

## Manual Trionyx



### Description

**Trionyx** Multispectral Fusion Binoculars combine the advantages of thermal imaging and digital night vision devices.

**Trionyx** can be used both at night and during the day in adverse weather conditions (fog, smog, rain).

**Trionyx** binoculars are designed for different types of use, such as night hunting, observation, terrain orientation, rescue operations, etc.

It is recommended to use the built-in infrared illuminator under low light conditions (no light from the moon or stars) when running in Digital or Fusion mode.

### Package Contents

- Multispectral Fusion Binoculars
- Carrying Case
- TPS7 Battery Pack
- Battery Pack Charger
- Power Adapter
- USB Type-C Cable
- Quick Start Guide
- Neck strap

- Lens-Cleaning Cloth
- Warranty Card

### Specifications

<b>Model</b>	<b>T3</b>
SKU	77451
<b>Microbolometer</b>	
Type	uncooled
Resolution, pixels	384x288
Pixel size, microns	17
Frame refresh rate, Hz	50
<b>Digital Sensor</b>	
Type/Resolution, pixels	CMOS/1280x720
<b>Optical Specifications</b>	
Magnification, x	
- Thermal imaging channel	2.5-10
- Digital channel	3.5-14
- Fusion mode	3.5-14
Lens, mm	
- Thermal imaging channel	F30/1.25
- Digital channel	F36/1.2
Field of view (H), °/m@100	
- Thermal imaging channel	12.3/21.8
- Digital channel	9.1/16
Minimum Focusing Distance, m/y	
- Thermal imaging channel	18/19.69
- Digital channel	5/5.47
Detection distance (Object of "deer" type), m/y	

- Thermal imaging channel	1000/1093.6
- Digital channel	450/492.1
Dioptr adjustment, D	±5
<b>Display</b>	
Type/Resolution, pixels	AMOLED/1024x768
<b>Operating Features</b>	
Power Supply, V	3.7
Battery type / Capacity / Rated Output Voltage	Li-Ion Battery Pack TPS7 / 6400 mAh / 3.7 V
External Power Supply	5 V, 9 V (USB Type-C Power Delivery)
Battery Pack operating time (at t = 22 °C), h	6
Degree of protection IP code (IEC60529), with installed battery	IPX7
Operating temperature, °C / °F	-25 ... +40 / -13 – +104
Dimensions, mm/inch	165x131x66 / 6.5x5.16x2.6
Weight (without battery), kg/oz	0.76 / 26.8
<b>Video Recorder</b>	
Photo / video resolution, pixels	1024x768
Video / photo format	.mp4 / .jpg
Built-in memory	16 GB
<b>Wi-Fi Channel**</b>	
Frequency	2.4 GHz
Standard	802.11 b/g
<b>IR Illuminator</b>	
Type / Wavelength, nm	LED/850

\* 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.

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- Digital channel	3.5-14
- Fusion mode	3.5-14
Lens, mm	
- Thermal imaging channel	F30/1.25
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Field of view (H), °/m@100	
- Thermal imaging channel	12.3/21.8
- Digital channel	9.1/16
Minimum Focusing Distance, m/y	
- Thermal imaging channel	18/19.69
- Digital channel	5/5.47
Detection distance (Object of "deer" type), m/y	
- Thermal imaging channel	1000/1093.6
- Digital channel	350/382.8
Diopeter adjustment, D	±5
<b>Display</b>	

Type/Resolution, pixels	AMOLED/1024x768
<b>Operating Features</b>	
Power Supply, V	3.7
Battery type / Capacity / Rated Output Voltage	Li-Ion Battery Pack TPS7 / 6400 mAh / 3.7 V
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Photo / video resolution, pixels	1024x768
Video / photo format	.mp4 / .jpg
Built-in memory	16 GB
<b>Wi-Fi Channel</b>	
Frequency	2.4 GHz
Standard	802.11 b/g
Line-of-sight reception range**, m/y	up to 15/16.4
<b>IR Illuminator</b>	
Type / Wavelength, nm	LED/850

\* 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.

## Features

- Microbolometer with a resolution of 384x288 pixels
- Microbolometer pixel size is 17 microns
- Digital sensor with a resolution of 1280x720 pixels
- Functional and ergonomic design
- Comfortable for long observation
- Variable interpupillary distance
- 1024x768 AMOLED display resolution
- High refresh rate 50 Hz
- Three operating modes: thermal imaging, digital, Fusion.
- Eight colour palettes for observation in thermal imaging mode
- Three calibration modes: Manual, Semi-Automatic, Automatic
- Long detection distance (thermal imaging channel: up to 1000 m, digital channel: up to 450 m)
- Smooth digital zoom (thermal imaging channel: 2.5-10x, digital channel: 3.5-14x, Fusion mode: 3.5-14x)
- Four observation modes in thermal imaging mode: Forest, Rocks, Identification, User
- "Image Detail Boost" function
- SumLight™ enhanced sensitivity software in Digital and Fusion modes
- Built-in IR Illuminator
- Stadiametric Rangefinder
- Display Off function
- Defective Pixel Repair function of thermal imaging microbolometer
- Updatable firmware
- Wide operating temperature range (-25°C to +40°C)
- Fully waterproof (IPX7 rated)
- Tripod mount

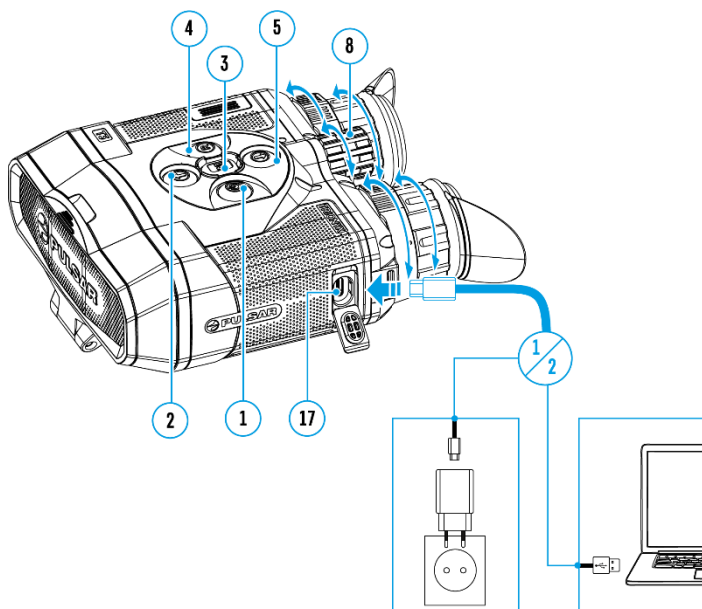
## Video/Audio Recording

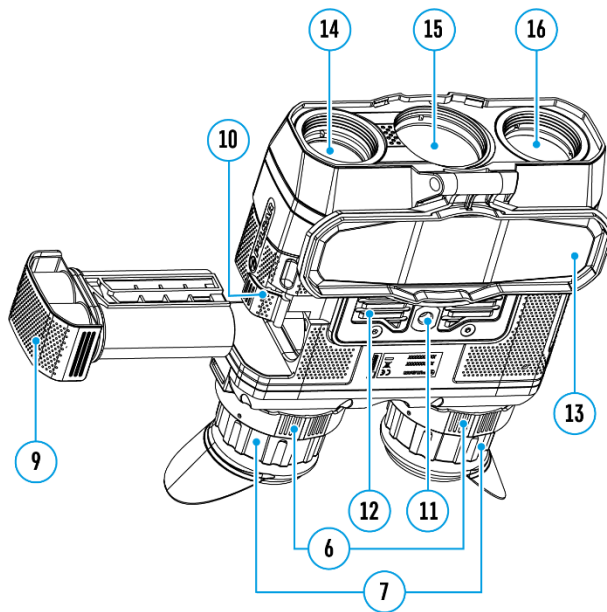
- Built-in photo and video recorder
- Integration with iOS and Android devices
- Wi-Fi remote control and viewing using a smartphone

## Battery Pack

- Quick Change Li-Ion Battery Pack TPS 7
- Charging from USB Power Bank
- USB Power Delivery quick charge

## Components and Controls




















1. Power ON/OFF/Calibration button
2. Navigation button UP/MODE
3. Button MENU
4. Recording button REC
5. Navigation button DOWN/ZOOM
6. Interpupillary distance adjustment rings
7. Diopter adjustment rings
8. Digital channel lens focus knob
9. Battery Pack
10. Battery Pack latch
11. Tripod socket
12. Radiator cooling system
13. Lens cover
14. Thermal imaging channel lens
15. Digital channel lens
16. IR illuminator
17. USB Type-C port
18. USB Type-C cable



## Button Operation

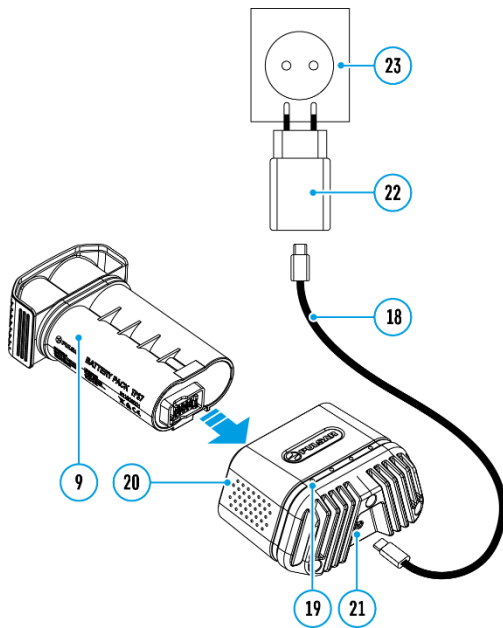
<b>Operation</b>	<b>Button</b>
Power device on	 short press
Power device off	 long press for 3 secs
Turn display off	 long press for less than 3 secs
Turn display on	 short press
Calibrate the microbolometer <b>(for Thermal Imaging and Fusion modes)</b>	 short press
Switching modes of operation <b>(Thermal Imaging/Digital/Fusion)</b>	 short press
Turn on / power level adjustment / turn off the IR illuminator <b>(for Digital and Fusion mode)</b>	 long press
Switch observation modes <b>(for Thermal Imaging mode)</b>	 long press
Control discrete digital zoom	 short press
Switch between color palettes <b>(for Thermal Imaging mode)</b>	 long press
Sumlight on/off <b>(for Digital and Fusion mode)</b>	 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	<b>↑</b> short press
Navigation downwards/leftwards	<b>↓</b> short press
Enter menu items	<b>M</b> 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

## Using the Battery Pack

### Battery Charging







**Trionyx** binoculars come with a TPS 7 rechargeable lithium-ion battery. TPS 7 batteries support USB Power Delivery fast charging technology when using a standard charging set of your **Trionyx** device (charger, USB Type-C cable, power adapter). Charge the battery before first use.



### Option 1

1. Insert the battery **(9)** along the guide to the stop into the TPS 7 charger slot **(20)** (see. Fig.).
2. Connect the plug of the USB Type-C cable **(18)** to the USB Type-C connector of the power adapter **(22)**. Plug the power adapter **(22)** into a socket 100-240 V (110 V for US) **(23)**.
3. Connect the other end of the USB Type-C cable to the USB Type-C connector **(21)** of the charger **(20)**.
4. LED indication **(19)** will display battery charge level (see Table).

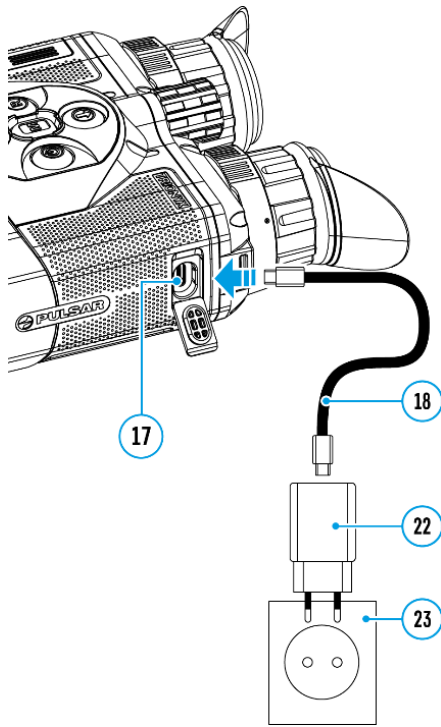
LED indication <b>(19)</b> in battery charging mode	Battery charge status
	Battery level is from 0% to 25%
	Battery level is from 26% to 50%
	Battery level is from 51% to 80%
	Battery level is from 81% to 99%
	The battery is fully charged. It can be disconnected from the charger.
	Defective battery. <b>Do not use the battery!</b>

LED indication (19) in standby mode*	Battery charge status
	Battery level is from 0% to 25%
	Battery level is from 26% to 50%
	Battery level is from 51% to 80%
	Battery level is from 81% to 99%
	The battery is fully charged. It can be disconnected from the charger.
	Defective battery. <b>Do not use the battery!</b>

\* Standby mode – an operating mode in which the battery is inserted into the charger, but the power adapter is not connected. In this mode, the indication is on for 10 seconds.

**Attention!** When using a power adapter that does not support USB Power Delivery fast charging technology, the flicker frequency of LED indicators is reduced by 3 times and charge time increases.

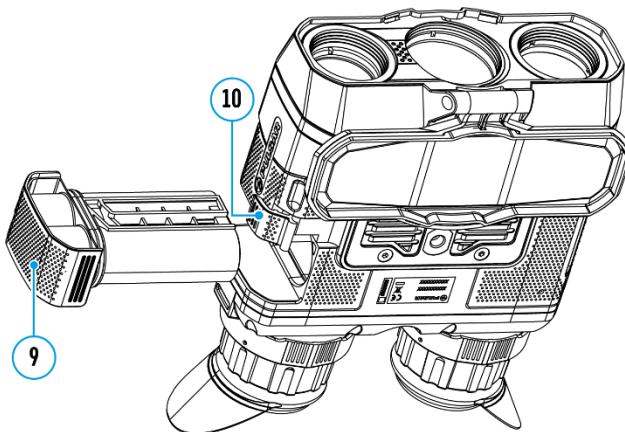
**Attention!** The charger heats up during fast charging. Excess heat is removed through the radiator and does not affect the device operation.



## Option 2

1. Install the battery **(9)** into the device (see the **Battery Installation** section)
2. Connect the USB cable **(18)** to the USB Type-C connector **(17)** of the device.
3. Connect the other end of the USB cable **(18)** to the power adapter **(22)**.
4. Plug the power adapter **(22)** into a 100-240 V socket **(23)**.

## Battery Installation



1. Lift the lever **(10)**.
2. Insert the rechargeable battery **(9)** along the guide into the battery compartment.
3. Lock the battery **(9)** by lowering the lever **(10)**.

#### Precautions

- Always use the TPS 7 charger supplied with the device (or purchased separately) to charge TPS 7 batteries. Using an unsuitable charger can cause irreparable damage to the battery and fire.
- Do not charge the battery immediately after bringing it from cold to warm. Wait at least 30 minutes for the battery to warm up.
- Do not leave the battery unattended while charging.
- Do not use the charger if it has been modified or damaged.
- Do not leave the battery in a charger connected to the mains after charging is complete.
- Do not expose the battery to high temperatures or naked flames.
- Do not use the battery as a power source for devices that do not support TPS 7 batteries.
- Do not disassemble or deform the battery.
- Do not drop or strike the battery.
- The battery must not be immersed in water.
- Keep the battery out of the reach of children.



#### Recommendations for Use

- The batteries should be partially charged (50 to 80 %) for long-term storage.
- The battery is to be charged at an ambient temperature of 0 °C to +35 °C or the lifespan of the battery will decrease significantly.
- When using the battery at sub-zero ambient temperatures, the battery capacity decreases. This is normal and not a defect.
- Do not use the battery at temperatures outside the range of -25 °C to +40 °C or it may reduce battery life.

- The battery is short circuit protected. However, any situation that may cause short-circuiting should be avoided.

## External Power Supply

External power can be supplied from an external source, such as a Power Bank (5 V, 9 V).

1. Connect the external power source to the USB Type-C connector **(17)** on the device.
2. The device will switch to draw power from the external source while the TPS 7 battery will be gradually recharged.
3. A battery icon  will appear on the display showing the percentage charge level.
4. An icon  will be displayed when the device is powered by an external power source and the TPS 7 battery is not connected.
5. The device automatically switches to the TPS 7 battery when the external power supply is disconnected.

**Attention!** Charging TPS 7 batteries from an external source at temperatures below 0°C can reduce battery life. When using external power, connect the Power Bank to the device only after it has been turned on and working for at least several minutes.

**Attention!** When the device is powered externally without a battery installed, the Power Bank must support the USB Power Delivery technology. Otherwise, the operation of the device is not ensured.

## Powering On and Image Setting

1. Open the lens cover **(13)**.
2. Press the **ON/OFF (1)** button briefly to turn on the device.
3. Set the pupillary distance by squeezing the eyepieces together or pulling farther apart while holding the adjustment rings **(6)**.

4. Get a sharp image of the symbols on the displays by rotating the optical adjustment ring of the eyepieces **(7)**.

5. By briefly pressing the **MODE (2)** button, select one of the three operating modes: **Thermal Imaging, Digital, Fusion**.

#### 6. For Thermal Imaging mode:

- Select the operation mode (**Forest/Rocks/Identification/User**) with a long press of the **MODE (2)** button. User mode allows you to setup and save custom brightness and contrast settings, as well as select one of the three modes as the base.
- Select the appropriate color palette with a long press of the **DOWN (5)** button or in the main menu (see the **Color Modes** section for details).

#### 7. For Thermal Imaging and Fusion mode:

- Enter the main menu with a long press of the **MENU (3)** button and select the calibration mode: **manual (M), semi-automatic (SA)** or **automatic (A)** (see the **Calibration Mode** section for details).
- Calibrate the image by briefly pressing the **ON/OFF (1)** button (if the **SA** or **M** calibration mode has been selected). Close the lens cover when calibrating manually.

#### 8. For Digital and Fusion mode:

- Rotate the lens focus knob of the digital channel **(8)** to focus on the visual target.
- To increase the quality of observation in low light conditions at night, turn on the built-in IR illuminator by briefly pressing the **UP (2)** button. Toggle between the IR illuminator power levels with long presses of the **UP (2)** button (see the **IR Illuminator** section for details).

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



**10.** When finished turn the device off with a long press of the **ON/OFF (1)** button.

**Warning!** Do not point the device's lenses at intense energy sources such as laser 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 the operating rules.

**Warning!** The radiator cooling system **(12)** becomes warm during operation: this is normal and allows an increase in the sensitivity of the device. When the device warms up significantly, the warning message **“Your device needs to cool down before you can use it”** will appear on the display, photo/video recording and WiFi will automatically turn off. The device needs to cool down to continue using these functions.

## Operating Modes

The device has three operating modes: Thermal Imaging, Digital and Fusion.

To switch between operating modes, briefly press the **MODE (2)** button.

### Thermal Imaging Mode

Thermal imaging mode is designed to detect the observed object.

By converting thermal radiation into an image visible to the human eye, the device can detect many important details hidden from human vision.

The advantage of the thermal-imaging mode is that it does not require external light sources – a thermal imaging microbolometer is sensitive to the objects' intrinsic radiation. As a result, the thermal imaging mode works equally well during the day and night as well as in utter darkness.

## Digital Mode

Digital mode allows you to identify an object of observation, and visualize terrain and vegetation in detail.

In this mode, the device detects near-infrared radiation, which allows you to see the object of observation in low light conditions.

The device's built-in IR illuminator switches on when there is insufficient light.

## Fusion Mode

It combines the advantages of digital and thermal imaging modes.

Fusion mode allows you to combine the images of the thermal and digital channels. This makes it possible to see the observed object and the terrain in the field of view in detail.


In this mode, the device's built-in IR illuminator switches on when there is insufficient light.

## Observation Modes


### Available in thermal imaging mode


The device has four observation 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).


- Select the observation mode with a long press of the **UP/MODE (2)** button.

 **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 as a base.

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

## Microbolometer Calibration

### Available in thermal imaging and Fusion modes

The calibration evens out the microbolometer's temperature background and eliminates the imperfections of the thermal image (such as vertical stripes, phantom images, etc.) that appear during binoculars operation.

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

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

#### Mode M (manual)

- Close the lens cover **(13)**.
- Press briefly the **ON/OFF (1)** button.
- Open the lens cover **(13)**.

#### Mode SA (semi-automatic)

- Press briefly the **ON/OFF (1)** button to calibrate.
- You do not need to close the lens cover (the microbolometer is closed with the internal shutter automatically).

### **Mode A (automatic)**

- The device calibrates by itself according to the firmware algorithm.
- You do not need to close the lens cover (the microbolometer is closed with the internal shutter automatically).
- In the automatic mode, the user can calibrate the microbolometer with the **ON/OFF (1)** (in the **SA** mode) button.


### Discrete Digital Zoom

The device allows you to quickly increase the basic magnification by 2 or 4 times.

- To operate the discrete digital zoom, press successively the **ZOOM (5)** button.
- The digital zoom will not be saved after the device is re-started.

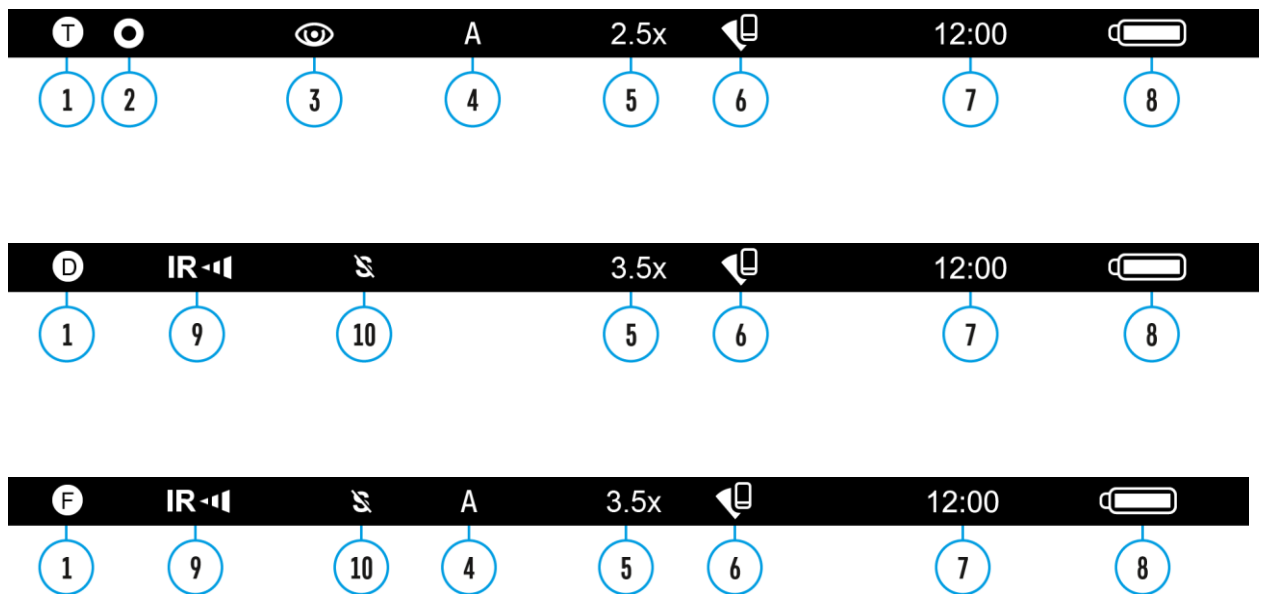
### Image Detail Boost

#### **Available in thermal imaging mode**

The **Image Detail Boost**  function enhances image detail. The results of the function depend on the selected mode and the observation conditions: the higher the object contrast the more noticeable the effect. This option is disabled by default, but it can be enabled from the main menu.

The description of enabling/disabling the **Image Detail Boost** function is available [here](#).

## Status Bar



The status bar is at the bottom of the image and displays data on the device status, including:

### 1. Operating mode:


**T** - Thermal Imaging

**D** - Digital

**F** - Fusion

### 2. Color palette (shown only if the "Black Hot" palette is selected)

### 3. Observation mode

4. 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).


### 5. Magnification

### 6. Wi-Fi connection

### 7. Time

### 8. Power Indication:

 - charge level if the device is powered by a battery

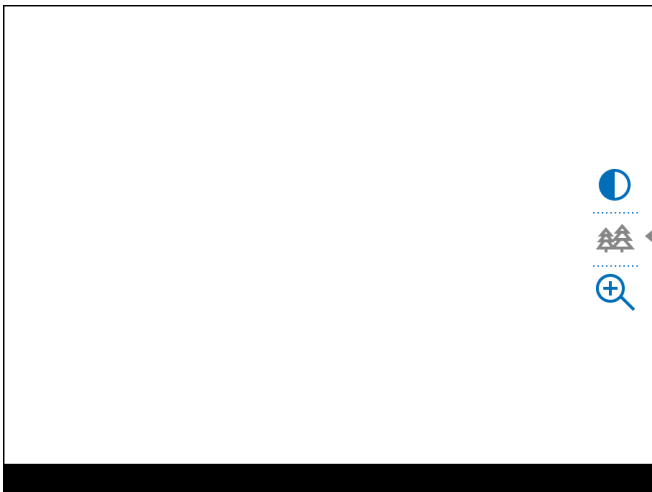
 - charge level if the device is charging and powered by a battery

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

9. IR Illuminator's power level

10. SumLight™(on/off)

## Quick Menu Functions





The quick menu is used to access basic device settings such as brightness and display contrast, smooth digital zoom, stadiametric rangefinder.


- Enter the menu by briefly pressing the **MENU (3)**.
- A short press of the **MENU (3)** button enables you to toggle between functions, as described below.

**Brightness**  – press the **UP (2)/DOWN (5)** buttons to change display brightness from 0 to 20.

**Contrast**  – press the **UP (2)/DOWN (5)** buttons to change image contrast from 0 to 20.

**Base Mode**  – allows you to select one of the three observation modes as the base for the User mode (**available in thermal imaging mode**).

**Smooth Digital Zoom**  – press the **UP (2)/DOWN (5)** button to change the value of the digital zoom. The digital zoom changes in 0.1 increments.

**Stadiometric Rangefinder**  – change the position of special marker lines to determine the distance to the object being observed by pressing the **UP (2)/DOWN (5)** buttons (for more details see the [Stadiometric Rangefinder](#) section).

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

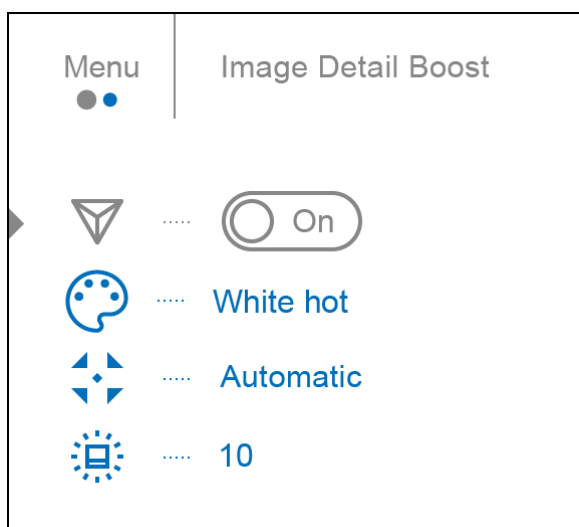
## Main Menu Functions

### Enter the Main Menu

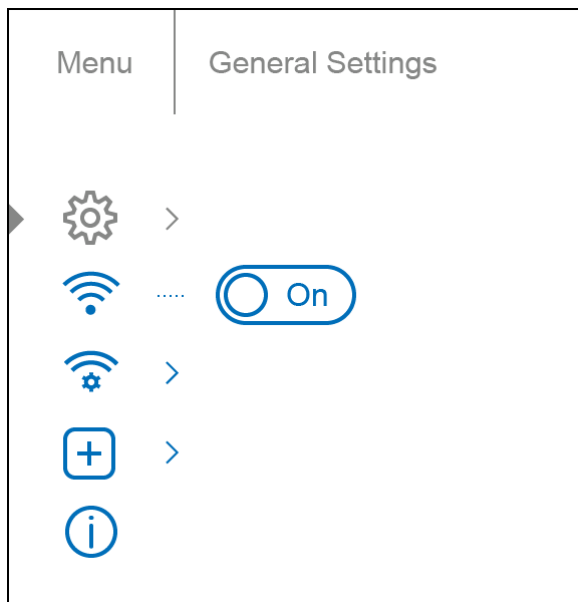
1. Enter the main menu with a long press of the **MENU (3)** button.
2. Press the **UP (2)/DOWN (5)** buttons to move through the menu items.
3. Press the **MENU (3)** button briefly to select the menu item.
4. Press and hold the **MENU (3)** button to exit the menu or wait for 10 seconds to exit automatically.
5. Automatic exit takes place after 10 seconds of inactivity.

## General View of Menu:

### Tab 1




### Tab 2



### Image Detail Boost

#### **Available in thermal imaging mode**

Turn on/off Image Detail Boost:

1. Press and hold down the **MENU (3)** button to enter the main menu.
2. Select the **Image Detail Boost**  menu option with the **UP (2)/DOWN (5)** buttons.
3. Turn Image Detail Boost on/off with a short press of the **MENU (3)** button.




## Color Modes



### **Available in thermal imaging mode**

Basic color mode is **White Hot**.

To select another palette:

1. Press and hold down the **MENU (3)** button to enter the main menu.
2. Select the **Color Modes**  icon with the **UP (2)/DOWN (5)** buttons.
3. Press briefly the **MENU (3)** button to enter submenu.
4. Select the desired palette with the **UP (2)/DOWN (5)** buttons.
5. Confirm your selection with a brief press of the **MENU (3)** button.
  - **Black Hot** (white color corresponds to low temperature, black color – to high temperature)
  - **Red Hot**
  - **Red Monochrome**
  - **Rainbow**
  - **Ultramarine**
  - **Violet**
  - **Sepia**


## Notes:

- To quickly change color modes press and hold the **DOWN (5)** button.
- In Fusion mode, there is only one **Fusion** palette that does not change.

## Calibration Mode

### Available in thermal imaging and Fusion modes


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

1. Press and hold down the **MENU (3)** button to enter the main menu.
2. Select the **Calibration Mode**  option with the **UP (2)/DOWN (5)** buttons.
3. Press briefly the **MENU (3)** button to enter submenu.
4. Select the desired calibration mode with the **UP (2)/DOWN (5)** buttons.
5. Confirm your selection with a brief press of the **MENU (3)** button.

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


## Icon Brightness

Icon brightness

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


## General Settings

This menu section allows you to change the interface language, set the date, time, units of measure, return the device to factory default settings and perform memory card formatting.

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (2)/DOWN (5)** buttons to select the **General Settings**  icon.
3. Press the **MENU (3)** button briefly to enter the submenu.
4. Choose the required menu item with **UP (2)/DOWN (5)** buttons.


### Language

#### Language selection

1. Press the **MENU (3)** button briefly to enter the **Language**  menu item.
2. Use the **UP (2)/DOWN (5)** buttons to select one of the available interface languages: English, German, Spanish, French, Russian, Italian, Portuguese, Dutch, Danish, Norwegian, Swedish, Polish, Czech, Hungarian.
3. Press the **MENU (3)** button briefly to confirm the selection.


### Date

#### Date setting

1. Press the **MENU (3)** button briefly to enter the **Date**  menu item. The date is displayed in dd/mm/yyyy format.
2. Use the **UP (2)/DOWN (5)** buttons to select the desired year, month, and date. Press the **MENU (3)** button briefly to toggle between digits.
3. Press and hold the **MENU (3)** button to save the date and exit the submenu.

### Time


#### Time setting

1. Press the **MENU (3)** button briefly to enter the **Time**  menu item.
2. Select the time format (24-hour clock or AM / PM) by pressing the **UP (2)/DOWN (5)**.

3. Press the **MENU (3)** button to select the hours.
4. Press the **UP (2)/DOWN (5)** buttons to select the hour value.
5. Press the **MENU (3)** button to select the minutes.
6. Press the **UP (2)/DOWN (5)** buttons to select the minute value.
7. Press and hold the **MENU (3)** button to save the time and exit the submenu.


#### Units of Measure

##### Rangefinder units of measure

1. Press the **MENU (3)** button briefly to enter the **Units of Measure**  menu item.
2. Press the **UP (2)/DOWN (5)** buttons to select either Meters or Yards as the unit of measure.
3. Press the **MENU (3)** button briefly to confirm your selection.
4. Exit from the submenu will happen automatically.

#### Default Settings

##### Factory reset

1. Press the **MENU (3)** button briefly to enter the **Default Settings**  menu item.
2. Use the **UP (2)/DOWN (5)** buttons to select **Yes** to restore default settings or **No** to cancel.
3. Confirm your selection with a short press of the **MENU (3)**
  - If **Yes** is selected, display will show "**Do you want to restore default settings?**" and **Yes** and **No** options. Select **Yes** to restore the default settings.
  - Selecting the **No** option will cancel the reset and exit the submenu.


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

<b>Video Recorder Mode</b> – Video	<b>Language</b> – English
<b>Observation Mode</b> – Forest	<b>Wi-Fi</b> – Off (default password)
<b>Operating Mode</b> - Thermal Imaging	<b>Magnification</b> – Standard (without digital zoom)
<b>Calibration Mode</b> – Automatic	<b>Color Mode</b> – White Hot

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


#### Format

This function enables you to format the Flash memory card. All files will be deleted.

1. Press the **MENU (3)** button briefly to enter the **Format** .
2. Use the **UP (2)/DOWN (5)** buttons to select **Yes** to format the memory card or **No** to return to the submenu.
3. Press the **MENU (3)** button briefly to confirm your selection.
  - If **Yes** is selected, the message "**Do you want to format the memory card?**" appears on the display as well as **Yes** and **No**. Select **Yes** to format the memory card.
  - Selecting the **No** option will cancel the formatting and exit the submenu.


#### Wi-Fi Activation

##### Turning Wi-Fi on/off

1. Press and hold the **MENU (3)** button to enter the main menu.
2. Use the **UP (2)/DOWN (5)** buttons to select the **Wi-Fi Activation**  icon.
3. Press the **MENU (3)** button briefly to turn **Wi-Fi** on / off.

## Wi-Fi Settings


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

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

## Password Setup

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


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

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

## Access Level Setup

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

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

Defective Pixel Repair

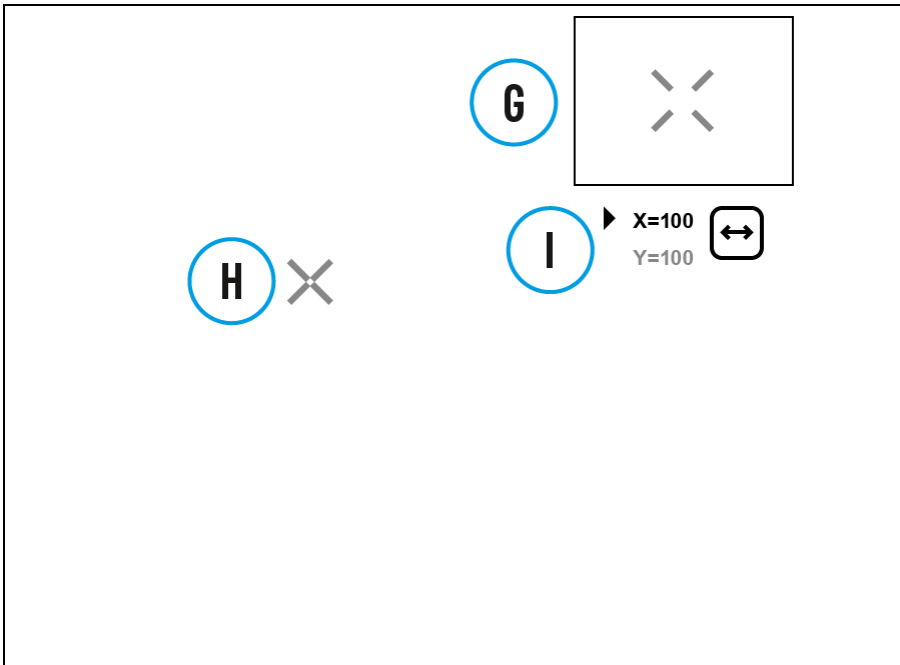
Defective Pixel Repair


### Available in thermal imaging mode




When operating a thermal imager, defective (dead) pixels (bright or dark dots with constant brightness) may become visible on the microbolometer.

Defective pixels on the microbolometer may proportionally increase in size when digital zoom is activated.

**Trionyx** binoculars allow the user to repair defective pixels on the detector using a firmware-based method or to abort deletion.



1. Press and hold down the **MENU (3)** button to enter the main menu.
2. Select the **Defective Pixel Repair**  menu item with the **UP (2)/DOWN (5)** buttons.

3. Press briefly the **MENU (3)** to open the submenu.
4. Select the **Defective Pixel Repair**  option by briefly pressing the **MENU (3)** button.
5. A marker **(H)**  appears on the left side of the image.
6. On the right side of the image appears "magnifying glass" **(G)** – a magnified image in a frame with a fixed cross , designed for easier detection of a defective pixel and to match the pixel with the marker, horizontal and vertical arrows for X and Y axes **(I)** showing marker's movement.
7. With a short press of the **UP (2)/DOWN (5)** buttons move the marker to align it with a defective pixel.
8. Switch the direction of the marker from horizontal to vertical and vice versa with a short press of the **MENU (3)** button.
9. Align the defective pixel with the fixed cross in the frame – the pixel should disappear.
10. Delete the defective pixel with a brief press of the **ON/OFF (1)** button.
11. A brief message "**OK**" appears in the frame in case of success.
12. Then you can delete another defective pixel by moving the marker along the display.
13. Exit **Defective Pixel Repair** with a long press of the **MENU (3)** button.



**Attention!** On binocular displays, 1–2 pixels are allowed in the form of bright white, dark or colored (blue, red, green) dots, which cannot be removed and are not a defect.

[Restore Default Pixel Map](#)

### **Available in thermal imaging mode**

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




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

#### Device Information

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

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

To display information, do the following:

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



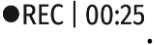
#### Video Recording and Photography

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

Before using photo and video functions, please read the subsections **Date**, and **Time** in the **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 (4)** 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 the **REC (4)** button.
4. Upon start of video recording icon  disappears, and icon REC and recording timer in the format MM:SS (minutes : seconds) appear instead: .
5. Pause and resume recording video with a short press of the **REC (4)** button.
6. Press and hold the **REC (4)** button to stop and save the video.
7. Video files are saved to the memory card after stopping video.
8. Switch between modes (**Video**-> **Photo**-> **Video**) with a long press of the **REC (4)** button.

### **Photo mode. Capturing an image**

1. Switch to the **Photo** mode with a long press of the **REC (4)** button.
2. Take a picture with a brief press of the **REC (4)** button. The image freezes for 0.5 sec and a photo is saved to the internal memory.

#### **Notes:**

- You can enter and operate the menu during video recording;
- Recorded videos and photos are saved to the built-in memory card in the format img\_xxx.jpg (photos); video\_xxx.avi (videos). xxx – three digit counter for videos and photos;
- 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 the free capacity of the internal memory, move recorded footage to other storage media to free up space on the internal memory card.

**Important!**

To playback video files recorded by **Trionyx** 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



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	Status bar indication
Wi-Fi is off	
Wi-Fi activated by the user, Wi-Fi in the device is being activated	






Wi-Fi is on, no connection with device	
Wi-Fi is on, device connected	

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

## IR Illuminator

### Available in digital and Fusion modes

The device is equipped with a IR Illuminator which provides significant increase in observation range in lowlight conditions and in the darkness.

1. To activate the IR illuminator, press and hold the **UP (2)** button. IR power level upon start is minimal .
2. IR Illuminator icon with respective power level is shown in the bar status.
3. To switch between power levels press and hold the IR button (  >  >  ) successively.
4. To turn the IR illuminator off, switch the power level with successive long presses of the **UP (2)** button until the icon in the status bar changes to .

## SumLight™ Function

### Available in digital and Fusion modes

The SumLight™ function substantially increases the sensitivity of the digital channel sensor in the event of a reduction in the light level, thus enabling observation in conditions of low light without using the IR illuminator.


1. To activate the SumLight™ function, press and hold the **DOWN (5)** button.
2. Press and hold the **DOWN (5)** button once more to switch off.
3. The SumLight™ icon (on **S** or off **S**) is displayed in the status bar.

**Attention!** When the SumLight™ function is activated, the noise level in the image increases, the frame rate decreases and the image slows down. Any sharp movement of the binoculars may cause the image to become “blurred”. Such effects are not defects. Luminous white dots (pixels) may be visible on the image. The number of dots may increase when the SumLight™ function is enabled. This is due to the peculiarities of this function and is also not a defect.

### Stadiametric Rangefinder



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



1. Select the **Stadiametric Rangefinder** function with short presses of the **MENU (3)** button until the icon  is selected.
2. The following will be displayed: lines to determine the distance, icons of three objects and digits of the determined distance to three objects.

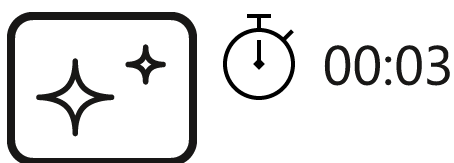
3. Position the lower fixed bar under the object being ranged.
4. By pressing the **UP (2)/DOWN (5)** buttons, move the upper horizontal bar relative to the lower fixed bar until the object fits entirely between the two bars. The distance to the object is automatically recalculated as you move the upper line.
5. If the rangefinder doesn't work within 10 seconds, the information disappears from the displays.
6. Exit the rangefinder mode with a long press of the **MENU (3)** button or wait 10 seconds to exit automatically.

### Notes:

- There are three predefined values for the reference objects: Hare - 0.3 m height, Boar - 0.7 m height, Deer - 1.7 m height.
- The distance value is rounded off before being displayed: up to 5 m for large distance values, up to 1 m for smaller distance values.
- To select the unit of measurement (Meters or Yards), go to the [General Settings](#)  menu item => **Units of Measure**  submenu.

### Display Off Function

The Display Off function deactivates transmission of image to the displays by minimizing their brightness. This prevents accidental disclosure. The device keeps running.

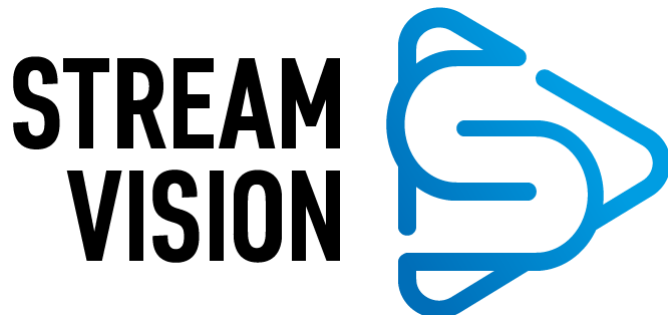


Display off

1. When the device is on, hold down the **ON/OFF (1)** button. The displays go out, the message "**Display Off**" appears.
2. To activate the displays, press briefly the **ON/OFF (1)** button.
3. When you press and hold the **ON/OFF (1)** button, the displays 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.

## Stream Vision



**Trionyx** binoculars support Stream Vision technology which allows you to stream an image from the display of your thermal imager to a smartphone or tablet PC via Wi-Fi in real time mode.

You can find further guidelines on Stream Vision here: <https://www.pulsar-nv.com/glo/products/33/software-applications/stream-vision/>

## Firmware Update

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.

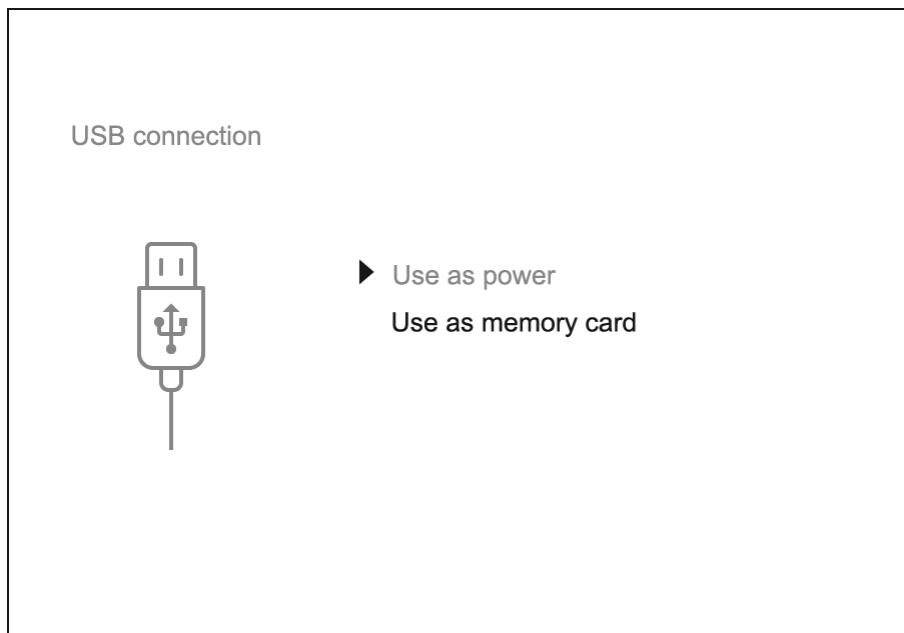
### **Important:**

- 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.

### **Is your firmware up to date?**

Click [here](#) to check the latest firmware for your device.


## USB Connection



1. Connect one end of the USB Type-C **(18)** to the USB Type-C **(17)** 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 (1)** 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 (2)/DOWN (5)** buttons.
6. Confirm the selection with a short press of the **MENU (3)** button.

### Connection modes:

#### Power

- In this mode, a PC/laptop is used as an external power supply. The status bar shows the icon . The device continues operating and all functions are available.



- The Battery Pack installed in the device is not being charged.
- When the USB is disconnected from the device when in the **Power** mode, the device keeps operating with the Battery Pack if it is available and sufficiently charged.

### **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.

### Technical Inspection

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

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

### Technical Maintenance

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. Silicone grease may be used for this.

- Clean the electric contacts of the Battery Pack using a non-greasy organic solvent.
- Inspect the objective lenses, eyepieces and IR illuminator 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

The device does not turn on

### **Possible cause**

Battery Pack is discharged.

### **Solution**

Charge the Battery Pack.

The device does not operate from an external power source

### **Possible cause**

The USB cable is damaged.

### **Solution**

Replace the USB cable.

### **Possible cause**

The external power supply is discharged.

### **Solution**

Charge the external power supply (if necessary).

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

### **Possible cause**

Calibration is required.

### **Solution**

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

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

**Possible cause**

Manual calibration has been performed with the lens cover open.

**Solution**

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

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**

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

Smartphone or tablet PC cannot be connected to the device

**Possible cause**

Device password has been changed.

**Solution**

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

**Possible cause**

The device is in an area with too many Wi-Fi networks that may be causing signal interference. There is a strong source of electromagnetic interference nearby.

## **Solution**

To ensure a stable Wi-Fi connection, relocate the device to an area with fewer or no Wi-Fi networks. Make sure there are no sources of electromagnetic interference (motors, transformers, etc.) nearby.

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.

Color bars appear on the display or the image disappears

## **Possible cause**

The device was exposed to static electricity during operation.

## **Solution**

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

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

## **Possible cause**

You are looking through glass.

## **Solution**

Change the viewing position to avoid it.

When the device is used in low temperature conditions, the quality of the thermal image of the environment is worse than in positive temperatures

## **Possible cause**

In positive temperature conditions the observation objects (environment, background) are heated in different ways due to different thermal conductivity. As a result, a high temperature contrast is achieved and therefore the image quality formed with binoculars is higher.

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.

In Fusion mode, there is a discrepancy between the images of the thermal imaging and the digital channels

### **Possible cause**

A discrepancy between the thermal imaging and digital channels images is possible. It is not a defect.

When observing during the day in Fusion mode, the thermal imaging channel image does not match the image of the digital channel

### **Possible cause**

IR illuminator on.

### **Solution**

Turn off IR illuminator.

## Legal Compliances and Disclaimers

**Attention!** A license is required for Trionyx Multispectral Fusion Binoculars when exporting 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.

This product is subject to change in line with improvements to its design.

The device repair is possible within 5 years.

