PULSAR

THERMAL IMAGING FRONT ATTACHMENT

KRYPTON FXG50

USER MANUAL

ENGLISH | FRANÇAIS | DEUTSCH | ESPAÑOL | ITALIANO | РУССКИЙ

EN **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.
Attention! ! A license is required for Thermal Imager KRYPTON FXG50 when exporting outside your country.
Improvements may be made to the design of this product to enhance its user features.
The current version of the Operation Manual can be found on the website:
www.pulsar-vision.com

FR **Compatibilité électromagnétique.**

Ce produit est conforme aux exigences de la norme européenne EN 55032: 2015, classe A.
Attention: L'utilisation de ce produit dans une zone résidentielle peut provoquer des interférences radio.
Attention! Les modules d'imagerie thermique Krypton FXG50 nécessitent l'obtention d'une licence s'ils sont exportés hors de votre pays.
La configuration peut être modifiée afin d'améliorer l'utilisation de l'appareil.
La version actuelle du manuel d'utilisation est disponible sur le site
www.pulsar-vision.com

DE **Elektromagnetische Verträglichkeit.**

Dieses Produkt entspricht den Anforderungen der Europäischen Norm EN 55032:2015, Klasse A.
Achtung: Der Betrieb dieses Produktes in Wohngebieten kann Funkstörungen verursachen.
Achtung! Die Wärmebildvorsatzgeräte Krypton FXG50 erfordern eine Lizenz, wenn sie über die Grenzen Ihres Landes exportiert werden.
Änderungen im Design zwecks höherer Gebrauchseigenschaften des Produktes vorbehalten.
Die aktuelle Version der Bedienungsanleitung finden Sie unter www.pulsar-vision.com

ES **Compatibilidad electromagnética.**

Este producto cumple con los requisitos de la norma europea EN 55032:2015, Clase A.
Advertencia: el uso de este producto en la zona residencial puede provocar interferencias de radiofrecuencia.
¡Atención! Los visores acoplables de imagen térmica Krypton FXG50 requieren una licencia si se exportan fuera de su país de usted.
El diseño de este producto está sujeto a modificaciones con el fin de mejorar sus características de uso.
Encontrará la última edición del manual de usuario en el sitio web www.pulsar-vision.com

IT **Compatibilità elettromagnetica.**

Questo prodotto è conforme ai requisiti della norma europea EN 55032:2015, Classe A.
Attenzione: l'uso di questo prodotto in un'area residenziale può causare dei radiodisturbi.
Attenzione! E' necessaria una licenza per dispositivo frontale a visione termica FXG50 nel caso in cui lo si portasse all'estero.
Per migliorare le proprietà del prodotto nella sua costruzione possono essere apportate delle modifiche.
La versione aggiornata delle istruzioni d'uso è disponibile sul sito www.pulsar-vision.com

RU **Электромагнитная совместимость.**

Данный продукт соответствует требованиям европейского стандарта EN 55032:2015, Класс A.
Внимание: эксплуатация данного продукта в жилой зоне может создавать радиопомехи.
Внимание! Тепловизионные насадки Krypton FXG50 требуют лицензии, если они экспортируются за пределы Вашей страны.
Для улучшения потребительских свойств изделия в его конструкцию могут вноситься усовершенствования.
Актуальную версию инструкции по эксплуатации Вы можете найти на сайте www.pulsar-vision.com

v.0920

TECHNICAL SPECIFICATIONS

MODEL	KRYPTON FXG50
SKU	**76655**
Microbolometer	
Type	Uncooled
Resolution, Pixels	640x480
Pixel Pitch, µm	12
Frame Rate, Hz	50
Optical characteristics	
Magnification of Attachment, x	1
Recommended Daylight Dptics Magnification, x	1.5-6
Lens	F50/ 1.2
Field-of-View (Horizontal), deg/m per 100 m	8.7 / 15.4
Detection Range (Animal Height 1.7 m), m/y	2300 / 2297
Minimum Focusing Distance, m	5
Display	
Type	AMOLED
Resolution, Pixels	960x720
Operational characteristics	
Power Supply, V	3-4.2
Battery Type	Li-Ion Battery Pack IPS 7
Capacity	6400 mAh
Rated Output Voltage	DC 3.7 V
External Power Supply	5 V (USB)
Max. Battery Pack Life (at t = 22 °C), hours*	8
Operating Temperature, °C	-25 ... +50
Overall Dimensions, mm/inch	143x93x76 / 5.63x3.66x2.99
Weight (Without Battery and Monocular), kg/oz	0.52 / 18.34
Video recorder	
Photo/Video Resolution, Pixels	960x720
Video/Photo Format	.mp4/.jpg
Built-in Memory	16 GB
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.

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

PACKAGE CONTENTS

- Thermal Imaging Attachment
- Carrying Case
- IPS7 Battery Pack
- Battery Pack Charger
- Power Adapter
- USB Cable
- Quick Start Guide
- Lens-Cleaning Cloth
- Warranty Card

DESCRIPTION

Thermal Imaging Front Attachment KRYPTON FXG50 is a multipurpose device that allows you to quickly and easily transform a daylight optical sight into a thermal imaging one. The attachment is mounted on the lens of an optical sight with the help of adapters designed for various lens diameters. The attachment does not require any additional adjustment. The attachment is intended for various applications, including hunting, sport shooting, night photography & video recording, and surveillance.

FEATURES

- High resolution thermal imaging microbolometer
- Microbolometer pixel size of 12 microns
- High-resolution AMOLED display
- Easily converts daylight optical devices into thermal imaging devices
- Preserves the benefits of daylight optics in night-time conditions
- Three calibration modes (manual, semi-automatic and automatic)
- Four observation modes: Forest, Rocks, Identification, User
- Compatible with a wide range of daylight optical magnifications
- Detection distance up to 2300 m
- High caliber recoil resistance 12 gauge, 9.3x64, .375 H&H
- Instant start
- Display off function
- Built-in video recording
- Remote Firmware update
- Fully watertight (IPX7 protection class)
- Wide operating temperature range (-25 °C – +50°C)

VIDEO/AUDIO RECORDING

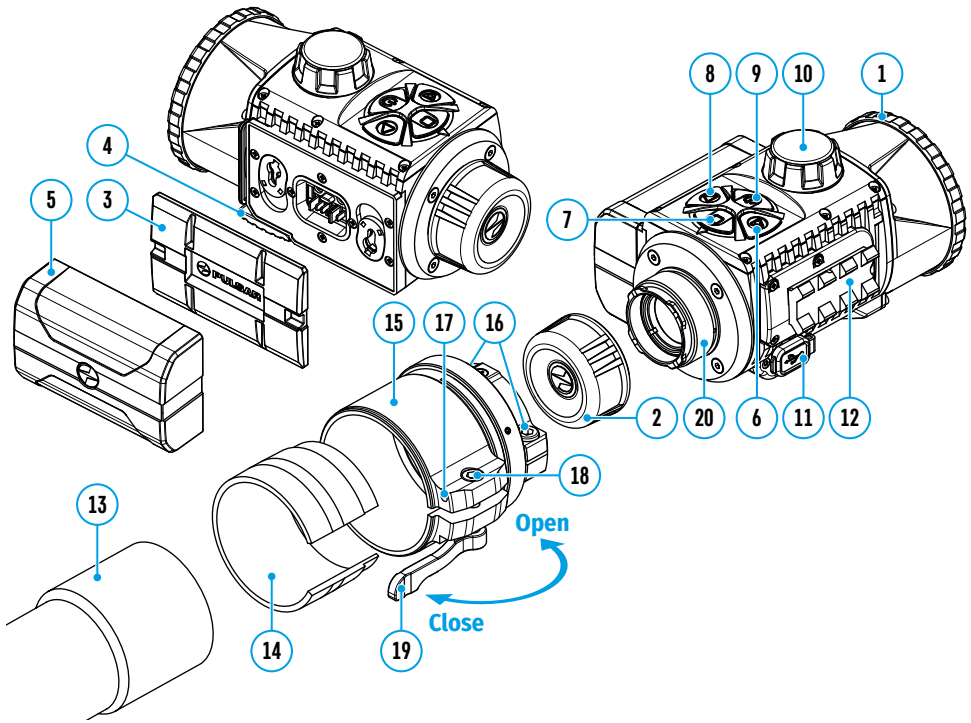
- Built-in video recorder
- Integration with iOS and Android devices
- Wi-Fi Smartphone remote control and surveillance
- YouTube Live broadcasting and direct recording on the Internet via a smartphone and the Stream Vision app.

BATTERY PACK

- Quick-change IPS7 Li-ion battery pack
- USB charging option

COMPONENTS AND CONTROLS

1. Lens cover
2. Eyepiece cover
3. Battery compartment cover
4. Battery locking lever
5. Battery pack
6. RIGHT/REC button
7. MENU button
8. LEFT/MODE button
9. ON/CALIBRATION button
10. Lens focus knob
11. USB port
12. Weaver rail
13. Objective lens end of daylight optical device
14. Insert
15. Adapter
16. Screws
17. Tightening screw
18. Screw
19. Adapter lever
20. Mount



Buttons operation

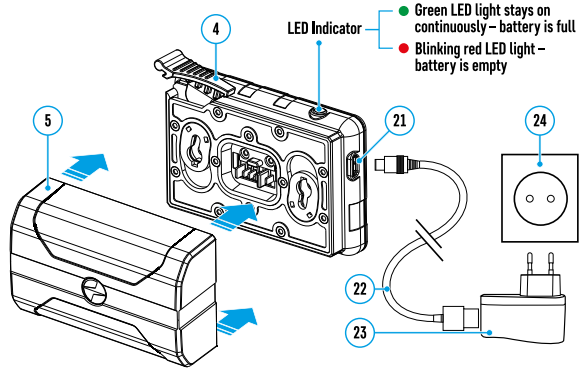
Control	Mode of operation	Single short press	Subsequent short presses	Long press
ON (9) ⏻	Device is turned off	Turn on device	Device calibration	Turn on device
	Display is turned off	Turn on display	Device calibration	Turn off device
	Device is turned on, quick menu, main menu			Turn off display/Turn off device
LEFT/MODE (8) ◁	Device is turned on	Observation modes		Select color palette
	Quick menu	Decrease value		
	Main menu	Down, counter-clockwise navigation		
MENU (7) ▢	Device is turned on	Enter quick menu		Enter main menu
	Quick menu	Upwards navigation		Exit quick menu
	Main menu	Confirm value, enter menu items		Exit menu items, main menu
RIGHT/REC (6) ▷	Device is turned on, video mode	Start video recording	Pause	Toggle between video/photo mode
	Device is turned on, video mode, recording is on	Pause	Continue video recording	Stop video recording
	Device is turned on, photo mode	Photography		Toggle between video/photo mode
	Quick menu	Increase value		
	Main menu	Up, clockwise navigation		

USING BATTERY PACK

The KRYPTON FXG50 thermal imaging attachment comes with a rechargeable Lithium-ion IPS7 Battery Pack that allows you to use the device for up to 8 hours. Charge the battery completely before first use.

CHARGING BATTERY PACK:

- Lift up the lever **(4)** of the charger.
- Remove the protective cover from the rechargeable battery.
- Insert the Battery Pack **(5)** into the Charger until it stops; lock the Battery by lowering the lever **(4)**.



Once installed on the charger, a green indicator lights up and begins flashing at a set interval:

– 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 99%.

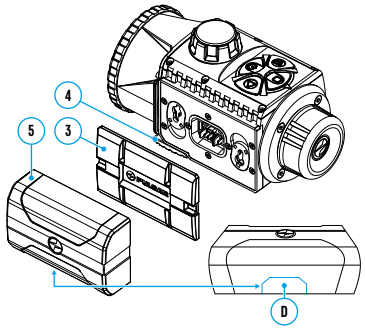
When the indicator is continuously green, the battery is completely charged. Disconnect the charger from the mains; disconnect the battery from the charger.

- To charge the battery, connect the micro-USB plug of the USB cable **(22)** to the Micro USB port **(21)** of the charger.
- Connect the second plug of the USB cable **(22)** to the Power adapter **(23)**.
- Plug the Power adapter **(23)** into a 100-240 V socket **(24)** – the battery charging process will start.

Attention! When the indicator of the charger is continuously red 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:

– Connect the charger with the battery inserted to the mains and leave it for a long time (up to several hours) to charge.
– Remove the battery from the charger and then re-insert it into the charger.
– If the indicator starts blinking green, the battery is fault free.
– If the indicator stays on red, the battery is faulty. Do not use the battery!

INSTALLING BATTERY PACK



- Lower the lever **(4)**.
- Remove the protective cover of the battery compartment **(3)**.
- Remove the Battery **(5)** from the Charger.
- Insert the Battery **(5)** into the slot on the device body specially designed for it so that the element D (a ridge on the Battery body) is facing downwards.
- Lock the Battery **(5)** by lifting the lever **(4)**.

PRECAUTIONS

- Always use the IPS charger supplied with the device (or purchased separately) to charge IPS batteries. Using the unsuitable charger can cause irreparable damage to the battery and fire.
- Do not charge the battery immediately after brining it from cold to warm. Wait at least 30 minutes for the battery to warm up.
- Do not leave the battery unattended while charging.
- Do not use the charger if it has been modified or damaged.
- Do not leave the battery in a charger connected to the network after charging is complete.
- Do not expose the battery to high temperatures and naked flame.
- Do not use the battery as a power source for devices that do not support IPS7 batteries.
- Do not disassemble or deform the battery.
- Do not drop or strike the battery.
- Do not submerge the battery.
- Keep the battery out of the reach of children.

Attention! Please do not use the IPS 14 Battery Pack with the KRYPTON FXG50 due to battery´s heavy weight.

RECOMMENDATIONS FOR USE

- The battery should be partially charged for long-term storage – 50 to 80 %.
- The battery should be charged at an ambient temperature of 0°C...+35°C (+32°F...+95°F). Otherwise, lifespan of the battery will decrease significantly.
- When using the battery at sub-zero 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...+50 °C (-13°F...+122°F) – this may reduce battery's life.
- The battery has a short-circuit protection. However, any situation that may cause short-circuiting should be avoided.

EXTERNAL POWER SUPPLY

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

- Attach the external power source to the device's USB connector **(11)**.
- The device will switch to operation from the external power source, while the IPS7 battery will be gradually recharged.
- An icon of a battery will appear on the display showing its charge as a percentage.
- If the device is operated from an external power source and the IPS7 battery is not connected, an icon is displayed .
- When the external power supply is disconnected, the device switches to the internal power supply without the device powering off.

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.

OPERATION

ATTENTION! The lens of the device must not be pointed at any sources of intense energy, such as laser-emitting devices or the sun. This may damage the electronic components in the device. Damage caused by failure to comply with the operating guidelines is not covered under warranty.

MOUNTING ATTACHMENT ON OPTICAL SIGHT

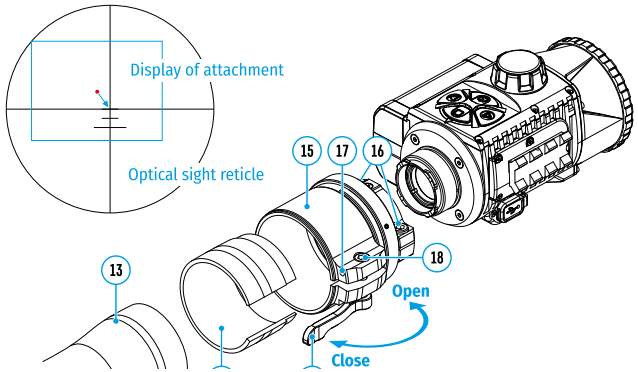
- Remove the eyepiece cover **(2)**.
- Select the Ring Adapter **(15)** (sold separately) with the insert **(14)** of the desired diameter depending on the outer diameter of the lens of your optical sight **(13)** (see table). The designation 42 mm / 50 mm / 56 mm in the name of the adapter means the lens diameter of the optical device.

Selection table for optical device inserts

Ring Adapter model	**The internal diameter of the insert needs to match the outer diameter of the objective lens housing of the daylight optical sight it is being installed on.**	
	Insert internal diameter, mm	**Suitable for lens housing of daylight optical sights with an outer diameter of, mm**
PSP Ring Adapter 42 mm	45.5	45.5
	46	46
	46.5	46.5
	47	46.7-47.6
	48	47.7- 48.6
	49	48.7-49.6
	50	49.7-50.6
PSP Ring Adapter 50 mm	51.6	51.6
	53.4	53.4
	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

Ring Adapter model	The internal diameter of the insert needs to match the outer diameter of the objective lens housing of the daylight optical sighte it is being installed on.	
	Insert internal diameter, mm	Suitable for lens housing of daylight optical sights with an outer diameter of, mm
PSP Ring Adapter 56 mm	60	59.7-60.6
	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

- Screw together the Ring Adapter **(15)** and the attachment along the threads of the mount **(20)**. The recommended lever **(19)** position is on the right (see Fig.).
- Evenly tighten the screws **(16)** until it just grips onto the Krypton mount **(20)** (they will be fully tightened in a later step)
- Push the insert **(14)** of your choice into the Ring Adapter **(15)** until it stops.
- Before installing the Ring Adapter **(15)** onto the optical sight, it is recommended to degrease the lens body of the optical sight **(13)**.



- Mount the Ring Adapter with the insert onto the lens of the daylight optical sight **(13)** as far as it will go.
- Move the lever **(19)** from its initial OPEN position to the CLOSE position.
- Ensure that the Ring Adapter fits snugly against the lens housing and there is no movement.
- If the Ring Adapter with the attachment moves freely relative to the lens of the optical sight **(13)**, do the following:
  - Loosen the locking screw **(17)** with a 2 mm Allen key.
  - Tighten the screw **(18)** using a 4 mm Allen key. The clamping force should ensure the tight operation of the lever **(19)**, while the Ring Adapter with the attachment should not move relative to the body of the optical sight **(13)**. If necessary, tighten or loosen the screw **(18)** to operate the lever **(19)** in the best way possible.
  - Tighten the locking screw **(17)** as far as it will go.
- Turn on the attachment by briefly pressing the ON **(9)** button.
- Align the display center with the crosshairs of the reticle by tilting the attachment.
- Align top and bottom display boundaries parallel to the horizontal axis of the optical sight by turning the attachment clockwise or counterclockwise.
- Having reached the best possible position of the attachment, tighten the two screws **(16)** until stop. The clamping force should be 7 N·m (use a torque screwdriver to check).

POWERING ON AND IMAGE SETUP

- Remove the lens cover **(1)** by turning it counterclockwise.
- Press the ON **(9)** button to turn on the thermal imager.
- Adjust the eyepiece diopter ring of your daylight optical sight until the symbols in the display are sharp. In future, it will not be necessary to adjust the eyepiece diopter, regardless of the distance and other conditions.
- Rotate the lens focus knob **(10)** to focus on the visual target.
- Enter the main menu with a long press of the MENU **(7)** button and select the desired calibration mode: manual (M), semi-automatic (SA) or automatic (A).
- Calibrate the image by briefly pressing the ON **(9)** button. Close the lens cover when calibrating manually.
- Select the desired observation mode (Forest, Rocks, Identification or User) by briefly pressing the MODE **(8)** button or in the main menu. User mode allows you to change and save user brightness and contrast settings in the quick menu.
- Select one of the two color palettes by a long press of the MODE **(8)** button.
- Activate the quick menu by briefly pressing the MENU **(7)** button to adjust the brightness and contrast of the display (see the Quick Menu Functions section of the manual for details).
- Upon completion of use, turn the device off by a long press of the ON **(9)** button.

MICROBOLOMETER CALIBRATION

Calibration enables the microbolometer temperature background to be equalized and defects in the image (such as vertical lines, phantom images etc.) to be eliminated.

During calibration, the image on the display freezes briefly for up to 1 second.

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

Select the required mode in the Calibration mode section of the menu ⁘.

M mode (manual).

- Secure the lens cap and briefly press the ON **(9)** button.
- After completing the calibration process, remove the lens cap.

SA mode (semi-automatic)

- Calibration is engaged by a brief press of the ON **(9)** button.
- The lens cap does not need to be secured (the microbolometer is closed by an internal shutter).

A mode (automatic)

- The device is calibrated autonomously, in accordance with the firmware algorithm.
- The lens cap does not need to be secured (the microbolometer is closed by an internal shutter).
- In this mode, the device may be calibrated by the user using the ON **(9)** button.

IMAGE DETAIL BOOST

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

QUICK MENU FUNCTIONS

- Enter the menu with a short press of the MENU **(7)** button.
- To select the functions below, press successively MENU **(7)** button.

Brightness ☀ – press the RIGHT (6)/ LEFT **(8)** buttons to change the display brightness value from 0 to 20.

Contrast ◐ – press the RIGHT (6)/ LEFT **(8)** buttons to change the display contrast value from 0 to 20.

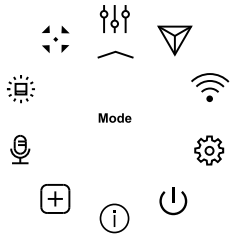
Basic mode ▲ ▲▲ 👁 – it allows you to select one of the three modes as the basic one for the user mode.

- To exit the menu, press and hold down the MENU **(7)** button, or wait 10 seconds for automatic exit.

MAIN MENU FUNCTIONS

- Enter the menu with a long press of the MENU **(7)** button.
- Press the RIGHT **(6)** / LEFT **(8)** buttons to move through the menu functions.
- One short press of the MENU **(7)** button opens a menu item.
- To exit the menu, press and hold down the MENU **(7)** button.

Automatic exit from the menu occurs after 10 seconds of inactivity.



MAIN MENU CONTENTS AND DESCRIPTION

Mode

The device has four observation modes of the thermal imager: Forest (observation mode of objects within low thermal contrast conditions), Rocks (observation mode of objects within high thermal contrast conditions), Identification (high detalization mode), and User (individual brightness and contrast settings).

Option 1:

- Briefly press the MODE **(8)** button to switch observation modes.

Option 2:

- Press and hold the MENU **(7)** button to enter the menu.
- Select the Mode option with RIGHT **(6)** / LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the menu.
- Select one of the modes described below with RIGHT **(6)** / LEFT **(8)** buttons.
- A short press of the MENU **(7)** button confirms the selection.

Rocks. This is the best mode when 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 when observing objects within adverse weather conditions (fog, mist, rain and snow). It allows you to recognize the characteristics of an object being observed more clearly. Increased detail may be accompanied by insignificant image graininess.

User. It allows you to configure and save custom brightness and contrast settings, as well as one of the three modes as a base.

Image Detail Boost

Turn on/off Image Detail Boost.

- Press and hold the MENU **(7)** button to enter the menu.
- Select the Image Detail Boost option with the RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the submenu.
- To turn Image Detail Boost on or off press RIGHT **(6)** or LEFT **(8)** buttons.
- Confirm your selection with a short press of the MENU **(7)** button.

Wi-Fi settings

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

- Press and hold the MENU **(7)** button to enter the menu.
- Select the Wi-Fi settings option with RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the menu section.

Wi-Fi activation

Turn Wi-Fi on/off.

- Select the Wi-Fi activation option with the RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the submenu.
- To turn Wi-Fi on or off press RIGHT **(6)** or LEFT **(8)** buttons.
- Confirm your selection with a short press of the MENU **(7)** button.

Password setup

This submenu allows you to set a password to access your thermal imaging attachment from a mobile device.

- Select the Password setup option with the RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the submenu.
- The default password (12345678) will appear on the screen.
- Set your desired password with the RIGHT **(6)** and LEFT **(8)** buttons. Press the MENU **(7)** button to toggle the digits.
- Press and hold down the MENU **(7)** button to save the password and exit the submenu.

Access level setup

This submenu allows you to set access levels of Stream Vision application to your device.

- Access level Owner. Stream Vision user has complete access to all device's functions.
- Access level Guest. Stream Vision user has access only to real time video stream from the device.
- Select the Access level setup submenu with the RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the submenu.
- Select Owner or Guest with the RIGHT **(6)** or LEFT **(8)** buttons.
- Confirm your selection with a short press of the MENU **(7)** button.

General Settings

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

- Press and hold the MENU **(7)** button to enter the menu.
- Select General Settings option with the RIGHT **(6)** or LEFT **(8)** buttons.
- A short press of the MENU **(7)** button opens the submenu.

Language

Interface language selection.

- Enter the Language submenu with a short press of MENU **(7)** button.
- Select one of the available interface languages (English, French, German, Spanish or Russian) with the RIGHT **(6)** or LEFT **(8)** buttons.
- Confirm your selection with a short press of the MENU **(7)** button.

Date

Date setup.

- Select the Date option with the RIGHT **(6)** or LEFT **(8)** buttons.
- Enter the submenu with a short press of MENU **(7)** button. The date appears in dd/mm/yyyy format (12/08/2020).
- Set the required year, month and day with the RIGHT **(6)** or LEFT **(8)** buttons. Press the MENU **(7)** button to toggle the digits.
- To save your chosen date and exit the submenu, press and hold the MENU **(7)** button.

Time

Time setup.

- Select the Time option with the RIGHT **(6)** or LEFT **(8)** buttons.
- Enter the submenu with a short press of the MENU **(7)** button.
- Select the time format (24-hour clock or AM/PM) by pressing the RIGHT **(6)** or LEFT **(8)** buttons.
- Switch to hour setup with a short press of the MENU **(7)** button.
- Select hour value with a short press of the RIGHT **(6)** or LEFT **(8)** buttons.
- Switch to minute setup with a short press of the MENU **(7)** button.
- Select minute value with a short press of RIGHT **(6)** or LEFT **(8)** buttons.
- Save selected time value and exit the submenu with a long press of the MENU **(7)** button.

Default Settings

Restore default settings.

- Select the Default Settings option with the RIGHT **(6)** or LEFT **(8)** buttons.
- Enter the submenu with a short press of the MENU **(7)** button.
- With a short press of RIGHT **(6)** or LEFT **(8)** buttons select Yes to restore default settings or No to abort.
- Confirm your selection with a short press of the MENU **(7)** button.

The following settings will be restored to their factory state before being set by the user:

- Video recorder mode – video
- Observation mode – Forest
- Calibration mode – automatic
- Language – English
- Wi-Fi – off (default password)
- Color palette – White Hot.

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

Format

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

- Select the Format option with the RIGHT **(6)** or LEFT **(8)** buttons.
- Enter the submenu with a short press of the MENU **(7)** button.
- Press the MENU **(7)** button briefly to confirm your selection.
- If Yes is selected, the message "Do you want to format the memory card?" appears on the display as well as Yes and No options. Select Yes to format the memory card.
- Selecting the No option will cancel the formatting and exit the submenu.

Auto shutdown

This item allows you to activate the auto shutdown function for when the device is in a non-operating position (tilted up or down at an angle of more than 70°, right or left at an angle of more than 30°).

- Press and hold the MENU **(7)** button to enter the main menu.
- Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Auto shutdown submenu.
- Press the MENU **(7)** button briefly to enter the submenu.
- Use the RIGHT **(6)** or LEFT **(8)** buttons to select the time period (1 min, 3 min, 5 min) upon expiry of which the device will automatically shut down, or select Off if you wish to deactivate Auto shutdown.
- Press the MENU **(7)** button briefly to confirm the selection.

Note: If the Auto shutdown function is activated, the status bar shows an icon and shutdown time period as 1 min.

Device Information

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

- SKU Number
- Firmware Version
- Device Name
- Hardware Version
- Device Serial Number
- Service Information.

To display information, do the following:

- Press and hold the MENU **(7)** button to enter the main menu.
- Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Device Information icon .
- Press the MENU **(7)** button briefly to view / exit the information.

Defective Pixel Repair

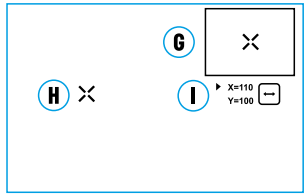
When using the device, defective (dead) pixels may appear on the sensor. These are bright or dark points of a constant brightness that are visible on the image.

KRYPTON FXG50 thermal imaging attachments allow the user to remove any defective pixels on the sensor using firmware as well as to cancel removing.

- Press and hold the MENU **(7)** button to enter the main menu.
- Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Defective Pixel Repair icon .
- Press the MENU **(7)** button to enter the submenu.

Defective Pixel Repair

- Select the Defective Pixel Repair option by briefly pressing the MENU **(7)** button.
- A marker **(H)** will appear on the left side of the display.
- A magnifying glass **(G)** will appear on the right side of the display – a rectangle with an enlarged view of the marker for precise pixel selection – and the coordinates **(I)** of the marker under the magnifying glass.
- Press the RIGHT **(6)** or LEFT **(8)** buttons briefly to align a defective pixel with the center of the enlarged marker in the magnifying glass – the pixel should be removed. Press the MENU **(7)** button briefly to switch the marker direction between the horizontal to the vertical.
- Press the ON **(9)** button briefly to delete the dead pixel.
- Once the pixel has been successfully deleted, an OK message will briefly appear on the screen.
- You can then delete the next defective pixel if required by moving the marker across the display.
- Press and hold the MENU **(7)** to exit the function.



Restore Default Pixel Map

This option allows the user to return all previously disabled defective pixels to their original state.

- Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Restore Default Pixel Map icon .
- Activate the function by briefly pressing the MENU **(7)** button.
- Using the RIGHT **(6)** or LEFT **(8)** buttons, select Yes if you want to return to the factory pixel map or select No if you do not.
- Confirm your selection with a short press of the MENU **(7)**.

Attention! One or two pixels on the display of the device in the form of bright white, black or colored (blue, red or green) points may appear. These points cannot be removed and are not a defect.

Microphone	Turning microphone on / off.
	This item allows you to enable (or disable) the microphone for recording sound during video recording. • Press and hold the MENU **(7)** button to enter the main menu • Select Microphone option with the RIGHT **(6)** or LEFT **(8)** buttons. • A short press of the MENU **(7)** button opens the submenu. • To turn the microphone on or off press RIGHT **(6)** or LEFT **(8)** buttons. • Confirm your selection with a short press of the MENU **(7)** button.
Icon Brightness	Icon brightness
	• Press and hold the MENU **(7)** button to enter the main menu. • Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Icon Brightness icon . • Press the MENU **(7)** button briefly to enter the submenu. • Use the RIGHT **(6)** or LEFT **(8)** buttons to select the desired brightness level from 0 to 10. • Press the MENU **(7)** button briefly to confirm the selection.
Calibration Mode	Calibration mode selection
	There are three calibration modes: Manual, Semi-Automatic and Automatic. • Press and hold the MENU **(7)** button to enter the main menu. • Use the RIGHT **(6)** or LEFT **(8)** buttons to select the Calibration Mode icon . • Press the MENU **(7)** button briefly to enter the submenu. • Use the RIGHT **(6)** or LEFT **(8)** buttons to select one of the calibration modes described below. • Press the MENU **(7)** button briefly to confirm the selection. **Automatic.** In this mode the firmware determines the need for calibration. The calibration process starts automatically. **Semi-Automatic.** The user determines the need for calibration based on the image quality and can action at a convenient time depending on the object being observed. **Manual.** In the Manual (silent) calibration mode the user determines the need for calibration (as in SA mode) but the lens cover must be closed during calibration.

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 (shown only when the Black Hot color mode is selected)
- Observation Mode
- Calibration Mode (in Automatic calibration mode a countdown timer will appear instead of the calibration mode icon 3 seconds before automatic calibration begins)
- Microphone
- Wi-Fi Connection
- Auto shutdown function (for example, 1 min)
- 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

VIDEO RECORDING AND PHOTOGRAPHY

The KRYPTON FXG50 thermal imaging attachments are equipped with the option to record video and still images (photography) of the observed image by saving them on the built-in memory card. It is recommended to set the date and time (see the corresponding menu items) before using the photo and video functions.

The built-in recorder operates in two modes:

VIDEO MODE. VIDEO RECORDING

- The VIDEO mode is activated when you turn on the device.
- The icon and the remaining recording time in HH:MM (Hours:Minutes) format are displayed in the upper left corner, for example, 5:12.
- Press the RIGHT/REC **(6)** button briefly to start video recording.
- When the video recording starts, the icon will disappear and the REC icon and timer in MM:SS (Minutes:Seconds) format will appear ●REC | 00:25.
- Press the RIGHT/REC **(6)** button briefly to pause or resume video recording.
- Press and hold the RIGHT/REC **(6)** button to stop video recording.
- Video files are saved to the built-in memory card after the video recording has been stopped.
- Press and hold the RIGHT/REC **(6)** button to switch between the video and photo modes.

PHOTO MODE. PHOTOGRAPHY

- Switch to PHOTO mode by pressing and holding the RIGHT/REC **(6)** button.
- Press the RIGHT/REC **(6)** button briefly to take a photo. The image freezes for 0.5 sec while the photo is saved to the internal memory.

Notes. You can enter and navigate the menu during video recording. The recorded videos and photos are saved to the built-in memory card of the device in the formats img_xxx.jpg (photos) and video_xxx. mp4 (video) where xxx is a 3 digit counter. The counter for multimedia files cannot be reset.

Attention! The maximum duration of a recorded video file is five minutes. After this time expires, the video is recorded to a new file. The number of recorded files is limited by the capacity of the internal memory of the device. 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

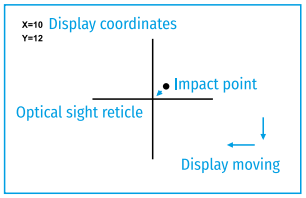
The device has a function enabling wireless communication with external devices (smartphone or tablet) via Wi-Fi.

Turn on the wireless module in the main menu. Wi-Fi is displayed in the status bar as follows:

Connection Status	Indication on the status bar
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 KRYPTON_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 attachment status bar changes to .

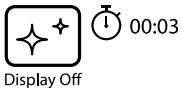
DISPLAY CALIBRATION



The thermal imaging attachment is configured so that after it is being mounted onto an optical sight that has been correctly configured, no adjustment of the aiming point is required. If your attachment has been subjected to hard blow or has been dropped, you may check the impact point and adjust it yourself if required, without having to return it to a service centre.

- Press and hold the MENU **(7)** button for 10 seconds to enter the display calibration mode – the coordinates X=0; Y=0 will appear.
- Use the LEFT **(8)** and RIGHT **(6)** buttons to move the display horizontally (X axis) and vertically (Y axis) so that the point of impact moves to the centre of the aiming reticle of your optical sight.
- Press the MENU **(7)** button briefly to toggle between the X and Y coordinates.
- The image shift step is 1 pixel of the microbolometer.
- The image shift range is +/-20 pixels for a horizontal axis (X axis) and +/-20 pixels for a vertical axis (Y axis).
- Press and hold the MENU **(7)** button for 2 (two) seconds to exit from the menu and save the settings.

DISPLAY OFF FUNCTION



This function deactivates the image transmission to the display by minimizing its brightness. This helps prevent accidental disclosure. 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.

- When the device is on, press and hold the ON **(9)** button for less than 3 seconds. The display goes blank and the message Display Off appears.
- Press the ON **(9)** button briefly to turn on the display.
- When you press and hold the ON **(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.

STREAM VISION

KRYPTON FXG50 thermal imaging attachments support Stream Vision technology, which enables the transmission of an image in real time from the thermal imager to your smartphone or tablet 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:

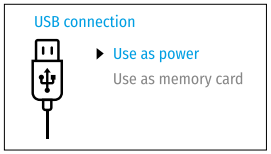
– if your Pulsar device is connected to phone, please turn on mobile data transfer (GPRS/3G/4G) to download update;

– 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

- Connect one end of the USB cable **(22)** to the device micro-USB port **(11)** and the other end to the port on your computer.
- Switch the device on with a short press of the ON **(9)** button (the computer will not detect the device if it is switched off).
- The device is detected by the computer automatically and no drivers need to be installed.
- Two connection modes will appear on the display:
  - Use as power.
  - Use as memory card.
- Use the RIGHT **(6)** and LEFT **(8)** buttons to select the connection mode.
- Press the MENU **(7)** button briefly to confirm the selection.



USE AS POWER

- When this mode is selected, the computer is used as an external power supply. The icon appears in the status bar. The device will continue operating and all the functions are available.
- A battery installed in the device will not be charged.
- When disconnecting the USB from the device connected in Use as Power mode, the device will continue to operate from the rechargeable IPS7 battery if it is present and provided it has enough charge.

USE AS MEMORY CARD

- When this mode is selected, the device is recognized by the computer as a flash card. This option is designed for working with files that are stored on the device's built-in memory. However, the device functions are not available in this mode and it will switch off automatically.
- If video recording was in progress when the connection was made, recording stops and the video is saved.

TECHNICAL INSPECTION

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

- The device appearance (there should be no cracks on the body).
- The state of the objective and eyepiece lenses of the attachment (there should be no cracks, grease spots, dirt or other deposits).
- The state of the rechargeable battery (it should be charged) and the electric contacts (there should be no signs of salts or oxidation).
- The controls should be in working order.
- The attachment is properly and firmly fixed on the optical sight.

MAINTENANCE

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

- Wipe the exterior metal and plastic surfaces with a cotton cloth to remove dust and dirt. Silicone grease may be used for this.
- Clean the electrical contacts of the rechargeable battery on the device using a non-greasy organic solvent.
- Check the eyepiece and the lens and if required remove dust and dirt from the optics (preferably using a non-contact method). Cleaning of the exterior surfaces of the optics should only be done with products specifically designed for this purpose.

- Always store the device in its carrying case in a dry, well-ventilated space. For prolonged storage, remove the batteries.

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 imaging attachment does not turn on.	The battery is completely discharged.	Charge the battery.
The device does not operate from an external power source.	The USB cable is damaged.	Replace the USB cable.
	The external power supply is discharged.	Charge the external power supply (if necessary).
Blurred image with vertical stripes or an uneven background.	Calibration is required.	Perform image calibration according to the Microbolometer Calibration section of the manual.
Poor quality image. There is noise or ghost images of previous scenes or objects.	Manual calibration has been performed with the lens cover open.	Check the calibration mode, close the lens cover and calibrate the device.
Image is too dark.	Brightness or contrast level is too low.	Adjust the brightness or contrast.
Color bars appear on the display or the image disappears.	The device was exposed to static charges during operation.	When the exposure to static charges is over, the device may either reboot automatically or require to be switched off and on again.
The image of the object being observed is missing.	You are looking through glass.	Remove the glass or change the viewing position to avoid it.
Poor image quality / reduced detection distance.	These problems may occur during observation in adverse weather conditions (snow, rain, fog, etc.).	
Smartphone or tablet cannot be connected to the device.	Device password has been changed.	Delete the network and connect again using the password saved in the device.
	The device is in an area with too many Wi-Fi networks that may be causing signal interference.	To ensure a stable Wi-Fi connection, relocate the device to an area with fewer or no Wi-Fi networks.
Missing or interrupted broadcasting via Wi-Fi.	The smartphone or tablet is beyond reliable Wi-Fi range. There are obstacles between the device and the signal receiver (e.g. concrete walls).	Move the devices in line-of-sight and within range of the Wi-Fi signal.
When the device is used in low temperature conditions the image quality is worse than in positive temperatures.	In positive temperature conditions, objects being observed (surroundings and background) heat up differently because of thermal conductivity, thereby generating a high temperature contrast. Consequently, the image quality produced by the thermal imager will be better. In low-temperature conditions, objects being observed (background) 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.	

Repair of the device is possible within 5 years.