

# PULSAR FORWARD Manual

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# Specifications

<b>Model</b>	<b>FN455S</b>
SKU	78199
<b>Optical Characteristics</b>	
Lens focus, mm	50
Relative aperture, D/f	1:1
Field-of-view (Horizontal), °	6.3
Field-of-view (Horizontal), m per 100 m	11
Detection Range (animal height 1.7 m), m/y	500/546.8
Minimum Focusing Distance, m/y	5
Recommended daylight optics magnification, x	2-8
<b>Electronic Specifications</b>	
Sensor type / resolution	CMOS HD 1280X720
Display type / resolution	AMOLED 1746×1000
<b>Detachable IR Illuminator</b>	
Type / wavelength, nm	LED 940
<b>Operational Characteristics</b>	
Power Supply, V	3.1-4.2
Battery type / Capacity / Rated Output Voltage	Li-Ion Battery Pack IPS7 / 6400 mAh / DC 3.7 V
External Power Supply	Micro USB type B (5V)
Max. Battery Pack Life at t = 22 °C (Wi-Fi off, IR off),	9

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Hour

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Degree of protection IP code (IEC60529)	IPX7
Operating temperature, °C	-25 – +50
Overall Dimensions (with battery and monocular), mm/inch	273x136x77 / 10.75×5.35×3.03
Weight (with battery and monocular), kg/oz	1 / 35.3

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#### **Video Recorder**

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Video/Photo Format	.mp4 / .jpg
Built-in Memory	16 GB

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#### **Wi-Fi Channel\***

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Frequency	2.4 GHz
Standard	802.11 b/g

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#### **Bluetooth**

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Wireless Protocol	BLE 4.2
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\*Reception range may vary depending on various factors: the presence of obstacles, other Wi-Fi networks.

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## **About the device**

## **Description**

The **Forward FN455S** digital night vision device is designed for various areas of application, including hunting surveillance, security activities, night photography and video recording.

The digital module included in the **Forward FN455S** package can be mounted on lenses of various daytime optical instruments using special adapters, enabling them to be used for night-time observation.

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To get started, see the sections:

Battery Charging

Battery Installation

Installing Digital Module on the Optical Device

Installing Pulsar 5×30 Monocular on to the Digital Module

Powering on and Image Setting

**Stream Vision 2**

## Package Contents

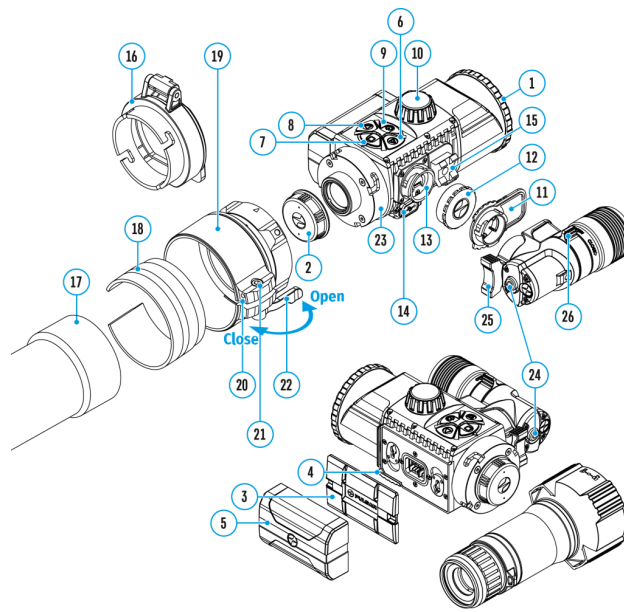
- Digital module
- Pulsar 5×30 Monocular
- Carrying Case
- Wireless Remote Control
- IPS7 Battery Pack
- Battery Pack Charger
- Power Adapter
- USB Cable
- Quick Start Guide

- Lens-Cleaning Cloth
- Warranty Card
- Neck strap

## Features

- 1280X720 HD sensor
- Enhanced night-time sensitivity
- Simple transformation of a daytime optical device into night device.
- Preserves the benefits of daytime optics in night-time conditions
- Comfortable use in a wide range of daytime optical magnifications
- Invisible long-range IR Illuminator
- SumLight™ enhanced sensitivity firmware
- Detection distance of up to 500m
- Instant power up
- Built-in video
- Power from quick-release, high-capacity B-pack rechargeable batteries
- Four-point mounting system with automatic clamp
- Wireless remote control
- Wi-Fi integration with iOS and Android devices
- Remote firmware updates
- Fully waterproof (IPX7)
- Extreme operating temperature range (-25 °C – +50 °C / -13 °F – +122 °F)
- MicroUSB Power Bank charging
- Storing photos and videos in Cloud when using the Stream Vision 2 App

## Components and Controls

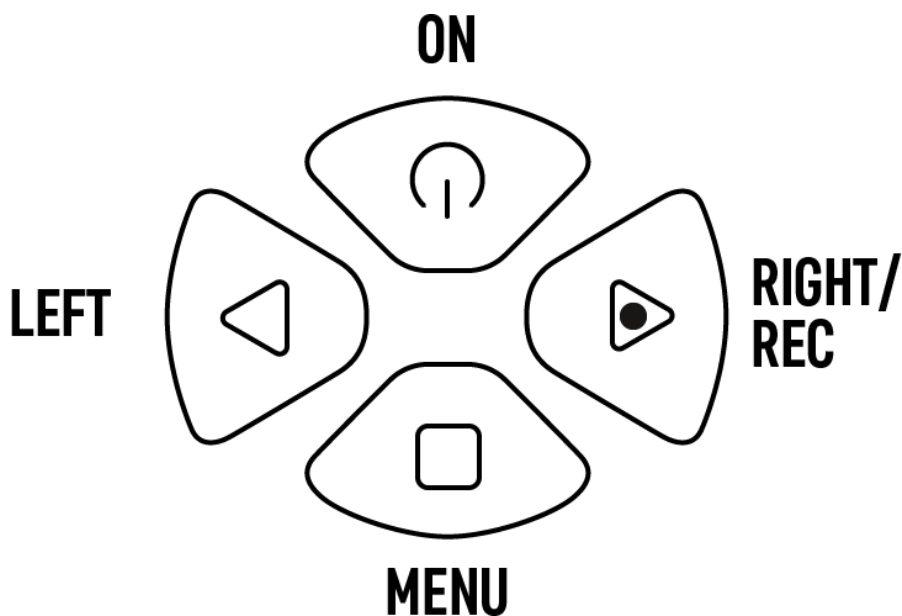


1. Lens cover
2. Eyepiece cover
3. Battery compartment cover
4. Battery locking lever
5. Battery pack
6. RIGHT button
7. M (MENU) button
8. LEFT button
9. ON/OFF button
10. Lens focus knob
11. IR illuminator cover
12. IR illuminator connector cap
13. Connector for installing IR illuminator
14. MicroUSB port
15. Weaver rail
16. Adapter cover\*
17. Optical device lens
18. Insert\*
19. Adapter\*
20. Tightening screw\*
21. Screw\*

- 22. Adapter lever\*
  - 23. Mounting area
  - 24. IR button
  - 25. IR illuminator arm
  - 26. IR illuminator lens lock knob
- 

\*Items of Cover Ring Adapter FN (available separately)

## Button Operation



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





Turn display off



long press for less than 3 secs

Turn display on



short press

Turn on/off SumLight™



short press

Turn on/off Wi-Fi



long press

### Video Recorder

### Button

Start/pause/resume video recording



short press

Stop video recording



long press

Switch to video/photo mode



long press

Capture Photo



short press

### Main Menu

### Button

Enter main menu



long press

Navigation downwards/counterclockwise



short press

Navigation upwards/clockwise



short press

Confirm value



short press

Exit submenu without confirming selection



long press

Exit main menu



long press

## Quick Menu

## Button

Enter quick menu



short press

Switch between quick menu options



short press

Increase value



short press

Reduce value



short press

Exit quick menu



long press

# Getting started

## Status Bar



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

- Auto shutdown function



1 min (if activated)

- Microphone
- IR illuminator power level (e.g. Level 3)
- Power Indication:



– Battery Pack charge level (when the device is powered by the Battery Pack)



– external battery power indicator (if the device is powered from an external supply)



– battery charge indicator with current charge in percent (where charging is by an external power supply)

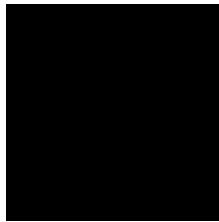
- The SumLight™ function
- Video recording status:



– video recording is on



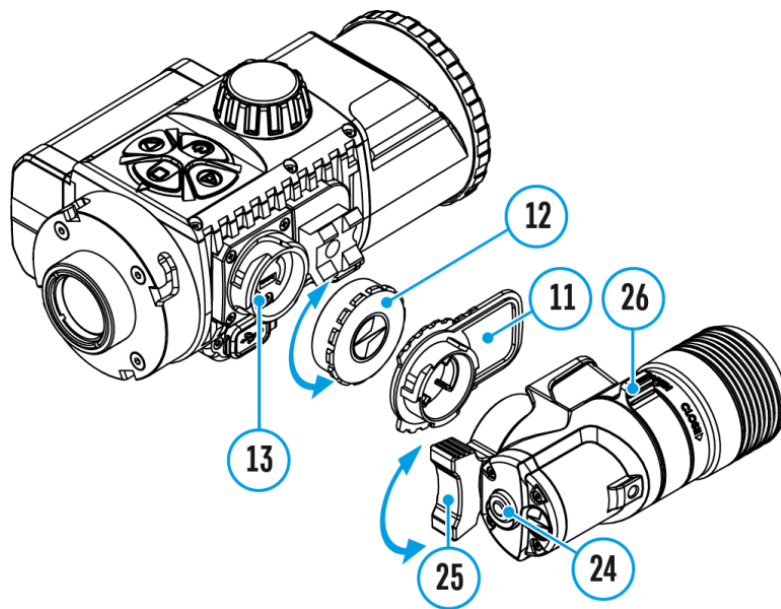
– pause



– video recording is off

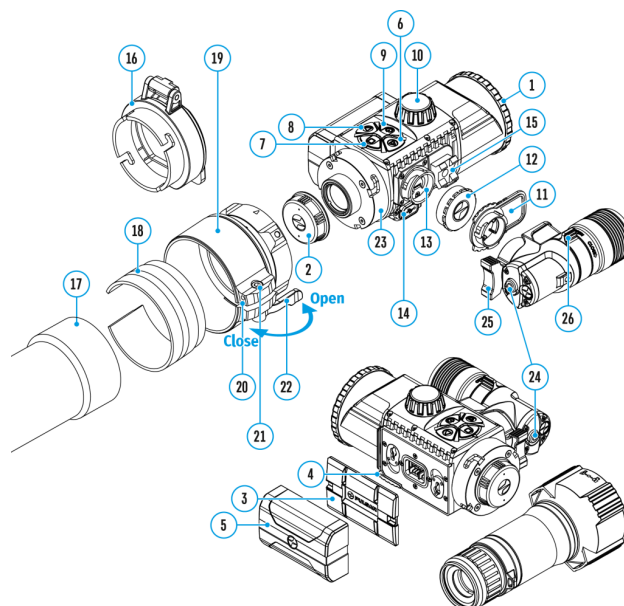
- Wi-Fi Connection
- Time
- Bluetooth

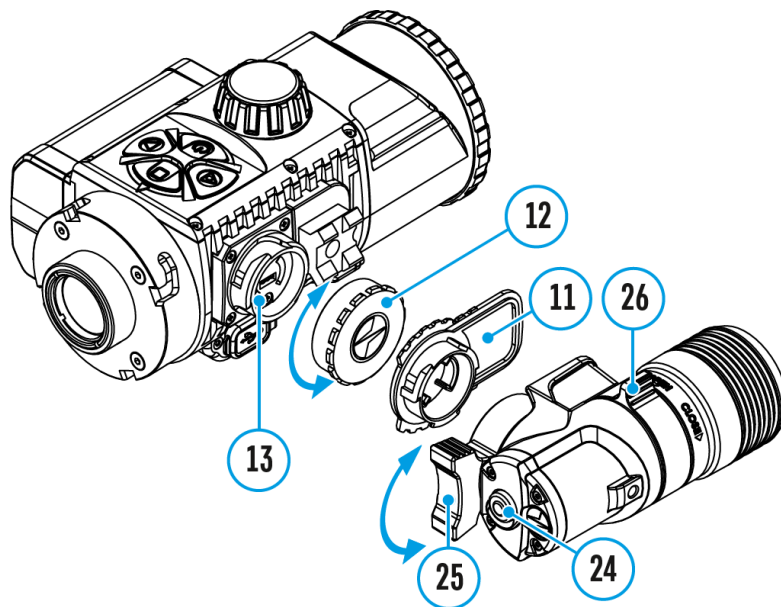
## Removing the IR Illuminator



1. Raise the lever **(25)**.
2. Disconnect the IR illuminator from the device.
3. Install the cap **(12)** on the connector for installing the IR illuminator **(13)**.
4. Put the cover **(11)** on the IR illuminator.

## Installing the IR Illuminator





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### Step 1. Install the IR illuminator

1. Remove the cap **(12)** from the connector to attach the IR illuminator **(13)**.
2. Remove the cover **(11)** from the IR illuminator.
3. Install the IR illuminator on the connector **(13)**. The lever **(25)** should be in the up position.
4. Lock the IR illuminator by pressing the lever **(25)** down.
5. Make sure that the IR illuminator is mounted and connected to the device.

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### Step 2. Turn on the IR illuminator

1. Turn on the device using the **ON/OFF (9)** button to activate the IR illuminator.
2. The status bar will display the disabled illuminator icon



if the IR illuminator is not connected. This icon is not displayed when the IR illuminator is connected.

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### Step 3. Adjust the power level of the IR illuminator

1. Briefly press the **IR (24)** button at the end of the illuminator. The power level when switching on is minimum

**IR** ◀

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2. The IR illuminator icon will be displayed on the status bar with the relevant power level.
3. Successive brief presses of the **IR (24)** button will toggle the brightness level of the illuminator (

**IR** ◀

>

**IR** ◀◀

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**IR** ◀◀◀

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**IR** ◀

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### Step 4. Adjust the position of the light spot

1. To adjust the position of the light spot in the field of view of the device, turn the IR-illuminator lens lock knob **(26)** to the OPEN position.
2. By moving the lens of the IR illuminator with your hand, adjust the required position of the light spot in the field of view of your device. After successful adjustment, turn

the lock knob **(26)** in the CLOSE direction while aiming the lens in the desired direction to lock the IR illuminator lens.

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### **Step 5. Turn off the IR illuminator**

1. The IR illuminator is turned off by a long press of the **IR (24)** button.
2. The **IR** icon will disappear from the screen.

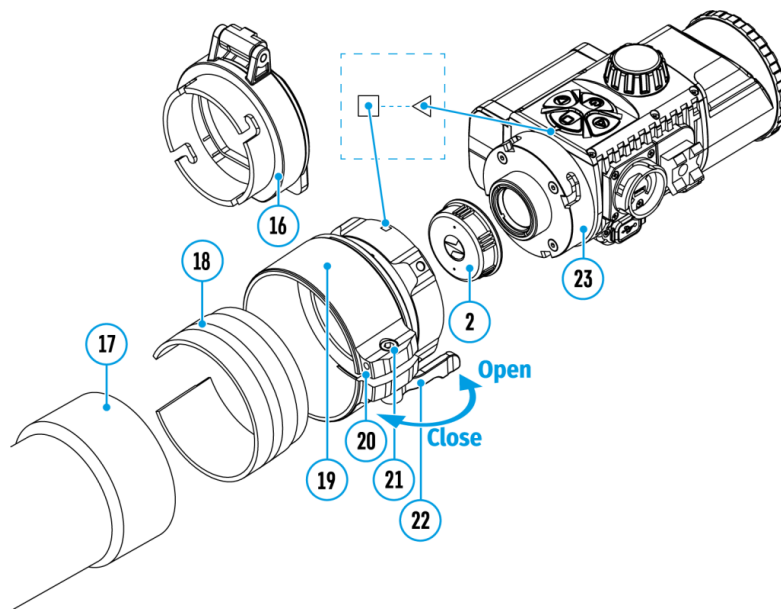
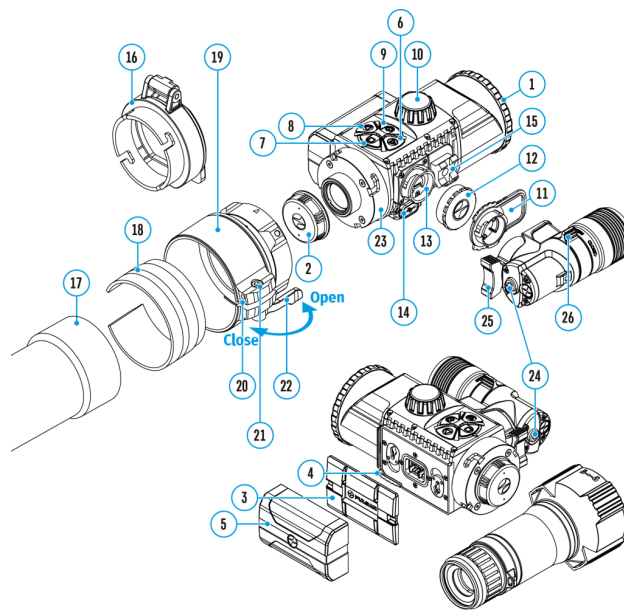
## **Operating Features**

The **Forward FN455S** device is designed for long-term use. Please follow these guidelines to ensure long life and maximum performance:

- Before using the attachment make sure you mount it according to the instructions in the **Installing Digital Module on the Optical Device** and **Installing Pulsar 5×30 Monocular on to the Digital Module** sections.
- Power off the device after use.
- Do not repair or dismantle an attachment under guarantee by yourself!
- The device can be used over a wide range of temperatures. If the device has been operated in the cold and brought into a warm room, do not remove it from its carrying case for at least 2-3 hours; this will prevent condensation forming on the external optical elements.
- **Inspect** and **maintain** the device regularly to ensure trouble-free operation and to avert and eliminate the cases of premature wear and tear and failure of components.

## **Installing Digital Module on the Optical Device**





1. Select the adapter (available separately) with the required diameter of insert depending on the outer diameter of the lens of your optical device (see the **Table**).
2. The designation 42mm / 50mm / 56mm in the title of the adapter refers to the optical diameter of the lens in the optical device.
3. Remove the cap **(16)** from the 42mm adapter **(19)** (SKU 79171) by turning it clockwise. To remove the cap from the 50mm (SKU 79172) or 56mm (SKU 79173) adapters, turn it anticlockwise.
4. Degreasing of the body of the optical device before mounting is recommended.
5. Mount the insert **(18)** onto the adapter **(19)** as far as it will go.

6. Move the lever **(22)** to the OPEN position.
7. Mount the adapter with the insert into the lens of the optical device **(17)**.
8. Move the lever **(22)** from its initial OPEN position to the CLOSE position.
9. Ensure that the adapter fits snugly against the lens.
10. If there is any gap, do the following:
  - Loosen the locking screw **(20)** with an Allen key (S=2mm).
  - Tighten the screw **(21)** with an Allen key (S=4mm) with the force necessary to ensure that the adapter fits tightly against the lens. The clamping forces should be 1 Nm.
  - Tighten the locking screw **(20)**.
11. The effort can be tested with a torque screwdriver.
12. Insert the digital module firmly into the adapter so that the pins located in the adapter case fit into the grooves **(23)** of the digital module. Turn the digital module clockwise as far as it will go. The triangular mark on the digital module and the square on the adapter body must be aligned.
13. To align the digital module, turn the handle **(22)** to the OPEN position and align the digital module with the horizon.

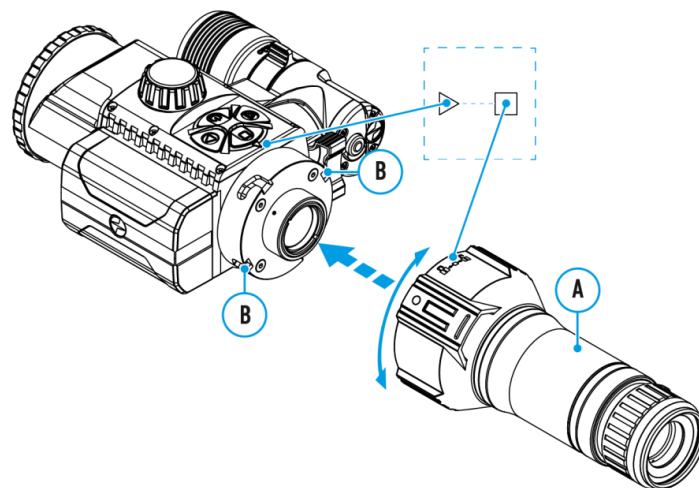
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## Selection table for optical device insert rings

Cover adapter model	The internal diameter of the insert needs to match the outer diameter of the objective lens housing of the daylight optical device it is being installed on.	
	Insert internal diameter, mm	Suitable for lens housing of daylight optical devices with an outer diameter of, mm
Cover adapter FN 42mm	45.5	45.5
	46	46
	46.5	46.5
	47	46.7-47.6

	48	47.7-46.7
	49	48.7-49.6
	50	49.7-50.6
	51.6	51.6
	53.4	53.4
Cover adapter FN 50mm	55	54.7-55.6
	56	55.7-56.6
	57	56.7-57.6
	58	57.7-58.6
	59	58.7-59.6
	60	59.7-60.6
Cover adapter FN 56mm	61	60.7-61.6
	62	61.7-62.6
	63	62.7-63.6
	64	63.7-64.6
	65	64.7-65.6

## Installing Pulsar 5×30 Monocular on to the Digital Module

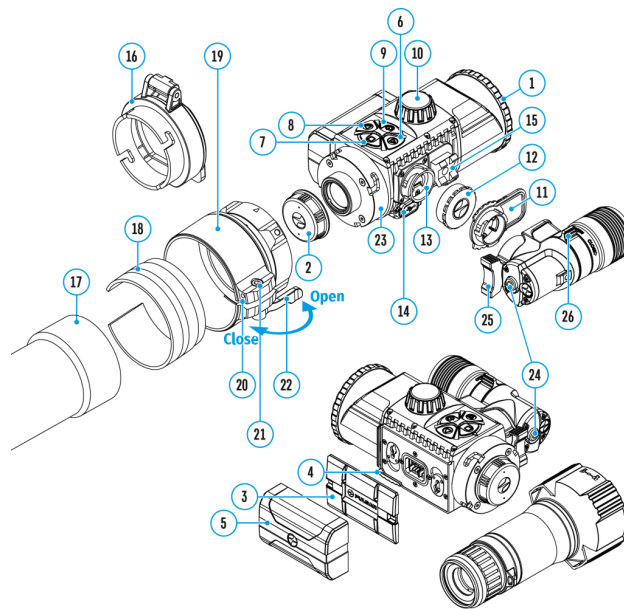


The **Pulsar 5×30 monocular** (included in the package) enables you to transform a digital module into a digital vision device for night-time observation with a magnification of 5x.

1. Insert the monocular tightly into the digital module as far as it will go so that the pins on the monocular body **(A)** fit into the slots **(B)** of the digital module (see Fig.).
2. Turn the monocular anticlockwise so that the monocular is fixed onto the digital module. The triangular mark on the digital module and the square on the monocular body must be aligned.
3. To remove the monocular, turn it clockwise and gently pull it towards you.

*Note:* the neck strap (included in the delivery package) can be used with the monocular.

## Powering on and Image Settings

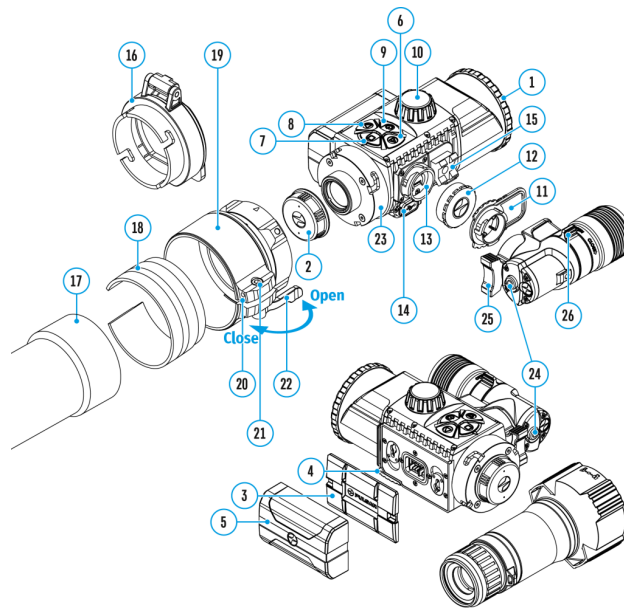


1. Remove the lens cap **(1)** by turning it anticlockwise.
  2. Turn on the device with a short press of the **ON/OFF (9)** button. An image will appear on the display.
  3. Adjust the resolution of the icons on the display by rotating the diopter adjustment ring of your optical device. In future, it will not be necessary to rotate the eyepiece diopter adjustment ring, regardless of distance and other conditions.
  4. Rotate the lens focus ring **(10)** to focus on the object being observed.
  5. Basic settings (brightness and contrast adjustment) can be altered by using the **quick menu**.
  6. Power the device off after use with a long press of the **ON/OFF (9)** button.
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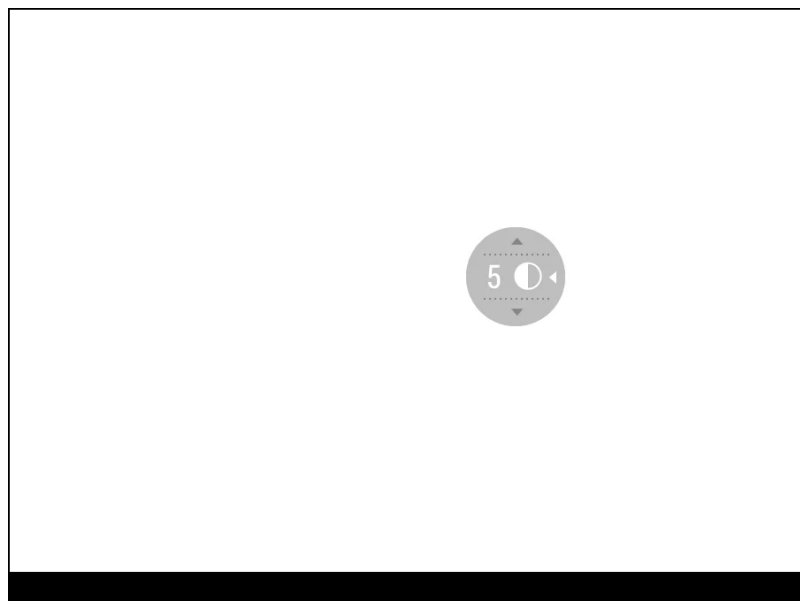
## Interface

## Main Menu

# Quick Menu Functions



1. Enter the quick menu with a short press of the **M (7)** button.
2. A short press of the **M (7)** button enables you to switch between functions, as described below.



## Contrast



– by pressing the **RIGHT (6)** and **LEFT (8)** buttons and changing the display contrast value from 0 to 20.

## Brightness

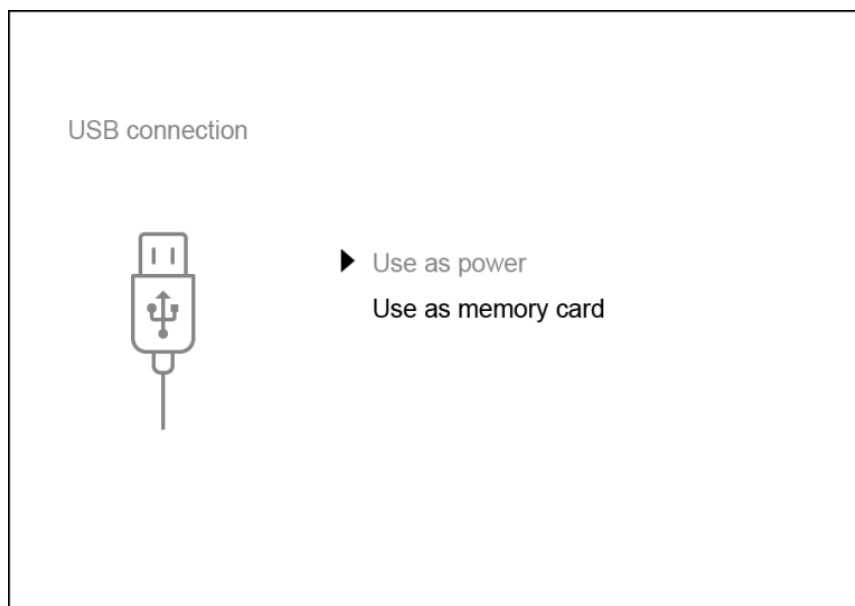
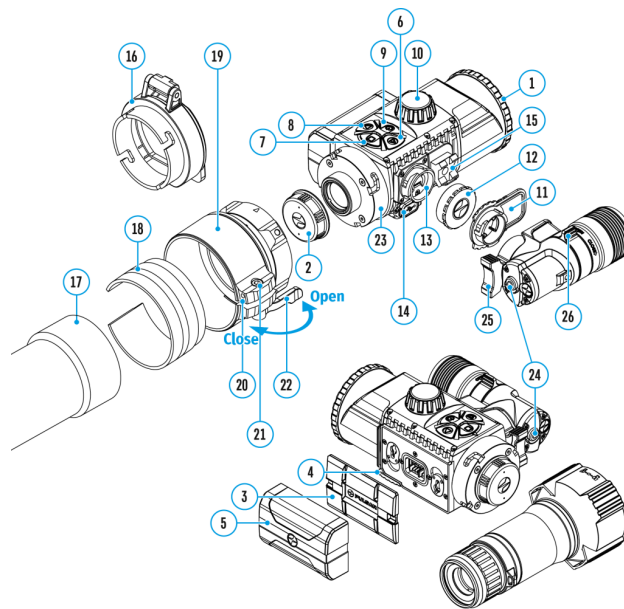


– by pressing the **RIGHT (6)** and **LEFT (8)** buttons and changing the display brightness value from 0 to 20.

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# Functions

## USB Connection



1. Power on the device by pressing the **ON/OFF (9)** button (the computer will not detect the device if it is turned off).
2. Connect one end of the USB cable to the device's microUSB connector **(14)** and the other end to the port on your computer.
3. The device is detected automatically by the computer and no installation of drivers is required.
4. Two connection modes will appear on the display: **Power** and **Memory card**.
5. Select the connection mode with the **RIGHT (6)** and **LEFT (8)** buttons.
6. A short press of the **M (7)** button confirms the selection.

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## Power



- When this mode is selected, the computer is used by the device as an external power supply. An icon



will appear in the status bar.

- The device will continue to function and all functions are available.
  - The battery pack installed in the device will not be charged.
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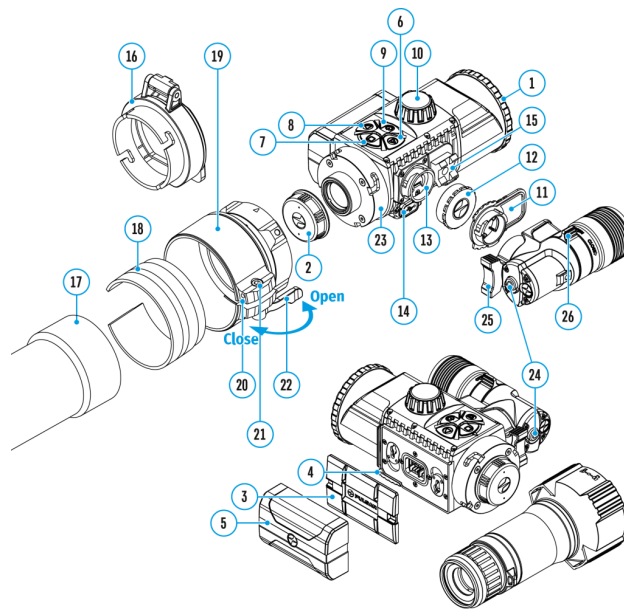
### Memory card

- When this mode is selected, the device will be recognised by the computer as a flash card.
  - This option is designed for working with files that are stored in the device's memory; the device's functions are not accessible and the device turns itself off. The device continues to function after disconnection from the computer.
  - If a video was being recorded at the time of connection, the recording will cease and will be saved.
- 

### Disabling the USB

- When disconnecting the USB from the device in **Power** mode, the device will continue to function with the Battery Pack, if it is available and has sufficient charge.
- When the USB is disconnected from the device connected in **Memory card** mode, the device remains switched on.

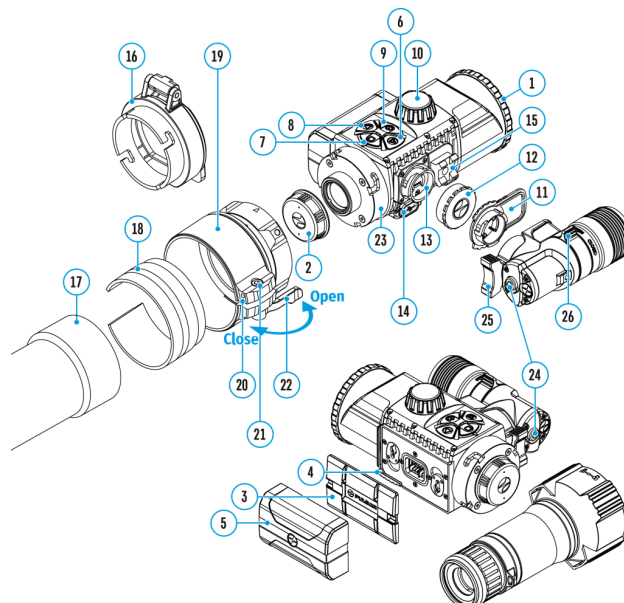
## Using the Weaver Rail



The device is equipped with a Weaver rail **(15)** which allows the user to mount extra accessories.

You must first detach the removable IR illuminator (see section **Removing the IR Illuminator**).

## Remote Control Activation



1. Turn on the Bluetooth module (see the **Bluetooth** section).

## 2. In the **Bluetooth**



section of the menu, use the **RIGHT (6)** and **LEFT (8)** buttons to select the **Scan**



menu item.

3. Confirm your selection with a short press of the **M (7)** button.
4. Press and hold any button on the Remote Control. The Remote Control is visible in the Bluetooth network and can be connected during this time.
5. Use the **RIGHT (6)** and **LEFT (8)** buttons to select the remote control from the dropdown list that appears.
6. Confirm your selection with a short press of the **M (7)** button.

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### *Notes:*

- Once paired, the Remote Control can operate the Pulsar device.
- Going forward, the Remote Control will automatically connect to the paired device when within visible range.
- The name of the remote control and its battery charge level will appear in the list of paired devices at the bottom of the display in the **Bluetooth**



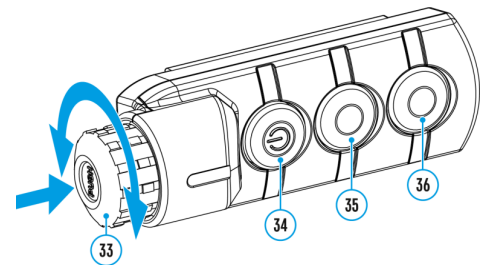
section of the menu.

## Descriptions of Controls

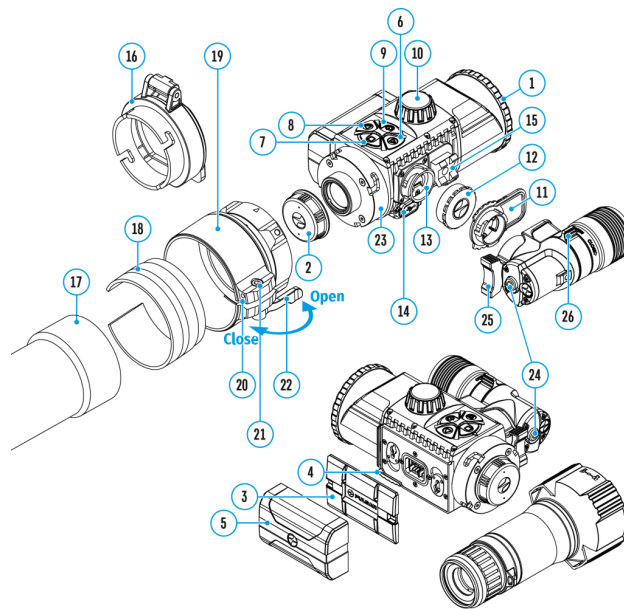
The wireless remote control duplicates the functions of turning off the device, turning off the display, controlling the IR illuminator, video recording and photographing, and it allows navigation through the menu.

	<b>Controller (33)</b>	<b>Button (34)</b>	<b>Button (35)</b>	<b>Button (36)</b>
<b>Short press</b>	Enter the quick menu and submenus of the main menu / confirm the selection / Switch to the next item of the quick menu	Turn the display on	Turn on the IR illuminator / Switch the IR power level	Start video recording / Capture a photo
<b>Long press</b>	Enter/exit the main menu / Exit the quick menu	Turn the display off / Turn the device off	Turn off the IR illuminator	Switch to photo/video mode

**Clockwise rotation**   **Quick menu**   Increase parameter



## SumLight™ Function



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

1. Turn off the IR illuminator before using the SumLight™ function.
2. To activate the SumLight™ function, press briefly the **LEFT (8)** button.
3. Press the **LEFT (8)** button once more to switch off.
4. The SumLight™ icon (on



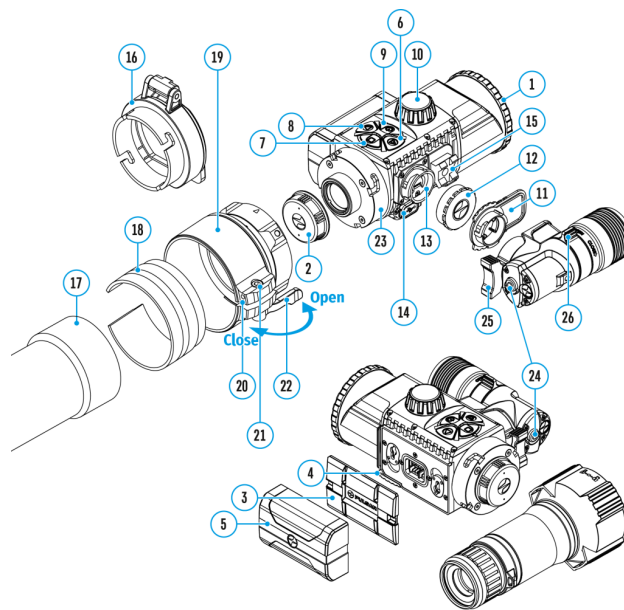
or off



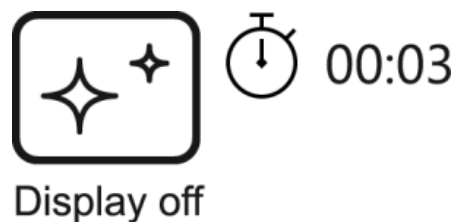
) is displayed in the status bar.

**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 device may cause the image to become "blurred". Such effects are not defects. Luminous white dots (pixels) may be visible on the device's display. The number of dots may increase when the SumLight™ function is enabled. This is due to the nature of how this function works and is not a defect.

# Display-Off Function

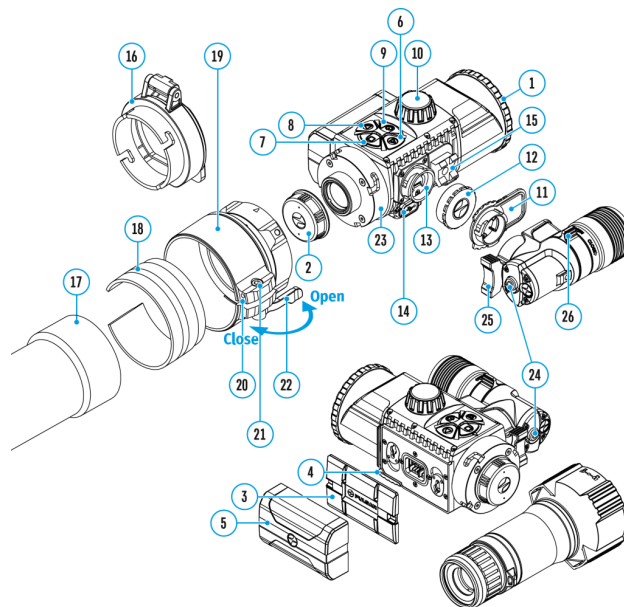


When this function is in use, the device switches to standby mode, which allows it to be turned off quickly if necessary.



1. When the device is on, press and hold the **ON/OFF (9)** button for less than 3 seconds. The display goes blank and the message **"Display off"**.
2. Press the **ON/OFF (9)** button briefly to turn on the display.
3. When you press and hold the **ON/OFF (9)** button, the display shows the message **"Display off"** with a countdown. Holding the button down for the duration of the countdown will power the device off completely.

# Wi-Fi Function



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

- Turn on the wireless connection module with a long press of the **LEFT (8)** button.

Wireless operation is displayed in the status bar in the following:

Connection Status	Indication on the status bar
Wi-Fi disconnected	No icon
Wi-Fi turned on by the user, Wi-Fi connection in the device is in progress	
Wi-Fi turned on, no connection to the device	
Wi-Fi turned on, the device is connected	

- The device is recognised by a mobile device under the label "Forward F\_XXXX", where XXXX are the four last digits of the serial number.
- Once the password has been entered on the mobile device (for more information on setting a password, see the **Password Setup** subsection in the **Wi-Fi Settings** section) and the connection has been established, the icon



in the status bar changes to



, the video signal on the mobile device screen starts after the "viewfinder" button is activated on the screen of the mobile device. The icon in the status bar changes to



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*Note:* you can configure the required access level to your device that is granted to the Stream Vision application in the **Access Level Setup**



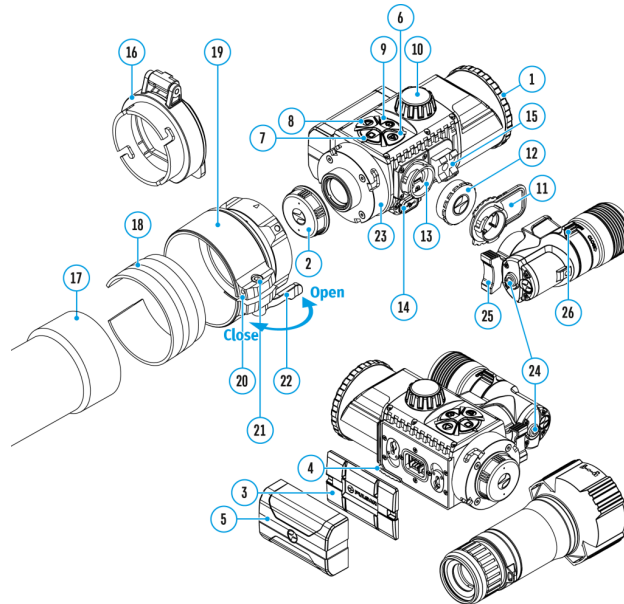
subsection in the **Wi-Fi Settings**



menu section.



# Video Recording and Photography



The device is equipped with a function for video recording (and photographing) an observed image that is saved onto the built-in memory card.

It is recommended to set the **date** and **time** (see the **General Settings** section) before using the photo and video functions.

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

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The built-in recorder operates in two modes:

- **Photo** (photography; in the top right corner of the display you can see an icon



). If the estimated number of photos that can be saved to the Flash card is more than 100, the message ">100" is shown.

- **Video** (video recording; an icon



is displayed in the upper left of the display, the total remaining recording time given the current resolution in HH:MM:SS format (hours : minutes : seconds).

To toggle between Video and Photo modes press and hold down the **RIGHT (6)** button. Switching between the modes toggles **Video**→**Photo**→**Video**...

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### Photo mode. Photographing an image

1. Switch to **Photo** mode with a long press of the **RIGHT (6)** button.
  2. To capture a photo, press the **RIGHT (6)** button briefly. The image freezes for 0.5 sec.
  3. The photo is saved to the internal memory.
- 

### Video Mode Recording video clips

1. Switch to **Video** mode with a long press of the **RIGHT (6)** button.
2. The icon



and the remaining recording time in HH:MM (Hours:Minutes) format are displayed in the upper left corner, for example, 5:12\*. In the status bar, the video recording status is displayed continuously.

3. Start video recording with a short press of the **RIGHT (6)** button.
4. When the video recording starts, the icon



will disappear and the REC icon and timer in MM:SS (Minutes:Seconds) format will appear.

5. Press the **RIGHT (6)** button briefly to pause or resume video recording.
6. Stop the video recording by pressing and holding down the **RIGHT (6)** button.

## 7. Video files are stored in the internal memory card:

- After turning off the video recorder;
- When you turn off the device if the recorder had been turned on;
- If the memory card is full, or if during a video recording the memory becomes full (a "Memory full" message appears on the display).

\* an icon will be displayed for 2 seconds and then disappear. When the **RIGHT (6)** or **M (7)** button is briefly pressed again, an icon will appear and the recording timer will show the current time of the video recording.

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### *Notes:*

- You can enter and navigate the menu during video recording.
  - Recorded videos and photographs are saved to the device's built-in memory card in the format: img\_xxx.jpg (for photos); video\_xxx.mp4 (for video). xxx – three-digit common file counter (for photos and video).
  - The counter used for the names of multimedia files cannot be reset.
  - If a file is deleted from the middle of the list, its number is not taken by another file.
  - When the counter is full, a new folder is created – img\_xxxx, where xxxx is the file counter.
  - The maximum duration of a recorded video file is 5 minutes. After this time expires, a video is recorded onto a new file. The number of files is limited by the capacity of the device's built-in memory.
  - Regularly check the free memory on the internal memory card, moving footage and photographs to other storage media to free up space.
  - In case of a memory card error, you can use the format function in the **General Settings** section of the main menu.
  - Graphic information (status bar, icons etc.) is displayed in recorded video files and photos.
  - When the Display Off function is activated, video recording is paused.
-

# Firmware Update

## Stream Vision 2

1. Download free Stream Vision 2 App in **Google Play** or **App Store**.
2. Connect your Pulsar device to your mobile device (smartphone or tablet).
3. Launch Stream Vision 2 and go to section "Settings".
4. Select your Pulsar device and press "Check firmware update".
5. Wait for the update to download and install. Pulsar device will reboot and will be ready to operate.

### **Important:**

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

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

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## Stream Vision

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



**Forward S** devices support Stream Vision and Stream Vision 2 mobile apps that allow you to stream real-time image from your device to your smartphone or tablet via Wi-Fi.

We recommend using the latest version – Stream Vision 2.

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Mobile App

**STREAM  
VISION 2**

You can find further guidelines on Stream Vision 2 [here](#).

[Download from Google Play](#)

[Download from App Store](#)

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

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**STREAM  
VISION**



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](#).

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## **Stream Vision 2 Manual**

Android

iOS

# Maintenance

## Technical Inspection

A check is recommended before each use of the device.

Check:

- External appearance (there should be no cracks on the housing).
- The state of the lenses of the objective, digital module eyepiece, monocular and IR-illuminator (there should be no cracks, grease spots, dirt or other residue). Wipe the exterior surfaces of metal and plastic parts free from dust, dirt and moisture with a soft, cotton cloth.
- The condition of the battery (whether it needs to be charged), electrical contacts on the battery and the IR illuminator, and connectors for their attachment to the device (there should be no sign of salts or oxidation).
- The controls should be in working order.
- The digital module should be properly and firmly attached to the optical device.

## Technical Maintenance and Storage

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

- Wipe the external surfaces of metal and plastic parts free of dust and dirt with a cotton cloth. To avoid damage to the paint coating, do not use chemically active substances, solvents, etc.
- Clean the electric terminals of the Battery Pack and battery slot on the device using a non-greasy organic solvent.

- Check the glass surfaces of the eyepiece and the lens. If necessary, remove dust and sand from the lenses (preferably using a non-contact method). Cleaning of the external surfaces of the optics should be done with substances designed especially for this purpose.
  - Always store the device in its carrying case, in a dry, well-ventilated space. It is essential during prolonged storage to remove the Battery Pack.
- 

## Power supply

## Safety Measures

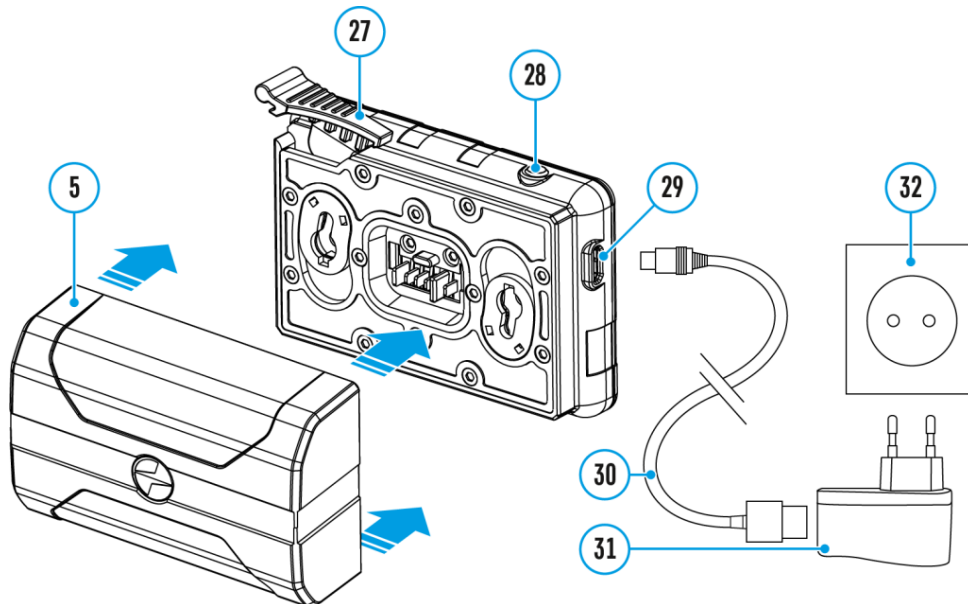
- Do not use the charger if it has been modified or damaged.
- Do not leave a battery unattended during charging.
- Do not leave the battery in a charger connected to the mains after charging is complete.
- The battery should be charged at a temperature between 0° C and +45° C, otherwise the battery life will be significantly reduced.
- Do not charge the battery immediately after bringing it from the cold into a warm atmosphere. Wait 30–40 minutes for the battery to warm up.
- Do not expose the battery to high temperatures or naked flame.
- Do not submerge the battery in water.
- The connecting of third-party devices with an energy consumption greater than permissible is not recommended.
- The battery is equipped with a short circuit protection system. However, situations that may lead to short circuiting should be avoided.
- Do not dismantle or deform the Battery Pack.
- Do not subject the Battery Pack to shocks or falls.
- When using the battery at negative temperatures, battery's capacity decreases, this is normal and is not a defect.
- The batteries should be partially charged (50 to 80 %) for long-term storage.



- Store the battery out of the reach of children.

## Battery Charging

The device is supplied with a rechargeable IPS7 Lithium-ion Battery Pack which allows the attachment to be used for up to 9 hours. Charge the battery before first use.



### Charging



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

1. Raise the lever **(27)** of the charger.
2. Install the Battery Pack **(5)** into the charger.
3. Click the lever **(27)**.

#### Step 2. Check the current battery level

- Upon installation, a green LED indicator **(28)** on the charger will start to glow and begin flashing:
  - once if the battery charge ranges from 0% to 50%.
  - twice if the battery charge ranges from 51% to 75%.
  - three times if the battery charge ranges from 76% to 100%.
- When the indicator is continuously green, the battery is fully charged. Disconnect the charger from the mains and disconnect the battery from the charger.
- If the battery charger indicator is constantly red when the battery is inserted, the charge level is probably below the permissible level (the battery has been in a discharged state for a long period of time). Leave the battery in the charger for a long period of time (up to several hours), then remove and reinsert.
- If the indicator begins to flash green, the battery is good.
- If it continues to show red, the battery is defective. **Do not use this battery!**

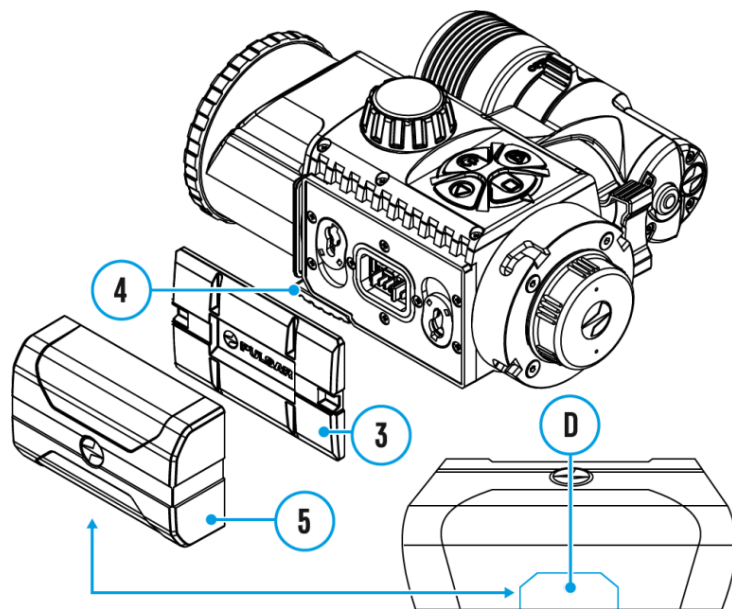
The LED indicator **(28)** will display the battery charge status:

LED Indicator <b>(28)</b>	Battery Charge Status
	Battery is empty
	Battery is full

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

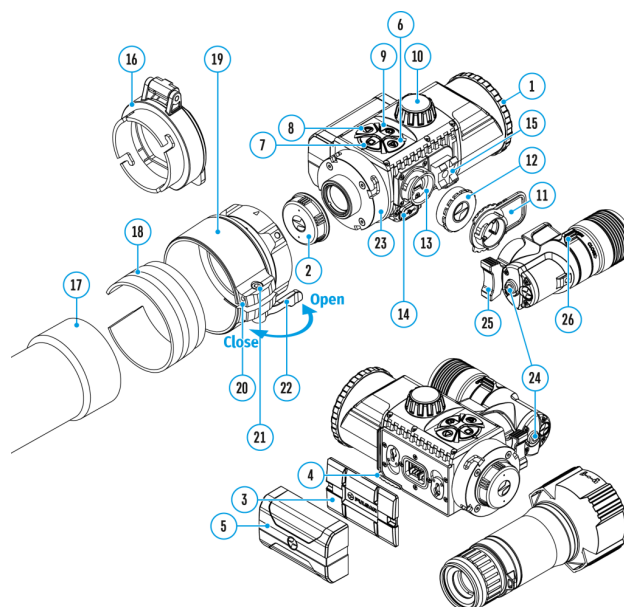
1. Attach the microUSB plug of the USB cable **(30)** to the microUSB connector **(29)** on the charger.
2. Connect the USB plug on the cable **(30)** to the power adapter **(31)**.
3. Plug the power adapter **(31)** into a 100-240V **(32)** socket.
4. When the indicator **(28)** is continuously green, the battery is fully charged. Disconnect the charger from the mains.

## Battery Installation



1. Lower the lever **(4)**.
2. Remove the protective cover of the battery compartment **(3)**.
3. Insert the battery **(5)** into the slot designed for it on the device body so that the element **(D)** is pointing downwards.
4. Lock the battery in place by raising the lever **(4)**.

## External Power Supply



External power is supplied from an external source, such as a 5V Power Bank.

1. Attach the external power source to the USB connector **(14)** on the device.
2. The device will switch to operation from the external power supply, while the IPS7 battery will be gradually recharged.
3. A battery icon



will appear on the display showing charge level as a percentage.

4. If the device is connected to a computer, network adapter or power bank that does not conform to the BC1.0 battery charger standard, an IPS7 battery will not begin charging: the external power icon only will be displayed



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5. If the device is operated from an external power source and the IPS7 battery is not connected, an icon is displayed



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6. Once the external power source is disconnected, the adapter will begin functioning on battery power.

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

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## 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.

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## Legal Compliances and Disclaimers

**Attention! Forward** digital night vision devices 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:** Operating this product in a residential area may cause radio interference.

**Updates of the Product.** The manufacturer reserves the right at any time, without mandatory prior notice to the Customer, to make changes to the package contents (subject to the applicable laws, if any), design and characteristics that do not impair the quality of the Product.

**Repair.** Repair of the product is available within 5 years after purchase of the product.

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