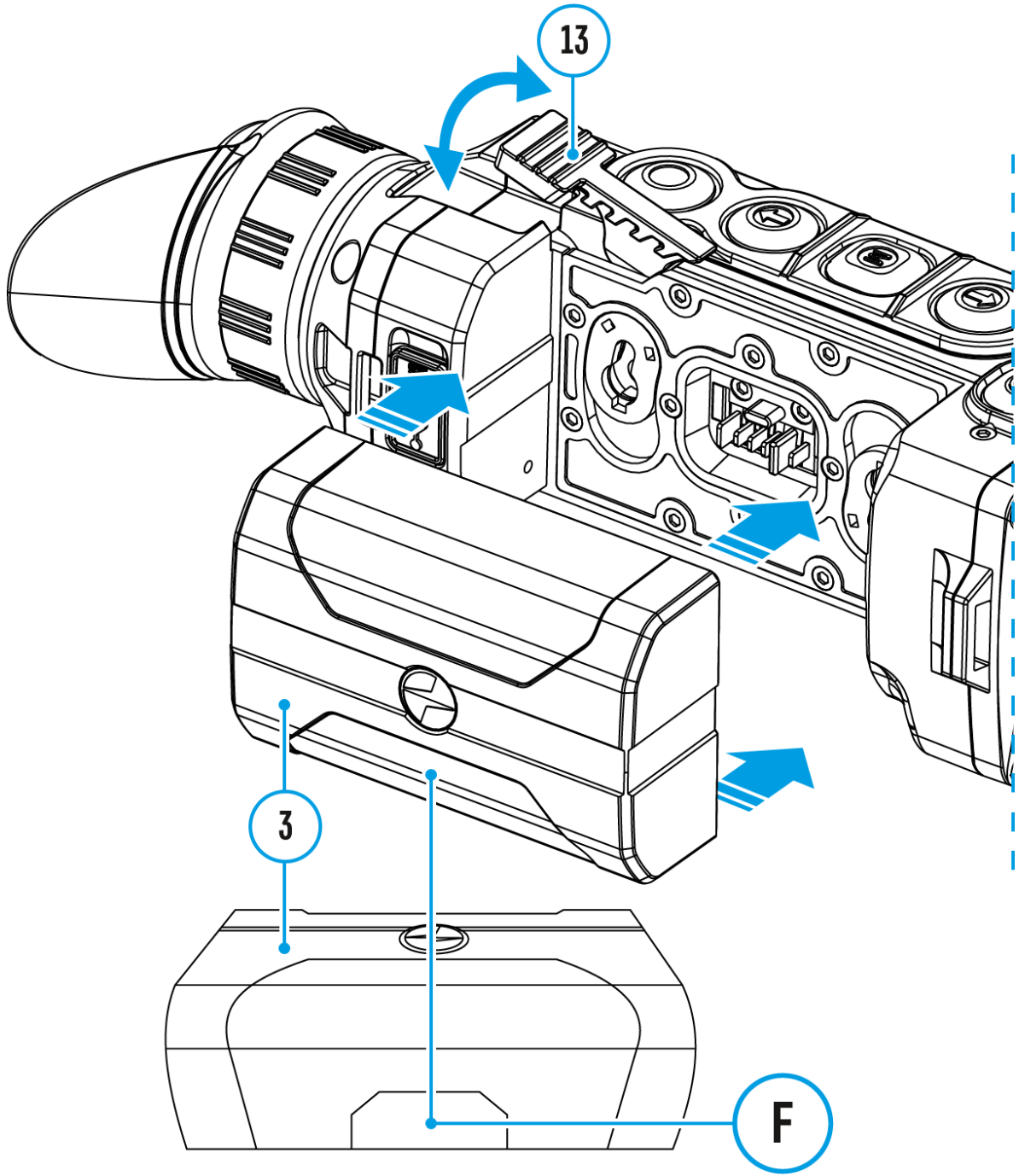
The status bar at the bottom of the display shows current operating statuses via icons, including:

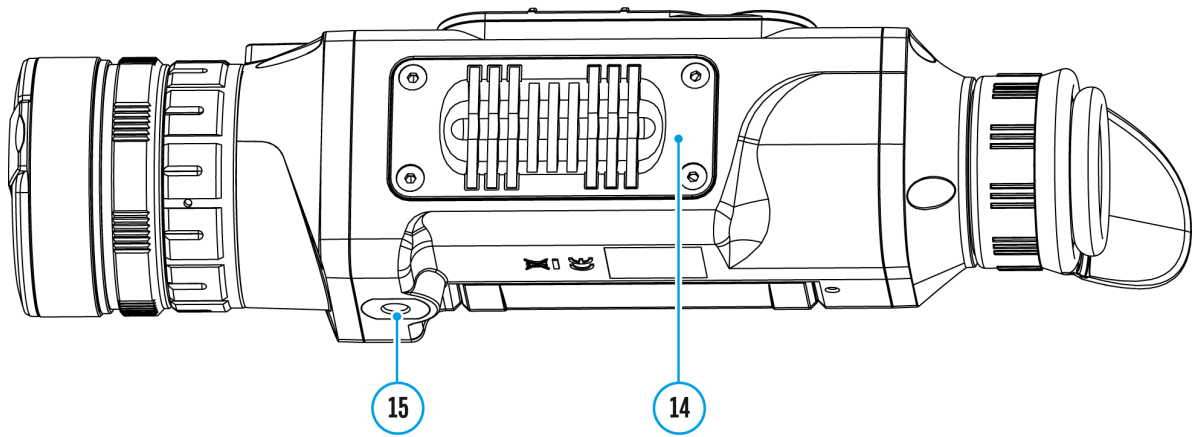
1. Color Mode (shown only if the **Black Hot** palette is selected)
2. Observation Mode
3. Calibration Mode (in Automatic calibration mode a countdown timer  00:03 will appear instead of the calibration mode icon 3 seconds before automatic calibration begins).
4. Current full Magnification (for example, 16x)
5. Wi-Fi Connection status
6. Time
7. Power Indication:
  - Battery charge level  (if the device is powered by the Battery Pack).
  - External battery power indicator  (if the device is powered by an external power supply).

# Quick Menu Functions

Show device diagram



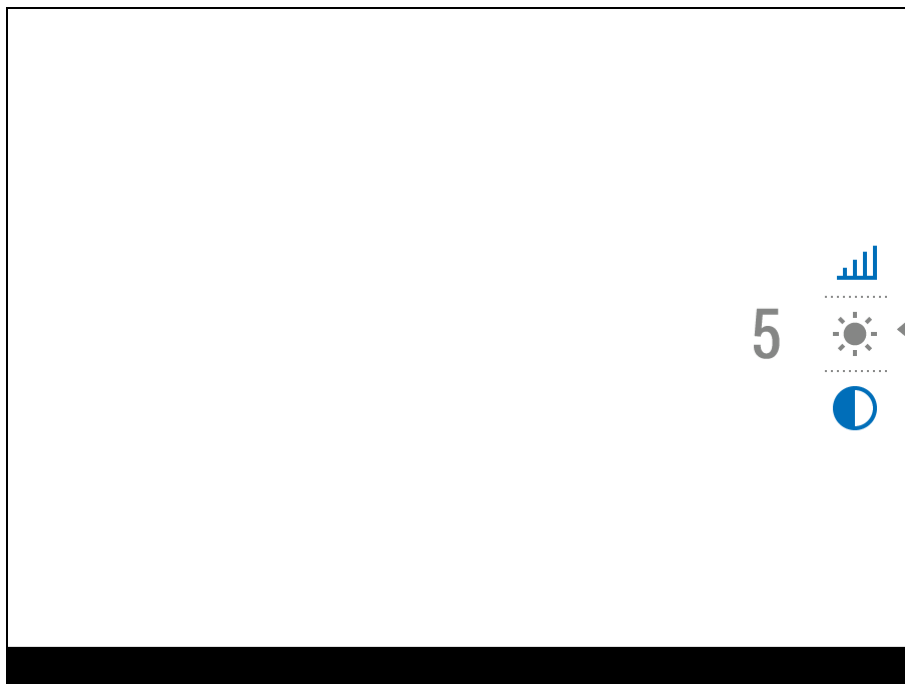




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The quick menu allows you to change the base settings (display brightness and contrast) and use the smooth digital zoom and stadiametric rangefinder.




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




**Brightness**  - press the **UP (10)** / **DOWN (8)** buttons to change display brightness from 0 to 20.


**Contrast**  - press the **UP (10)** / **DOWN (8)** buttons to change display contrast from 0 to 20.

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

**Base mode**    -allows you to select one of the three observation modes (Forest, Rocks, Identification) as a base for the User mode.

**Smooth digital zoom**  - Press the **UP (10)** / **DOWN (8)** buttons to change digital zoom value from 2.5x to 20x.

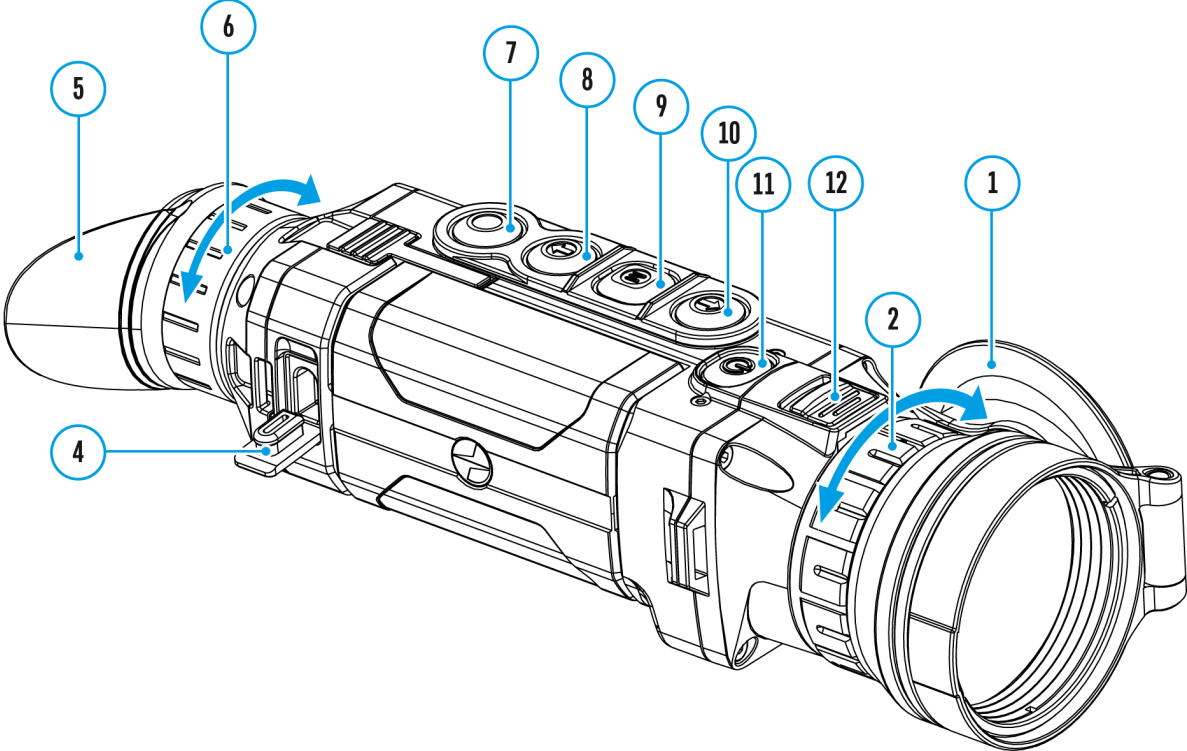
Smooth digital zoom is in 0.1 increments.

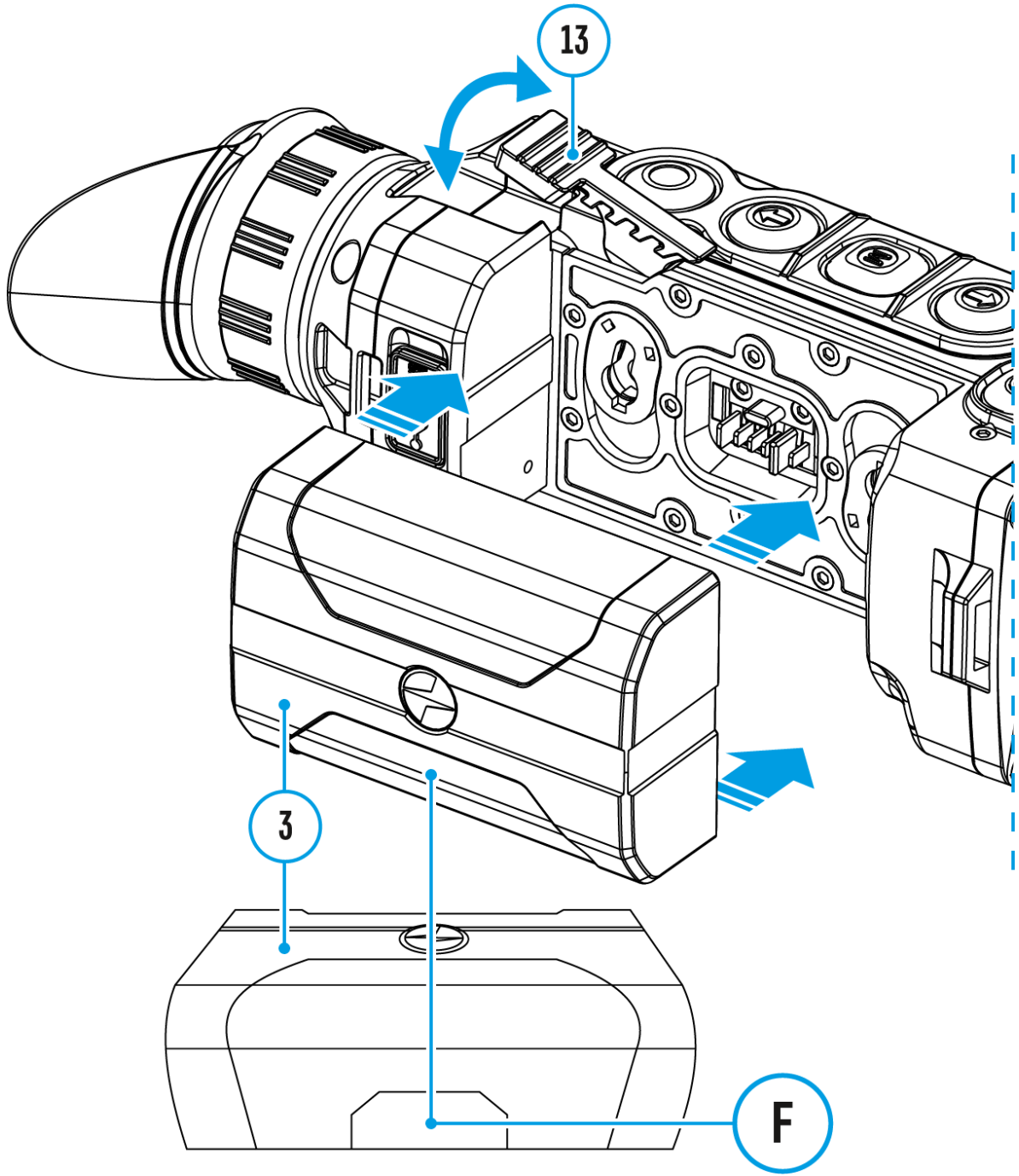
**Stadiametric rangefinder**  - press the **UP (10)** / **DOWN (8)** buttons to change the distance between special markers to determine the distance to the observed object. Please refer to section [Stadiametric Rangefinder](#) for more details.

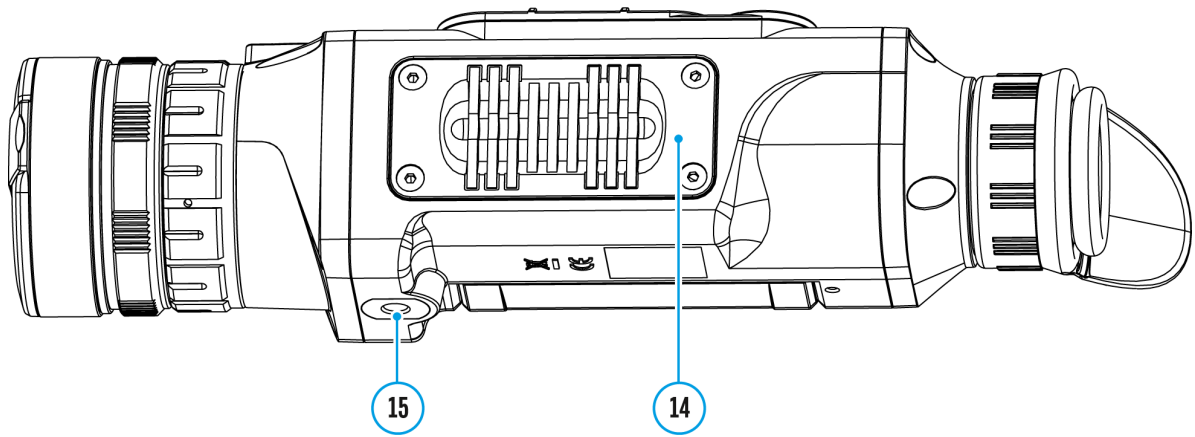
- To exit the menu, press and hold the **M (9)** button, or wait 10 seconds to exit automatically.

# Enter the Main Menu

Show device diagram















1. Enter the main menu with a long press of the **M (9)**
2. Press the **UP (10) / DOWN (8)** buttons to move through the menu items.
3. Enter a submenu of the main menu with a short press of the **M (9)**
4. Exit a submenu with a long press of the **M (9)** button.
5. Automatic exit takes place after 10 seconds of inactivity.

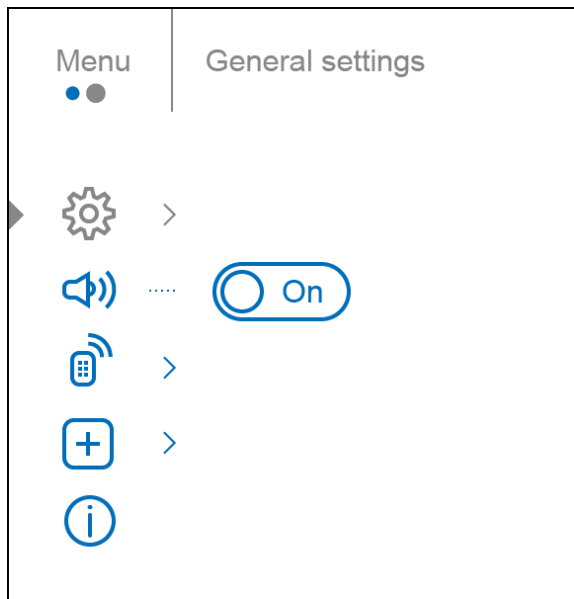
### General View of the Menu

Tab 1

Menu	Wi-Fi activation
● ●	
 .....	<input type="checkbox"/> On
 .....	<input checked="" type="checkbox"/> On
 .....	
 .....	White hot
 .....	10
 .....	Automatic
 >	

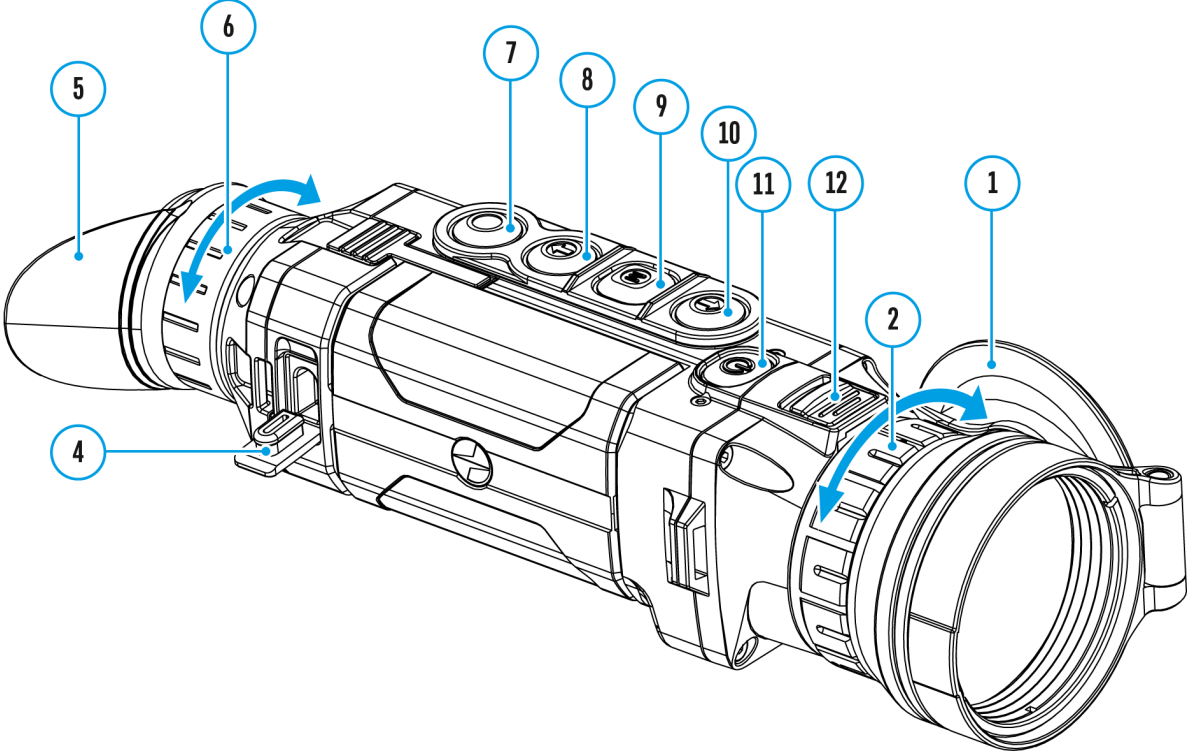


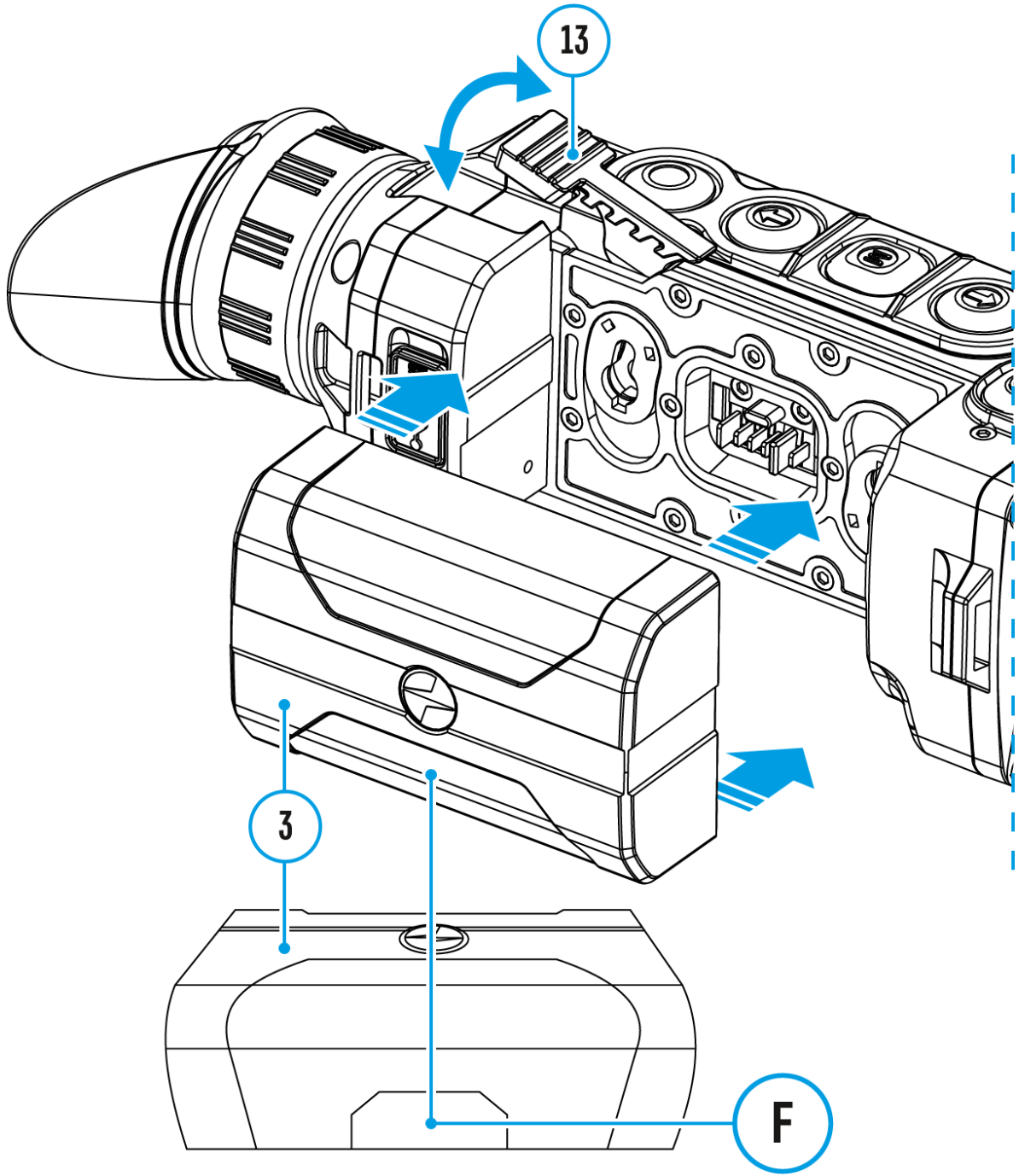
## Tab 2

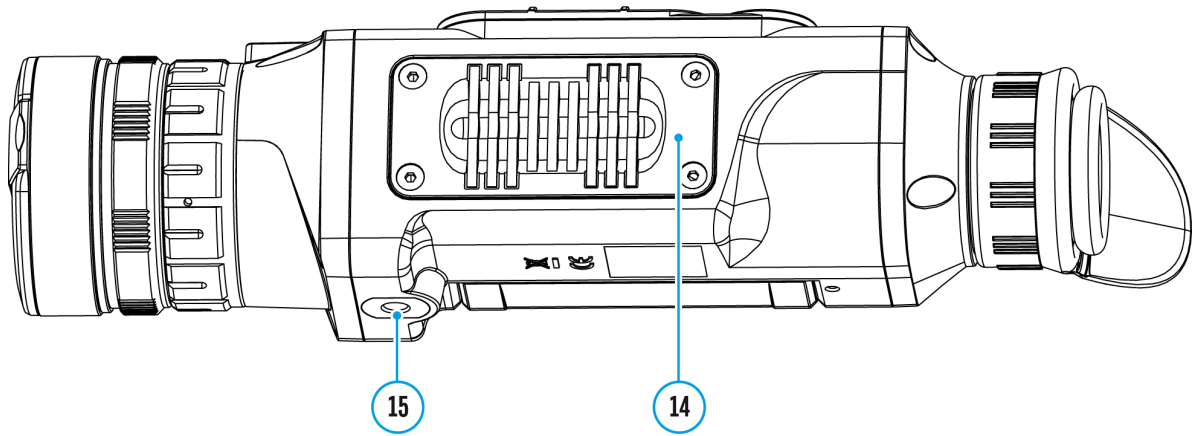



# Wi-Fi Activation

Show device diagram





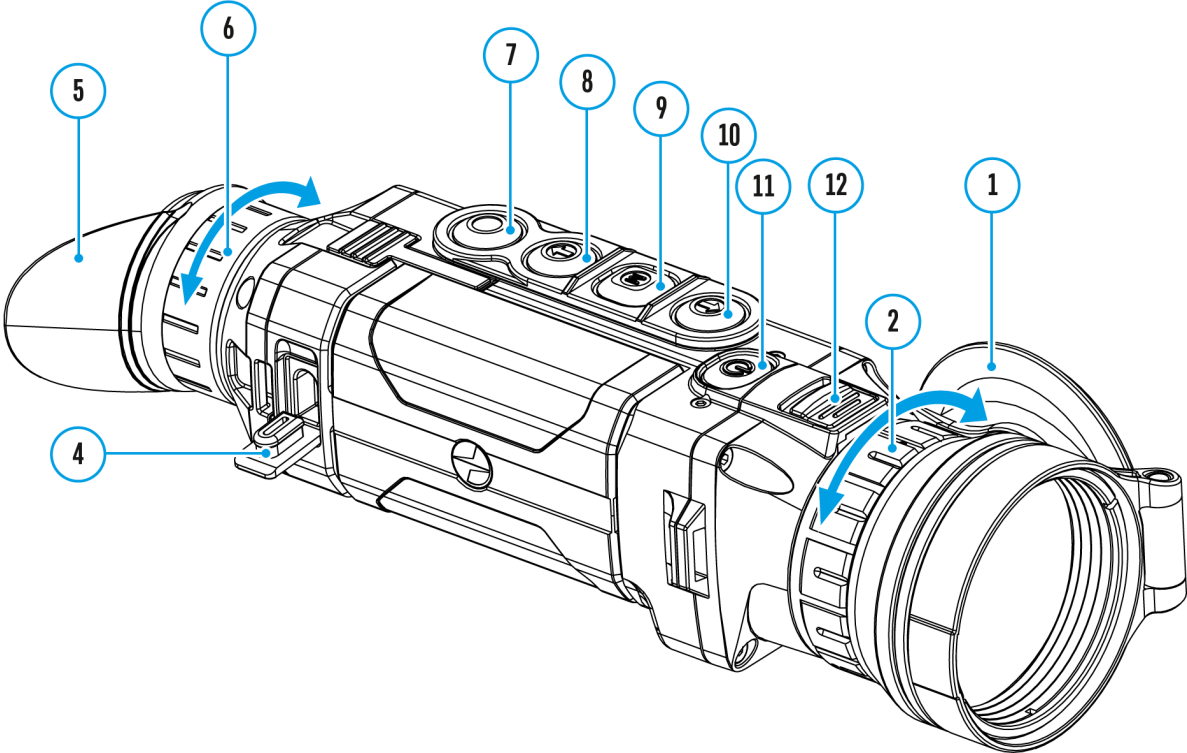


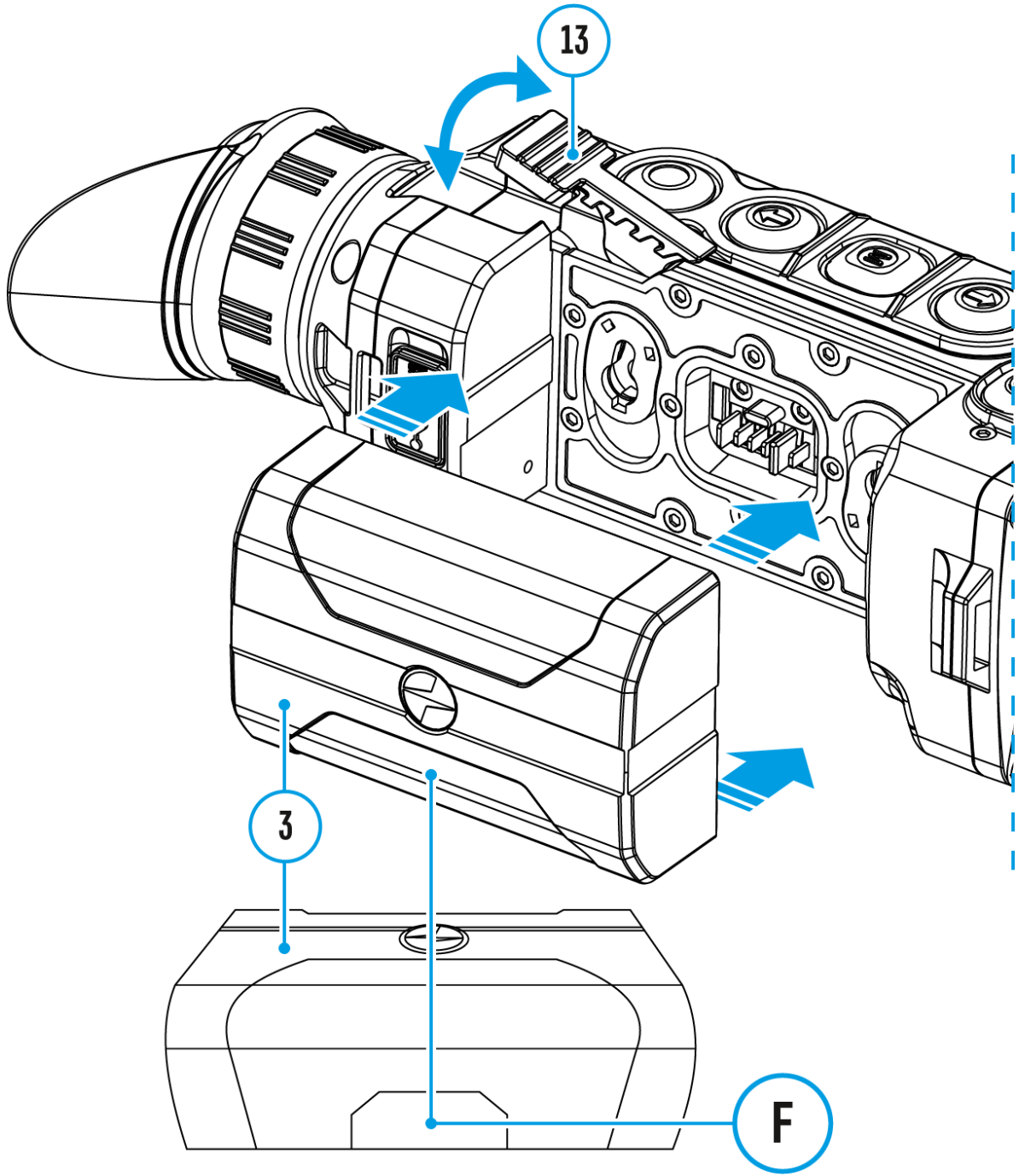
- 
1. Press and hold the **M (9)** button to enter the main menu.
  2. Use the **UP (10)** / **DOWN (8)** buttons to select the **Wi-Fi Activation**  menu option.
  3. Turn Wi-Fi on/off with a short press of the **M (9)**.

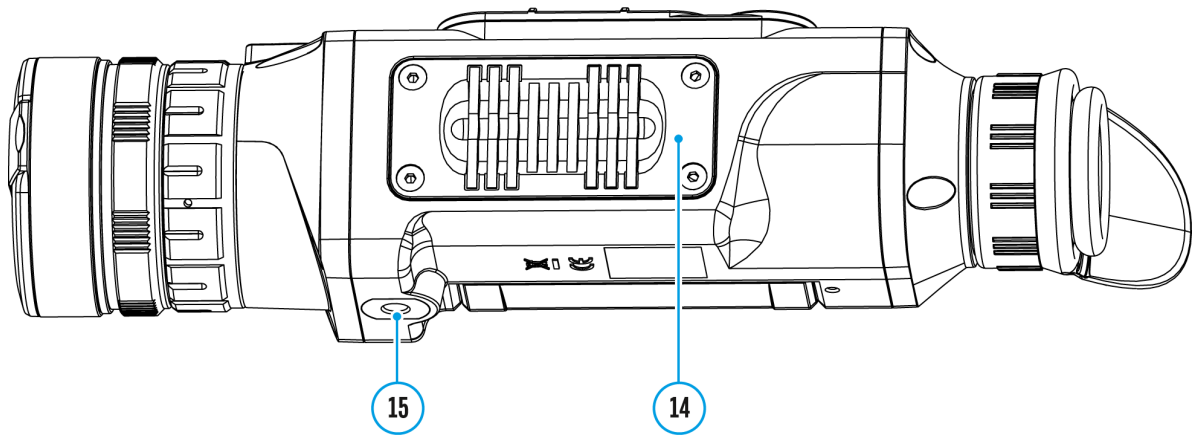
# Image Detail Boost

<https://www.youtube.com/embed/GNezJKveMRc>


Show device diagram








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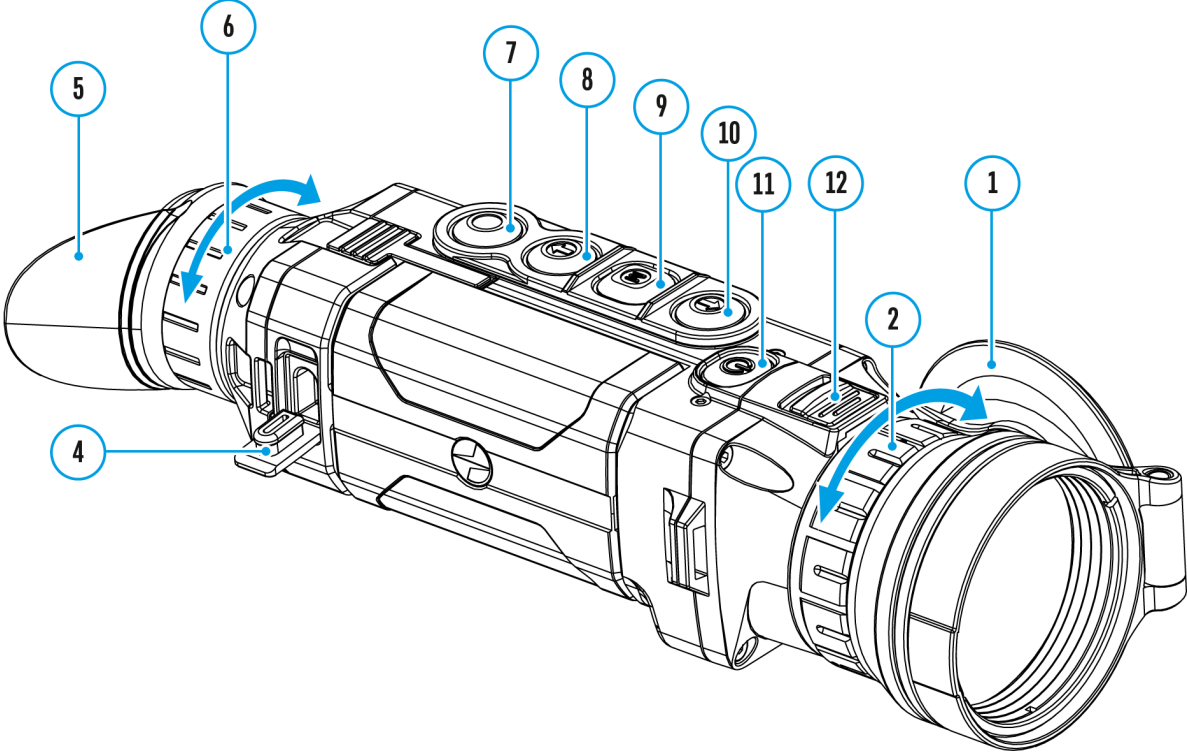
The **Image Detail Boost**  function increases the sharpness of the contours of heated objects, which increases their detail. The result of the function depends on the selected mode and observation conditions: the higher the contrast of objects, the more noticeable the effect. This option is enabled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

Turn on / off Image Detail Boost:

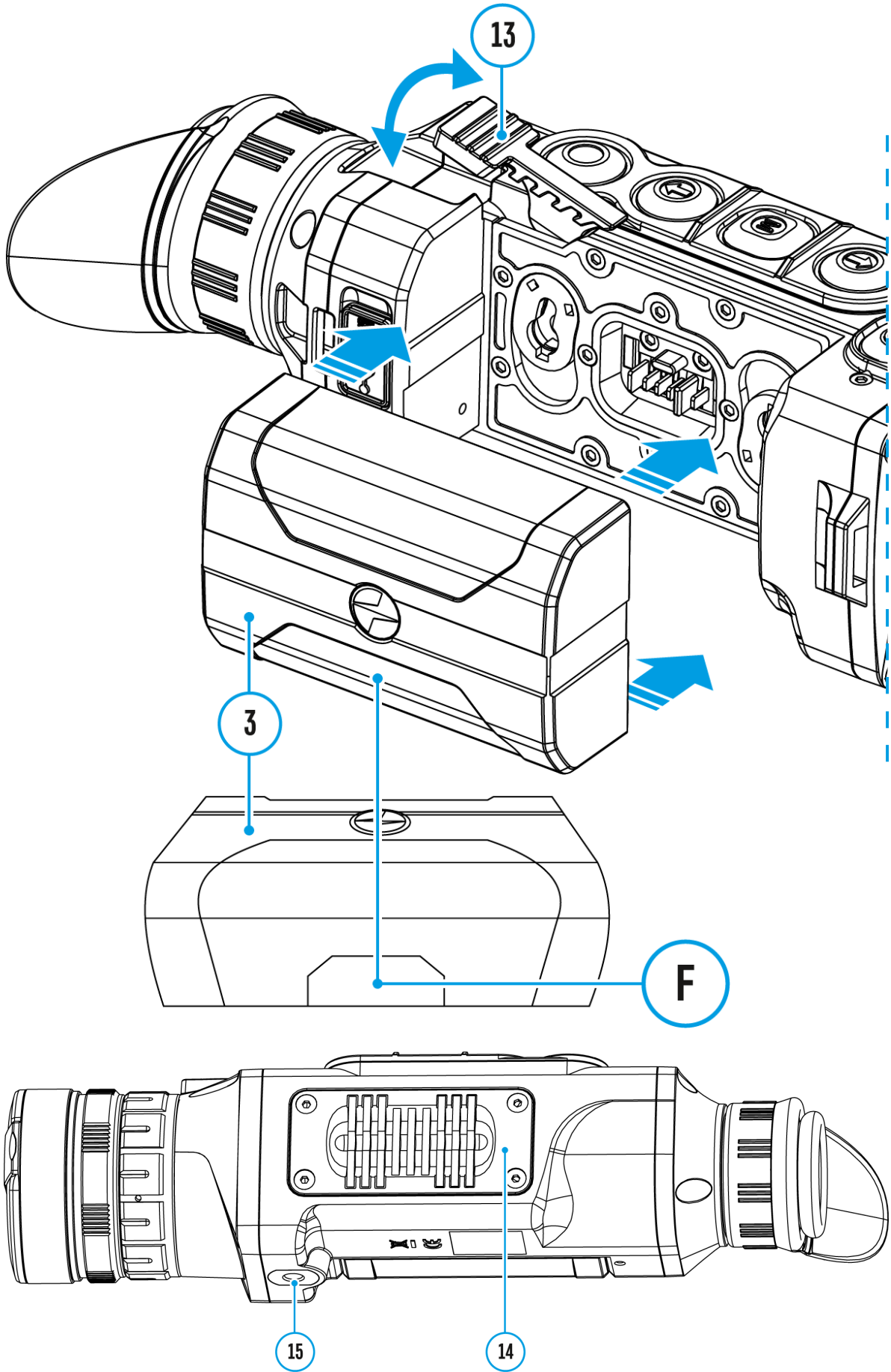
1. Press and hold the **M (9)** button to enter the main menu.
2. Use the **UP (10)** / **DOWN (8)** buttons to select the **Image Detail Boost**  menu option.
3. Press the **M (9)** button briefly to turn the function on / off.

# Mode


Show device diagram











The device has four operating modes of the thermal imager: Forest (mode for object observation in low thermal contrast conditions), Rocks (mode for object observation in high thermal contrast conditions), Identification (high imagery resolution), User (personalized brightness and contrast settings).

1. Press and hold the **M (9)** button to enter the menu.
2. Select the **Mode**  option with the **UP (10) / DOWN (8)** buttons.
3. Enter the submenu with a short press of the **M (9)**.
4. Select one of the settings described below with the **UP (10) / DOWN (8)** buttons.
5. A short press of the **M (9)** button confirms the selection.

 **Forest Mode.** 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 Mode.** This is the best mode for observing objects after a sunny day or within urban conditions.

 **Identificaion Mode.** This is the best mode for identifying objects in adverse weather conditions (fog, mist, rain and snow). It allows you to recognize the characteristics of an object being observed more clearly. Increased zoom may be accompanied by insignificant image graininess.

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

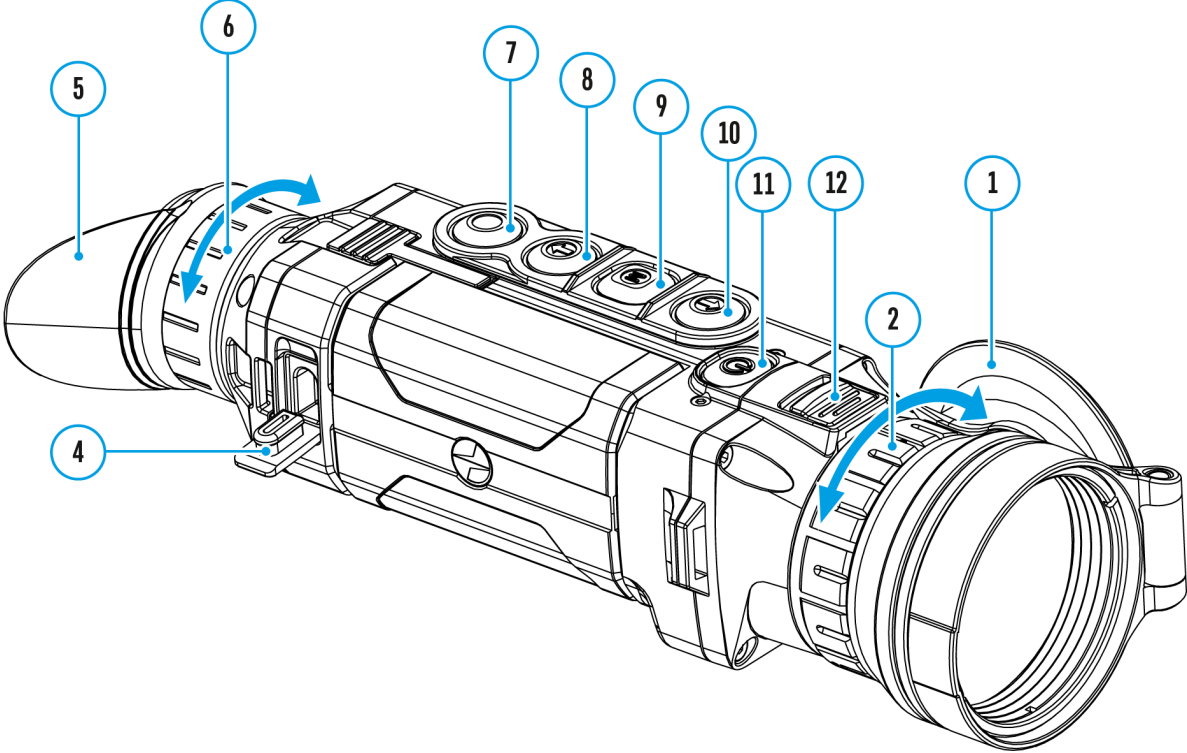
**Note:** selection of the base mode for the User mode setting is also possible in the quick menu.

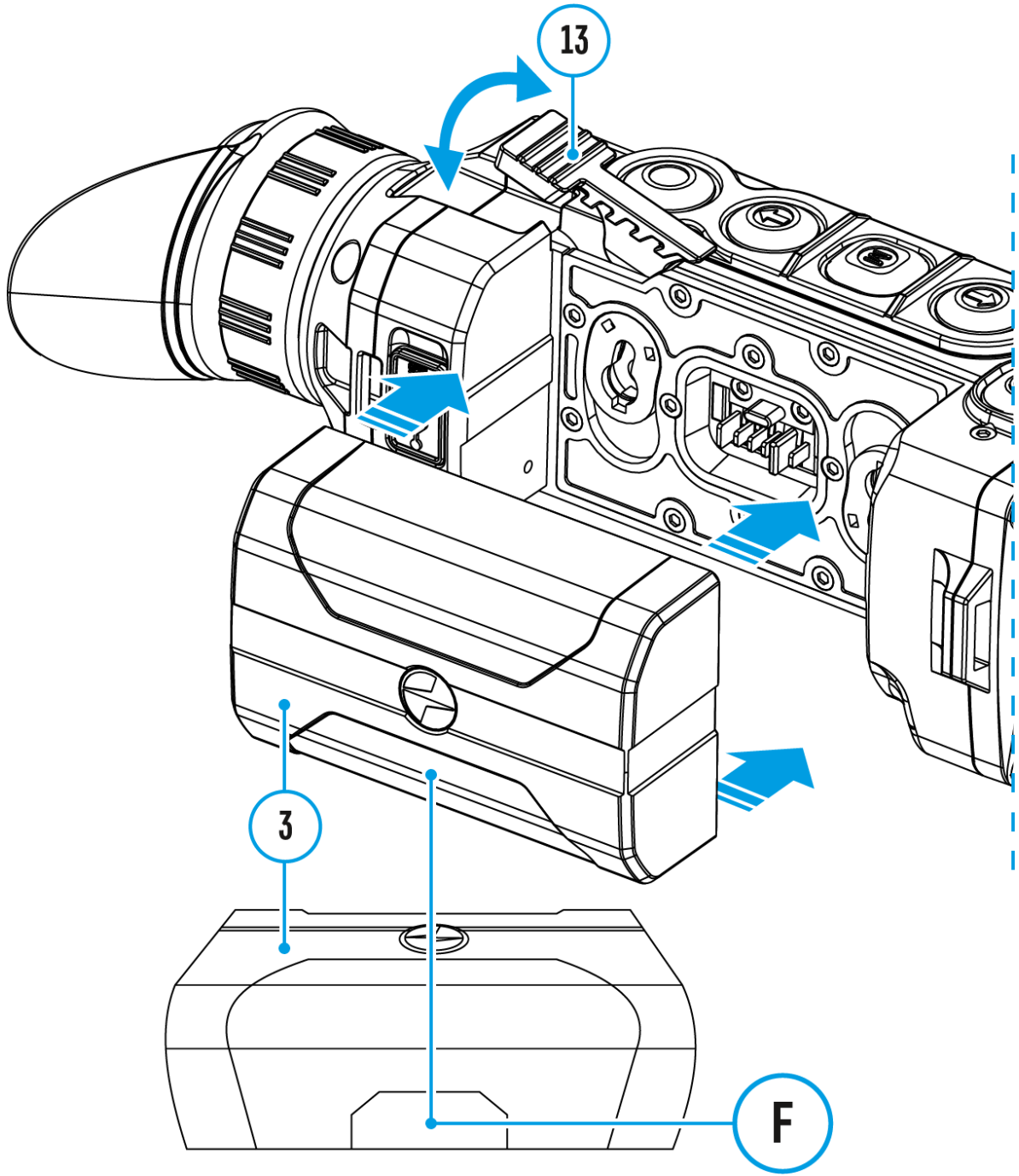
**<http://www.youtube.com/embed/Mnt5c8ZP1PA>**

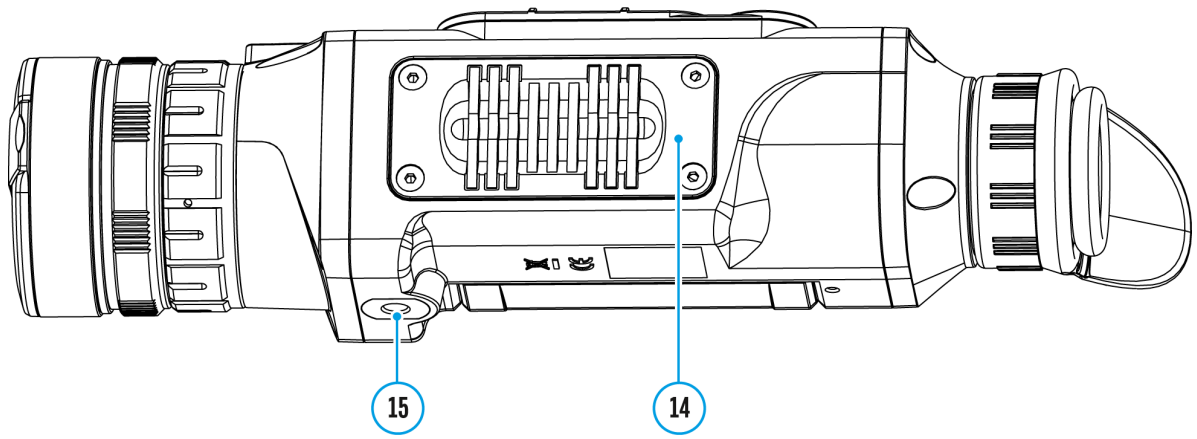
**Note:** quick switching of the operating modes is possible by using the **UP (10)** button. A short press of the button will switch between modes.

# Color Modes

Show device diagram








Selection of color palette.

The base image mode is **White Hot**.

To select an alternative palette:

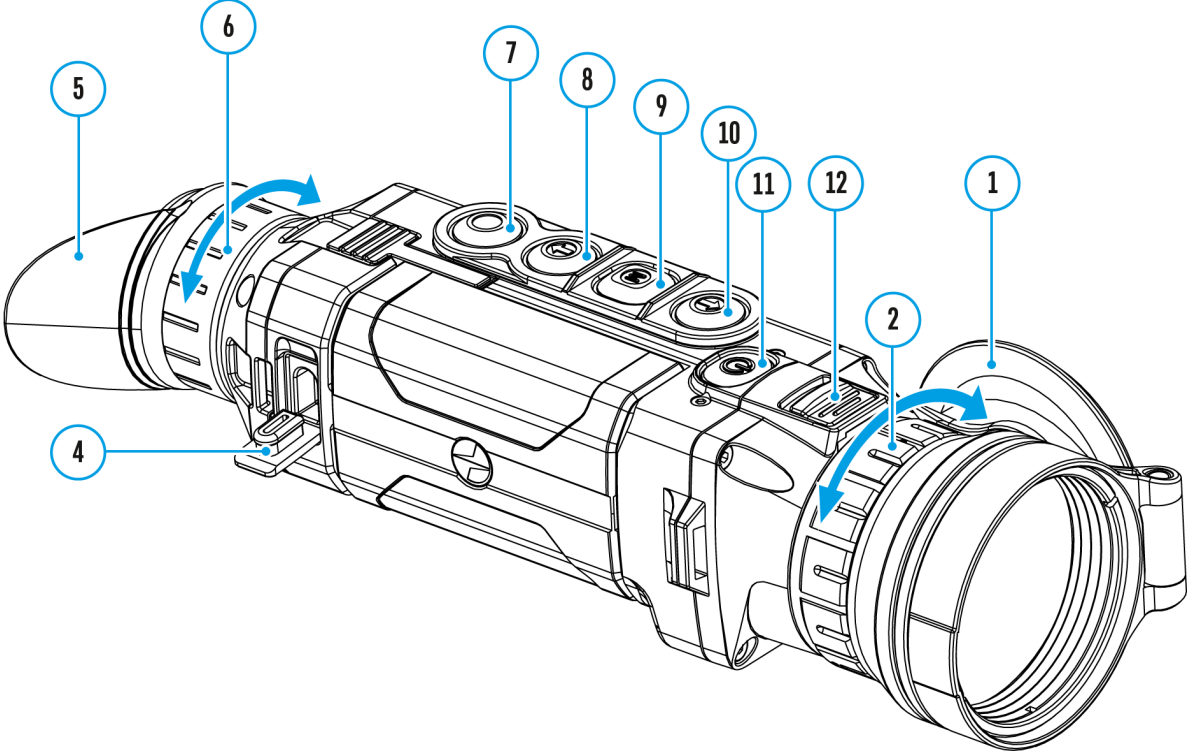
1. Press and hold the **M (9)** button to enter the main menu.
2. Select the **Color Modes**  icon with the **UP (10) / DOWN (8)** buttons.
3. Enter the submenu with a short press of the **M (9)** button.
4. Select one of the palettes below using the **UP (10) / DOWN (8)** buttons.
5. Confirm your selection with a short press of the **M (9)** button.

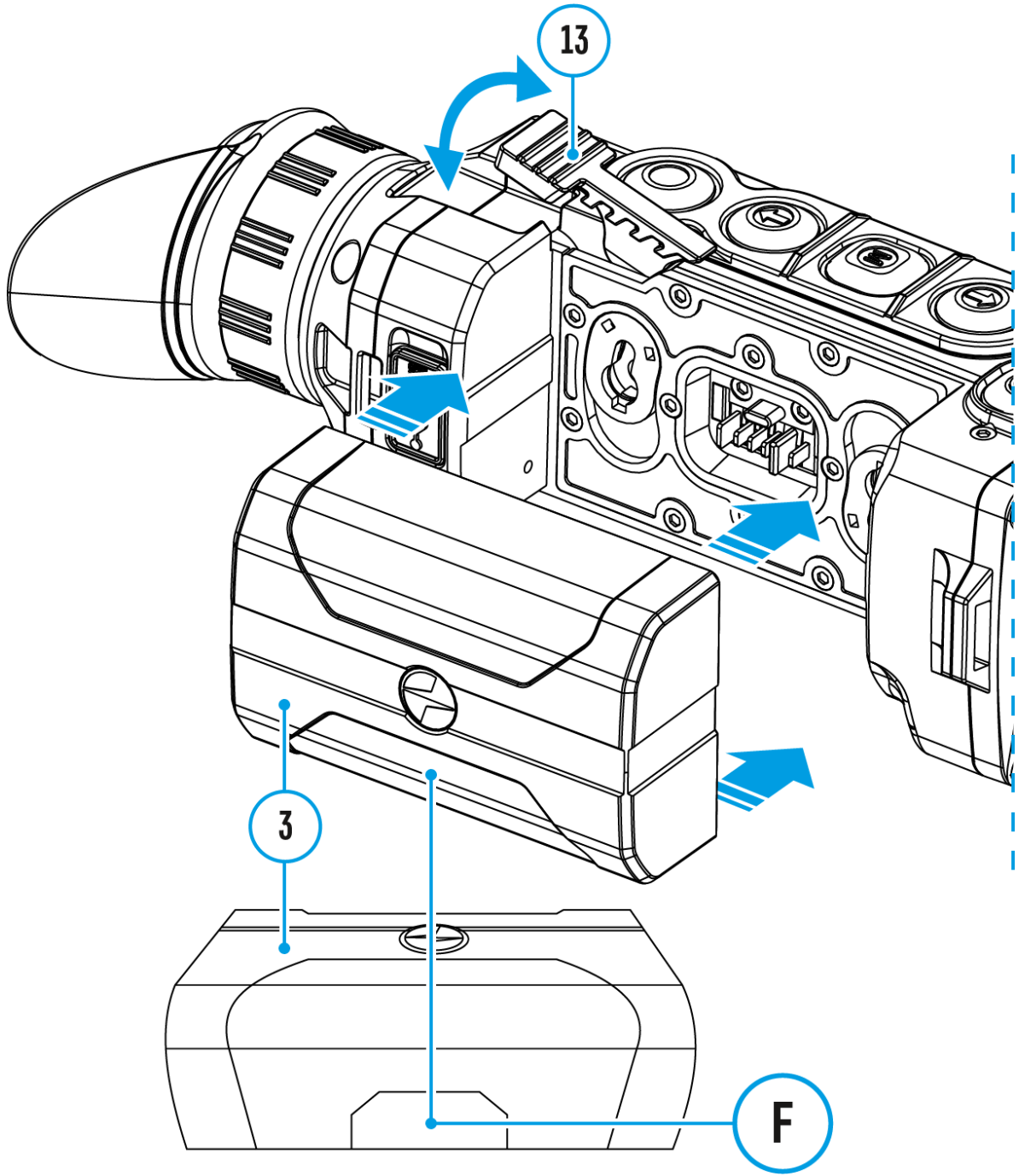
- **Black Hot** - black and white palette (white color corresponds to low temperature, black color to high temperature)
- **Red Hot**
- **Red Monochrome**
- **Rainbow**
- **Ultramarine**
- **Violet**
- **Sepia**

**Note:** you can also switch from a selected color palette to the base mode with a long press of the **UP (10)** button.

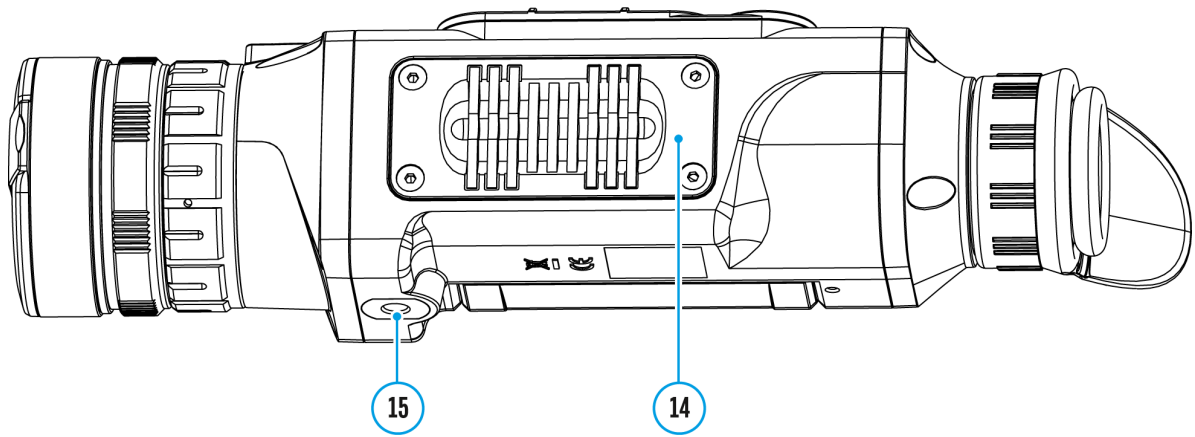
# Icon Brightness


Show device diagram





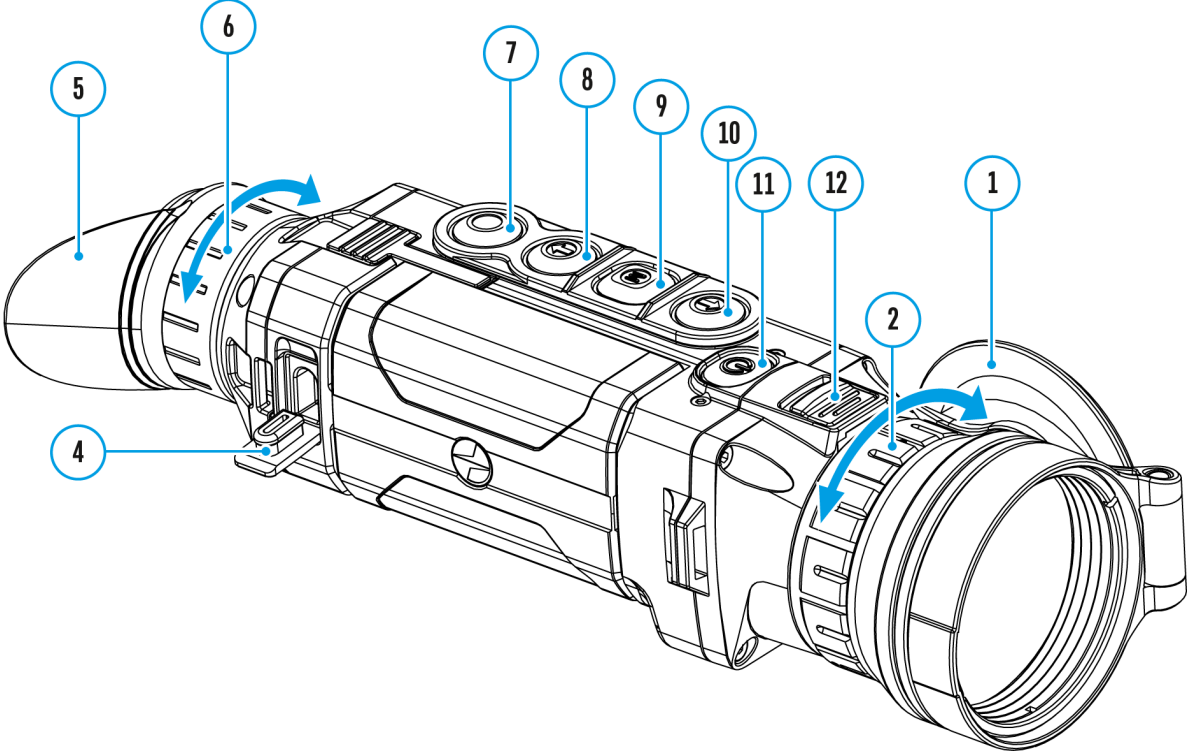


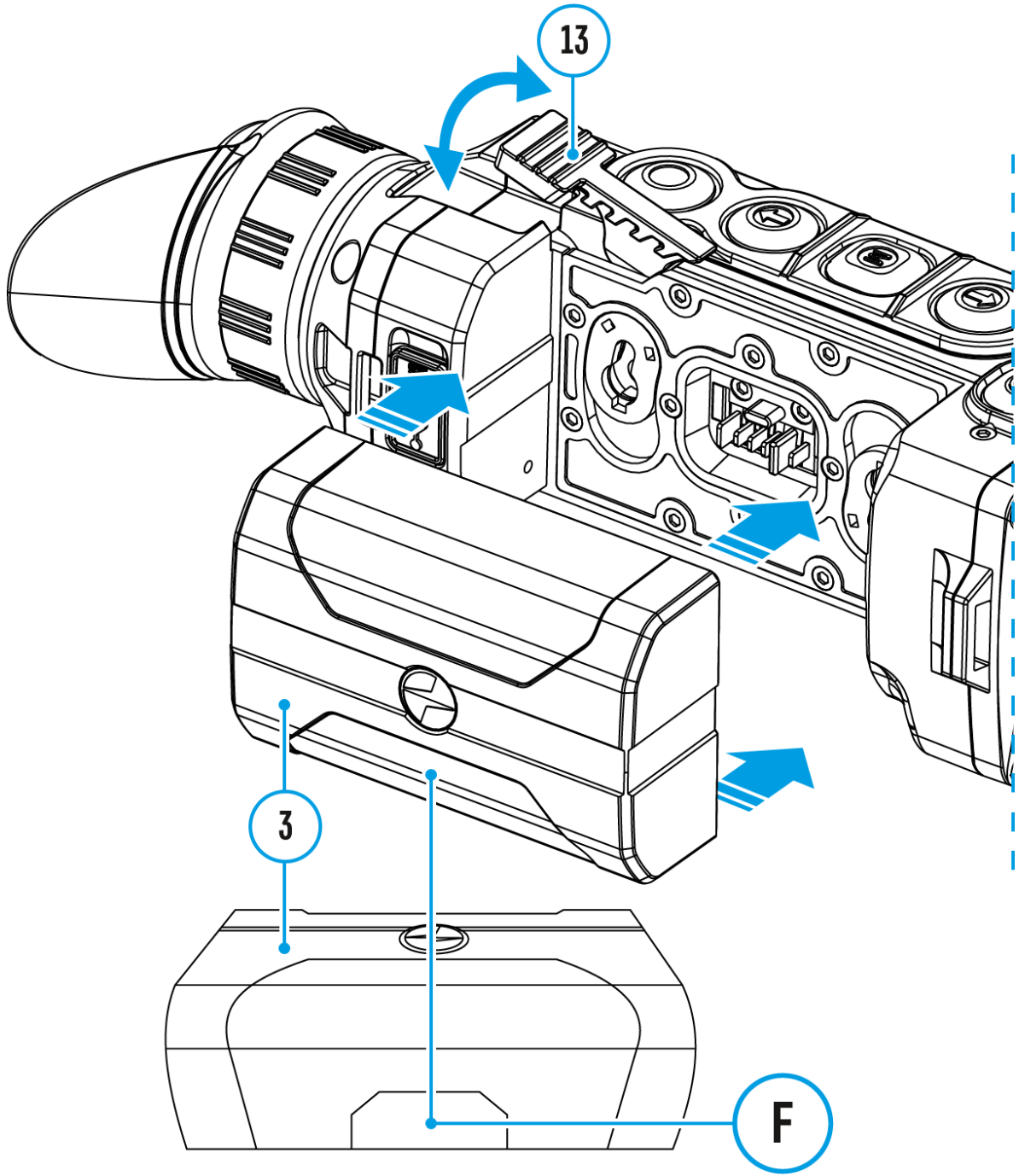


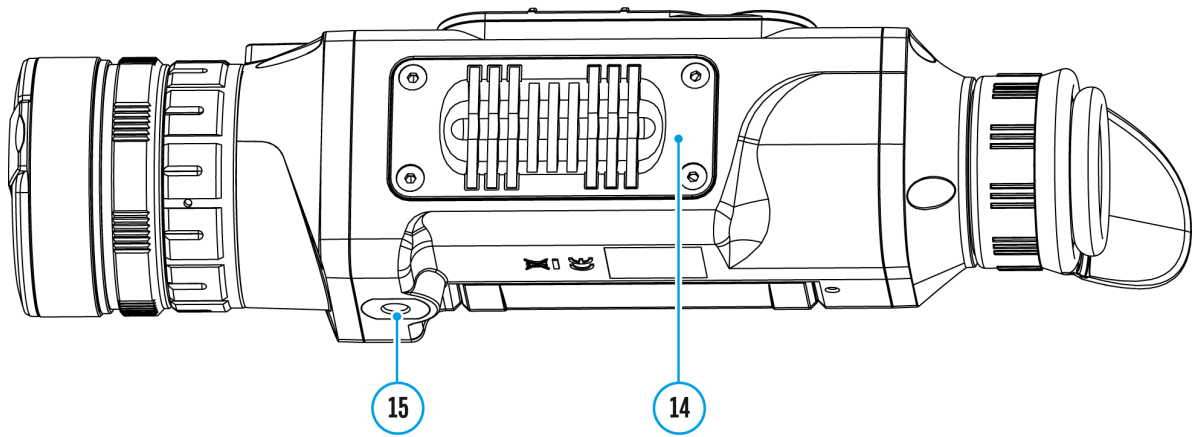
- 
1. Press and hold the **M (9)** button to enter the main menu.
  2. Select the **Icon Brightness**  submenu with the **UP (10) / DOWN (8)** buttons.
  3. Enter the submenu with a short press of the **M (9)** button.
  4. Set the desired icon brightness (menu and status bar icons) from 1 to 10 with the **UP (10) / DOWN (8)** buttons.
  5. Press the **M (9)** button briefly to confirm the selection.

# Calibration Mode

Show device diagram








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Selection of calibration mode.

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

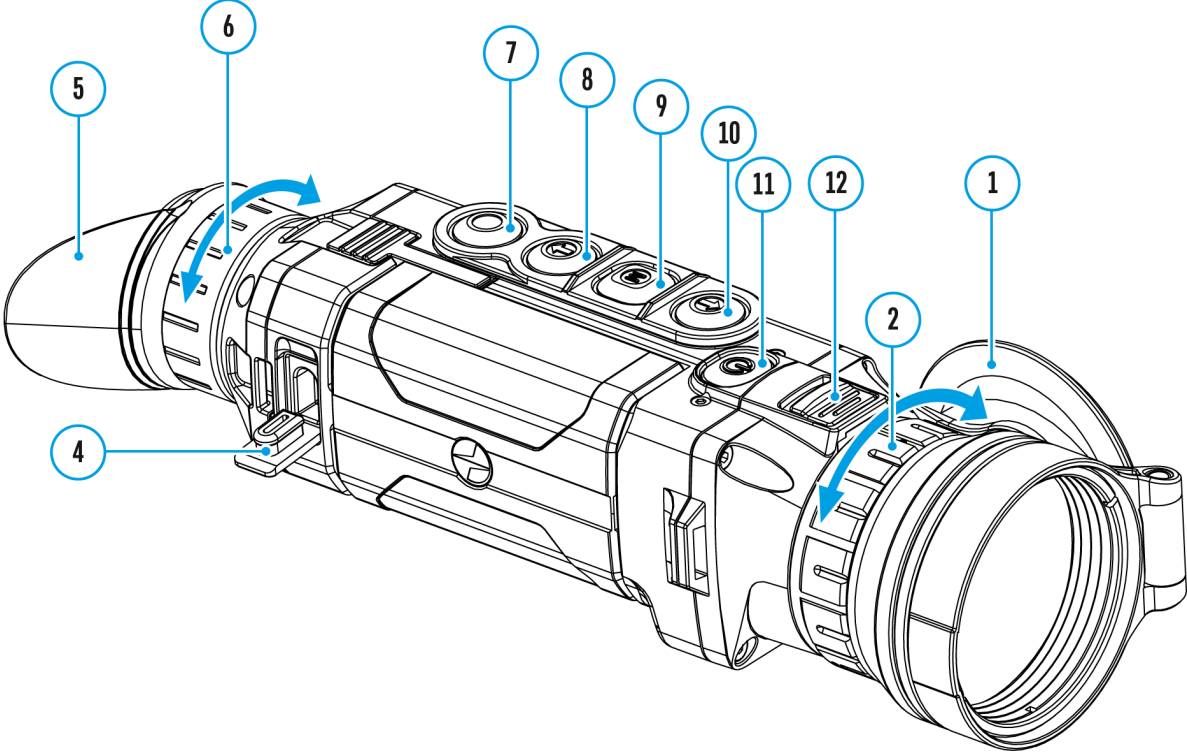
To select the calibration mode:

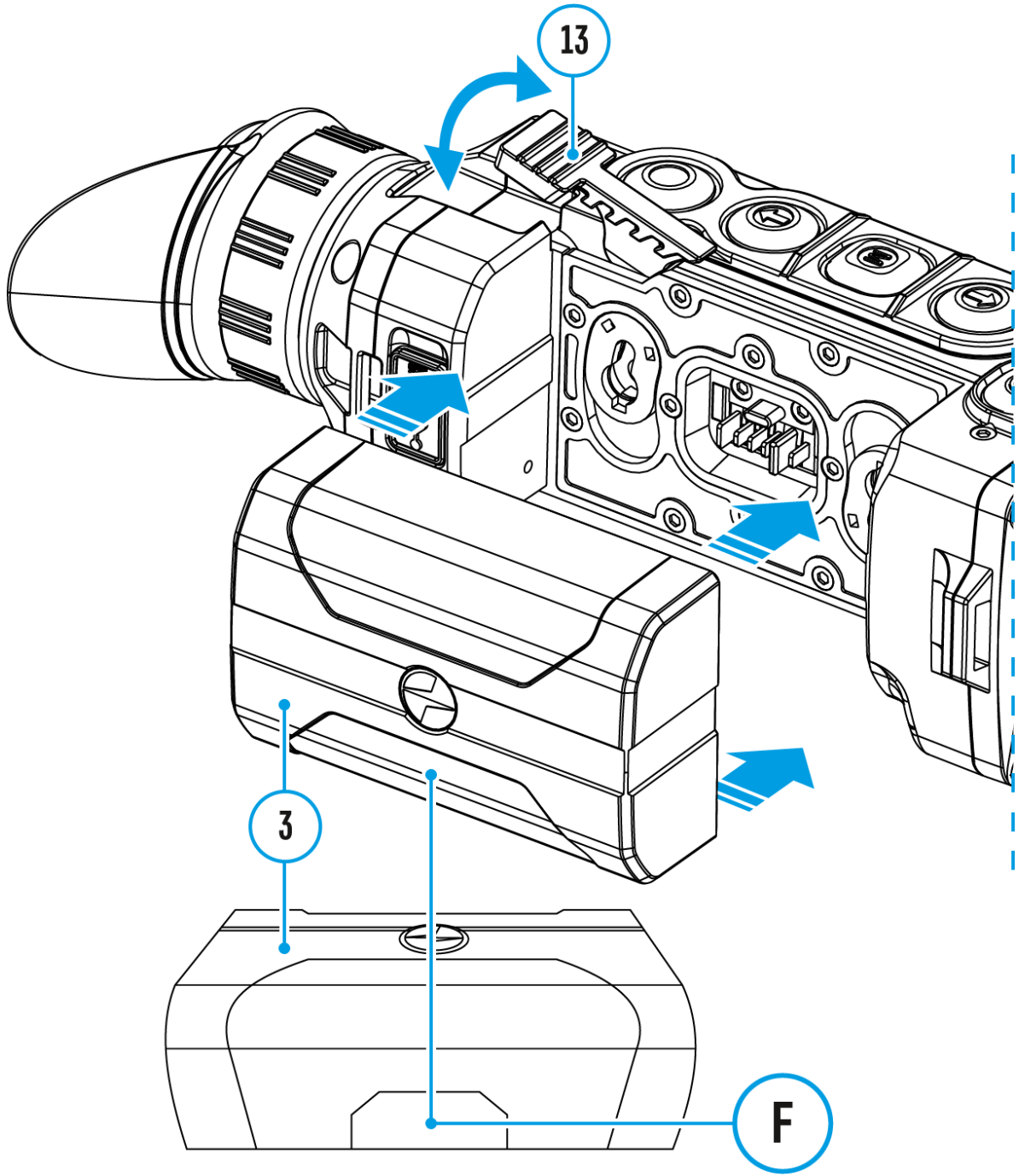
1. Press and hold the **M (9)** button to enter the main menu.
2. Use the **UP (10)** / **DOWN (8)** buttons to select the **Calibration Mode**  option.
3. Press the **M (9)** button briefly to enter the submenu.
4. Use the **UP (10)** / **DOWN (8)** buttons to select one of the calibration modes.
5. Press the **M (9)** button briefly to confirm the selection.

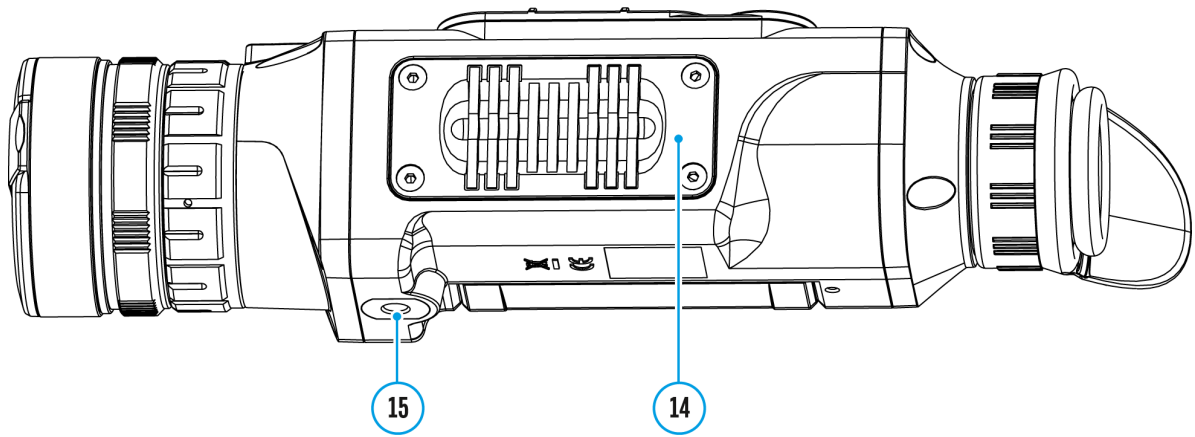
More details in the section [Microbolometer Calibration](#).

# Wi-Fi Settings

Show device diagram








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This item enables you to set up your device for operation in a Wi-Fi network.

1. Press and hold down the **M (9)** button to enter the main menu.
2. Select the **Wi-Fi Settings**  menu option with the **UP (10) / DOWN (8)** buttons.
3. Press briefly the **M (9)** button to enter submenu.
4. Select the desired menu item with the **UP (10) / DOWN (8)** buttons.

## Password Setup

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

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


1. Enter the **Password Setup**  submenu with a short press of the **M (9)** button.
2. The default password is **12345678**.
3. Set the desired password with the **UP (10) / DOWN (8)** buttons. Switch between digits with a short press of the **M (9)** button.
4. Save the password and exit the submenu with a long press of the **M (9)** button.

## Access Level Setup

This option allows you to configure the appropriate access level to your

device made available to the Stream Vision application.

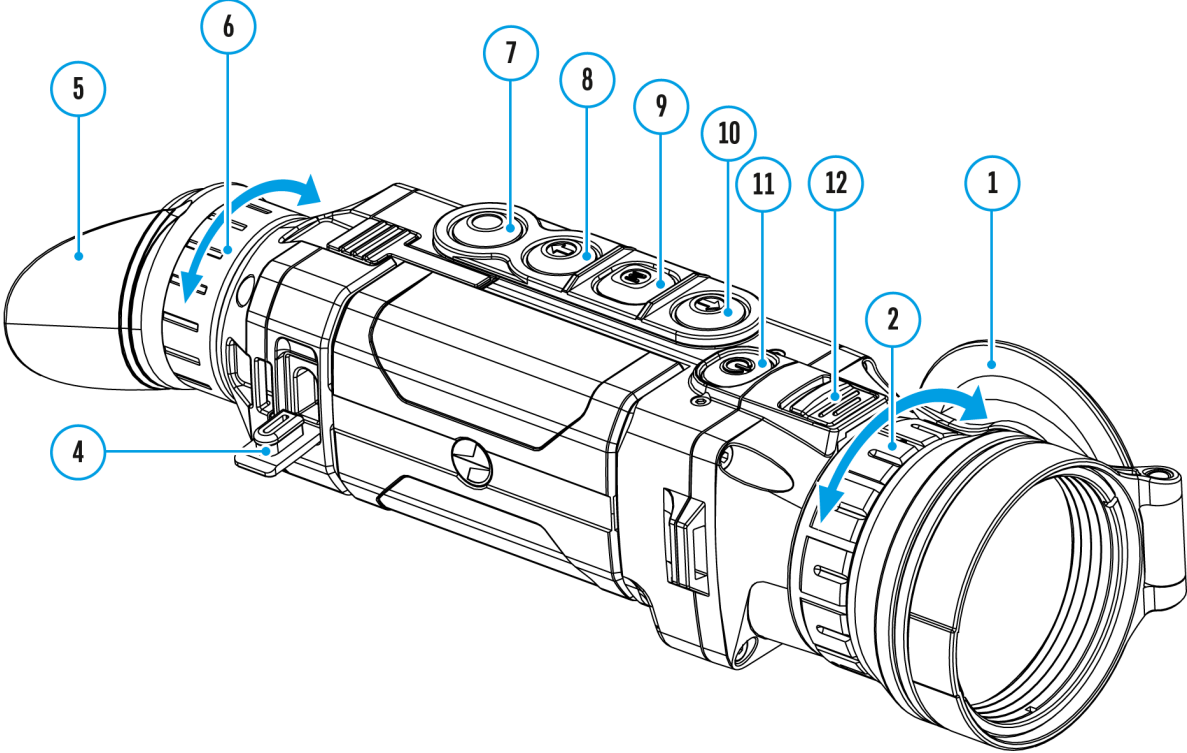
- **Owner** level. A Stream Vision user has full access to all device functions.
- **Guest** level. A Stream Vision user only has access to the real time video stream from the device.

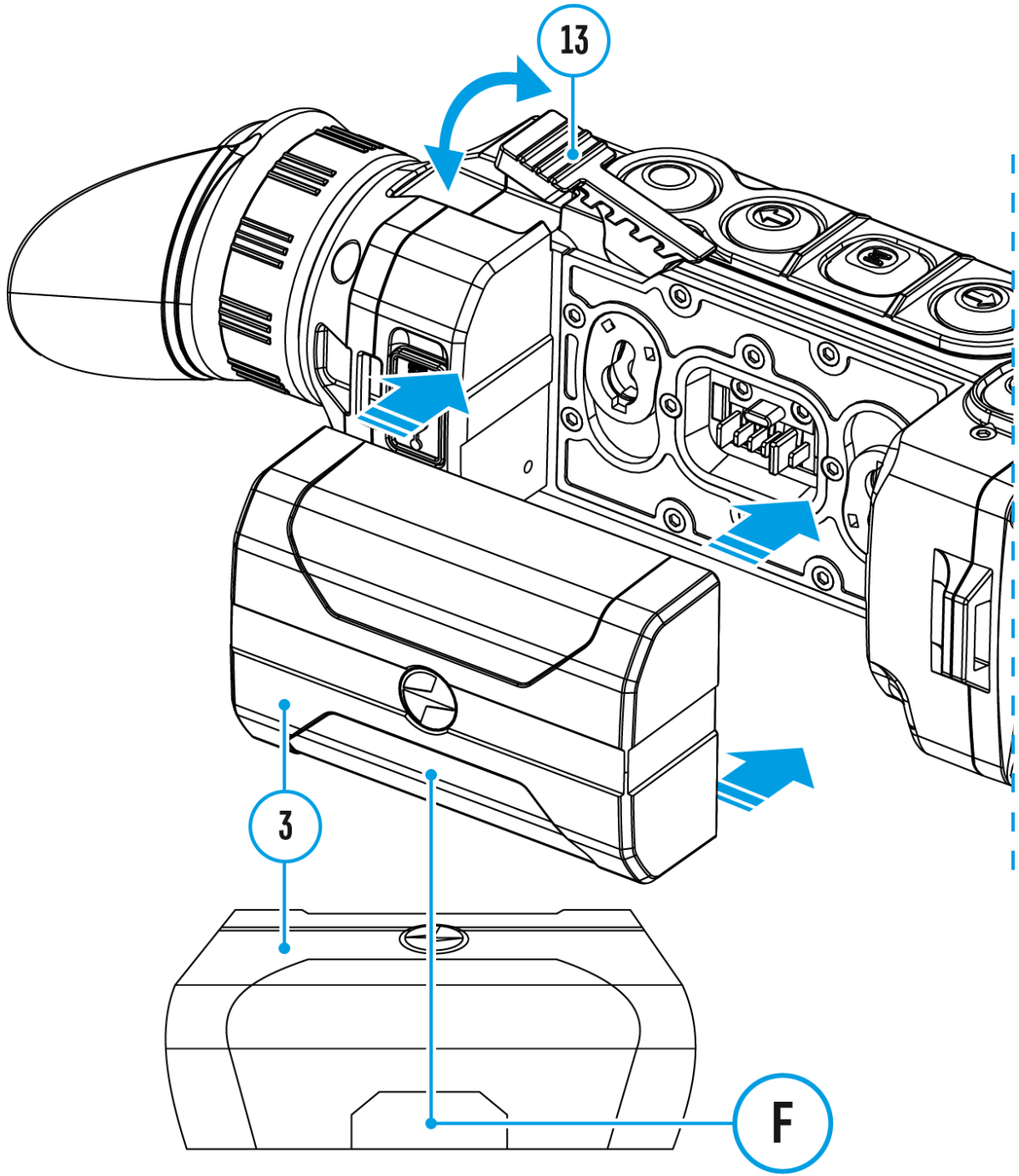
1. Press briefly the **M (9)** button to enter the **Access Level Setup**  submenu.
2. Select the access level with the **UP (10)** / **DOWN (8)** buttons.
3. Press and hold the **M (9)** to confirm your selection and exit from the submenu.

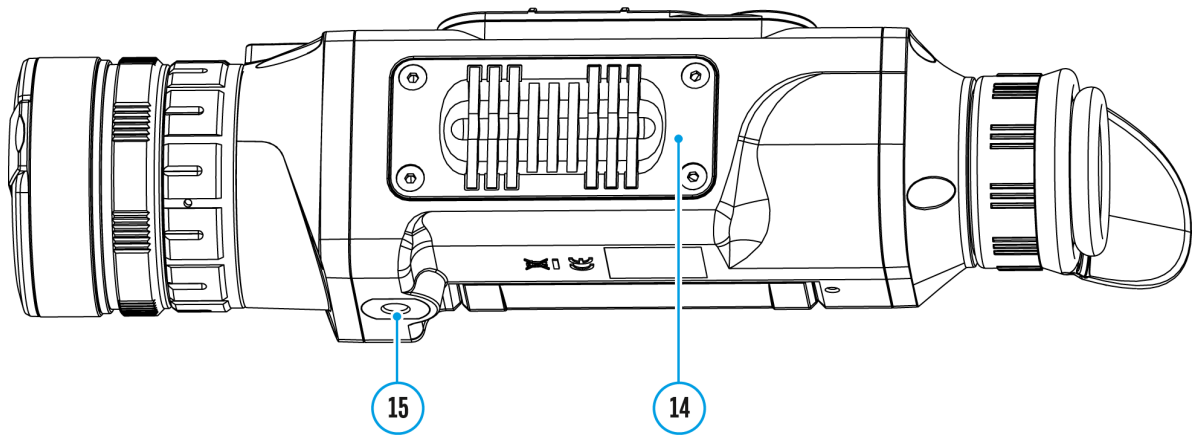


# General Settings

Show device diagram








1. Press and hold down the **M (9)** button to enter the main menu.
2. Select option **General Settings**  with the **UP (10) / DOWN (8)** buttons.
3. Press briefly the **M (9)** button to confirm.

The following settings are available:


## Language

Language selection:

1. Select option **Language**  with the **UP (10) / DOWN (8)** buttons.
2. Press briefly the **M (9)** button to confirm.
3. Select one of the available interface languages with a short press of the **UP (10) / DOWN (8)** buttons: English, French, German, Spanish, Russian.
4. Save selection and exit the submenu with a long press of the **M (9)** button.

## Date

Date setup


1. Select option **Date**  with **UP (10) / DOWN (8)** buttons.
2. Enter the submenu with a short press of the **M (9)** button. The 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 (10) / DOWN (8)** buttons.

4. Switch between digits with a short press of the **M (9)** button.
5. Save the selected date and exit the submenu with a long press of the **M (9)** button.


## Time

Time setup:

1. Select option **Time**  with **UP (10) / DOWN (8)** buttons.
2. Enter the submenu with a short press of the **M (9)** button.
3. Select the desired time format with a short press of the **UP (10) / DOWN (8)** buttons: 24 or PM/AM.
4. Switch to hour setup with a short press of the **M (9)** button.
5. Select hour value with a short press of the **UP (10) / DOWN (8)** buttons.
6. Switch to minute setup with a short press of the **M (9)** button.
7. Select minute value with a short press of the **UP (10) / DOWN (8)** buttons.
8. Save the selected time and exit the submenu with a long press of the **M (9)** button.

## Units of Measure



Selection of units of measure:

1. Select option **Units of Measure**  with **UP (10) / DOWN (8)** buttons.
2. Enter the submenu with a short press of the **M (9)** button.
3. Select the desired units of measurement with a short press of the **UP (10) / DOWN (8)** buttons: Meters or Yards.
4. Save the selection with a short press of the **M (9)** button.
5. Menu exit will take place automatically.

## Objective Lens


Lens selection is used when replacing objective lenses.

Selection of the lens type is important for the correct display of the optical magnification and adequate operation of the **Stadiametric Rangefinder**.

1. Replace the objective lens: to do this, move the latch(**12**) backwards, turn the lens counter- clockwise all the way and remove the lens.
2. Install a new lens, move the latch (**12**) backwards and move clockwise until the latch snaps.
3. Enter the **General Settings**  submenu.
4. Select the **Objective Lens**  submenu with **UP (10) / DOWN (8)** buttons
5. Enter the submenu with a short press of the **M (9)** button.
6. With a short press of the **UP (10) / DOWN (8)** buttons select the desired lens: 28; 38 or 50.
7. Confirm selection with a long press of the **M (9)** button.

## Default Settings

This menu option allows you to return the settings to their defaults.

1. Select option **Default Settings**  with **UP (10) / DOWN (8)** buttons.
  2. Enter the submenu with a short press of the **M (9)** button.
  3. With a short press of the **UP (10) / DOWN (8)** buttons select "**Yes**" to restore default settings or "**No**" to abort.
  4. Confirm selection with a short press of the **M (9)** button.
- If "**Yes**" is selected the display will show "**Return default settings?**" and "**Yes**" and "**No**" options.
  - Select "**Yes**" to restore default settings. If "**No**" is selected the action is aborted and you return to the submenu.

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


- **Video Recorder Operating Mode**- Video
- **Observation Mode** - Forest
- **Calibration Mode** - Automatic
- **Language** - English
- **Microphone** - Off
- **Wi-Fi** - Off (default password)

- **Magnification** - Off (without digital zoom)
- **PIP** - Off
- **Colour Mode** - White Hot
- **Units of measurement**- Meters

**Warning:**The date and time settings and default pixel map are not restored.

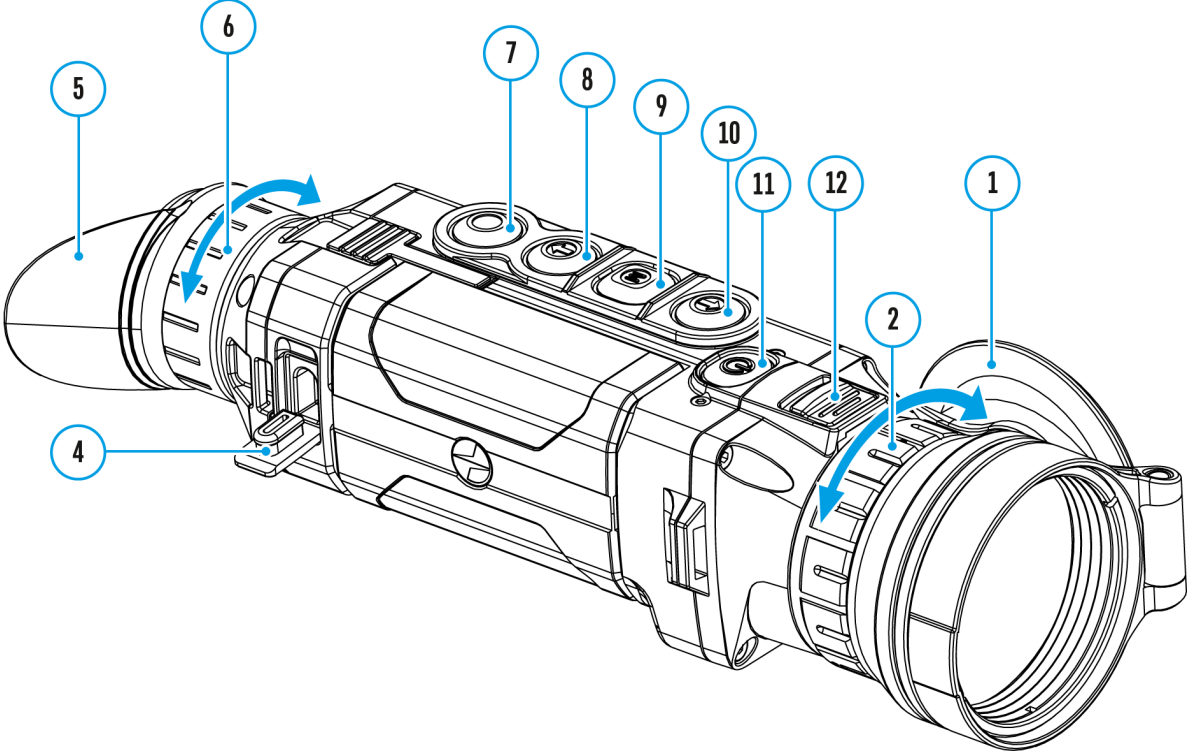
## Format

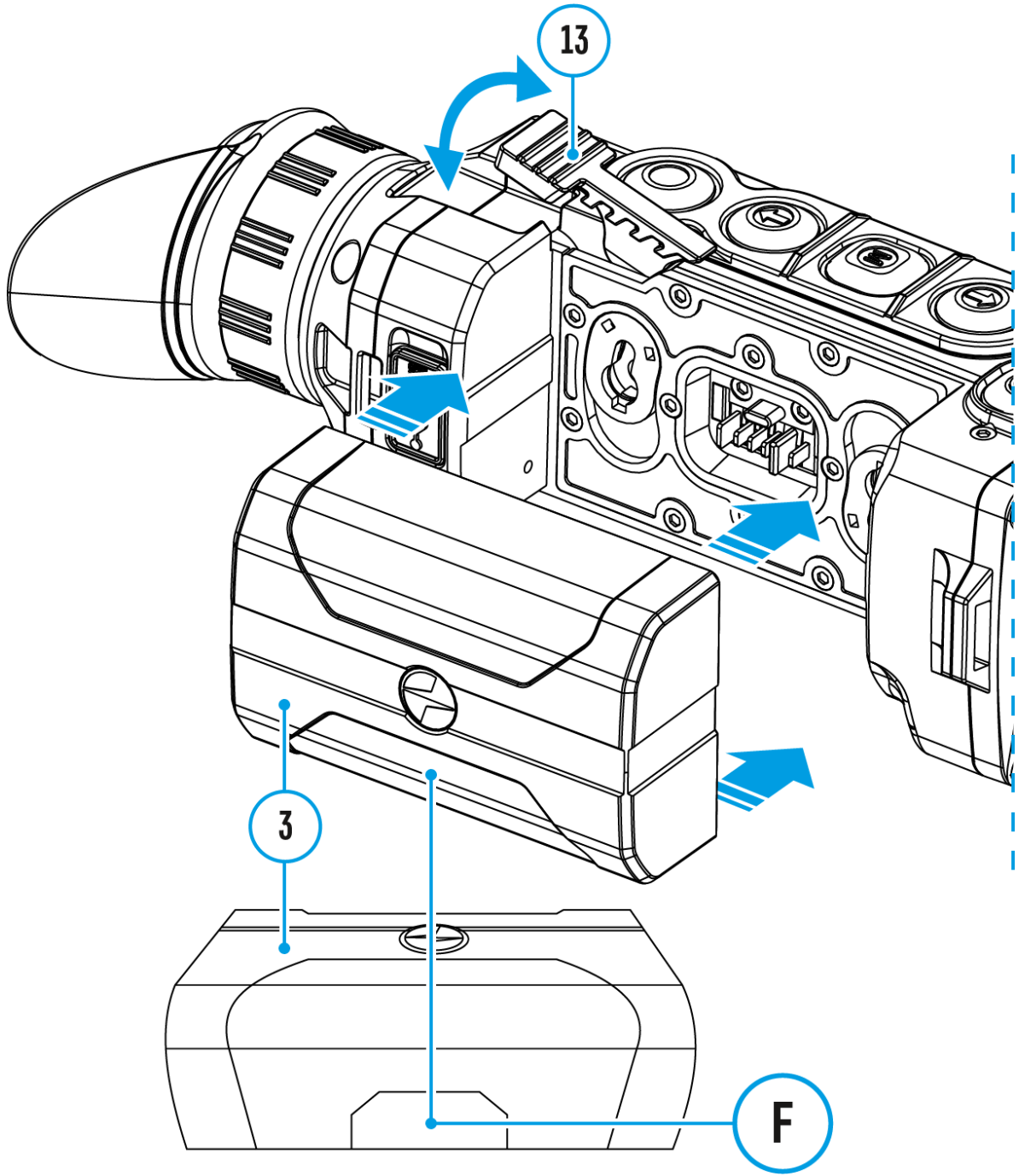
This menu option allows you to format the Flash memory card. All files will be deleted.

1. Select option **Format**  with **UP (10) / DOWN (8)** buttons.
  2. Enter the submenu with a short press of the **M (9)** button.
  3. With a short press of the **UP (10) / DOWN (8)** buttons select **"Yes"** to format the memory card or **"No"** to return to the submenu.
  4. Confirm selection with a short press of the **M (9)** 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.

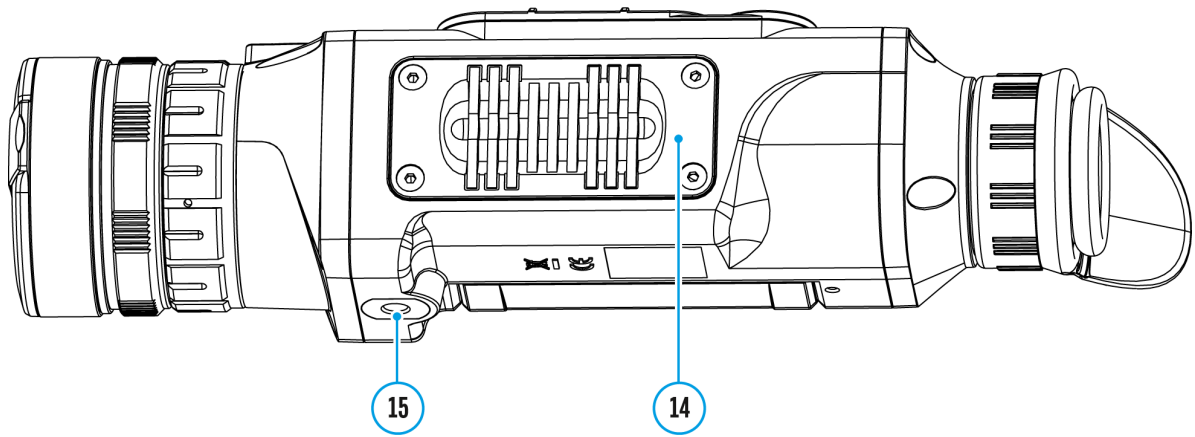
# Microphone

Show device diagram







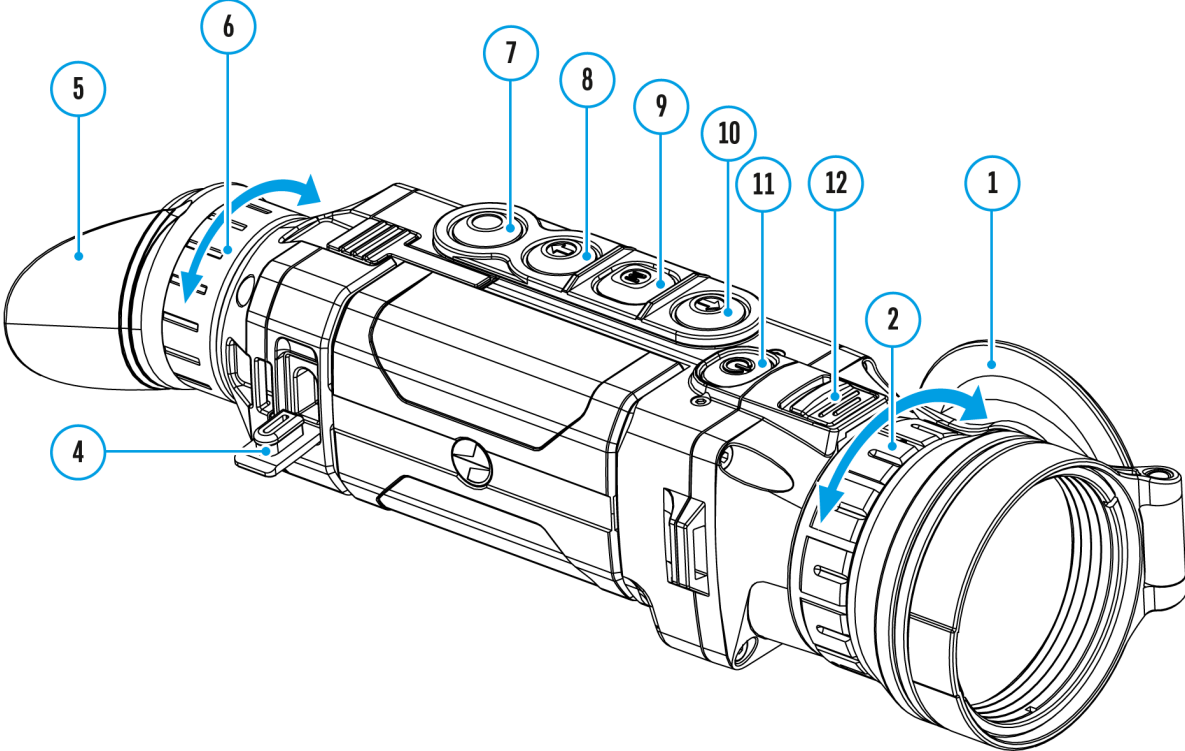


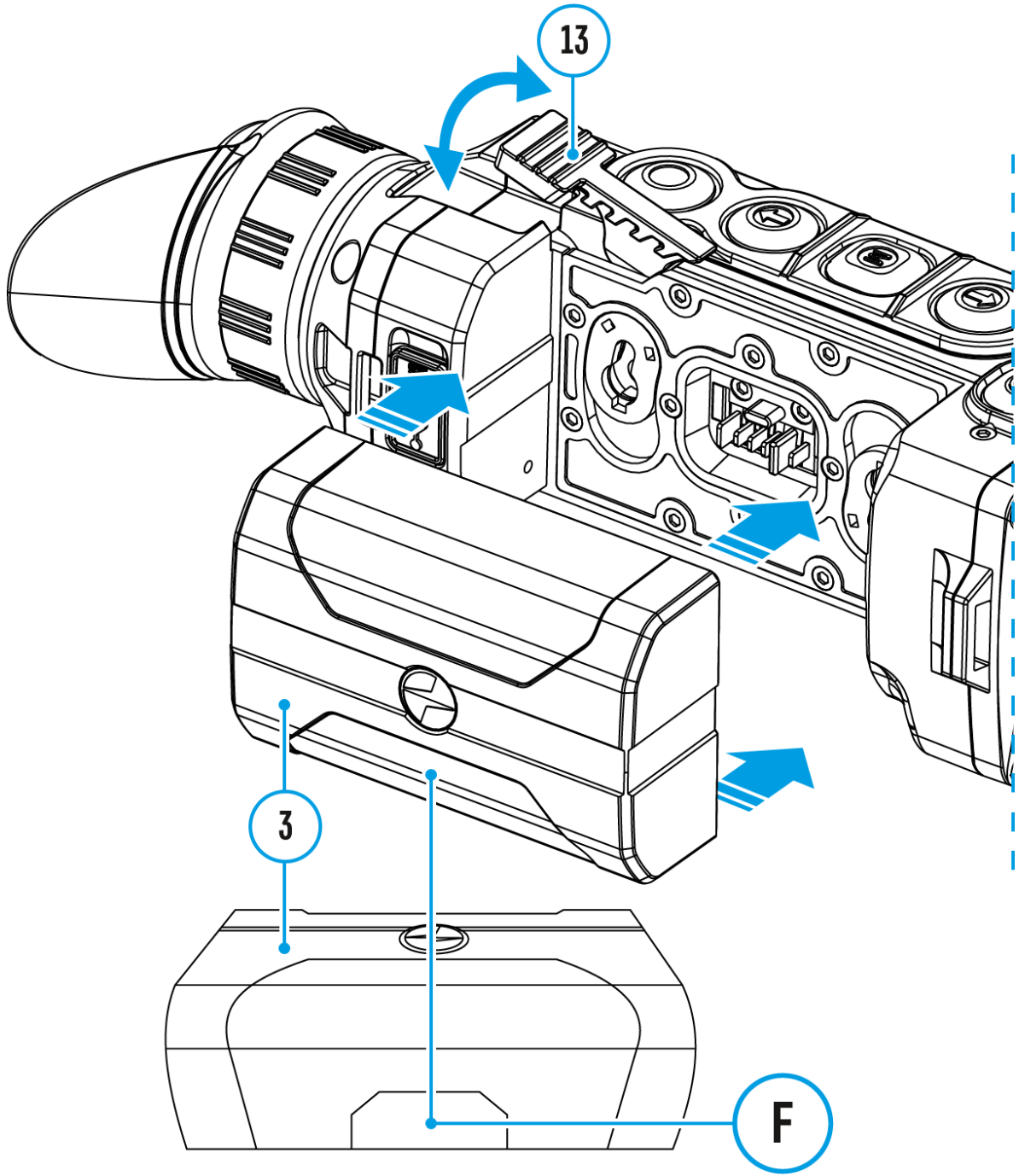
- 
1. Press and hold the **M (9)** button to enter the main menu.
  2. Select the **Microphone** (🔊) menu item with the **UP (10) / DOWN (8)** buttons.
  3. Turn the microphone on / off with a short press of the **M (9)** button.
  4. With the microphone on, you will have audio track in your video.

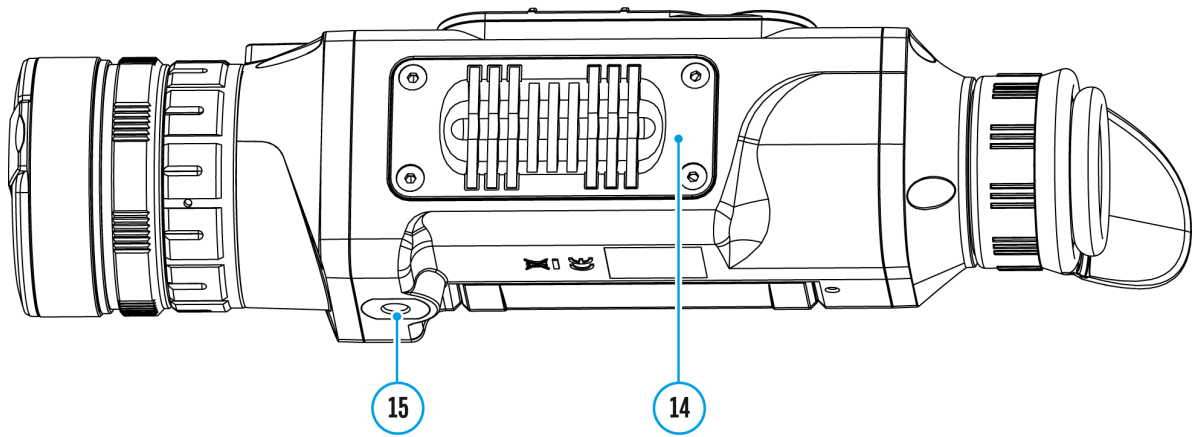
**The microphone is off by default.**

# Remote Control

Show device diagram










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**This feature is not supported on devices manufactured after August 1, 2021.**

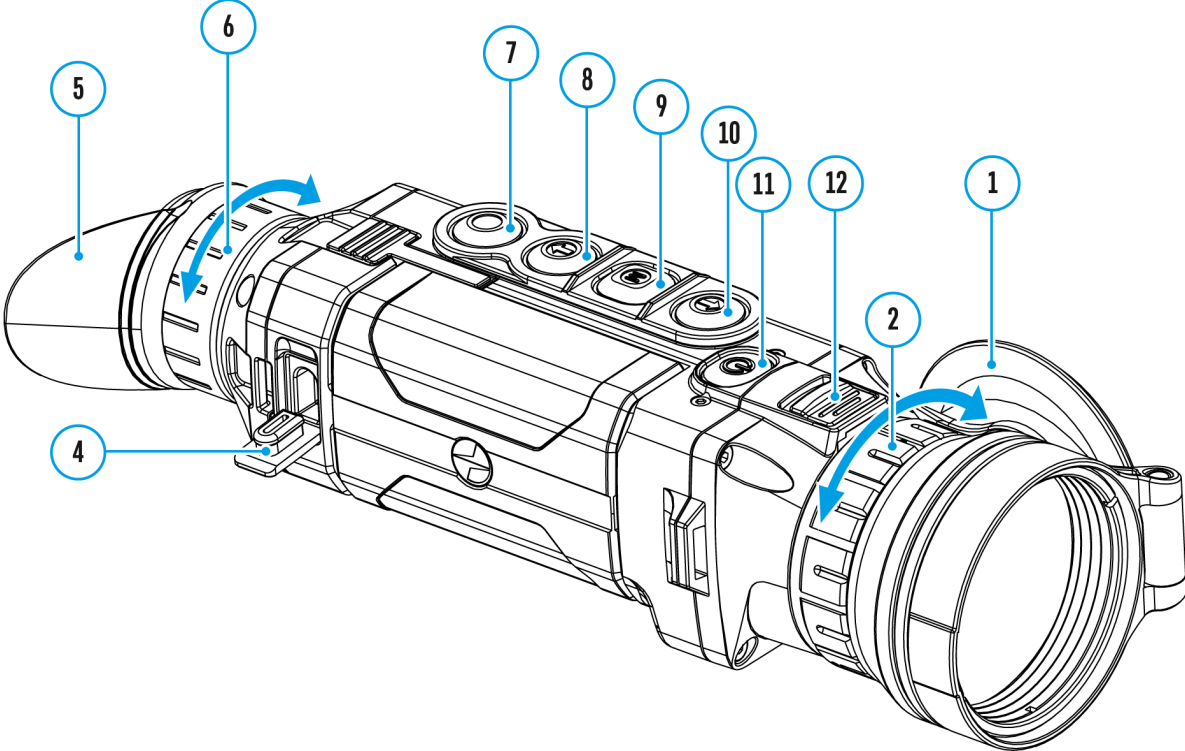
Remote control activation (bought separately)

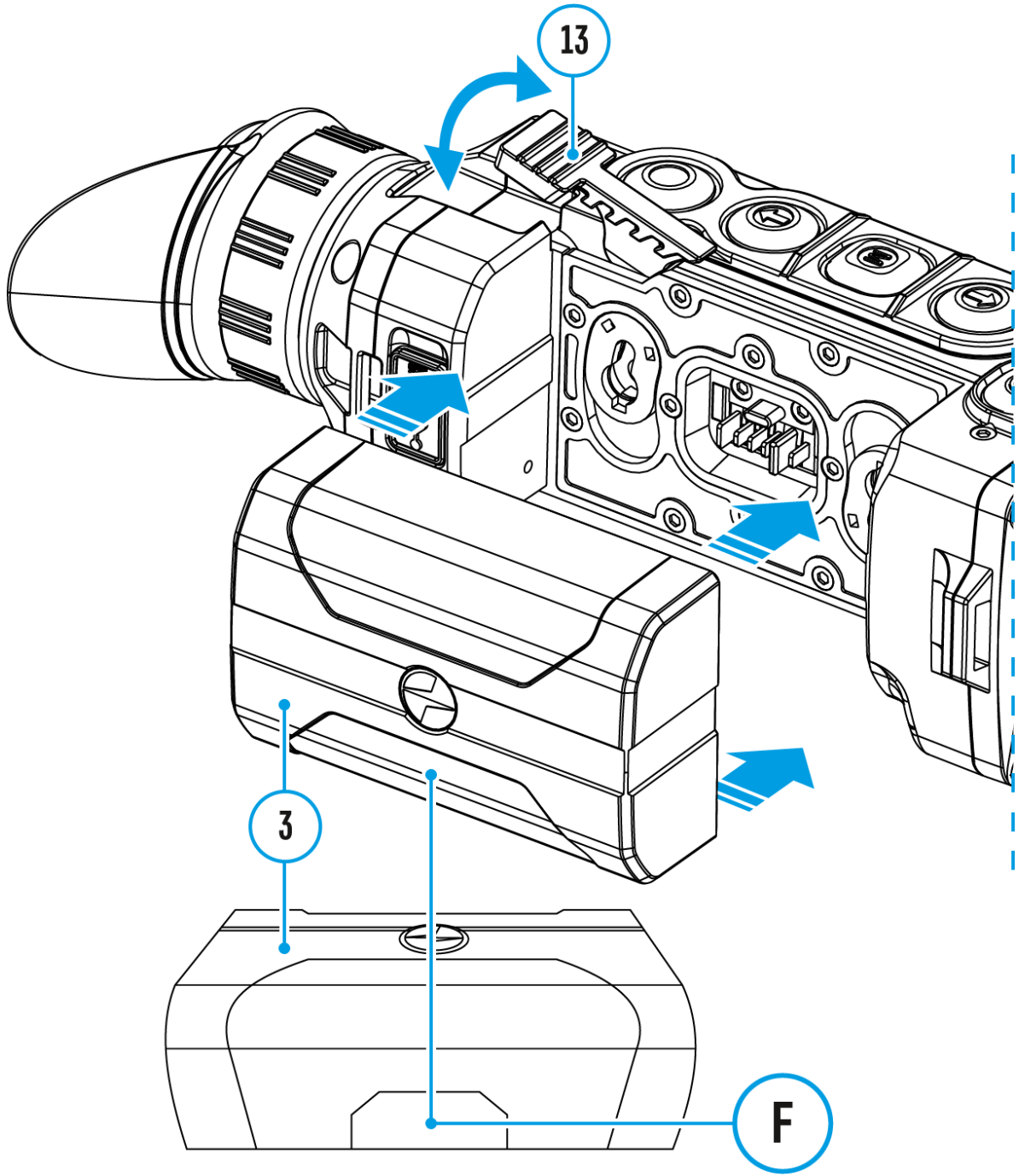
Before operating the remote control (**RC**), remember to activate it as follows:

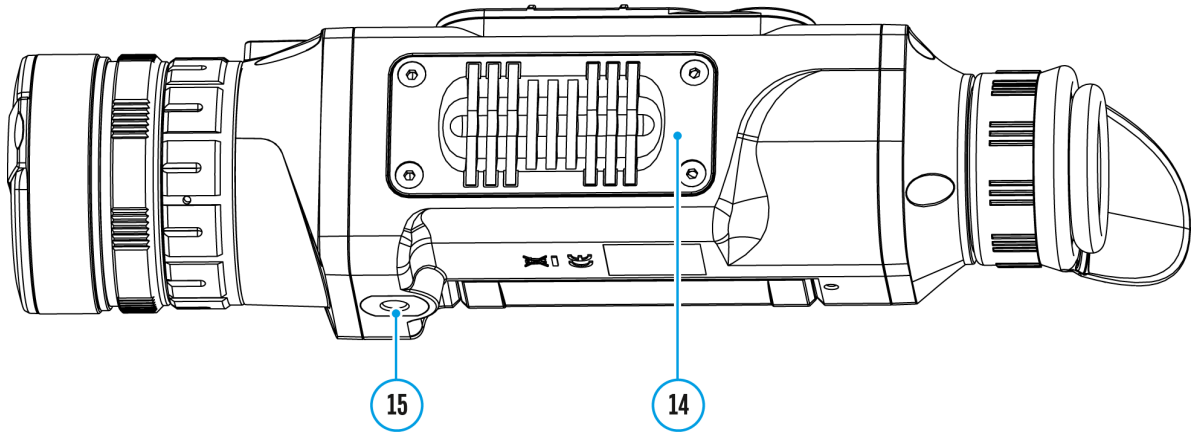
1. Press and hold down the **M (9)** button to enter the main menu.
2. Select option **Remote Control**  with the **UP (10) / DOWN (8)** buttons.
3. Press briefly the **M (9)** button to confirm.
4. Display shows message "**Wait**" and countdown starts (30 sec), within which hold down for two seconds any **RC** button.
5. If activation is successful, the message "**Connection complete**" appears .
6. If error occurs the message "**Connection failed**" appears . Repeat the procedure.
7. The **RC** is activated and ready for use.
8. To unlink the **RC**, press the **M (9)** button, wait for the countdown to expire without pressing any **RC** button for 30 sec.
9. All remote controls previously linked to your device are now unlinked.
10. Now you can activate your **RC** again or activate another **RC**.

# Device Information

Show device diagram







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

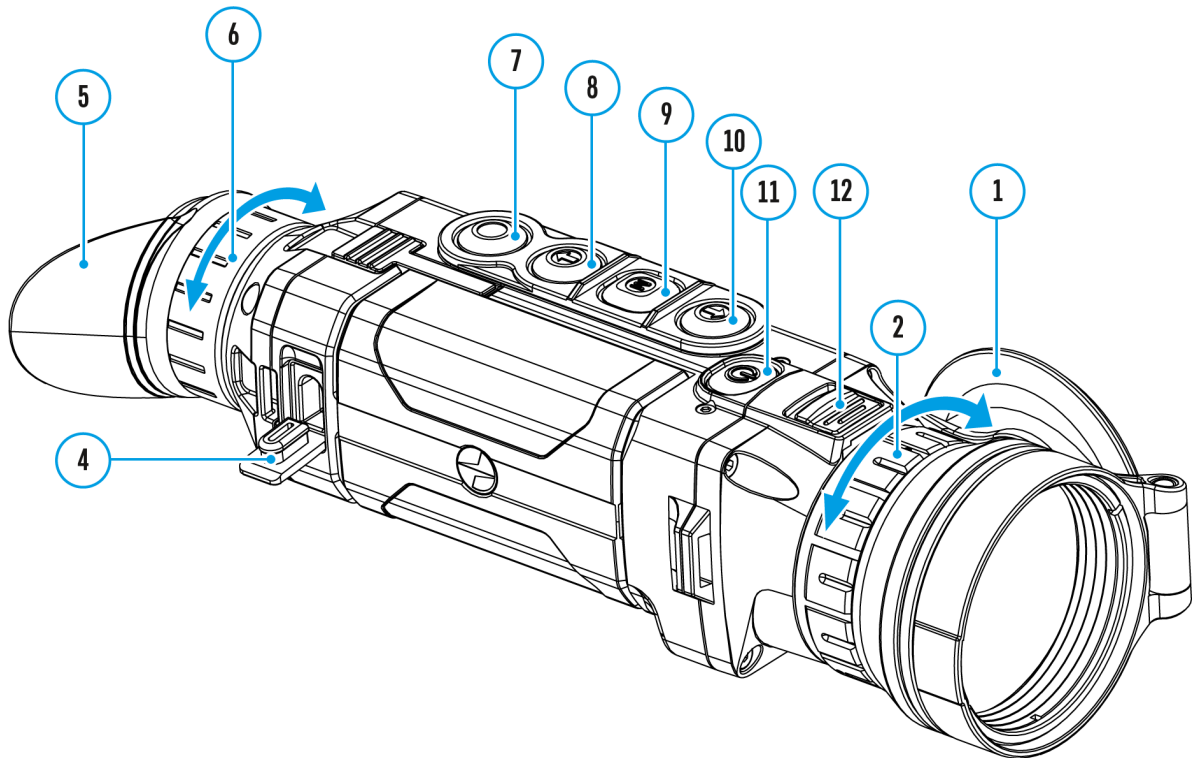
- Full Name
- SKU Number
- Serial Number
- Firmware Version
- Hardware Version
- Service Information

To display information, do the following:

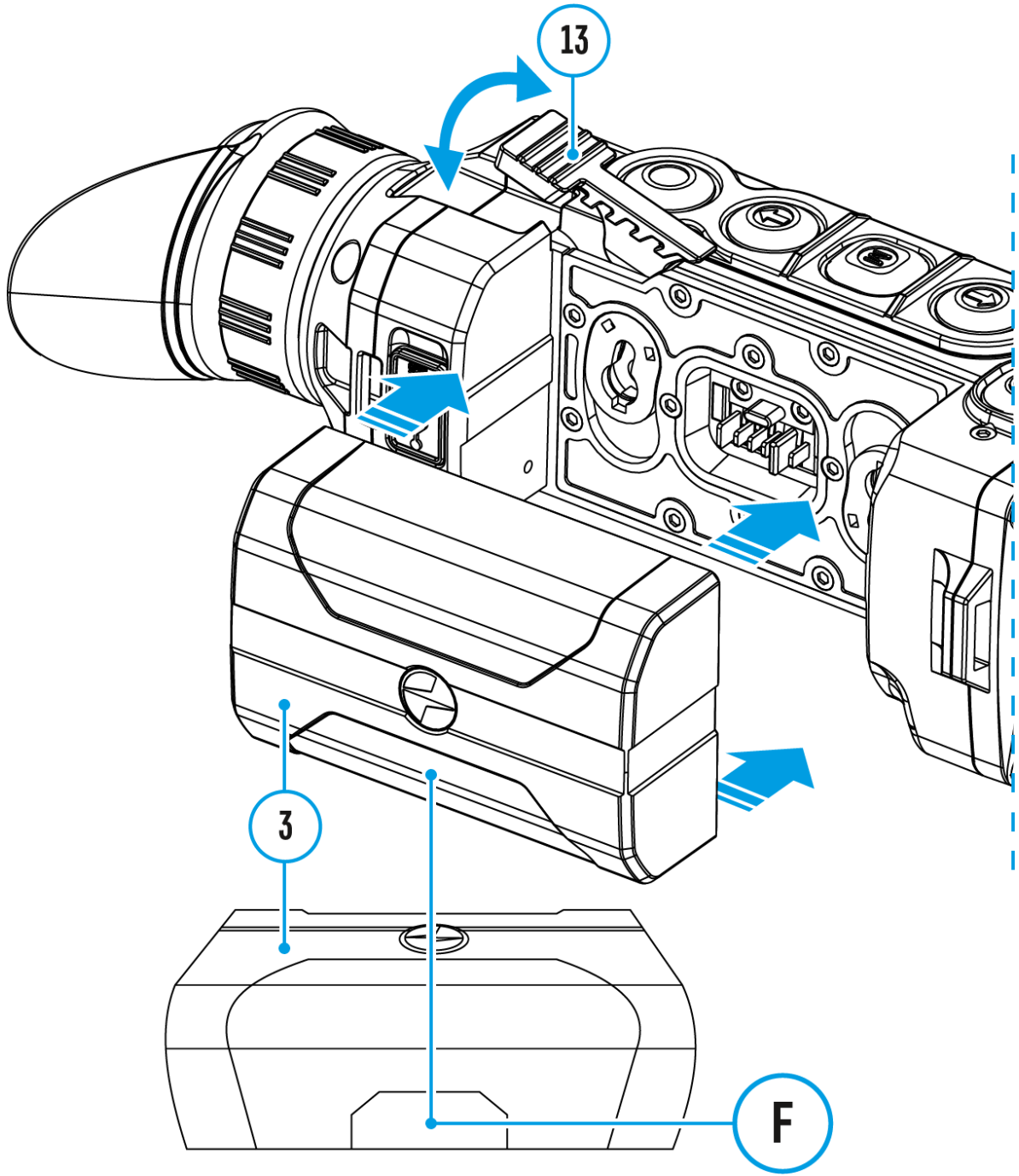
1. Press and hold down the **M (9)** button to enter the main menu.
2. Select option **Device Information (i)** with the **UP (10) / DOWN (8)** buttons.
3. Press briefly the **M (9)** button to confirm.

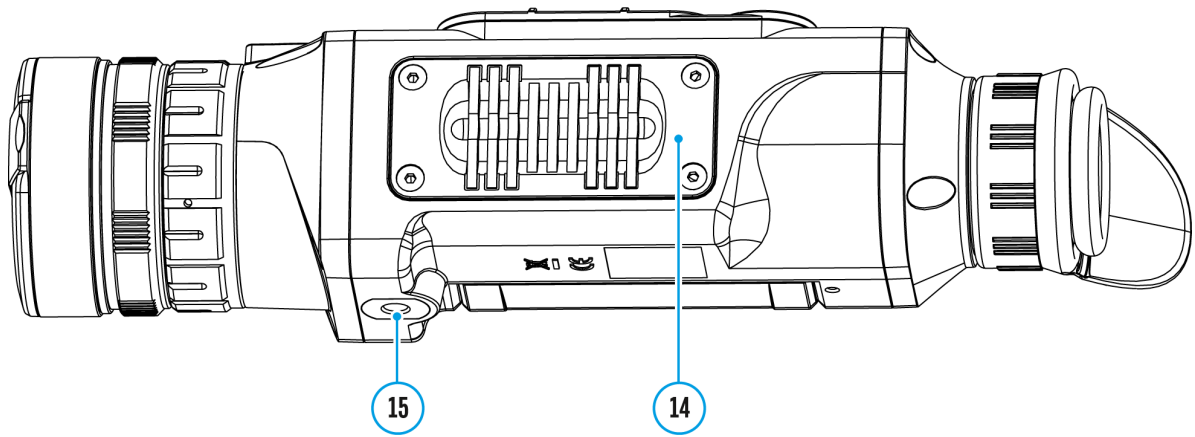
# Video Recording and Photography

Show device diagram











**Helion 2 XP** thermal imagers feature video recording and photography of the image being observed to the internal memory card.

Before using this feature please set the **date** and **time** (see [General Settings](#) section).



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

### **Video mode. Video recording**

1. Switch to **Video** mode by pressing and holding the **REC (7)** button.
2. The  icon and the remaining recording time in HH:MM (Hours:Minutes) format are displayed in the upper left corner, for example 12:10.
3. Press the **REC (7)** button briefly to start video recording.
4. When the video recording starts, the icon  will disappear and the REC icon and timer in MM:SS (Minutes:Seconds) format will appear  
●REC | 00:25.
5. Pause and resume recording video with a short press of the **REC (7)** button.
6. Stop recording video with a long press of the **REC (7)** button.
7. Video files are saved to the built-in memory card after the video recording has been stopped.
8. Press and hold the **REC (7)** button to switch between the **Video** and **Photo** modes (Video-> Photo-> Video...)

### **Photo Mode. Capturing an image**

1. Switch to the **Photo** mode by pressing and holding the **REC (7)** button.

2. Press the **REC (7)** button briefly to take a photo. The image freezes for 0.5 sec while the photo is saved to the internal memory.
3. In the top left corner of the display you will see a camera icon  and the number of pictures you are able to take. If the number is less than 100 the actual number will be shown (i.e. 98) but if more than 100 pictures can be taken **>100** will be displayed next to the icon .

**Notes:**

- You can enter and operate the menu during video recording.
- The counter for multimedia files cannot be reset.
- Recorded videos and photos are saved to the internal memory card in the format img\_XXX.jpg (photos); video\_XXX.mp4 (videos) where XXX is a three-digit counter for videos and photos.

**Warning:**





- The 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 the device's internal memory.
- Regularly check the free capacity of the internal memory and 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.



# Wi-Fi Function

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

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

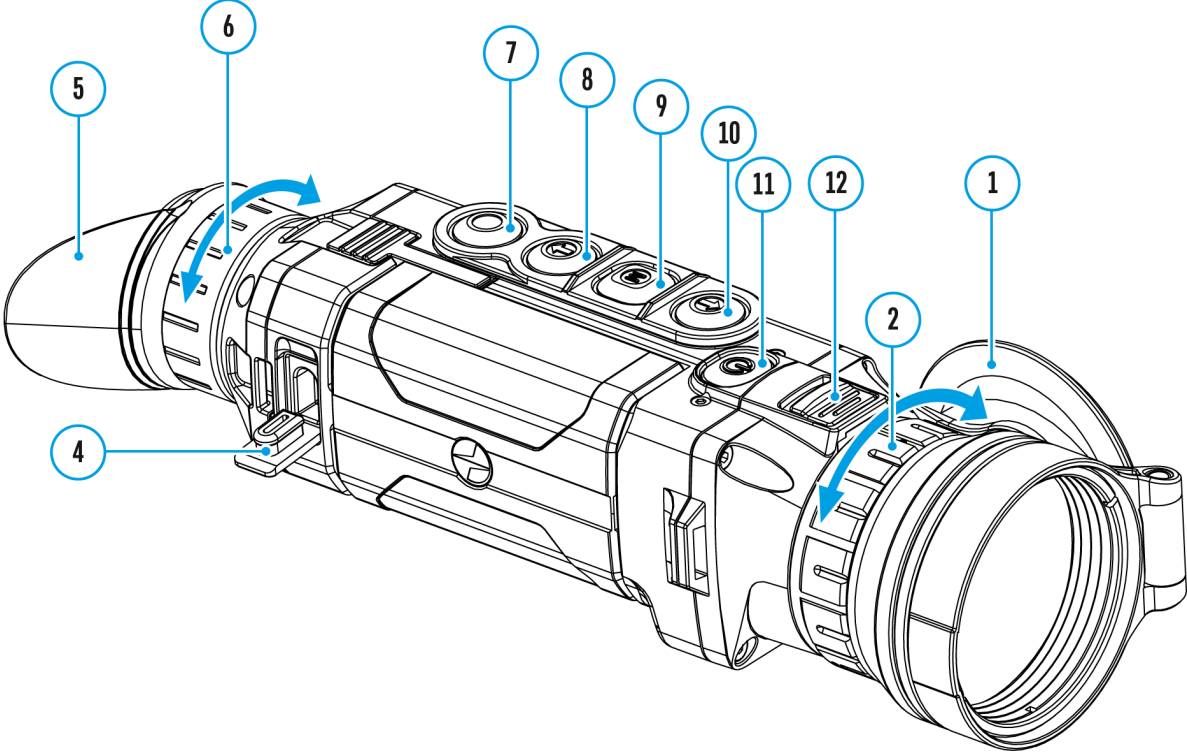
**Wi-Fi operation is shown in the status bar as follows:**

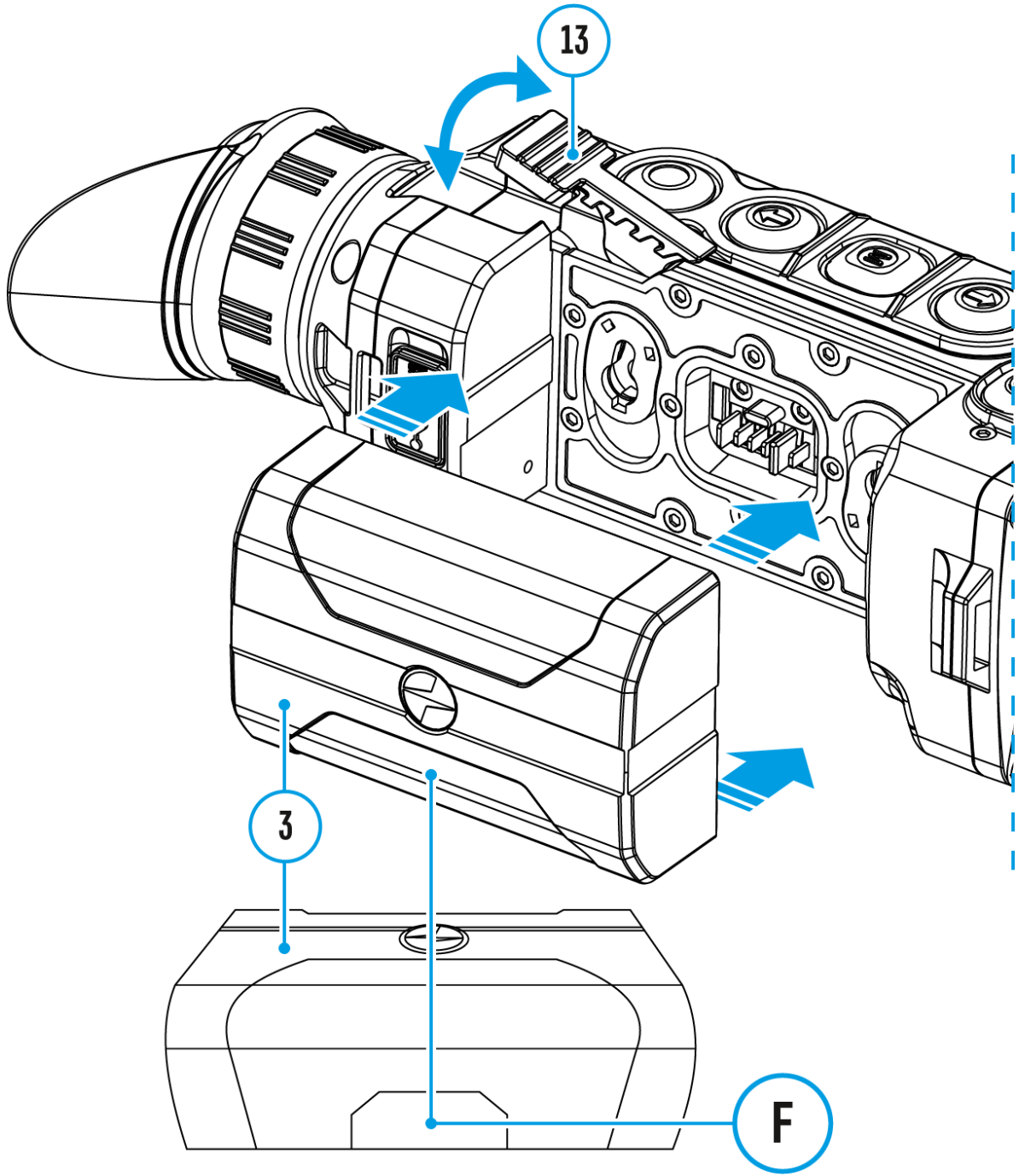
Connection status	Indication on the status bar
Wi-Fi is switched off	
Wi-Fi activated by the user, Wi-Fi in the device is being activated	
Wi-Fi is switched on, no connection with device	
Wi-Fi is switched on, device connected	

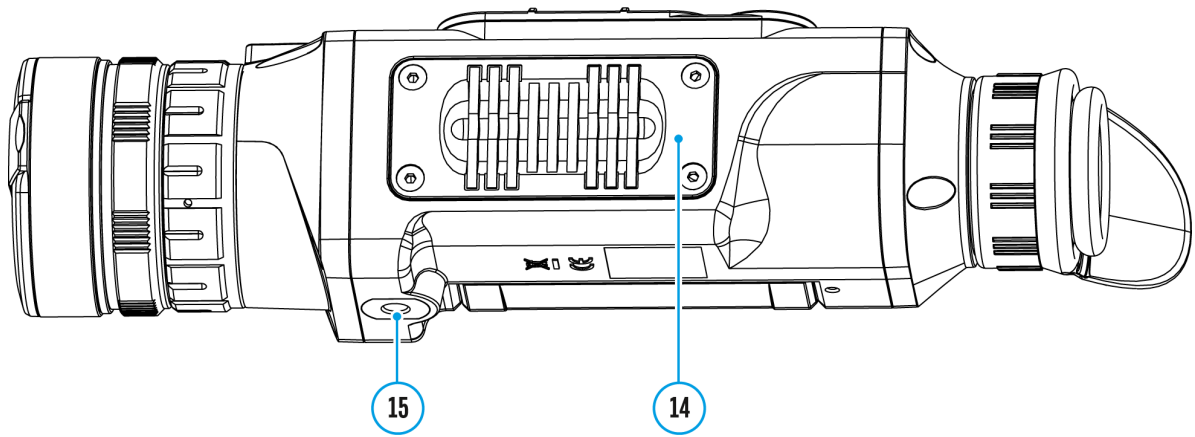
- The device is recognized by an external device as Helion2\_XXXX where XXXX are the four last digits of the serial number.
- After entering the password (default: **12345678**) on a mobile (see **Password Setup** subsection of the **Wi-Fi Settings** section for more information on setting a password) and setting up a connection, the icon  in the status bar changes to .

# Stadiametric Rangefinder

Show device diagram








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**Helion 2 XP** thermal imagers are equipped with a stadiametric rangefinder which allows the user to determine the approximate distance to an object of a known size with reasonable accuracy.






1. Select the **Stadiametric Rangefinder** function with short presses of the **M (9)** button until the icon  is selected.
2. You will see on the display: measurement bars, icons of three reference objects and respective distances for the three objects.
3. Position the lower fixed bar under the object being ranged.
4. By pressing the **UP (10)** / **DOWN (8)** buttons, move the upper horizontal bar relative to the lower fixed bar until the object fits entirely between the two bars. The distance to the object is automatically

recalculated as you move the upper line.

5. Exit the rangefinder mode with a long press of the **M (9)** button or wait 10 seconds to exit automatically.

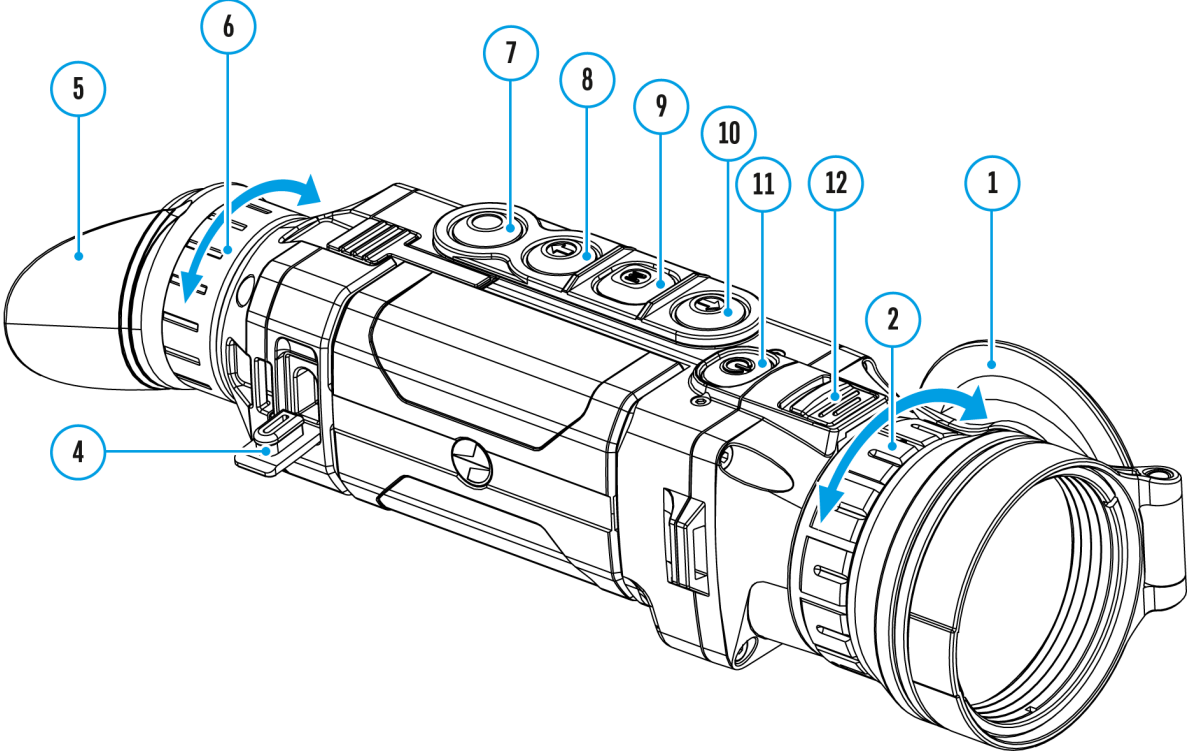
### Notes:

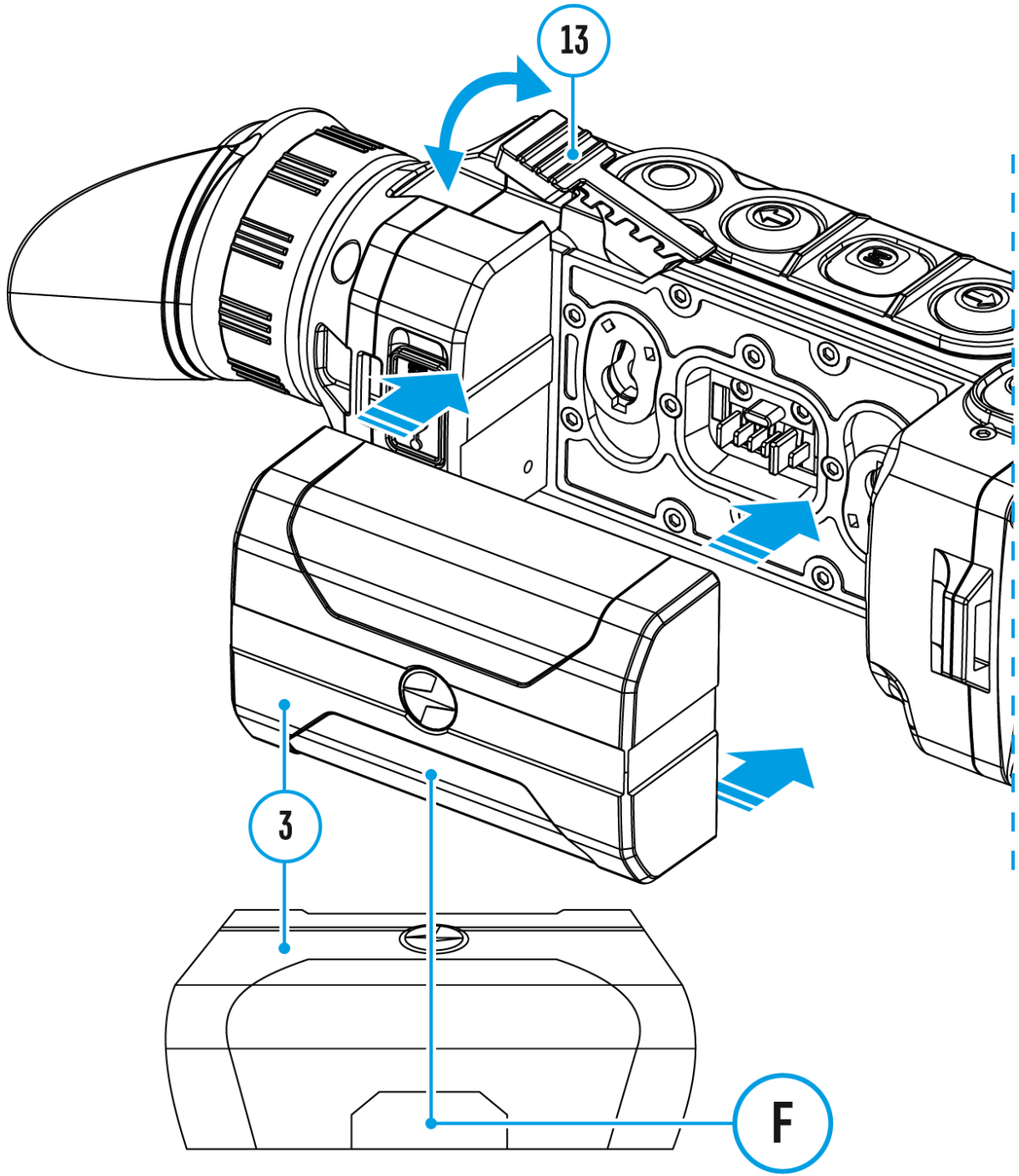
- There are three predefined values for the reference objects: Hare - 0.3 m (1 ft.) height, Boar - 0.7 m (2.3 ft.) height, Deer - 1.7 m (5.6 ft.) height.
- Before it appears on the display, a measured distance value is rounded up to 5m (16.4 ft.) for larger values and rounded down to 1m (3.3 ft.) for smaller values.
- To select the unit of measurement (Meters or Yards), go to the **General Settings**   menu item => **Units of Measure**  submenu.

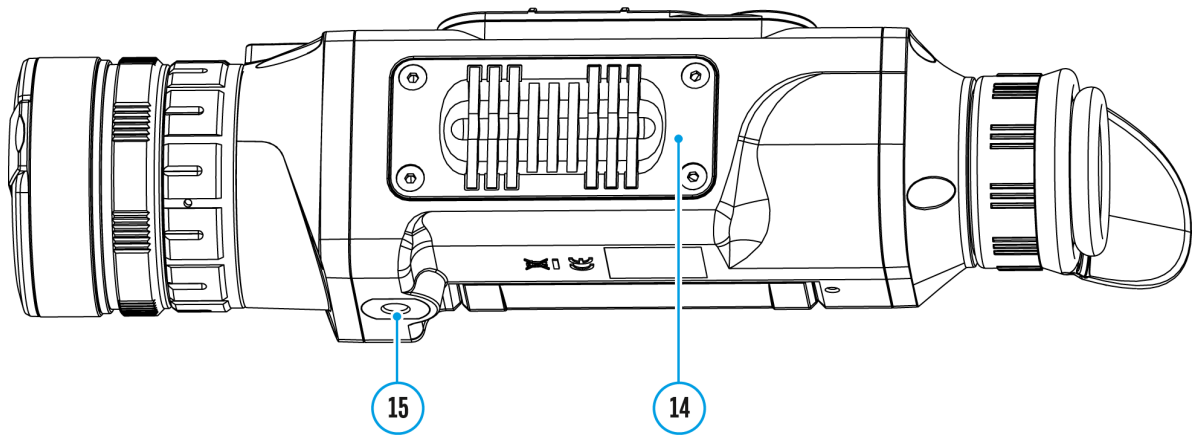


# Display-Off Function

Show device diagram

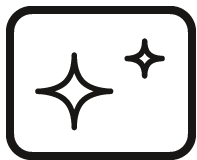






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This function deactivates the image transmission to the display by minimizing its brightness. This helps prevent accidental disclosure. However, the device stays on.



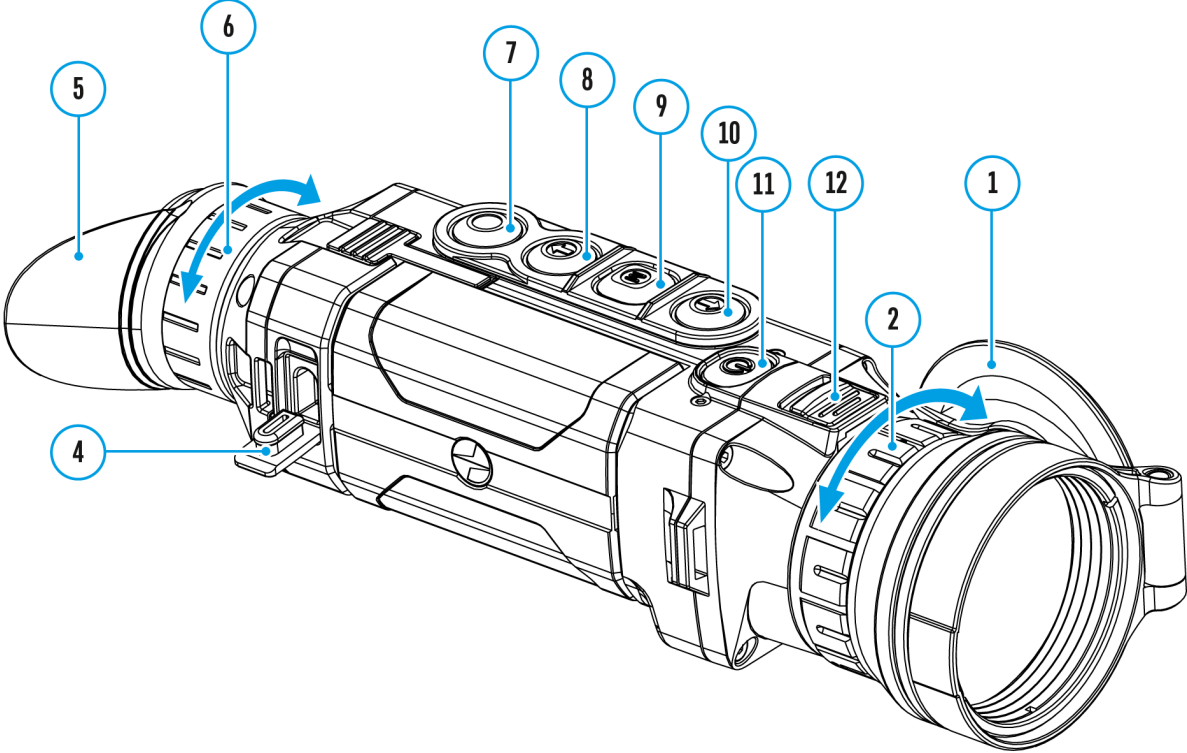
00:03

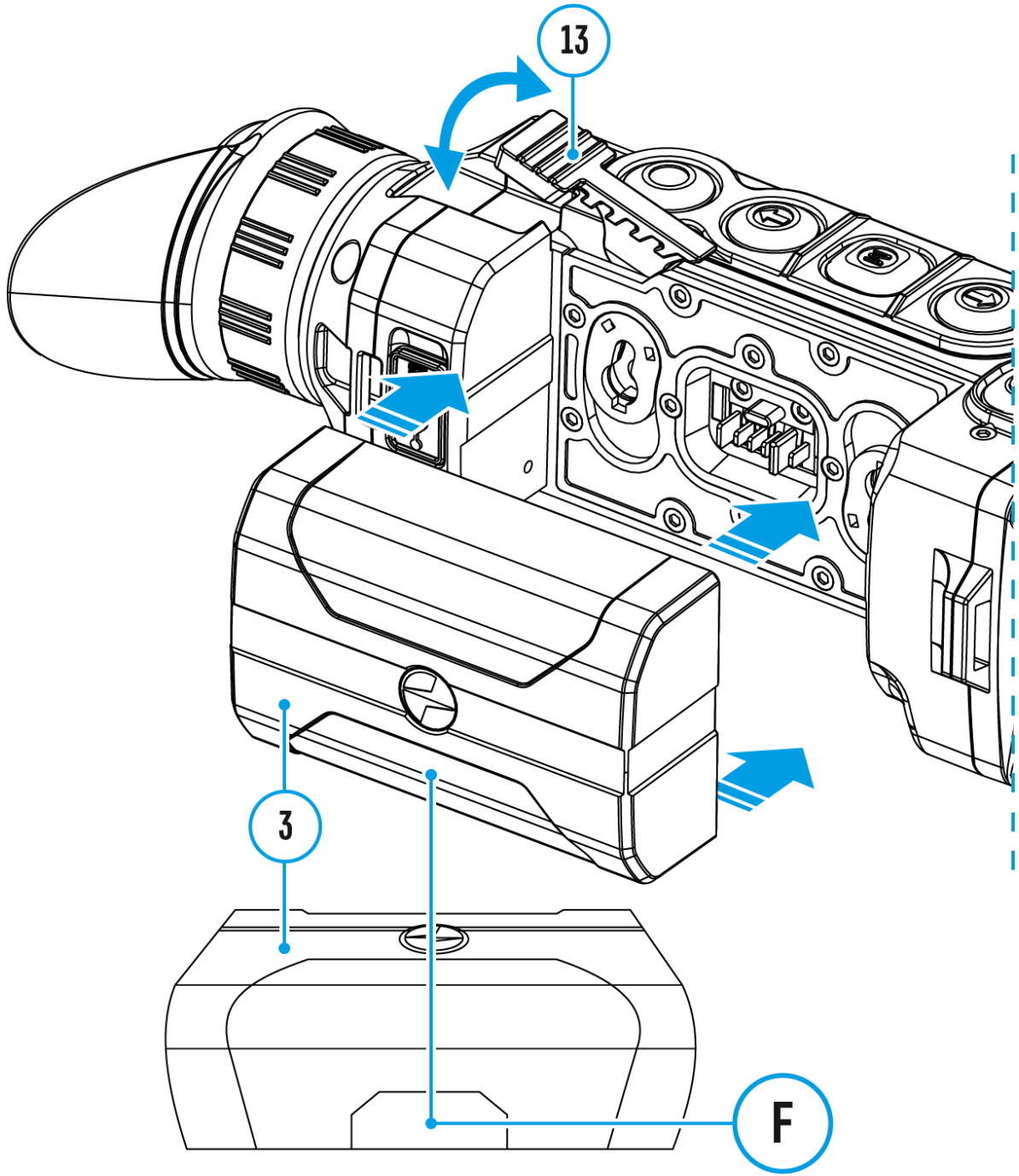
Display off

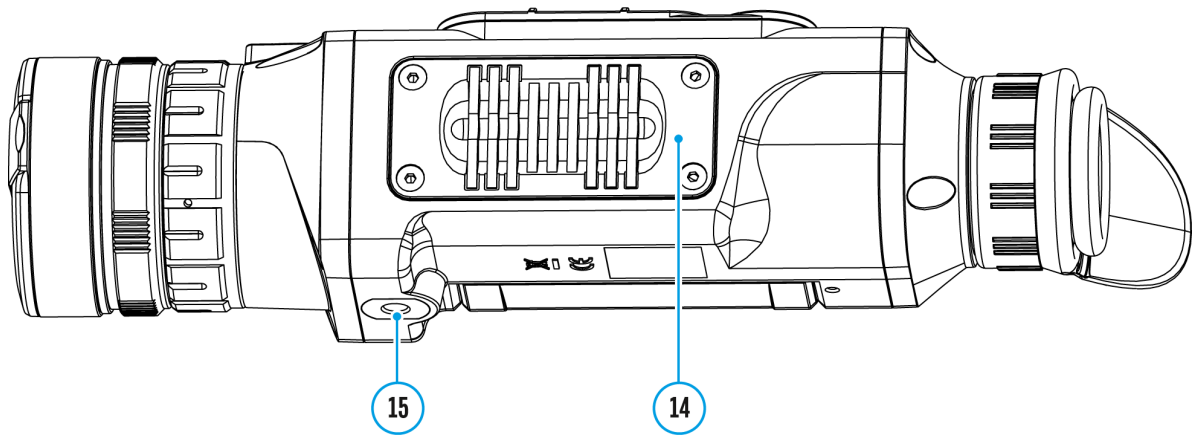
1. When the device is on, press and hold the **ON/OFF(11)** button. The display goes out and the message **Display Off** appears.
2. Turn the display back on with a short press of the **ON/OFF (11)** button.
3. When you press and hold the **ON/OFF(11)** button, the display shows the message **Display Off** with a countdown. Pressing & holding the button down for the duration of the countdown will power the device off completely.

# PiP Function

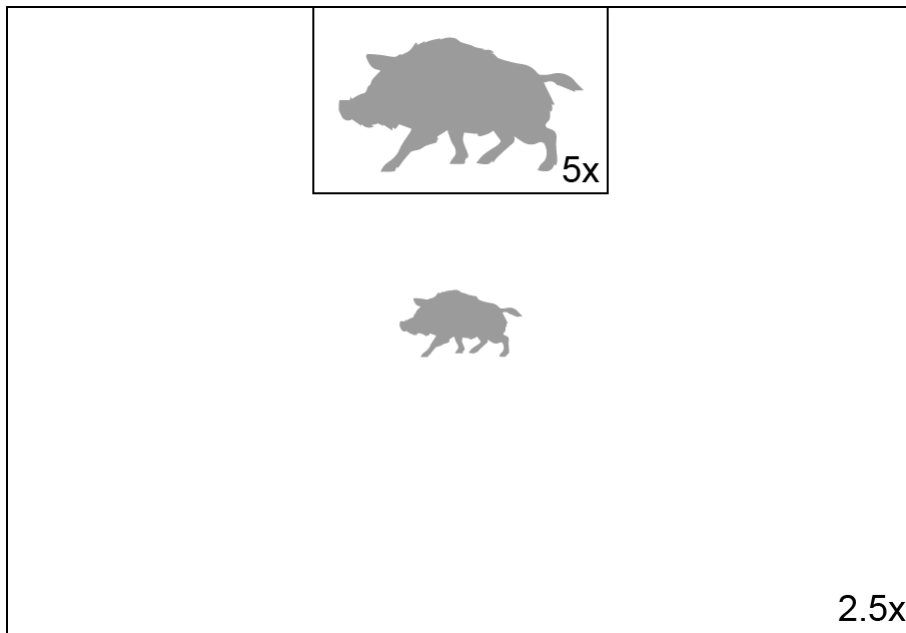
Show device diagram





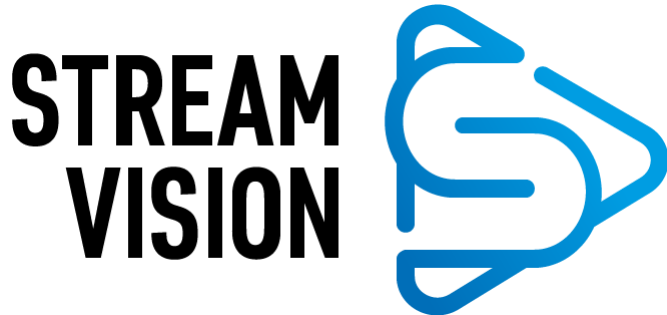


PiP (Picture in Picture) function allows you to see both the main image and a magnified image in a dedicated window.



- Turn on/off the PiP function with a long press of the **DOWN (8)** button.
- Change the zoom ratio in the PiP window with a short press of the **DOWN (8)** button.
- The zoomed image is displayed in a dedicated window, while the image in the rest of the screen is displayed at base magnification (2.5x).
- When PiP is turned on, you can operate the discrete and smooth digital zoom. The full optical magnification will take place only in the dedicated window.
- When PiP is turned off, the image is shown with the optical magnification set for the PiP function.

# Stream Vision



**Helion 2 XP** thermal imagers support Stream Vision technology which allows you to stream an image from the thermal imager to a smartphone or tablet in real time via Wi-Fi.

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](#).

# Firmware Update

## Stream Vision

<https://www.youtube.com/embed/0Blu4rr-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.

## 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.

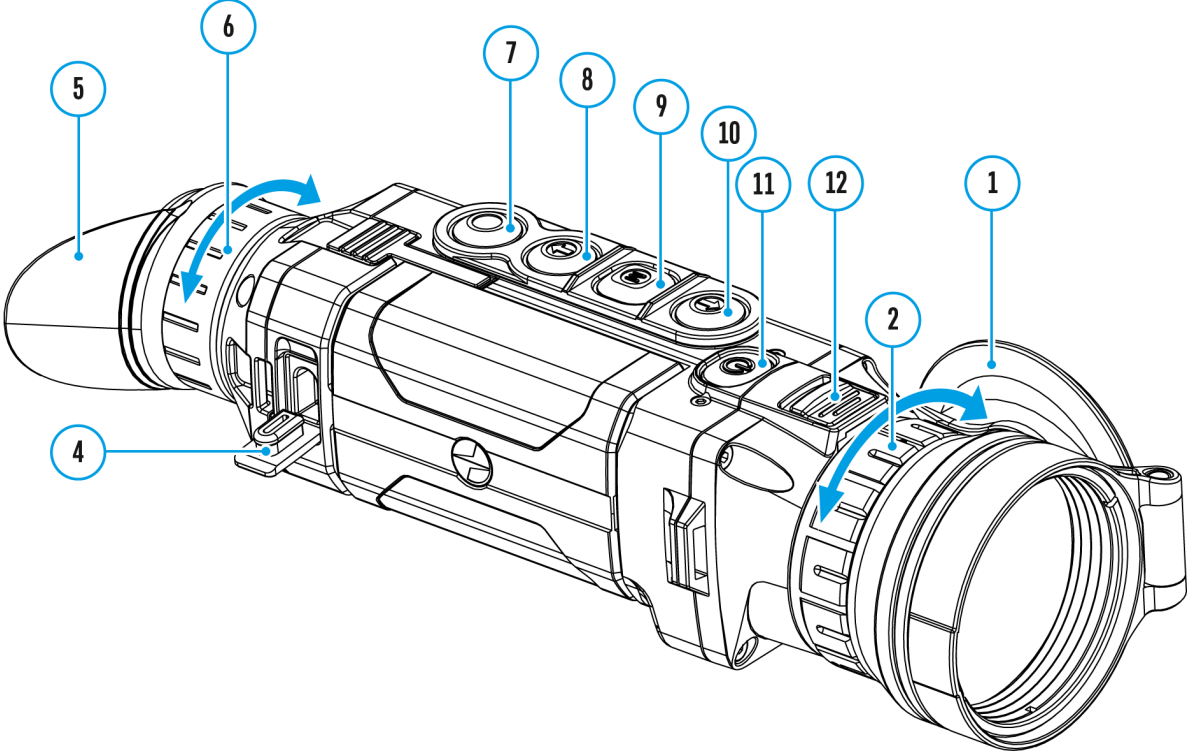
**Important:**

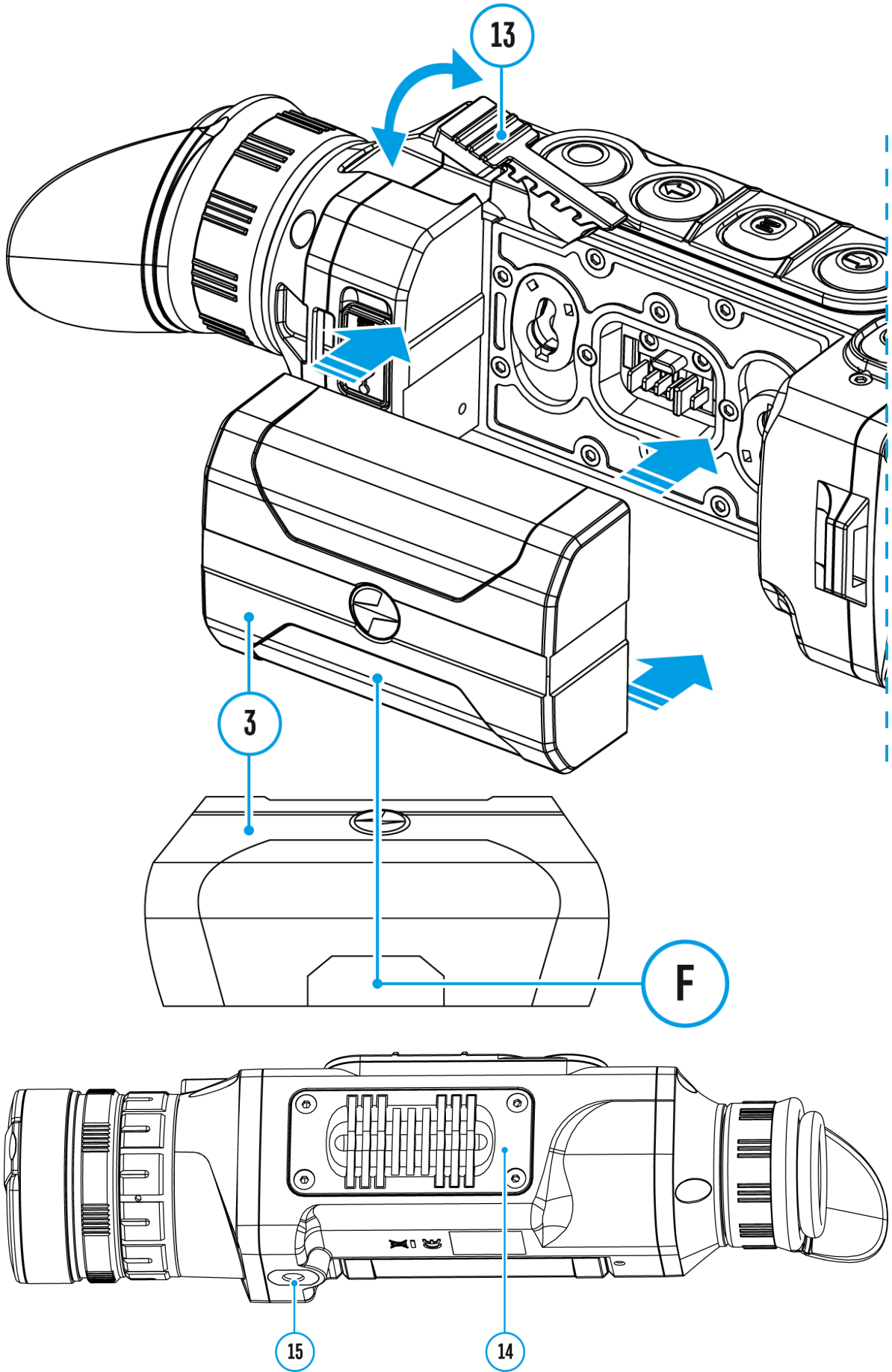
- if your Pulsar device is connected to phone, please turn on mobile data transfer (GPRS/3G/4G) to download update;
- if your Pulsar device is not connected to your phone but is already listed in “Settings” > “My devices” section, you may use Wi-Fi to download update.

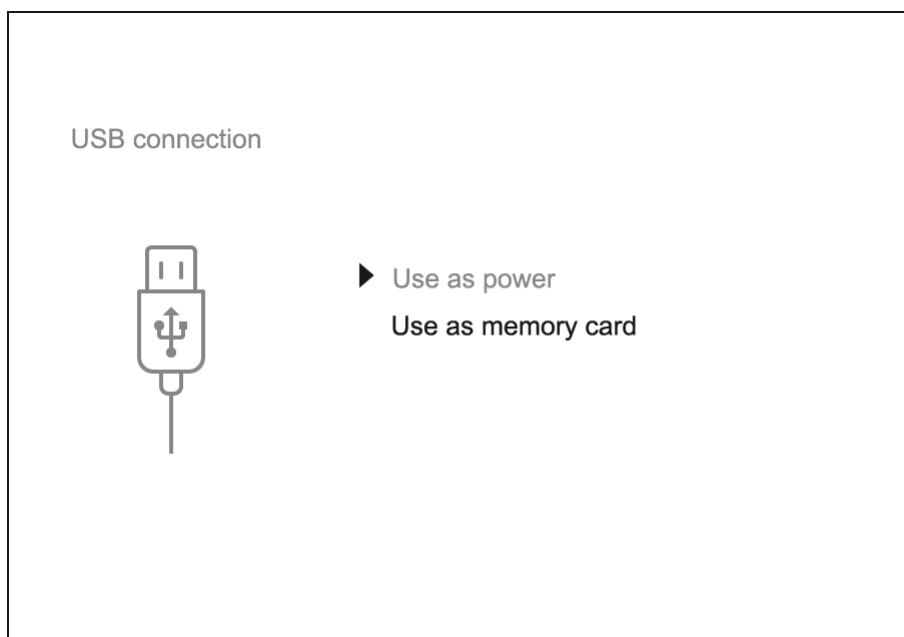
Find answers to frequently asked questions about using Stream Vision 2 [here](#).

# USB Connection

Show device diagram








1. Connect one end of the USB cable to the Micro-USB **(4)** port of your device and the other end to the USB port of your PC / laptop.
2. Turn the device on with a short press of the **ON/OFF (11)** button (a device that has been turned off cannot be detected by your computer).
3. Your device will be detected by the computer automatically; no drivers need to be installed.
4. Two connection modes will appear on the display: **Power** and **Memory Card**(external storage device).
5. Select the connection mode with the **UP (10) / DOWN (8)** buttons.
6. Confirm the selection with a short press of the **M (9)** button.

### **Connection modes:**

#### **Power**

- In this mode, when a computer is used as an external power supply, the icon  appears in the status bar. The device will continue operating and all functions are available.
- The Battery Pack installed in the device is not being charged.
- When disconnecting from the computer, the device will continue to operate from the battery pack battery (if it is present and holding enough charge).

#### **Memory Card (external memory)**

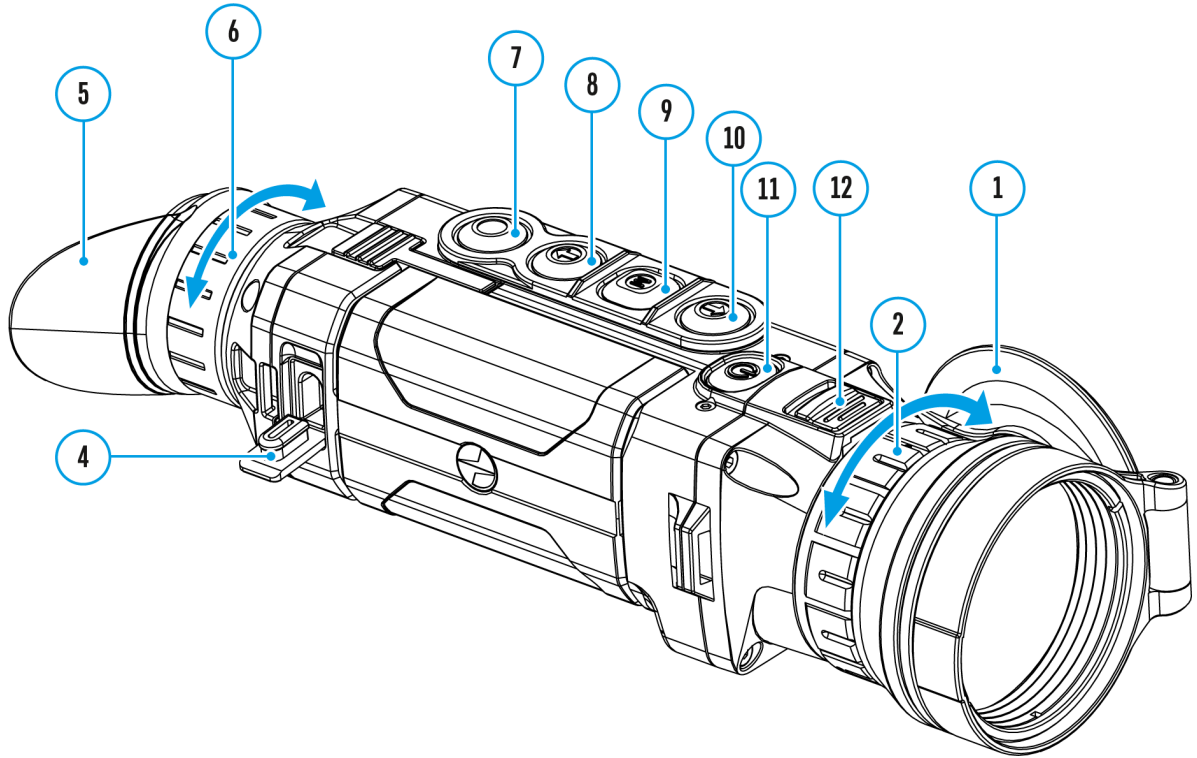
- In this mode the device is detected by the computer as a flash card. This

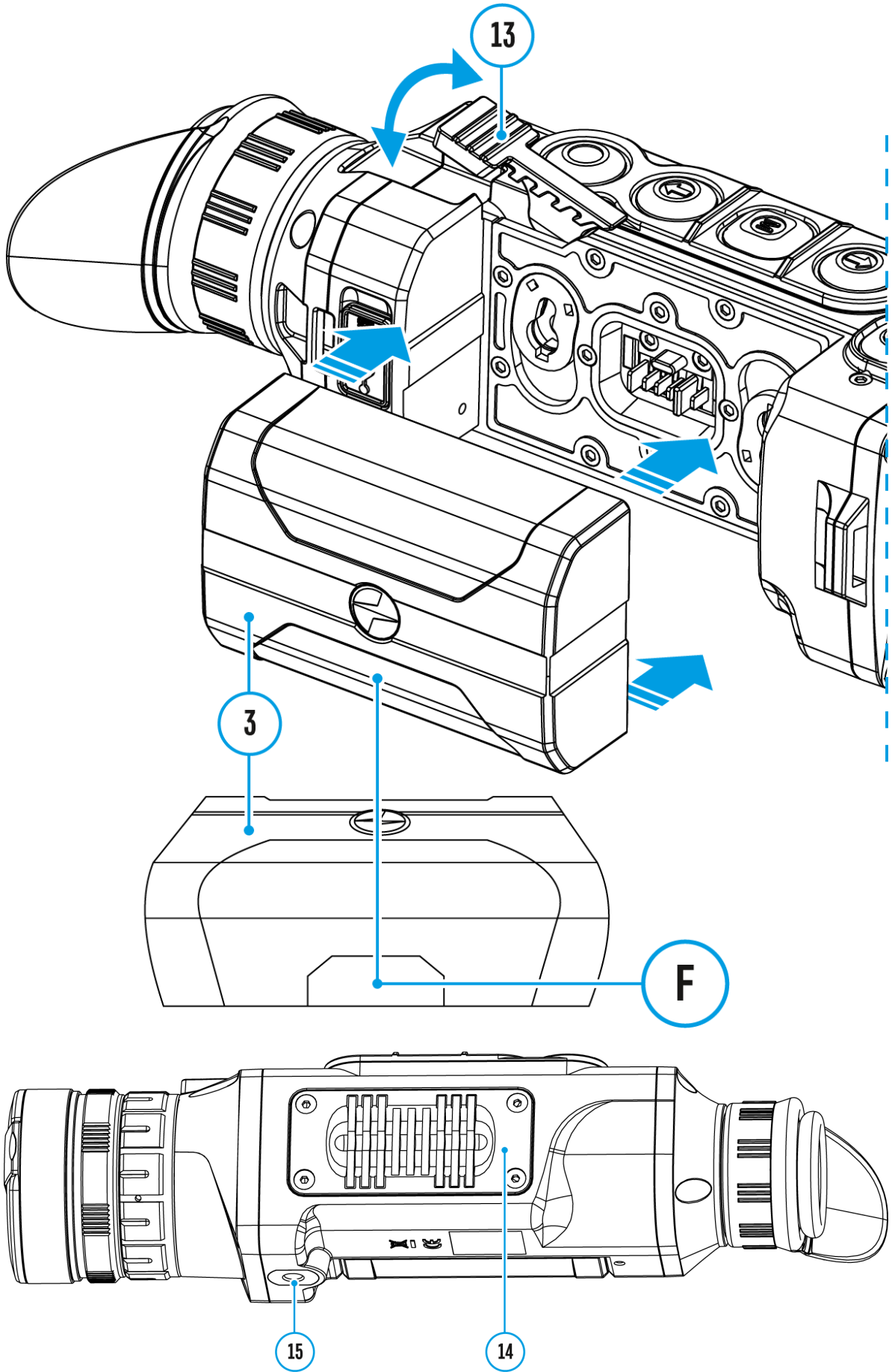
mode is designed for work with the files saved in the device's memory. The device's functions are not available in this mode; the device turns off automatically.

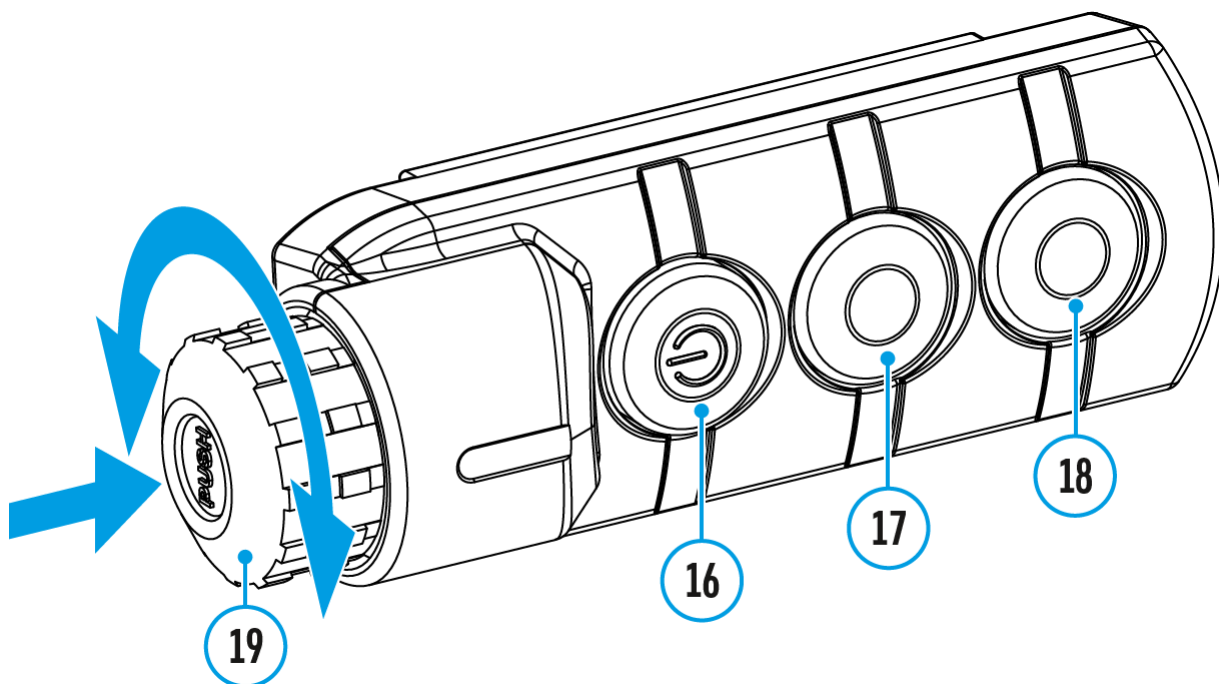
- If video recording was in progress when the connection was made, recording stops and the video is saved.
- When the USB is disconnected from the device where connection is in the **Memory Card** mode, the device remains in the Off state. Turn the device On for further operation.

# Wireless Remote Control

Show device diagram







**This feature is not supported on devices manufactured after August 1, 2021.**

(Bought separately)

Wireless remote control (RC) duplicates the power on function, digital zoom, video start/stop and menu navigation.

**RC controls are as follows:**

- Button **ON/OFF (16)**: duplicates the functions of the **ON/OFF (11)** button.
- Button **(17)**: digital zoom activation, function PiP.
- Button **(18)**: duplicates the functions of the **REC (7)** button.
- Controller**(19)**: duplicates the functions of the **M(9)** button when pressed; duplicates the functions of the **UP (10) / DOWN (8)** upon rotation (in quick menu/main menu).



# Technical Inspection

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

- The state of the objective and eyepiece lenses (there should be no cracks, grease spots, dust, deposits).
- The device appearance (there should be no cracks on the housing).
- 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 no less frequently than twice a year, and should consist of the following measures:

- Wipe external plastic and metal surfaces with a cotton cloth to remove dust and dirt.
- Clean the electric contacts of the Battery Pack and the device's battery slot using a non-greasy organic solvent.
- Check the objective and eyepiece lenses and if required, remove dust and dirt (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](mailto: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**

Battery Pack is discharged.

### **Solution**

Charge the Battery Pack.

---

## The device does not operate on external power supply

### **Possible cause**

The USB cable is damaged.

### **Solution**

Replace the USB cable.

### **Possible cause**

External power supply is discharged.

### **Solution**

Charge the external power supply.

---

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

### Possible cause

Calibration is required.

### Solution

Perform the calibration according to [Microbolometer Calibration](#) section.

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## Black screen after calibration

### Solution

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

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## The image is too dark

### Possible cause

Brightness or contrast level is too low.

### Solution

Adjust the brightness or contrast level in the [Quick Menu](#).

---

## Poor image quality / Detection range reduced

### Possible cause

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

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## Smartphone or tablet PC cannot be connected to the device

**Possible cause**

Password in the device was changed.

**Solution**

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

**Possible cause**

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

**Solution**

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

More information on solving problems with connection to Stream Vision by following the [link](#).

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## Wi-Fi signal is missing or interrupted

**Possible cause**

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

**Solution**

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

More information on solving problems with connection to Stream Vision by following the [link](#).

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## **Colored lines appeared on display or image has disappeared**

### **Possible cause**

The device was exposed to static electricity during operation.

### **Solution**

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

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

### **Possible cause**

Because of variations in thermal conductivity, objects (surrounding environment, background) under observation become warm more quickly at above-zero temperatures, which allows higher temperature contrast, so the quality of the image produced by a thermal imager will be better.

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

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## **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.

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## **The device cannot be powered on with wireless remote control**

### **Possible cause**

Remote control is not activated.

### **Solution**

Activate the remote control according to instructions.

### **Possible cause**

Wireless remote control low battery.

### **Solution**

Install a new CR2032 battery.

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## **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.

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# Legal Compliances and Disclaimers

**Attention!** Helion 2 thermal imaging monoculars require a license if exported outside your country.

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

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

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.

