PULSAR

THERMAL IMAGING SCOPE

HELION 2 XQ

USER
MANUAL

ENGLISH | FRANÇAIS | DEUTSCH | ESPAÑOL | ITALIANO | РУССКИЙ

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

Electromagnetic compliance

This product complies with EU Standard EN 55032:2015, Class A.

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

For detailed information about the device, please download the complete user manual:

https://www.pulsar-nv.com/glo/products/33/thermal-imaging-scopes/helion-version-2/

FR **Attention!** Les monoculaires d'imagerie thermique Helion 2 XQ nécessitent une licence s'ils sont exportés hors de votre pays.

Compatibilité électromagnétique

Ce produit est conforme à la norme européenne EN 55032:2015, Classe A.

Attention! L'utilisation de ce matériel dans un environnement résidentiel peut produire des interférences radio.

Pour des informations détaillées sur la lunette, prière de télécharger le manuel complet d'utilisation:

www.pulsar-nv.com/glo/fr/produits/439/lunettes-limageriethermique/helion-version-2/

DE **Achtung!** Wärmebildgeräte Helion 2 XQ benötigen eine Lizenz, wenn sie außerhalb Ihres Landes exportiert werden.

Elektromagnetische Verträglichkeit

Das Produkt entspricht der Europäischen Norm EN 55032:2015, Klasse A.

Warnung! Der Betrieb dieses Gerätes im Wohngebiet kann Funkstörungen verursachen.

Für detaillierte Informationen über das Gerät, bitte das vollständige Handbuch herunterladen:

https://www.pulsar-nv.com/glo/products/33/thermal-imaging-scopes/helion-version-2/

ES **¡Atención!** Los monoculares de visión térmica Helion 2 XQ requieren una licencia si se exportan fuera de su país.

Compatibilidad electromagnética

Este producto cumple con la reglamentación de la UE EN 55032:2015, Clase A.

Advertencia: el funcionamiento de este equipo en áreas residenciales podría causar radio interferencias.

Para obtener información detallada acerca del dispositivo, descargue el manual de usuario al completo:

www.pulsar-nv.com/glo/es/productos/64/alcances-de-imagentermica/helion-version-2/

IT **Attenzione!** I monocoli termici Helion 2 XQ necessitano una licenza se esportati al di fuori del proprio paese.

Compatibilità elettromagnetica

Questo prodotto è conforme alla norma europea EN 55032:2015, Classe A.

Avvertenza: l'uso di questa apparecchiatura in un'area residenziale può causare perturbazioni radioelettriche.

Per informazioni dettagliate sul dispositivo, scaricare il manuale d'uso completo:

https://www.pulsar-nv.com/glo/products/33/thermal-imaging-scopes/helion-version-2/

RU **Внимание!** Тепловизионные монокуляры Helion 2 XQ требуют лицензии, если они экспортируются за пределы Вашей страны.

Электромагнитная совместимость.

Данный продукт соответствует требованиям европейского стандарта EN 55032:2015, Класс А.

Внимание: эксплуатация данного продукта в жилой зоне может создавать радиопомехи.

Для получения подробной информации о приборе скачайте полное руководство по эксплуатации:

https://www.pulsar-nv.com/glo/ru/produkty/44/teplovizory/helion-version-2/

CE ♻ EHC

v.1020

⚡ TECHNICAL SPECIFICATIONS

Model	XQ50F	XQ38F
SKU	77397	77396
Microbolometer		
Type	uncooled	
Resolution, Pixels	384x288	
Frame Rate, Hz	50	
Pixel Pitch, μm	17	
Optical Characteristics		
Magnification, x	4.5	3.0
Smooth Digital Zoom, x	4.5 – 18	3.0 – 12
Digital Zoom	x2 / x4	x2 / x4
Objective Lens	F50 / 1.0	F35 / 1.0
Field of View (Horizontal), °/ m@100 m	7.5 / 13	10.7 / 18.7
Diopter Adjustment, D	±5	
Range of Detection, m (Deer Type Object)	1800	1350
Display		
Type	AMOLED	
Resolution, Pixels	1024x768	
Operational Characteristics		
Power Supply, V	3 – 4.2 V	
Battery Type	Li-Ion Battery Pack IPS7	
Capacity	6400 mAh	
Output Voltage	DC 3.7 V	
External Power Supply	5 V (USB)	
Max. Operating Time on Battery Pack (at t=22°C), Hours*	9	
Level of Protection (acc. to IEC 60529), with Battery Installed	IPX7	
Operating Temperature	-25 °C ...+50 °C	
Dimensions, mm	226x55x58	234.6x55x58
Weight (without Battery), kg	0.5	0.45
Video Recorder		
Video / Photo Resolution, Pixels	1024x768	
Video / Photo Format	.mp4 / .jpg	
Built-In Memory	16 GB	
Built-In Memory Capacity	About 5 h video or > 100,000 pictures	
Wi-Fi Channel		
Frequency	2.4 GHz	
Standard	802.11 b / g	
Line-of-Sight Reception Range, m **	up to 15	

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

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

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

⚡ PACKAGE CONTENTS

- Helion 2 XQ thermal imaging scope
- IPS7 Battery Pack
- Battery charger with mains charger
- USB cable
- Carrying case
- Hand strap
- Quick start guide
- Lens cloth
- Warranty card

⚡ DESCRIPTION

Helion 2 XQ thermal imaging scopes are based on an IR sensor (uncooled microbolometer). The scopes are designed for the use both in the night-time and during the day in adverse weather conditions (fog, smog, rain) to see through obstacles hindering detection of targets (branches, tallgrass, thick bushes, etc.).

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

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

⚡ DISTINCTIVE FEATURES

- User-friendly interface
- Four operating modes: Forest, Rocks, Identification, User
- Three calibration modes: (Manual, Semi-Automatic, Automatic)
- Eight colour palettes for observation
- Defective pixels repair function
- Image Detail Boost function
- Stadiametric rangefinder
- Display Off function
- Functional and ergonomic design
- Durable metal body
- Updatable firmware
- Wide operating temperature range (-25 to +50°C)

VIDEO/AUDIO RECORDING
- Built-in video and sound recorder
- Integration with macOS and Android devices
- Direct YouTube streaming and recording to the Internet using the Stream Vision application
- Wi-Fi remote control and viewing using a smartphone

BATTERY PACK
- Quick release Li-Ion Battery Packs IPS7 / IPS14
- Operating time in Wi-Fi mode up to 18 hours*
- Operates on AA batteries**
- USB charging capability for IPS7 / IPS14

* with IPS14 Battery Pack (purchased separately).

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

⚡ EXTERNAL VIEW AND CONTROLS

1. Lens cover
2. Lens focus ring
3. Battery Pack
4. Micro-USB connector
5. Eyeshade
6. Diopter adjustment ring
7. Record button REC
8. Navigation button DOWN
9. Button MENU
10. Navigation button UP
11. Activation / calibration button ON
12. Lever for Battery Pack

⚡ DESCRIPTION OF CONTROLS

| Button	Device status	First short press:	Other short presses	Long press:
Button ON / OFF	Device is off	Power device on	Calibrate the sensor	Turn display off / Power device off
	Display OFF mode	Turn display on	Calibrate the sensor	
	Device is on	Microbolometer calibration		
Navigation button UP	Regular (observation)	Switch observation modes		Switch colour palettes
	Main menu	Navigation up / right		
	Quick menu	Change parameters		
Button MENU	Regular (observation)	Enter quick menu		Enter main menu
	Main menu	Confirm selection		Exit submenu without confirming selection / Exit menu (switch to observation mode)
	Quick menu	Switch between quick menu options		
Navigation button DOWN	Regular (observation)	Control discrete zoom		PiP on / off
	Main menu	Navigation down / left		
	Quick menu	Change parameters		
Record button REC	Video	Start video recording	Pause / resume video recording	Stop video recording / Switch to photo mode
	Photo	Take a photograph		Switch to video mode

⚡ USING THE BATTERY PACK

Helion 2 XQ thermal imaging scopes are supplied with a rechargeable Li-Ion Battery Pack IPS7 which allows operation for up to 9 hours. Please remember to charge the Battery Pack before first use.

CHARGING

- Lift the lever (C) of the charging base.
- Remove the protective cover from the Battery Pack.
- Insert the battery into the charger until it stops, as shown in Fig., lower the lever (C).
- Upon installation, a green indicator (D) 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 and 75%;
  - three times if the battery charge ranges from 76% to 99%.
- If the indicator lights green continuously, the battery is fully charged. You can disconnect it from the charger.
- To charge the battery, connect the micro-USB plug of the USB cable to port (E) of the charger.
- Connect the plug of the USB cable to the mains adapter.
- Plug the mains adapter into a 100-240 V socket and the battery charging process will start.
- If the indicator of the charger lights up red continuously upon battery installation, the battery charge level
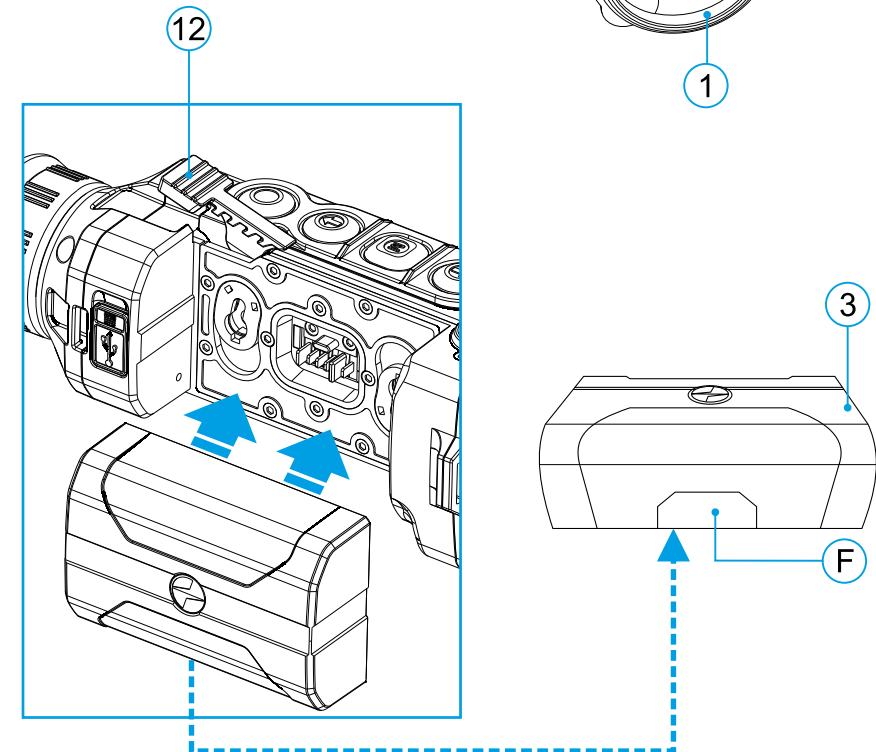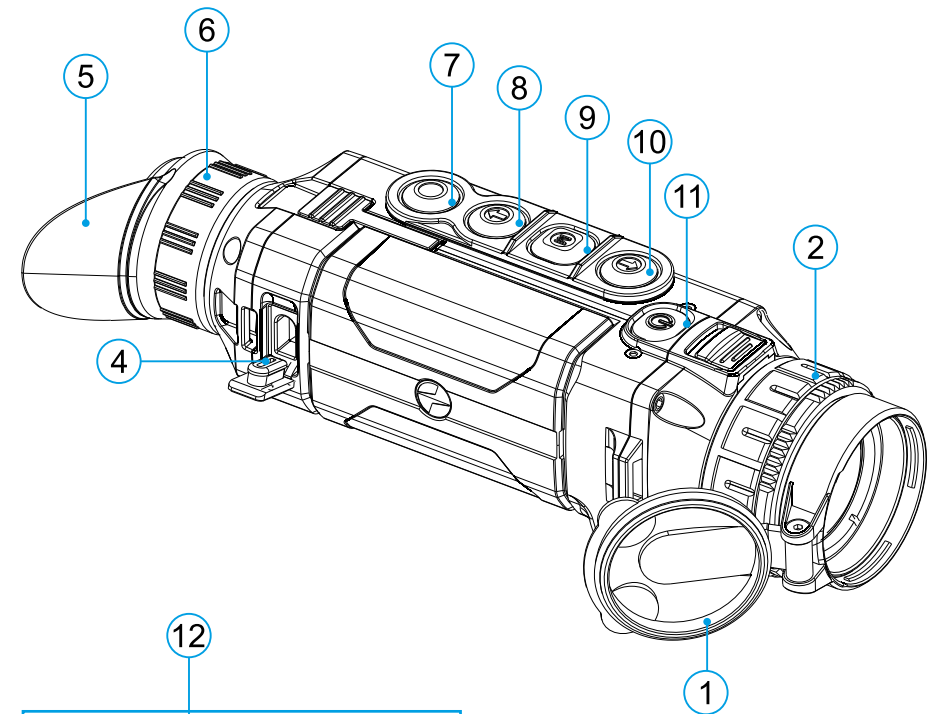
is probably lower than acceptable (the battery has been in deep discharge for too long). In this case, keep the battery in the charger for a long time (up to several hours), then remove and re-insert it. If the indicator then starts blinking green, the battery is good but if it keeps lighting up red it's defective. Do not use the battery!
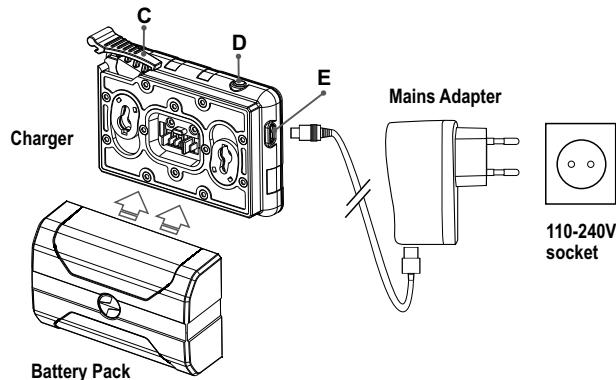
INSTALLATION

- Remove the protective cover from the Battery Pack.
- Lift the lever **(12)**.
- Insert the battery into the dedicated slot in the device body until it stops so that element F (see Fig. 2 on the flyleaf) is located below.
- Lock the battery by lowering the lever.

PRECAUTIONS

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

⚡ EXTERNAL POWER SUPPLY

The thermal imaging scope can be powered with an external power supply such as Power Bank (5 V).

- Connect the external power supply to the USB port **(4)** of the device.
- The device will switch to operation from the external power supply and the IPS7 Battery Pack will begin slowly charging.
- The display will show the battery icon ⌁ with the charge level as a percentage.

Charger

C **D** **E**

Mains Adapter

Battery Pack

110-240V socket

- If the device operates on external power supply but the IPS7 Battery Pack is not installed, the icon ▬■▬ is shown.
- When external power supply is disconnected, the device will switch to the internal IPS7 Battery Pack without powering off.

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

⚡ OPERATION

WARNING! Do not point the objective lens of the device at intensive sources of light such as devices emitting laser radiation or the sun. This may render the electronic components inoperative. The warranty does not cover damage caused by improper operation.

POWERING ON AND IMAGE SETUP

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

⚡ MICROBOLOMETER CALIBRATION

Calibration allows levelling of the microbolometer background temperature and eliminates image flaws (such as vertical stripes, frozen images, etc.).

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

Select the desired mode in the menu option CALIBRATION ⌖ .

M Mode (Manual). Close the lens cover then press the ON **(11)** button briefly. Having finished calibration, open the lens cover.

SA Mode (Semi-Automatic). Calibration is activated with a short press of the ON **(11)** button. You do not have to close the lens cover (the sensor is closed with an internal shutter automatically).

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

⚡ DISCRETE DIGITAL ZOOM

The device allows you to quickly increase base magnification (please refer to the Magnification line in the Technical Specifications Table) by two times or four times, as well as to return to the base magnification. To operate the discrete digital zoom, press successively the DOWN **(8)** button.

⚡ QUICK MENU FUNCTIONS

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

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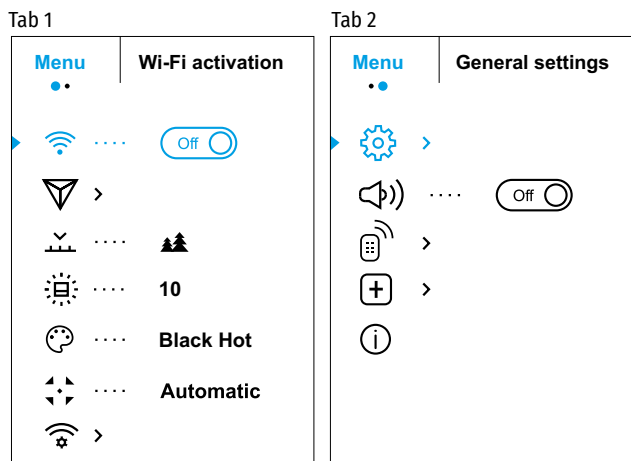- To toggle between the functions below, press successively the M **(9)** button.

- Brightness ☀ – press the UP **(10)** / DOWN **(8)** buttons to change display brightness from 0 to 20.
- Contrast ◑ – press the UP **(10)** / DOWN **(8)** buttons to change display contrast from 0 to 20.
- To exit the menu, press and hold the M **(9)** button, or wait 10 seconds to exit automatically.

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

- Smooth digital zoom ⊕ – press the UP **(10)** / DOWN **(8)** buttons to change digital zoom value from the base value of 3.0x in the Helion 2 XQ38F and 4.5x in the Helion 2 XQ50F to the maximum value of 12x and 18x respectively. Smooth digital zoom is in 0.1 increments.

Note. The actual magnification is the product of the base magnification and smooth digital zoom values. For example: the device's base magnification is 3.0x and smooth zoom value is x1.7, so the actual magnification is 5.1x (3.0x1.7).

- Stadiametric rangefinder ▥ press the UP **(10)** / DOWN **(8)** buttons to change the distance between special markers to determine the distance to the observed object. Please refer to section STADIAMETRIC RANGEFINDER for more details.
- Base mode ▲ ▲▲ ◉ – allows you to select one of the three modes as a base for the User mode.

⚡ MAIN MENU FUNCTIONS

OPERATION MODE:

- Enter the main menu with a long press of the M **(9)** button.
- Press the UP **(10)** / DOWN **(8)** buttons to switch between the main menu options.
- Main menu navigation is cyclical: as soon as the last menu option of the first tab is reached, the first menu option of the second tab starts.
- Enter a submenu of the main menu with a short press of the M **(9)** button.
- Exit a submenu with a long press of the M **(9)** button.
- Automatic exit takes place after 10 seconds of inactivity.
- When exiting from the menu the cursor location is memorized only for the duration of the working session (i.e. until the unit is turned off). When restarting the device and entering the menu the cursor will be located on the first menu option.

GENERAL VIEW OF MENU:

Tab 1   Tab 2

Menu	Wi-Fi activation
📶 · · · ·	Off
▽ ›	
⌄ · · · ·	▲▲
⊡ · · · ·	10
🎨 · · · ·	Black Hot
✣ · · · ·	Automatic
📶 ›	

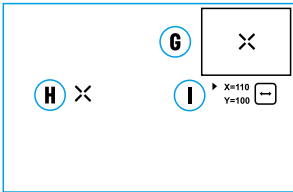| Menu	General settings
⚙ ›	
🔊 · · · ·	Off
📶 ›	
⊞ ›	
ⓘ	

MAIN MENU CONTENTS AND DESCRIPTION

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

Image Detail Boost
▽
The Image Detail Boost function increases the sharpness of the contours of heated objects, increasing their detail.

The results of the function depend on the selected mode and the conditions: the higher the object contrast the more noticeable the effect.

This option is enabled by default but can be disabled in the main menu.

Turn on / off Image Detail Boost:
- Press and hold the M **(9)** button to enter the main menu.
- Use the UP **(10)** / DOWN **(8)** buttons to select the Image Detail Boost menu option.
- Turn Image Detail Boost on / off with a short press of the M **(9)** button.

Mode
⌄
The device has four operating modes of the thermal imager: FOREST (mode for object observation in low thermal contrast conditions), ROCKS (mode for object observation in high thermal contrast conditions), IDENTIFICATION (high imagery resolution), USER (personalized brightness and contrast settings).

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

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

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

◉ **Identification.** 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.** 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 also possible in the quick menu.

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

Graphics Brightness
☀
- Press and hold the M **(9)** button to enter the main menu.
- Select the submenu with the UP **(10)** / DOWN **(8)** buttons.
- Enter the Icon brightness option with a short press of the M **(9)** button.
- Set the desired graphics brightness (menu and status bar icons) from 1 to 10 with the UP **(10)** / DOWN **(8)** buttons.
- Confirm your selection with a short press of the M **(9)** button.

Colour palettes ⊙	Selection of colour palette.
	The base image mode is White Hot. To select an alternative palette:
	• Press and hold the M **(9)** button to enter the main menu.
	• Select the Colour Mode icon with the UP **(10)** / DOWN **(8)** buttons.
	• Enter the submenu with a short press of the M **(9)** button.
	• Select one of the palettes below using the UP **(10)** / DOWN **(8)** buttons.
	• Confirm your selection with a short press of the M **(9)** button.
	Black Hot – black and white palette (white colour corresponds to low temperature, black colour to high temperature); Red Hot; Red Monochrome; Rainbow; Ultramarine; Violet; Sepia.
	Note. You can also switch from a selected colour palette to the base mode with a long press of the UP **(10)** button.
Calibration Mode ⟨⟩	Selection of calibration mode.
	There are three calibration modes: Manual, Semi-Automatic and Automatic.
	To select the calibration mode:
	• Press and hold the M **(9)** button to enter the main menu.
	• Select the Calibration icon with the UP **(10)** / DOWN **(8)** buttons.
	• Enter the submenu with a short press of the M **(9)** button.
	• Select one of the calibration modes below with the UP **(10)** / DOWN **(8)** buttons.
	• Confirm your selection with a short press of the M **(9)** button.
	Automatic. In the automatic mode the need for calibration is based on the software algorithm. Calibration starts automatically.
	Semi-Automatic. In the semi-automatic mode the user determines the need for calibration (based on the actual image status).
	Manual. In the manual (silent) calibration mode the user determines the need for calibration. The lens cover must be closed during calibration.
Wi-Fi Settings 📶	This menu option allows you to set up your device for operation in a Wi-Fi network.
Password Setup PAS	This menu option allows you to set a password to access your thermal imager from an external device. The password is used to connect an external device (i.e. smartphone) to your thermal imager.
	• Enter the Wi-Fi setting submenu with a short press of the M **(9)** button.
	• Enter the Password setup submenu with a short press of the M **(9)** button. The default password is 12345678.
	• Set the desired password with the UP **(10)** / DOWN **(8)** buttons (button UP **(10)** to increase the value; button DOWN **(8)** to reduce). Switch between digits with a short press of the M **(9)** button.
	• Save the password and exit the submenu with a long press of the M **(9)** button.
Access Level Setup 👥	This option allows you to configure the appropriate access level to your device made available to the Stream Vision application.
	Owner level. A Stream Vision user has full access to all device functions.
	Guest level. A Stream Vision user only has access to the real time video stream from the device.
General Settings ⚙	The following settings are available:
Language 🌐	Language selection:
	• Enter the submenu Language with a short press of the M **(9)** button.
	• Select one of the available interface languages with a short press of the UP **(10)** / DOWN **(8)** buttons: English, French, German, Spanish, Russian.
	• Save selection and exit the submenu with a long press of the M **(9)** button.

Date 📅	Date setup:
	• Enter the submenu Date with a short press of the M **(9)** button. The date format is displayed as: YYYY/MM/DD (year/month/day).
	• Select the correct values for the year, month and date with a short press of the UP **(10)** / DOWN **(8)** buttons.
	• Switch between digits with a short press of the M **(9)** button.
	• Save the selected date and exit the submenu with a long press of the M **(9)** button.
Time 🕐	Time setup:
	• Enter the submenu Time with a short press of the M **(9)** button.
	• Select the desired time format with a short press of the UP **(10)** / DOWN **(8)** buttons: 24 or PM/AM.
	• Switch to hour setup with a short press of the M **(9)** button.
	• Select hour value with a short press of the UP **(10)** / DOWN **(8)** buttons.
	• Switch to minute setup with a short press of the M **(9)** button.
	• Select minute value with a short press of the UP **(10)** / DOWN **(8)** buttons.
	• Save the selected time and exit the submenu with a long press of the M **(9)** button.
Units of Measure ⌗	Selection of units of measure:
	• Enter the submenu "M/Y" with a short press of the M **(9)** button.
	• Select the desired units of measurement with a short press of the UP **(10)** / DOWN **(8)** buttons: Meters or Yards.
	• Save the selection with a short press of the M **(9)** button.
	• Menu exit will take place automatically.
Format 🖫	This menu option allows you to format the device's memory card (erase all files from its memory).
	• Enter the Format submenu with a short press of the M **(9)** button.
	• With a short press of the UP **(10)** / DOWN **(8)** buttons select **Yes** to format the memory card or **No** to return to the submenu.
	• Confirm selection with a short press of the M **(9)** button.
	• If Yes is selected the display will show **Do you want to format memory card?** and **Yes** and **No** options. Select **Yes** to format the memory card.
	• The message **Memory card** formatting means that formatting is in progress and when completed the message **Formatting completed** is shown.
	• If **No** is selected the formatting is aborted and you return to the submenu.

Default Settings
↩

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

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

If No is selected the action is aborted and you return to the submenu.

The following settings will be returned to their defaults:

Operating mode of video recorder - video

Observation mode - Forest

Calibration mode - Automatic

Language - English

Microphone - Off

Wi-Fi - Off (default password)

Magnification - Off (no digital zoom)

PiP - Off

Colour mode - White Hot

Units of measure - Meters

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

Microphone
🎤

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

The microphone is off by default.

Defective Pixel Repair
⊞

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

The defective pixels on the sensor may proportionally increase in size when digital zoom is activated.

Helion 2 XQ thermal imagers allow the user to repair defective pixels by the software-based method or to abort deletion.

- Enter the Defective pixel repair submenu with a short press of the M **(9)** button.
- Select the icon ⊞ with a short press of the M **(9)** button.
- A marker **(H)** ⚔ appears on the left side of the display.
- On the right side of the display appears a 'magnifying glass' **(G)** - a magnified image in the frame with a fixed cross, designed for easier detection of a defective pixel and to match the pixel with the marker, and horizontal and vertical arrows for X and Y axes **(I)** showing the marker's movement.
- With a short press of the UP **(10)** / DOWN **(8)** buttons move the marker to align it with a defective pixel.
- Switch the direction of the marker from horizontal to vertical and vice versa with a short press of the M **(9)** button.
- Align the defective pixel with the fixed cross in the frame with the UP **(10)** / DOWN **(8)** buttons - the pixel should disappear.
- Delete the defective pixel with a short press of the ON **(11)** button.
- A brief OK message appears in the frame if successful.
- You can then delete another defective pixel by moving the marker along the display.
- Exit the Defective pixel repair option with a long press of the M **(9)** button.

Warning! The display of a thermal imager may have 1- 2 pixels represented as bright white or coloured (blue, red) dots which cannot be deleted and are not a defect.

RESTORE DEFAULT PIXEL MAP

- This option allows you to cancel the deletion of the defective pixels and return them to the original state:
- Enter the Restore default pixel map submenu with a short press of the M **(9)** button.
- Select Yes if you wish to return to default pixel map, or No if you do not.
- Confirm the selection with a short press of the M **(9)** 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 this information on the display, select the Device information menu option using the UP **(10)** / DOWN **(8)** buttons and briefly press the M **(9)** button.

⚡ STATUS BAR

| ⏺ | ⛰ | ✧ A | 16x | 🎤 | 🚫📶 | 12:30AM | 🔋 |

The status bar is located in the lower part of the display and shows information on the actual operating status of the device, including:

- Colour palette (shown only if the Black Hot palette is selected)
- Observation mode
- Calibration mode (in the automatic calibration mode, three seconds before automatic calibration a countdown timer 00:01 is shown in place of the calibration mode icon).
- Current full magnification (for example, 16x)
- Microphone
- Wi-Fi connection status
- Time
- Battery charge level (if the device is powered by the Battery Pack) or External battery power indicator ▬◼▬ (if the device is powered by an external power supply).

⚡ VIDEO RECORDING AND PHOTOGRAPHY

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

Before using this feature please set the date and time (see the corresponding menu options).

The built-in recorder operates in two modes – VIDEO and PHOTO:

VIDEO MODE. VIDEO RECORDING ▷

- The device is in the VIDEO mode upon turning on.
- In the top left corner of the display you will see the video icon and the remaining recording time in the format HH:MM (Hours:Minutes); ▷ 12:10.
- Start video recording with a short press of the REC **(7)** button.
- Pause video recording with a short press of the REC **(7)** button.
- Resume recording video with a short press of the REC **(7)** button.
- Stop recording video with a long press of the REC **(7)** button.
- When video recording is started the icon disappears and the icon REC and a recording timer in the format MM:SS (Minutes:Seconds) appears instead; ●REC | 00:25.
- Video files are saved to the internal memory card after video recording stops.
- Switch between modes (Video-> Photo-> Video...) with a long press of the REC **(7)** button.

PHOTO MODE. PHOTOGRAPHY 📷

- Switch to the PHOTO mode with a long press of the REC **(7)** button.
- Take a picture with a short press of the REC **(7)** button.
- The image freezes for 0.5 sec while the photo is saved to the internal memory.
- In the top left corner of the display you will see a camera icon 📷 and the number of pictures you are able to take. If the number is less than 100 the actual number will be shown (i.e. 98) but if more than 100 pictures can be taken >100 will be displayed next to the icon.

Notes:
- you can enter and operate the menu during video recording;
- the counter for multimedia files CANNOT BE RESET;
- recorded videos and photos are saved to the internal memory card in the format img_xxx.jpg (photos); video_xxx.mp4 (videos) where xxx is a three-digit counter for videos and photos;

Warning:
- The maximum duration of a recorded file is five minutes. After this time expires, a video is recorded into a new file. The number of recorded files is limited by the capacity of the device's internal memory;
- regularly check the free capacity of the internal memory and move recorded footage to other storage media to free up space on the internal memory card.

⚡ WI-FI FUNCTION

Helion 2 XQ thermal imagers feature a wireless connection option (Wi-Fi) which links them with external appliances (smartphone, tablet PC).

- Activate the main menu by long pressing the M **(9)** button.
- Select the Wi-Fi activation menu option using the UP **(10)** / DOWN **(8)** buttons and briefly press the M **(9)** button icon to activate the Wi-Fi module.

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

Connection Status	Indication on the status bar
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	📶🖥

- The device is recognized by an external device as Helion2_XXXX where XXXX are the four last digits of the serial number.
- After entering the password (default: 12345678) on a mobile (see Wi-Fi Setup section of the Main Menu Functions section of this manual for more information on setting a password) and setting up a connection, the icon 📶 in the status bar changes to 🖥 .

⚡ STADIAMETRIC RANGEFINDER

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

- Select the Stadiametric Rangefinder function with short presses of the M **(9)** button until the icon ⛰ is selected.
- You will see on the display: measurement bars, icons of three reference objects and respective distances for the three objects.
- There are three pre-set reference objects:
  - Hare - height 0.3m
  - Wild boar - height 0.7m
  - Deer - height 1.7m

🦌	235m
🐗	96m
🐇	41m

- Position the lower fixed bar under the object being ranged and by pressing the UP/ DOWN 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.
- If ranging does not take place within 10 seconds, the information disappears from the display.
- To select the unit of measurement (Meters or Yards), go to the respective menu option.
- 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.
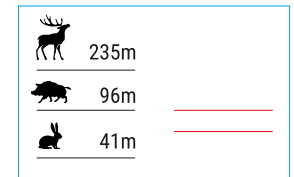
- Exit the rangefinder mode with a long press of the M **(9)** button or wait 10 seconds to exit automatically.

⚡ DISPLAY OFF FUNCTION

This function deactivates the transmission of an image to the display by minimizing its brightness. This prevents accidental disclosure. The device keeps running.

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

⏱ 00:03

Display off
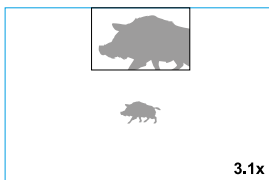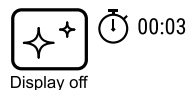
⚡ PIP FUNCTION

PiP (Picture in Picture) allows you to see a zoomed image simultaneously with the main image in a dedicated window.

- Turn on/off the PiP function with a long press of the DOWN **(8)** button.
- Change the zoom ratio in the PiP window with a short press of the DOWN **(8)** button.
- The zoomed image is displayed in a dedicated window with the full optical magnification being shown.
- The main image is shown with optical magnification ratio which corresponds to x1.0.
- When PiP is turned on, you can operate the discrete and smooth digital zoom. The full optical magnification will take place only in the dedicated window.
- When PiP is turned off, the image is shown with the optical magnification set for the PiP function.

3.1x

⚡ STREAM VISION

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

Detailed instructions on the operation of Stream Vision technology can be found in a separate booklet or on the www.pulsar-vision.com website.

Note: the Stream Vision application allows you to update the firmware features of your Pulsar Device.

How to update instructions are as below:

- Download free of charge Stream Vision App on Google Play or App Store. Scan the QR codes to download Stream Vision free of charge:
- Connect your Pulsar device to your mobile device (smartphone or tablet).
- Launch Stream Vision and go to section My Devices.
- Select your Pulsar device and press Check Updates.

STREAM VISION

ANDROID APP ON Google play

Available on the App Store

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.

- Wait for the update to download and install. Pulsar device will reboot and will be ready to operate.

USB connection

▶ Use as power

Use as memory card
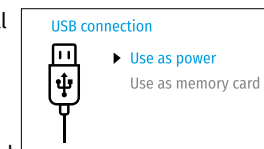
⚡ USB CONNECTION

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

CONNECTION MODES:

USB Mass storage device. 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 USB Mass storage device mode, the device remains in the Off state. Turn the device On for further operation.

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.

⚡ MAINTENANCE AND STORAGE

Maintenance should be carried out at least 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 is allowed.
- Clean the electric terminals of the Battery Pack and the device's battery slot using a grease-free organic solvent.
- Check the objective and eyepiece lenses. If required, remove dust and sand (preferably by a noncontact method). Clean the external surfaces of the lenses with products expressly designed for this purpose.
- Store the device in a carrying case. Remove the Battery Pack for long-term storage.

⚡ TECHNICAL INSPECTION

Maintenance should be carried out at least 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 is allowed.
- Clean the electric terminals of the Battery Pack and the device's battery slot using a grease-free organic solvent.
- Check the objective and eyepiece lenses. If required, remove dust and sand (preferably by a noncontact method). Clean the external surfaces of the lenses with products expressly designed for this purpose.

• Store the device in a carrying case. Remove the Battery Pack for long-term storage.

⚡ TROUBLESHOOTING

The table below lists problems that may occur when using the device. Carry out the recommended checks and troubleshooting steps in the order listed in the table. If there are defects not listed in the table or it is impossible to resolve the problem yourself, the device should be returned for repair.

Malfunction	Possible cause	Corrective action
The thermal imager will not turn on.	Battery Pack is discharged.	Charge the Battery Pack.
The device does not operate on external power supply.	The USB cable is damaged.	Replace the USB cable.
	External power supply is discharged.	Charge the external power supply.
The image is blurry, with vertical stripes or an uneven background.	Calibration is required.	Perform the calibration according to the instructions.
The image is too dark.	Brightness or contrast level is too low.	Adjust the brightness or contrast.
Poor image quality / detection range reduced.	Problems described may arise in adverse weather conditions (snow, rain, fog, etc.).	
Smartphone or tablet PC cannot be connected to the device.	Password in the device was changed.	Delete network and connect again inserting the password saved in the device.
	There are too many Wi-Fi networks in the area device is located which may cause signal interference.	To ensure stable Wi-Fi performance, move the scope to an area with few or no Wi-Fi networks.
No Wi-Fi signal or erratic signal.	The device is beyond reliable Wi-Fi range. There are obstacles between the device and the signal receiver (i.e. concrete walls).	Place the device in line-of-sight and within range of the Wi-Fi signal.
Colour stripes appear on the display or the image disappears.	The device has accumulated static charge during operation.	As soon as the impact of the static charge is over, the device may reboot automatically. Alternatively, please turn off and restart the device.
The image quality during the device operation at below zero temperatures is worse than at positive temperatures.	Because of variations in thermal conductivity, objects (surrounding environment, background) under observation become warm more quickly at above-zero temperatures, which allows higher temperature contrast, so the quality of the image produced by a thermal imager will be better. At low operating temperatures, objects under observation (background) normally cool down to roughly identical temperatures, which leads to reduced temperature contrast and to image quality (precision) degradation. This is normal for thermal imaging devices.	
There is no image of the observed object.	You are looking through glass.	Remove glass from the field of view.

Repair of the device is possible within 5 years.