

PULSAR AXION COMPACT

Manual

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When the device is turned on, the calibration frequency is at first higher, then decreases (if the automatic calibration mode is enabled)

Poor image quality / Detection range reduced

Wi-Fi signal is missing or interrupted

Color bars appear on the display or the image disappears

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

The image of the object being observed is missing

The supplied USB cable is broken

Specifications

Model	XM30F
SKU	77473
Microbolometer	
Type	uncooled
Resolution, Pixels	320×240
Pixel Pitch, μm	12
Frame Rate, Hz	50
Optical Characteristics	
Optical Magnification, x	3
Smooth Digital Zoom	3-12
Digital Zoom, x	x1, x2, x4
Relative Aperture, D/f'	1.2
Minimum Observation Distance, m/y	3/3.28
Exit Pupil Diameter, mm	4
Angular Field of View (Horizontal x Vertical), degree	7.8×5.9
Linear Field of View (Horizontal x Vertical), m at 100 m	13.7×10.3
Eyepiece Focus Range, Diopter	+4 / -5
Detection Distance for Deer-Sized Objects, m/y	1300/1421.7
Display	
Type	AMOLED

Resolution, Pixels	640×400
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Operational Characteristics

Power Supply, V	3 – 4.2
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Battery Type/Capacity/Nominal Output Voltage	APS 3 Li-ion Battery Pack / 3200 mAh / DC 3.7 V
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External Power Supply	5 V (USB)
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Battery Run Time at t=22°C, hours*	7
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Degree of Protection, IP Code (IEC60529)	IPX7
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Operating Temperature Range, °C / °F	-25 ... +40 / -13 – +104
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Dimensions, mm/inch	144×40×69 / 5.67×1.46×2.72
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Weight (without battery), kg/oz	0.25/8.81
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Video Recorder

Photo/Video Resolution, Pixels	528x400
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Video/Photo Format	.mp4 / .jpg
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Built-in Memory	16 GB
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Wi-Fi Channel**

Frequency	2.4/5 GHz
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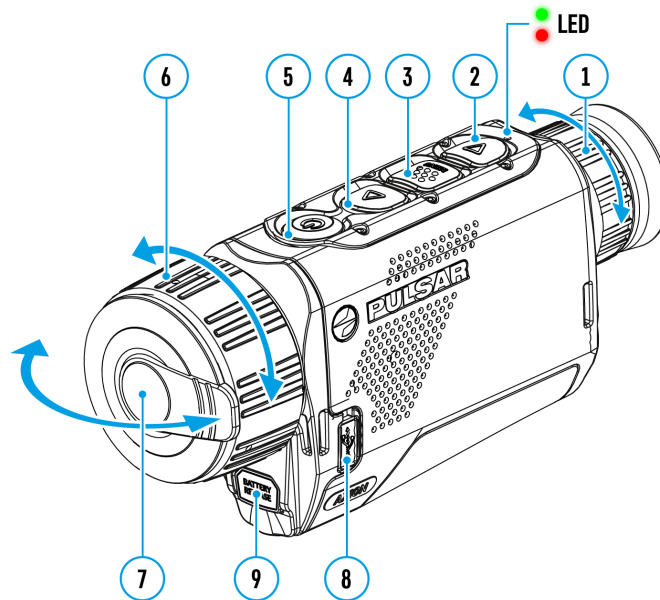
Standard	IEEE 802.11 b/g/n/ac
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*Actual operating time will depend to what extent the Wi-Fi and built-in video recorder is used.

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

About the device





Components and Controls



1. Eyepiece focus ring
2. DOWN/REC button
3. MENU button
4. UP/ZOOM button
5. Power ON/OFF/CALIBRATION button
6. Lens focus ring
7. Lens cover
8. MicroUSB connector
9. Battery release button

LED indicator displays the current status of the device:

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

Features

- Microbolometer pixel size is 12 microns
- 640×400 AMOLED display resolution
- Compact size and light weight
- Functional and ergonomic design
- Eight color modes
- Three calibration modes: Manual, Semi-Automatic, Automatic
- Three levels of sensitivity enhancement: Normal, High, Ultra
- Stadiametric Rangefinder
- Display Off function
- Defective pixel repair function
- Updatable firmware
- Wide operating temperature range (-25°C to +40°C / -13°F to +104°F)
- Fully waterproof (IPX7 rated)

Video/Audio Recording

- Built-in video and sound recorder
- Integration with iOS and Android devices
- Wi-Fi remote control and viewing using a smartphone
- Storing photos and videos in Cloud when using the Stream Vision 2 App

Battery Pack

- Quick Change Li-Ion Battery Pack APS 3
- Charging from USB Power Bank

Package Contents

- Axion F Thermal Imager
- APS 3 rechargeable battery
- Power Adapter
- USB Cable
- Carrying case
- Hand strap
- Quick User Manual
- Lens-cleaning cloth
- Warranty sheet

Description

Axion F thermal imaging monoculars are designed for use both at night-time and during the day in difficult weather conditions (fog, smog, rain), as well as where obstacles are present that impede the detection of a target (branches, tall grass, dense shrubs etc.).

Unlike night-vision devices that are based on electron-optical converters, thermal vision monoculars do not require an external light source and are resistant to the effects of bright light.

Axion F monoculars can be used for night-time hunting, observation and terrain orientation, and carrying out rescue operations.

To get started, see the sections:

Battery Charging

Power supply

Button Operation


Operation

Button


Power device on


short press

Power device off


long press for 3 secs

Turn display off


long press for less than 3 secs

Turn display on


short press

Calibrate the microbolometer


short press

Switching amplification levels


short press

Control discrete digital zoom


long press

Video Recorder

Button

Start/pause/resume video recording



short press

Stop video recording



long press

Switch to video / photo



long press

Capture a photo



short press

Main Menu

Button

Enter main menu



long press

Navigation upwards/rightwards



short press

Navigation downwards/leftwards



short press

Confirm selection



short press

Exit submenu without confirming selection



long press

Exit menu (switch to viewing mode)



long press

Quick Menu

Button

Enter quick menu



short press

Switch between quick menu options



short press

Increase value



short press

Decrease value



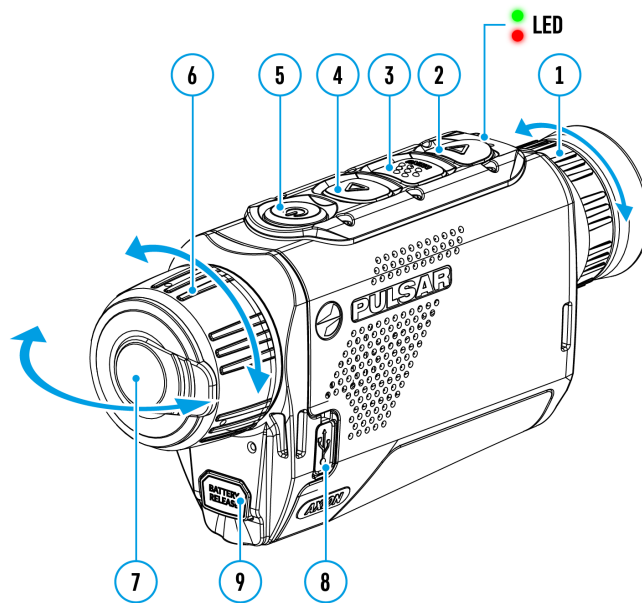
short press

Exit quick menu



long press

Powering on and Image Settings



1. Remove the lens cover **(7)**. Secure the cover to the strap using the magnet built into the cover.
2. Turn the device on with a short press of the **ON/OFF (5)**
3. Adjust the resolution of the icons on the display by rotating the diopter adjustment ring on the eyepiece **(1)**.
4. To focus on the object under observation, rotate the lens focus ring **(6)**.
5. Select the desired calibration mode in the main menu: Manual **(M)**, Semi-automatic **(SA)** or Automatic **(A)**.
6. Calibrate the image with a short press of the **ON/OFF (5)** button (where calibration mode **SA** or **M** has been selected). Close the lens cap before manual calibration.
7. Select the required **amplification level ("Normal"**



, "High"



, "Ultra"

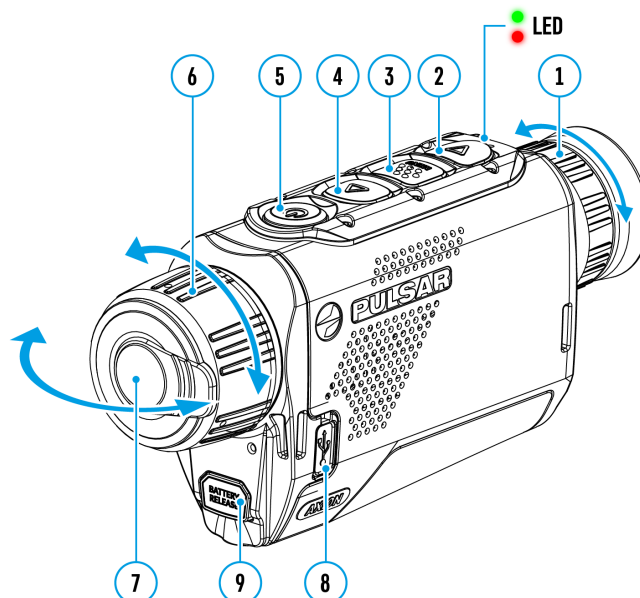


-) by briefly pressing the **UP (4)** button.
8. Activate the quick menu by briefly pressing the **MENU (3)** button to adjust the brightness, contrast and smooth digital zoom (for more details see the **Quick Menu** section).
 9. Turn the device off with a long press of the **ON/OFF (5)**.

Observation conditions: time of day, weather, different observation objects affect the image quality. Custom settings for brightness, display contrast as well as the function of adjusting the microbolometer sensitivity level will help to achieve the desired quality in a particular situation.

Attention! It is forbidden to point the riflescope lens at intensive energy sources, such as laser radiation emitting devices or the sun. It can disable the riflescope electronic components. Warranty does not cover damage arising from failure to comply with the operating rules.

External Power Supply



Power can be supplied from an external source such as a 5 V power bank.

1. Attach the external power source to the device's USB connector **(8)**.
2. The device will switch to operation from the external power source, while the APS3 battery will be gradually recharged.
3. An icon of a battery



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

4. If the device is operated from an external power source and the APS3 battery is not connected, an icon



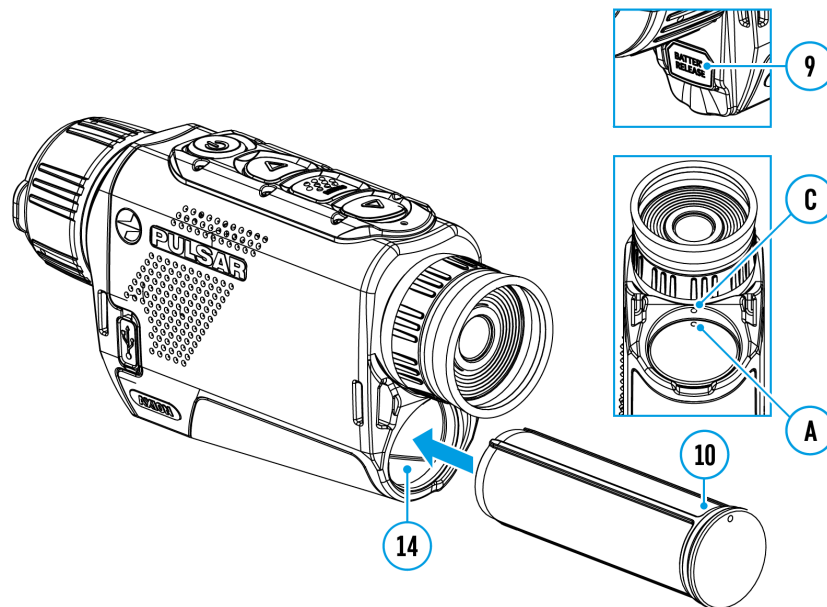
is displayed.

5. When the external power supply is disconnected, the device switches to the internal power supply without the device powering off.

Important! Power Bank must be connected to the device with the battery installed.

Attention! Charging the built-in battery and the APS3 battery from the power bank at an external temperature below 0 °C (32 °F) can reduce the battery life. When using external power, connect the Power Bank to the device after it has been turned on and working for several minutes.

Battery Installation



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

1. Insert the battery **(10)** into the assigned slot on the device's casing **(14)**, aligning the images to form a 'dot' on the device **(C)** and the battery **(A)**.
2. When properly installed, the battery is locked into the slot with a special clip.
3. To remove the battery from the device, press the Battery Release button **(9)**.

Recommendations for Battery Use

- The battery 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.

Battery Charging

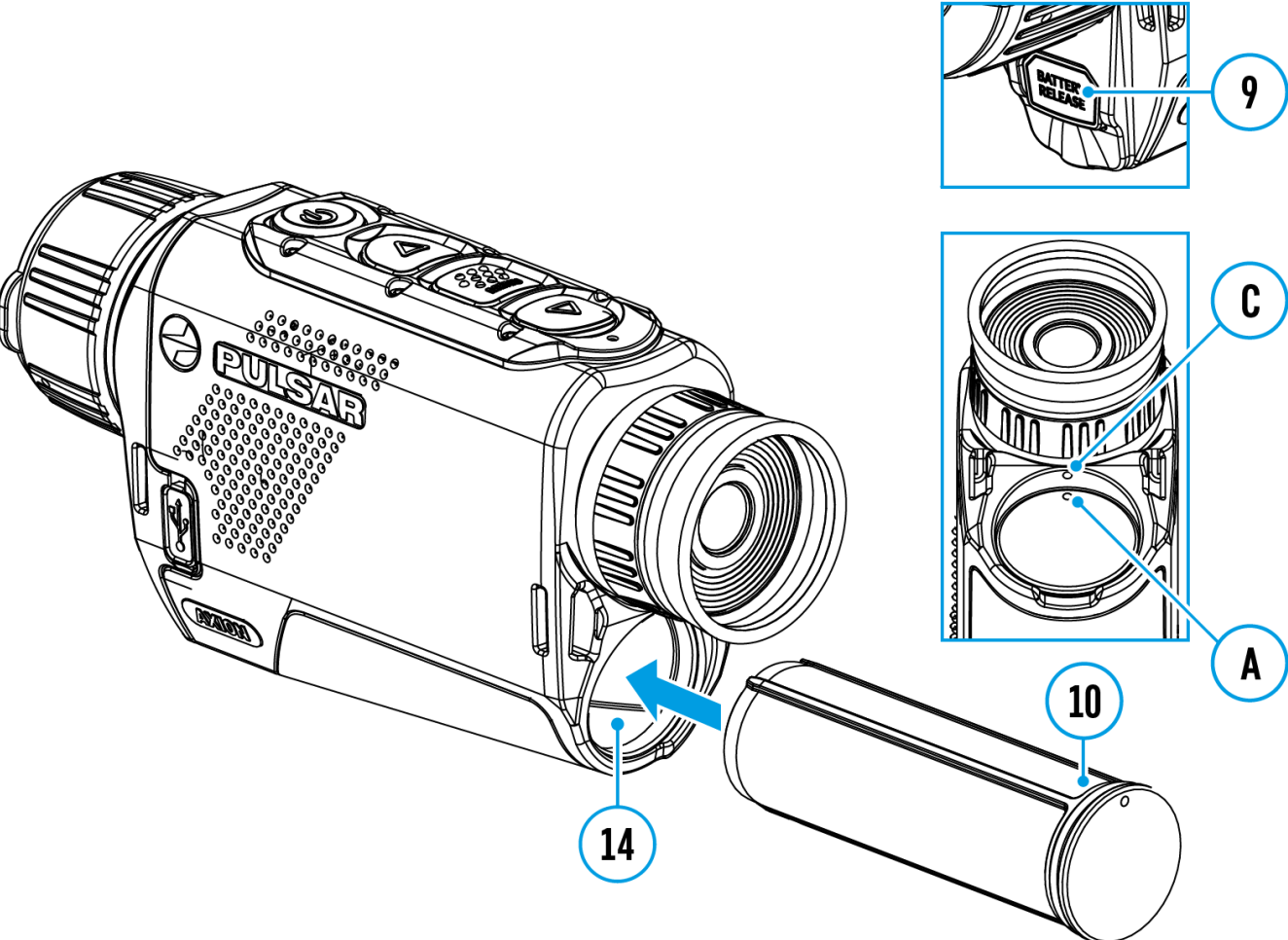
The **Axion F** thermal imager comes with an APS 3 rechargeable Lithium-ion battery. Before first use, make sure the battery is fully charged.

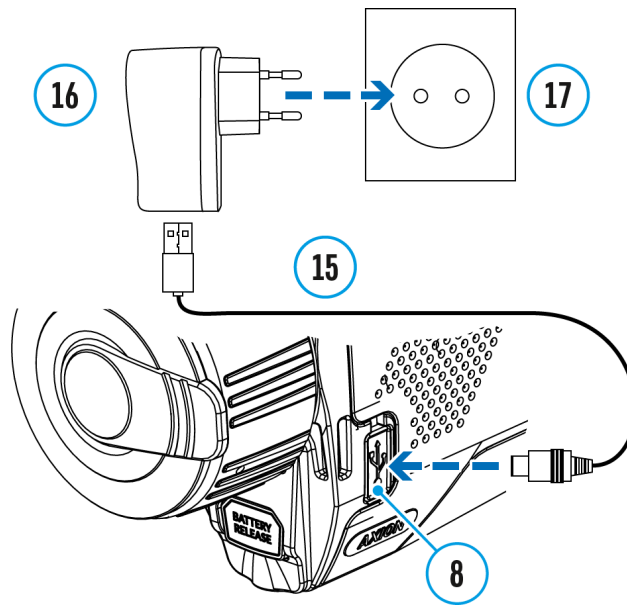
The icon



in the status bar will flash when the battery is low. The battery needs to be charged.

Option 1





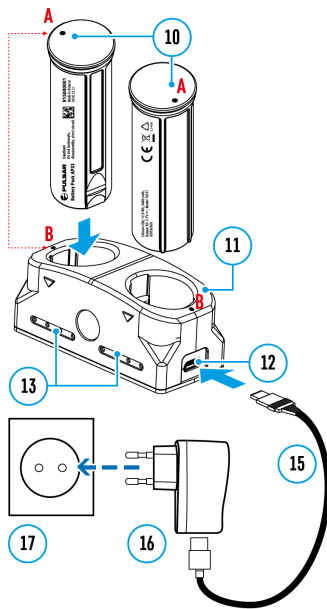
1. Install the battery (10) into its slot on the device case (14) by aligning the icons to form a 'dot' on the unit and the battery.
2. Attach a USB cable (15) to the microUSB connector (8) on the device.
3. Connect the other end of the USB cable (15) to the power adapter (16) or to a USB socket connected to another power sources with rated output of 5V or less.
4. Connect the power adapter (16) to the mains power supply (17).
5. Wait until the battery is fully charged (indication in the status bar:



)

Note: The PB8I Power Bank may be used as a charger.

Option 2



1. Insert the battery **(10)** fully along the guide rail into the APS charger* **(11)** slot as far as it will go.
2. Point **A** on the battery and Point **B** on the charger should be aligned.
3. Two batteries* can be charged at the same time – a second slot is provided for this.
4. Attach the microUSB plug on the USB cable **(15)** to the microUSB connector on the power adapter **(16)**. Plug the device into a 100–240V power outlet **(17)**.
5. Attach the second plug of the microUSB cable to the socket **(12)** of the charger **(11)**.
6. The LED indicator **(13)** will light up battery charge status (see table).
7. Wait until the battery is fully charged (LED indication **(13)**):



).

(13) LED Indicator**

Battery charge status

●	Battery charge from 0 to 10%. Charger not connected to the mains power supply
●	Battery charge from 0 to 10%. Charger connected to the mains power supply
●●●●	Battery defective. Do not use the battery!
●	Battery charge from 10 to 20%
●●	Battery charge from 20 to 60%
●●●	Battery charge from 60 to 95%



Battery completely charged. Charging will automatically stop. The battery can be disconnected from the charger.

* Available separately

**The indicator displays the current level of charge of the battery for 30 seconds when the APS charger is not plugged in. When the power is connected, the display shows the current status of the battery constantly, the LEDs additionally flickering to indicate the battery charging process.

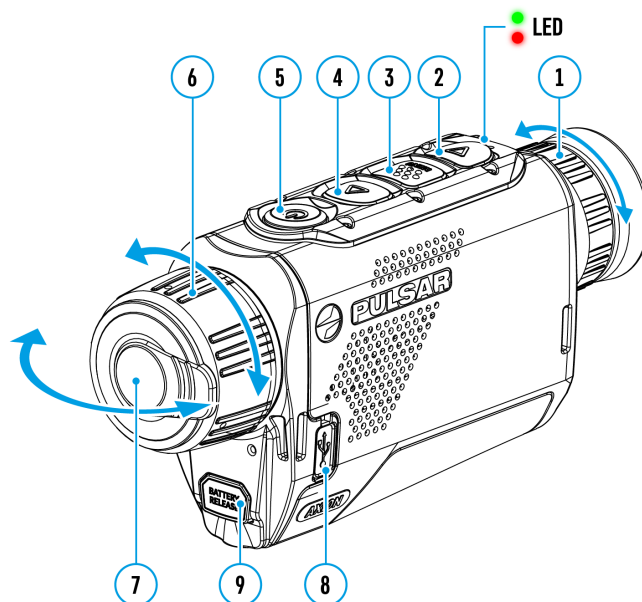
Precautions

- Always use the APS charger to charge APS 3 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.
- It is not recommended to charge the batteries with a charger connected to the USB port of a computer or laptop. It can damage the computer.
- 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 APS 3 batteries.
- Do not disassemble or deform the battery or charger.
- Do not drop or strike the battery or charger.
- The battery and charger must not be immersed in water.
- Keep the battery out of the reach of children.

Getting Started

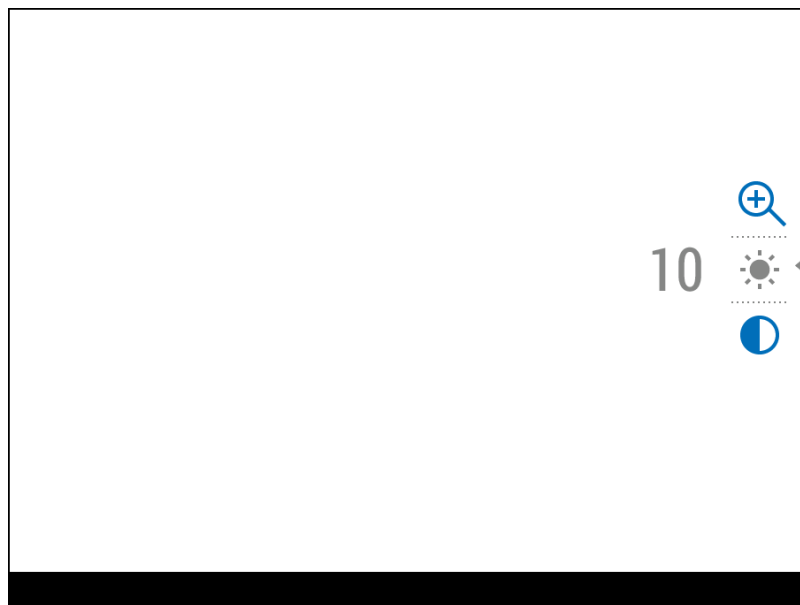
Interface

Quick Menu



The basic settings (adjusting brightness and contrast, using the Stadiametric Rangefinder function) can be changed using the quick access menu.

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



Brightness



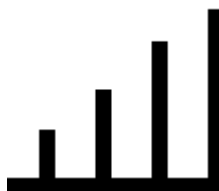
– press the **UP (4)/DOWN (2)** buttons to change display brightness from 0 to 20.

Contrast



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

Stadiometric Rangefinder



– change the position of special marker lines to determine the distance to the object being observed by pressing the **UP (4)/DOWN (2)** buttons (for more details see the Stadiometric Rangefinder section).

Smooth Digital Zoom



– press the **UP (4)/DOWN (2)** button to change the value of the digital zoom from 3 to 12. The digital zoom changes in 0.1 increments.

Note: the magnification value is reset to the base value when the device is switched off

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

Status Bar



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

- Color Mode:



– White hot



– Black hot

- Amplification level
- Smoothing Filter (displayed when the function is on)
- Calibration Mode (in Automatic calibration mode a countdown timer



will appear instead of the calibration mode icon 3 seconds before automatic calibration begins).

- Microphone
- Magnification
- Wi-Fi Connection
- Time
- Power Indication:



– charge level if the device is powered by a battery



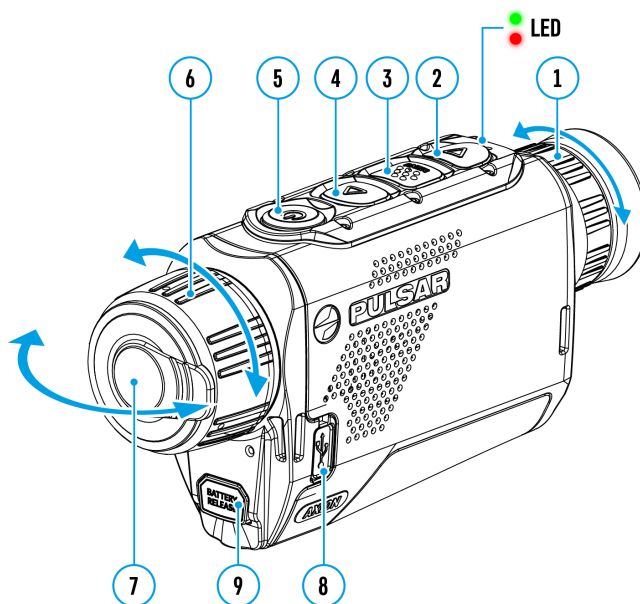
– charge level if the device is charging and powered by a battery



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

Functions

USB Connection



USB connection



- ▶ Use as power
- Use as memory card

1. Connect one end of the USB cable to the Micro-USB **(9)** 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 (5)** 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 (4)/DOWN (2)** buttons.
 6. Confirm the selection with a short press of the **MENU (3)** button.
-

Power

- In this mode, a PC/laptop is used as an external power supply. The status bar shows the icon

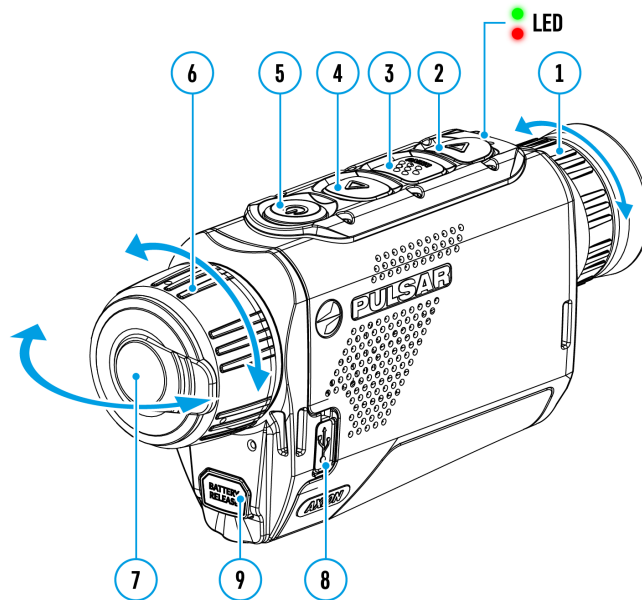


- The device continues operating and all functions are available.
 - The Battery Pack installed in the device is not being charged.
 - When the USB is disconnected from the device when in the **Power** mode, the device keeps operating with the Battery Pack if it is available and sufficiently charged.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

Memory Card

- 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.
- If the device is in **Memory Card** mode and is disconnected from USB, the device will remain on.

Stadiametric Rangefinder



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



1. Select the **Stadiametric Rangefinder** function with short presses of the **MENU (3)** button until the icon



is selected.

2. You will see on the display: measurement bars, icons of three reference objects and respective distances for the three objects.
3. Position the lower fixed bar under the object being ranged.
4. By pressing the **UP (4)/DOWN (2)** buttons, move the upper horizontal bar relative to the lower fixed bar until the object fits entirely between the two bars. The distance to the object is automatically recalculated as you move the upper line.
5. Exit the rangefinder mode with a long press of the **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.
- Before it appears on the display, a measured distance value is rounded up to 5m for larger values and rounded down to 1m for smaller values.
- To select the unit of measurement (Meters or Yards), go to the **General Settings**



menu item ⇒ **Units of Measure**



submenu.

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 is displayed in the status bar as follows:

Indication on the status bar	Connection Status
	Wi-Fi is switched off
	Wi-Fi connection is in progress
	Wi-Fi is switched on, no connection with device
	Wi-Fi is switched on, device connected

- The device is recognized by an external device as AXION_XXXX where XXXX are the four last digits of the serial number.
- After entering the password on a mobile device (see **Password Setup** subsection of the **Wi-Fi Settings** section for more information on setting a password) and setting up a connection, the icon



in the status bar will change to

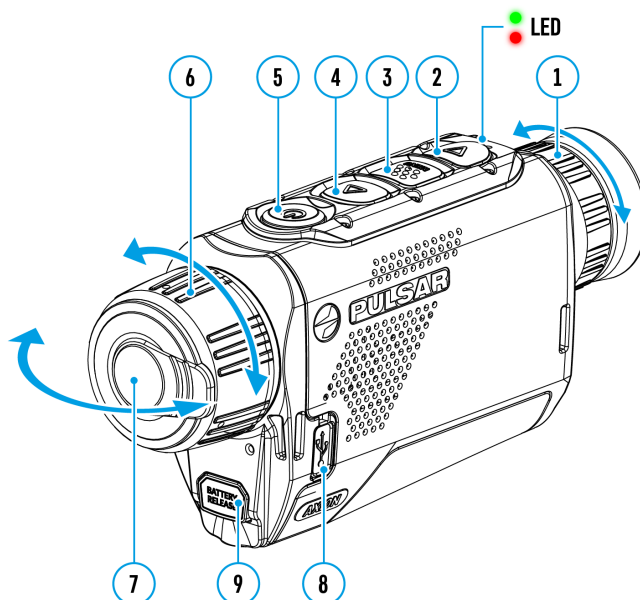


- The Wi-Fi function will turn off automatically if there is not enough battery power for Wi-Fi. The battery icon will turn red



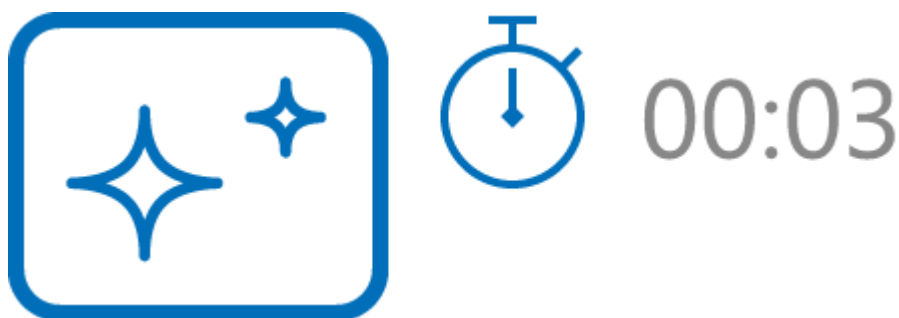
and flash. To use the Wi-Fi function again, you need to charge the battery.

Display-Off Function



This function darkens the screen, which aids the user's concealment. However, the device stays on.

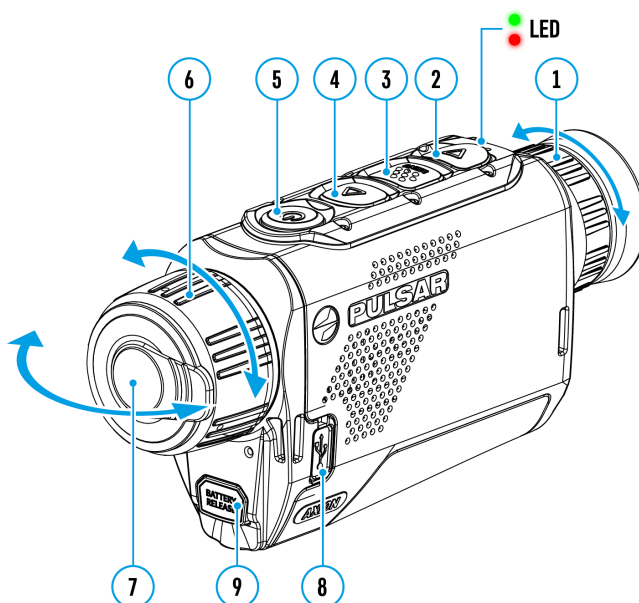
When this function is in use, the device switches to the standby mode, which allows it to be switched on quickly if necessary.



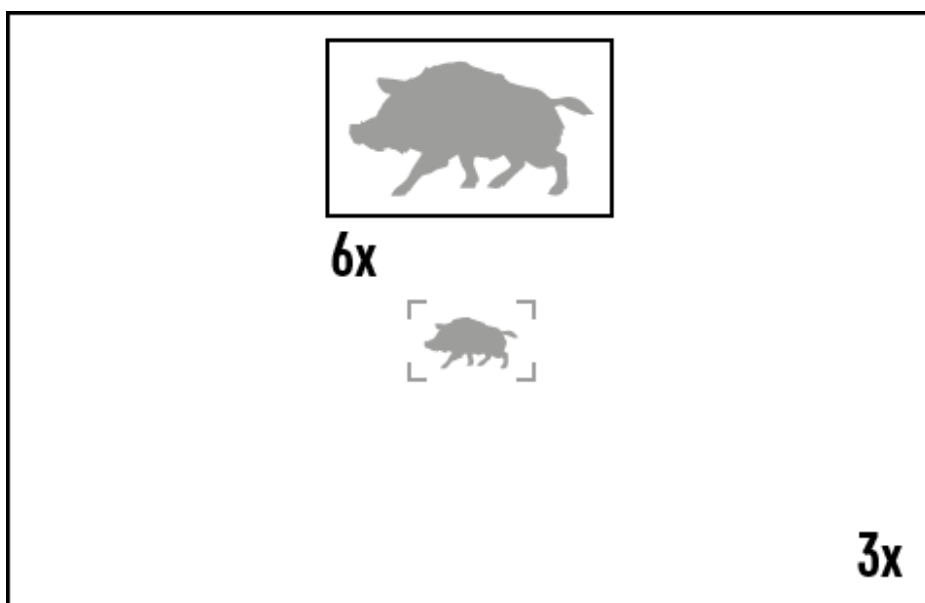
1. When the device is on, press and hold the **ON/OFF (5)** button. The display will turn off, the current time and the **"Display off"** icon will appear.
2. Turn the display back on with a short press of the **ON/OFF (5)** button.

- When you press and hold the **ON/OFF (5)** button, the display shows the **"Display off"** icon with a countdown. Pressing & holding the button down for the duration of the countdown will power the device off completely.

PiP Function



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



- To turn on and off the **PiP** function see the **PiP Mode** section.
- Press and hold the **UP (4)** button to change the magnification ratio in the **PiP** window.
- The zoomed image is displayed in a dedicated window, while the image in the rest of the screen is displayed at base magnification 3x.
- When the **PiP** is turned on you can control both the discrete and smooth digital zoom. In this case the zoom value changes only take place in the dedicated window.
- When the **PiP** function is turned off, the screen will display at the magnification that was set in **PiP** mode.

Discrete Digital Zoom

The device functionality allows you to quickly increase the base magnification (see **Optical Magnification** line in the table of **Technical Specifications**) by 2 or 4 times as well as return to the base magnification.

Note: the magnification value is reset to the base value when the device is switched off

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

Software

Firmware Update

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

Is your firmware up to date?

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

Stream Vision 2



Install the Stream Vision 2 application to download files, update firmware, control the device by remote control and broadcast images from your device to a smartphone or a tablet via WiFi.

We recommend using the latest version – Stream Vision 2.



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

[Download from Google Play](#)

[Download from App Store](#)

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

Stream Vision 2 Manual

[Android](#)

[iOS](#)

Maintenance

Technical Maintenance and Storage

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

- Wipe the exterior surfaces of metal and plastic parts with a cotton cloth. Do not use chemically active substances, solvents, etc. as these will damage the paint.
- Clean the electric contacts of the Battery Pack and the device's battery slot using a non-greasy organic solvent.
- Check the objective and eyepiece lenses and if required, remove dust and sand from the optics (it is preferable to use a non-contact method). Cleaning of the exterior surfaces of the optics should be done with cleaners designed especially for this purpose.
- Store the device in a carrying case. Remove the Battery Pack for long-term storage.

Technical Inspection

It is recommended to inspect your device before each use. Check the following:

- The device should be free of any cracks or deformations.
 - The lenses should be free of cracks, grease, dirt or debris.
 - The battery level of the device should be full. Electrical sockets should be free of salts, oxidation, or other debris.
 - All controls should be responsive.
-

Troubleshooting

For technical support please contact support@pulsar-vision.com.

Answers to frequently asked questions about the devices can also be found in the **FAQ** section.

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.

Solution

To ensure a stable Wi-Fi connection, relocate the device to an area with fewer or no Wi-Fi networks.

Possible cause

The device has a 5 GHz network enabled, but the smartphone only supports 2.4 GHz.

Solution

Switch the device's Wi-Fi bandwidth to 2.4 GHz.

More information on solving problems with connection to Stream Vision 2 by following the link.

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.

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

Possible cause

Calibration is required.

Solution

Perform the calibration according to Calibration Mode section.

The device does not turn on

Possible cause

Battery Pack is discharged.

Solution

Charge the Battery Pack.

Device malfunction

Solution

In case of any malfunctions during operation, try resetting the device by long pressing the ON/OFF button for 10 seconds.

The device does not operate from an external power source

Possible cause

The USB cable is damaged.

Solution

Replace the USB cable.

Possible cause

The external power supply is discharged.

Solution

Charge the external power supply (if necessary).

Black screen after calibration

Solution

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

When the device is turned on, the calibration frequency is at first higher, then decreases (if the automatic calibration mode is enabled)

Possible cause

After turning on the device, it takes some time for the sensor temperature to stabilize. This is normal and is not a defect.

Poor image quality / Detection range reduced

Possible cause

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

Wi-Fi signal is missing or interrupted

Possible cause

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

Solution

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

More information on solving problems with connection to Stream Vision 2 by following the link.

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

Possible cause

In warm climates, objects in the background of a thermal image heat up differently because of thermal conductivity, generating a high temperature contrast and a sharper thermal image.

In cold climates, objects in the background of a thermal image will cool down to roughly the same temperature, which leads to a greatly reduced temperature contrast and a degraded image quality. This is normal for all thermal imaging devices.

The image of the object being observed is missing

Possible cause

The object is behind glass, which obstructs thermal vision.

Solution

Remove the glass.

The supplied USB cable is broken

Solution

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

Self-repair of the cable is prohibited.

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