



THERMION Thermal Imaging Riflescopes

OPERATING INSTRUCTIONS

ENGLISH / FRANÇAIS / DEUTSCH / ESPAÑOL / ITALIANO / РУССКИЙ

Thermal Riflescope THERMION	1-15	ENGLISH	
Viseurs thermiques THERMION	16-30	FRANÇAIS	
Wärmebild-Zielfernrohr THERMION	31-45	DEUTSCH	
Visores térmicos THERMION	46-60	ESPAÑOL	
Cannocchiali termici THERMION	61-75	ITALIANO	
Тепловизионные прицелы THERMION	76-90	РУССКИЙ	

⚡ Technical Specifications

MODEL	XM30	XM38	XM50	XQ38	XQ50	XP38	XP50
SKU	76524	76525	76526	76522	76523	76542	76543
MICROBOLOMETER							
Type				Uncooled			
Resolution, pixels	320x240			384x288		640x480	
Pixel size, microns	12			17			
Frame refresh rate, Hz	50						
OPTICAL SPECIFICATIONS							
Lens, mm	F30	F38	F50	F38	F50	F38	F50
	F/1.2	F/1.2	F/1.2	F/1.2	F/1.2	F/1.2	F/1.2
Magnification ratio, x	3.5-14	4-16	5.5-22	2.5-10	3.5-14	1.5-12	2-16
Eye relief, mm/inch	50 (1.96)						
Field of view angle (horizontal), °	7.3	5.8	4.4	9.8	7.5	16.3	12.4
Eyepiece focusing range, dioptres	-3/+5						
Detection distance*, m (y)	1300 (1420)	1700 (1860)	2300 (2515)	1350 (1475)	1800 (1970)	1350 (1475)	1800 (1970)
AIMING RETICLE							
Click value (H/V), mm@100 m – when magnifying, x	12 – 3.5x	10 – 4x	7 – 5.5x	17 – 2.5x	13 – 3.5x	28 – 1.5x	21 – 2x
	6 – 7x	5 – 8x	3.5 – 11x	8.5 – 5x	6.5 – 7x	14 – 3x	10.5 – 4x
	3 – 14x	2.5 – 16x	1.75 – 22x	4.25 – 10x	3.25 – 14x	7 – 6x	5.25 – 8x
Click range (H/V), mm@100 m	2400/2400	2000/2000	1400/1400	3400/3400	2600/2600	5600/5600	4200/4200
DISPLAY							
Type	AMOLED						
Resolution, pixels	1024x768						
OPERATING FEATURES							
Diameter of the riflescope body to assemble the mounting rings, mm	30						
Battery Packs (built-in APS3 and removable APS2) operating time at temp. = 22 °C (Wi-Fi off), hrs	7						
Operating voltage, V	3-4.2						
Battery type / Capacity / Rated Output Voltage	Li-Ion Battery Pack APS2 / 2000 mAh / DC 3.7 V (removable)** APS3 / 3200 mAh / DC 3.7 V (built-in)						
External power supply	Micro USB type B (5 V)						
Maximum recoil power on a rifled weapon, Joules	6000						
Maximum recoil power on a smooth-bore weapon, caliber	12						
Degree of protection IP code (IEC60529)	IPX7						
Operating temperature, °C (°F)	-25 – +50 (-13 – +122)						
Dimensions with an eyecup (LxWxH), mm (inch)	387 x 78 x 74 (15.23 x 3.07 x 2.91)	395 x 78 x 72 (15.55 x 3.07 x 2.83)	407 x 78 x 80 (16.02 x 3.07 x 3.15)	395 x 78 x 72 (15.55 x 3.07 x 2.83)	407 x 78 x 80 (16.02 x 3.07 x 3.15)	407 x 78 x 80 (16.02x3.07x3.15)	416 x 78 x 80 (16.38 x 3.07 x 3.15)
Weight (without removable battery), kg (oz)	0.75 (26.45)	0.75 (26.45)	0.9 (31.75)	0.75 (26.45)	0.9 (31.75)	0.75 (26.45)	0.9 (31.75)
VIDEO RECORDER							
Photo/video resolution, pixels	1024x768						
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						

* Object of deer type ** APS3 Battery Pack can be used (sold separately) ***The reception range may vary depending on various factors: obstacles, other Wi-Fi networks.

Improvements may be made to the design of this product to enhance its user features.
The current version of the User's Manual can be found on the website pulsar-vision.com

⚡ Description

THERMION thermal imaging riflescopes are designed for use with hunting weapons both at night-time and during the day in adverse weather conditions (fog, smog, rain) as well as having the obstacles (branches, tall grass, dense bushes etc.) hindering the target detection. Unlike the riflescopes based on electrical-to-optical converters, thermal imaging riflescopes do not require an external light source and are resistant to high-illumination level.

Application areas of the riflescopes are as follows: hunting, observation and orientation under conditions of limited visibility.

⚡ Distinctive Features

- High range detection
- High-resolution image
- Variable magnification
- 12 micron microbolometer (XM models)
- Heavy caliber shock resistance: 12-gauge, 9.3x64, .375H&H
- Mounting with standard 30 mm rings
- Strong metal housing
- Completely waterproof IPX7
- Custom spot options
- HD AMOLED color display
- Photo and video recording
- Picture in Picture Function
- Color Modes
- **Stream Vision** App Support
- Advanced features (It is possible to update rifle scope software using free **Stream Vision** app)
- User-friendly control
- B-Pack mini combined power system
- Functional and ergonomic design
- Wide operating temperature range (-25 °C...+50°C)

⚡ Useful Functions and Modes

- User-friendly interface
- Stadiametric rangefinder (estimate distance to object)
- Built-in 3-axis accelerometer gyroscope (slope angle indication)
- Four observation modes: Forest, Rocks, Identification and User
- Three calibration modes: manual, semi-automatic and automatic
- Smooth Digital Zoom
- A large number of electronic spots
- Scalable reticles (reticle graduation changes proportional to Zoom)
- 5 zeroing profiles (10 distances per profile)
- One-shot zero function
- Precise “Zoom zeroing” (reducing the minute of angle click when zooming in)
- **“Freeze Zeroing”** function

- 8 color modes
- Defective microbolometer pixel removal function
- **“Display off”** function
- **“Image Detail Boost”** function, which increases the sharpness and overall image detail.
- **Wi-Fi**. Remote control and observation with a smartphone

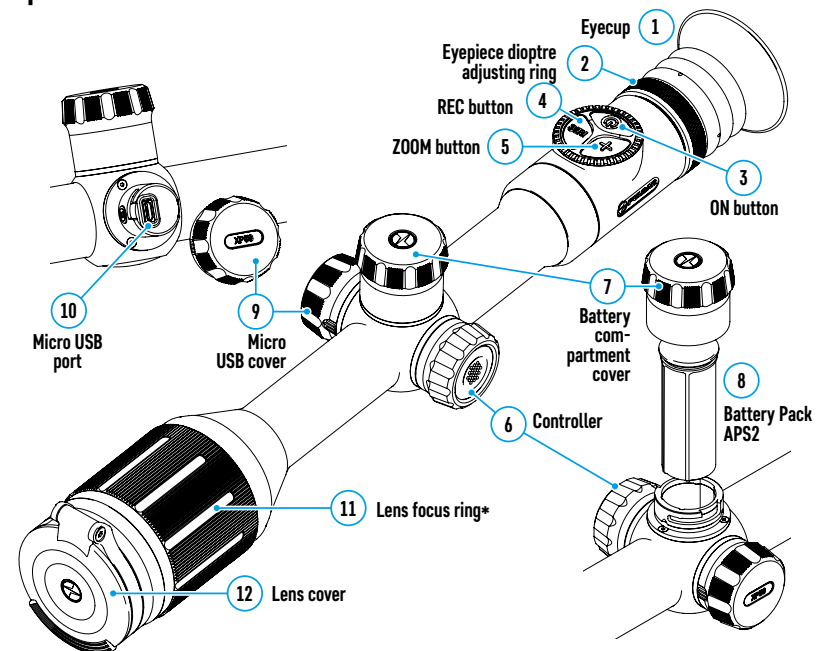
Video recording

- Built-in photo and video recorder with sound recording
- 16 GB internal memory
- Integration with iOS and Android devices.
- **Youtube**. Live video streaming and recording in the Internet via smartphone and using a free **Stream Vision** application

Batteries

- Built-in 3200 mAh Battery Pack APS3
- Quick Change Li-Ion Battery Packs APS2/APS3
- You can charge the built-in and external Battery Packs APS2 and APS3 via micro USB port

⚡ Components and Controls



*except for Model XM30 (non-focusing lens)

Buttons Operation

Control	Condition / Operating Mode	First short press	Subsequent short presses	Long press	Rotation
ON button	Device is switched off	Switch device on	Device calibration	Switch device on	–
	Display is switched off	Switch display on	Device calibration	Switch device off	–
	Device is switched on, quick menu, main menu	Device calibration		Switch display off/ Switch device off	–
ZOOM button	Device is switched on, quick menu, main menu	Zoom		Switch PiP on/off	–
REC button	Device is switched on, quick menu, main menu, video mode	Video recording start	Pause	Toggle between video/photo mode	–
	Device is switched on, quick menu, main menu, video recording activated	Pause	Video recording start	Stop video recording	–
	Device is switched on, quick menu, main menu, photo mode	Photography		Toggle between video/photo mode	–
	Device is switched on	Access quick menu	–	Access main menu	–
Controller	Quick menu	Navigation		Exit quick menu	Parameter change
	Main menu	Confirm value, enter menu items		Exit menu items, main menu	Navigation through menu
	Zoom	–		–	Smooth Zooming

Using Battery Pack

THERMION thermal imaging riflescopes come with a built-in rechargeable lithium-ion APS3 Battery Pack with a capacity of 3200 mAh and removable rechargeable lithium-ion APS2 Battery Pack with a capacity of 2000 mAh. Battery should be charged before the first use.

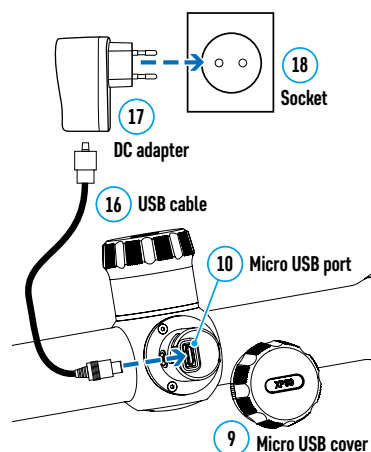
Charging:

- Open the micro USB cover (9) by turning it counterclockwise.
- Connect the micro USB plug of the USB cable (16) to the micro USB port (10) in the body of the riflescope.
- Connect the second micro USB plug of the USB cable (16) to the micro USB port on the DC adapter (17). Plug the device into a 100–240 V socket (18).

ATTENTION! When charging batteries via the micro USB port (10), the built-in APS3 Battery Pack is the first to be charged. When it is completely charged, the removable APS2 Battery Pack starts charging. When the device is in use, power consumption occurs in reverse sequence.

The rechargeable lithium-ion APS2 Battery Pack can be recharged using the APS charger*.

- Insert the APS2* Battery Pack (8) along the rail into the APS charger slot as far as it will go. The APS charger is supplied with your device.



- Point **A** on the battery and point **B** on the charger should match.
- Two batteries can be charged at the same time: the second slot is designed for it.
- Connect the micro USB plug of the USB cable (16) to the micro USB port on the DC adapter (17). Plug the device into a 100–240 V socket (18).
- Connect the second plug of the micro USB cable to the APS battery charger port (14).
- The LED indicator (15) will display battery charge status:

LED Indicator** Battery charge status

●	Battery level is from 0% to 10%. Charger is not connected to a power supply.
★	Battery level is from 0% to 10%. Charger is connected to a power supply.
●●●●	Defective battery. It is forbidden to use the battery.
●●	Battery level is from 10% to 20%.
●●●	Battery level is from 20% to 60%.
●●●●	Battery level is from 60% to 95%.
●●●●	The battery is completely charged and can be disconnected from the charger.

*Supplied as part of package. APS3 Battery Pack is available (sold separately).

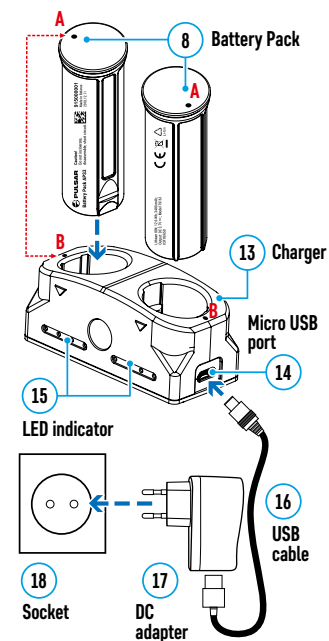
** LED indicator displays the current battery charge status for 30 seconds when the APS charger is not plugged in. When the power is being supplied, the indicator is constantly displaying the current battery charge status, the LEDs are additionally flickering to display the battery charging process.

Installation:

- Turn the battery cover (7) counterclockwise and remove it.
- Install the battery (8) into the battery compartment along the special guides in the device body designed for it.
- When properly installed, the battery is fixed in the battery compartment of the device.
- Close the battery cover (7) by turning it clockwise.

Precautions:

- When charging, always use the charger supplied with the scope of supply. The use of any other charger may irreparably damage the battery or the charger.
- After being stored for a long time, the battery should be partially charged: it should not be completely charged or completely discharged.
- Do not charge the battery immediately after bringing it from cold to warm. Wait for 30–40 minutes so that the battery may warm up.
- After being stored for a long time, the batteries should be partially charged: it should not be completely charged or completely discharged.
- Do not charge the battery immediately after bringing it from cold to warm. Wait for 30–40 minutes so that the battery may warm up.
- Do not leave the battery unattended while charging.
- Do not use the charger if it has been modified or damaged.
- The battery should be charged at an air temperature of 0 °C ... + 45 °C. Otherwise, lifespan of the battery will decrease significantly.
- Do not leave the charger with the battery connected to power supply for more than 24 hours after it has been completely charged.
- Do not expose the battery to high temperatures and naked flame.



- Do not submerge the battery.
- Do not connect external device with a current consumption that exceeds permitted levels.
- The battery has a short-circuit protection. However, any situation that may cause short-circuiting should be avoided.
- Do not disassemble or deform the battery.
- Do not drop or strike the battery.
- When using the battery at low temperatures, the battery capacity decreases, this is normal and not a defect.
- Do not use the battery at the temperatures above those shown in the Table – this may decrease battery's life.
- Keep the battery out of the reach of children.

Switching and changing the batteries:

Thermion devices are powered by 2 batteries: built-in Battery Pack APS3 and removable Battery Pack APS3/APS2.

- If there are two batteries in the device, two battery icons are displayed in the status bar (1 - built-in battery, 2 - removable battery). The battery from which the device is powered is displayed in blue, inactive - in gray.




- If there is no removable battery in the device, only one blue icon of the internal battery is displayed in the status bar.
- When both batteries are fully charged, the device is powered by the removable battery. If there is low removable battery level, the device will switch to the built-in battery.
- When charging the batteries using the micro USB port (10), the built-in battery is charged first. When the built-in battery charge level reaches 100%, the device switches to charging the removable battery. The battery level is displayed in percentage above the icons in the status bar.
- It is possible to replace removable battery with device turned on when it is powered by built-in battery (the device will continue to work properly).

Attention! When removing the removable battery from the device, if the device is powered by it, the device will reboot and switch to operation from the built-in battery. When installing a removable battery with a sufficient charge level, the device will automatically switch to it.

⚡ External Power Supply

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

- Connect the external power supply to the micro USB port (10) of the riflescope.
- The riflescope switches to external power source, while built-in Battery Pack APS3 and removable Battery Pack APS2 (or APS3*) will gradually recharge.
- A rechargeable battery icon  indicating a percentage of the battery life will appear in the status bar.
- When you turn off external power source, riflescope switches over to the removable battery without turning off. When there is no removable battery or low power level the device switches to the built-in battery.

Attention! Charging Power Bank APS2 / APS3 batteries at air temperatures below 0 °C can result in reduced battery life. When using external power, connect Power Bank to the switched-on riflescope, which have worked for several minutes.

*Optional.

⚡ Operation

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.

Mounting on the weapon:

To ensure accurate shooting the **THERMION** riflescope should be properly mounted on the weapon.


- The riflescope is fixed using the mount, which is purchased separately. Use only high-quality mounts and rings that are designed especially for your weapon. Follow the mounting manufacturer's recommendations on the installation procedure and use the proper tool.
- When mounting the riflescope, adjust the position on the weapon so that proper (comfortable) holding of weapon ensures the distance between the riflescope and eye (eye relief) specified by the **Technical Specifications**. Failure to comply with this recommendation may result in injury to the shooter by the parts of the riflescope eyepiece when shooting.
- It is recommended to install the riflescope as low as possible, at the same time it should not be in contact with barrel or receiver.
- In order to avoid pinching the riflescope body, a tightening torque for the screws of the mounting rings must be not more than 2.5 Nm. A torque wrench is recommended to control the tightening torque.
- Before using the riflescope when hunting, follow instructions in the **Zeroing** section.
- It is recommended to use an eyecup while using the riflescope in the dark in order to avoid detection of camouflage. Mounting the eyecup on the riflescope eyepiece is carried out using built-in magnets.

⚡ Powering On and Image Setting

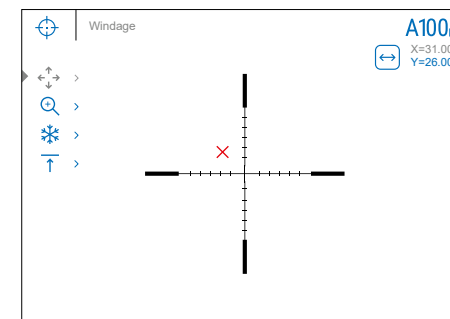
- Open the lens cover (12).
- Press the **ON (3)** button briefly to power the riflescope on.
- Adjust the sharp resolution of the symbols on the display by rotating the dioptre adjusting ring of the eyepiece (2).
- Rotate the lens focus ring (11) to focus on the object being observed*.
- Select the desired calibration mode in the main menu: Manual (**M**), Semi-automatic (**SA**) or Automatic (**A**).
- Calibrate the image with a short press of the **ON (3)** button (if the **SA** or **M** calibration mode has been selected). Close the lens cover (12) when calibrating manually.
- Select the required operating mode (**Forest, Rocks, Identification, User**) in the main menu. User mode allows you to configure and save custom brightness and contrast settings.
- Adjust the brightness and contrast of the display using the controller (6) (for more details, see the **Quick Access Menu Functions** section).
- Switch the device off with a long press of the **ON (3)** button.





⚡ Zeroing


The riflescope features two zeroing methods: one shot zeroing and using the **"Freeze"** function. Zeroing is recommended to be done at the temperature close to the riflescope operating temperature.


- Mount the weapon with the riflescope installed on a bench rest.
- Set a target at a certain distance.
- Adjust the riflescope according to the **Powering On and Image Setting** section.
- Select the zeroing profile (see **Zeroing Profile**  main menu item)
- Point a weapon at the center of the target and shoot.
- If the impact point does not match the aiming point (center of the riflescope's reticle), press and hold down the controller button (6) to enter the main menu.

*except for Model XM30 (non-focusing lens)



- Rotate the controller ring **(6)** to select the **Zeroing** submenu . To confirm the selection, briefly press the controller button **(6)**.
- Set the zeroing distance value (see **Zeroing** menu item => **Add New Distance** submenu .
- Confirm the selected zeroing distance value by long pressing the controller button **(6)**.
- The **Zeroing Parameters Settings** additional menu will appear on the screen.
- Cross hairs appear in the center of the display . X and Y coordinates of the cross hairs are in the upper right corner.
- Rotate the controller ring **(6)** to select the icon . Press the controller button **(6)** briefly.
- Holding the reticle in the aiming point, move the cross hairs by rotating the controller ring **(6)** until the cross hairs match the point of impact. To switch the direction, briefly press the controller button **(6)**.

Attention! Not to hold the reticle at the aiming point, you can use the **Freeze** function – freezing the zeroing screen (refer to **Zeroing** menu item => **Distance** submenu => **Zeroing Parameters Settings** submenu => **Freeze** submenu .

- Press the controller button **(6)** briefly to switch the cross hairs movement direction from horizontal to vertical.
- To save the new reticle position, press and hold the controller button **(6)**. The reticle is aligned with the point of impact and the submenu  exits.
- Press and hold the controller button **(6)** again to exit the zeroing settings menu - the message “Zeroing coordinates saved” appears, confirming the successful operation.
- Fire a second shot - now the point of impact and the aiming point must be matched.

⚡ Smart Reticle Function*


When changing the riflescope digital magnification, the reticle that appears on the display is scaled; the reticle appearance will change (enlarge or reduce) proportionally to the magnification. It allows the use of the rangefinder reticles with any digital magnification.

*Only for scalable reticles X51Fi-300, M56Fi, M57Fi

⚡ Microbolometer Calibration

Calibration enables to equalize the microbolometer temperature and eliminate the image defects (such as vertical bars, phantom images etc.).


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

Select the required mode in the **Calibration Mode**  item.

- **M mode (manual)**. Close the lens cover and press the **ON (3)** button briefly. Open the cover after the calibration is completed.
- **SA mode (semi-automatic)**. Press the **ON (3)** button briefly to activate calibration. There is no need to close the lens cover (internal shutter covers the microbolometer).
- **A Mode (automatic)** The riflescope is calibrated autonomously according to the software algorithm. There is no need to close the lens cover (internal shutter covers the microbolometer). In this mode, the riflescope may be calibrated by the user with the **ON (3)** button.

⚡ Discrete Digital Zoom

The riflescope functionality allows you to quickly increase the basic magnification (see **Magnification** line in the table of **Technical Specifications**) by 2 and 4 times (8 times for XP models), as well as to return to the basic magnification.








- Press the **Zoom (5)** button successively to change the magnification ratio of the riflescope.
- While the icon  is visible on the screen, rotate the controller ring **(6)** for **smooth digital zooming** from the current magnification.

⚡ 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 Access Menu Functions

The basic settings (adjusting brightness and contrast, using the function of smooth digital zoom, a stadiametric rangefinder, information on the current profile and distance) can be changed using the quick access menu.

- Press the controller button **(6)** briefly to enter the quick menu.
- A short press of the controller button **(6)** enables you to switch between functions, as described below.
- **Brightness**  – rotate the controller ring **(6)** to change the display brightness value from 00 to 20.
- **Contrast**  – rotate the controller ring **(6)** to change the image contrast value from 00 to 20.
- **A100**  – information on the current profile and zeroing distance in this profile (e.g., profile A, zeroing distance of 100 m). This information is always displayed in the status bar. Rotate the controller ring **(6)** to switch between the zeroing distances in the selected profile. This function is available if there are two or more distances in the profile.
- **Stadiametric rangefinder**  – rotating the controller ring **(6)**, change the distance between the special mark points to determine the distance to the observed object (for more details on the rangefinder, see the **Stadiametric Rangefinder** section).
- Basic mode    – it allows you to select one of the three modes as the basic one for the user mode.
- Press and hold the controller button **(6)** to exit the menu or wait 10 seconds to exit automatically.

⚡ Main Menu Functions

- Enter the main menu with a long press of the controller button (6).
- To move through the main menu items, rotate the controller ring (6).
- Main menu navigation is cyclical: as soon as the last menu item of the first tab is reached, first menu item of the second tab starts.
- Press the controller button (6) briefly to open subitems of the main menu.
- Press and hold the controller button (6) to exit from a subitem of the main menu.
- Automatic exit from the main menu occurs after 10 seconds of inactivity.
- Upon exit from the main menu the cursor location (▶) is stored only for a single working session (i.e. until the riflescope is turned off). Upon restarting the riflescope and entering the menu the cursor will be on the first menu item.

General view of the menu:

Tab 1





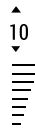

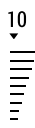






Menu	Mode
▼	🌲
📶	On
📄	A
+	>
☀️	10
📶	On
📶	Automatic
📶	>




























Tab 2














Menu	Microphone
🎤	On
🗣️	White hot
⚙️	>
📶	>
(••)	>
+	>
i	











⚡ Main Menu Contents and Description










MENU ITEM	SUBMENU
Mode ▼	The devices have three operating 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), User (individual brightness and contrast settings). Each mode has been created to provide the best image quality of a wild nature object being observed within various observation conditions. <ul style="list-style-type: none">• Press and hold the controller button (6) to enter the main menu.• Rotate the controller ring (6) to select the Mode menu item.• Press the controller button (6) briefly to enter the Mode submenu.• Rotate the controller ring (6) to select one of the modes: Forest, Rocks, Identification, User.• Press the controller button (6) briefly to confirm the selection.
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.
Rocks 🏔️	This is the best mode when observing objects after a sunny day or within urban conditions.
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. Zoom increase 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 basic.
Image Detail Boost 📶	Turn on/off Image Detail Boost : <ul style="list-style-type: none">• Press and hold the controller button (6) to enter the main menu.• Rotate the controller ring (6) to select the Image Detail Boost menu item.• To turn Image Detail Boost off, briefly press the controller button (6). 📶 Off• To turn Image Detail Boost on, briefly press the controller button (6). 📶 On
Zeroing Profile 📄	This item of the main menu allows you to select one of five profiles (A, B, C, D, E) to use. Each profile includes the following parameters: <ol style="list-style-type: none">1. A set of zeroed distances2. Reticle color3. Reticle type Different profiles can be used when using the riflescope on different weapons or when shooting with different bullets. <ul style="list-style-type: none">• Press and hold the controller button (6) to enter the main menu.• Rotate the controller ring (6) to select the Zeroing Profile menu item.• Press the controller button (6) briefly to enter the Zeroing Profile submenu.• Rotate the controller ring (6) to select one of the zeroing profiles (marked with the letters A, B, C, D, E).• Confirm your selection with a short press of the controller button (6).• The name of the selected profile appears in the status bar at the bottom of the display.

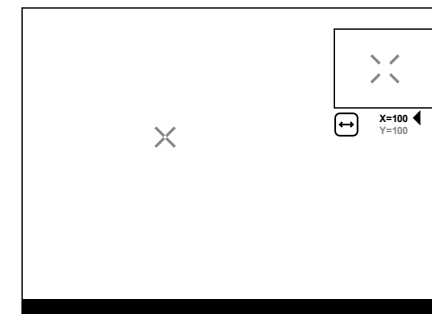
MENU ITEM	SUBMENU	
Reticle Setup 	<p>This main menu item allows you to select the reticle shape, color and brightness.</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Reticle Setup menu item. Press the controller button (6) briefly to enter the Reticle Setup submenu. 	
Reticle Type 	<p>Selection of the aiming reticle shape.</p> <ul style="list-style-type: none"> Rotate the controller ring (6) to select the Reticle Type submenu. Press the controller button (6) briefly to enter the Reticle Type submenu. Rotate the controller ring (6) to select the desired aiming reticle shape from the list that appears. The reticle type changes as the cursor goes down the reticle list. Press the controller button (6) briefly to confirm the selection. 	
Reticle Color 	<p>Selection of reticle color.</p> <ul style="list-style-type: none"> Rotate the controller ring (6) to select the Reticle Color submenu. Press the controller button (6) briefly to enter the Reticle Color submenu. Rotate the controller ring (6) to select one of the color options for the reticle: <ul style="list-style-type: none"> - Black/Red - White/Green - Yellow - Black/White - White/Red - Red - Blue - White/Black - Black/Green - Green - Orange Press the controller button (6) briefly to confirm the selection. 	
Reticle Brightness 	<p>Adjust the brightness level of the aiming reticle.</p> <ul style="list-style-type: none"> Rotate the controller ring (6) to select the Reticle Brightness submenu. Press the controller button (6) briefly to enter the Reticle Brightness submenu. Rotate the controller ring (6) to set the desired brightness level (1 to 10). Press the controller button (6) briefly to confirm the selection. 	
Icon Brightness 	<p>Adjust the brightness level of the icons and screensavers (Pulsar, Display off) on the display.</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Icon Brightness menu item. Press the controller button (6) briefly to enter the Icon Brightness submenu. Rotate the controller ring (6) to set the desired brightness level (1 to 10). Press the controller button (6) briefly to confirm the selection. 	
Wi-Fi activation 	<p>Turn on/off Wi-Fi</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Wi-Fi activation menu item. To turn Wi-Fi on, briefly press the controller button (6).   On To turn Wi-Fi off, briefly press the controller button (6).   Off 	
Calibration Mode 	<p>Calibration mode selection</p> <p>There are three calibration modes: manual, semi-automatic and automatic. The selected calibration mode is displayed in the status bar (see Status Bar section).</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Calibration Mode menu item. Press the controller button (6) briefly to enter the Calibration Mode submenu. Rotate the controller ring (6) to select one of the calibration modes described below. Press the controller button (6) briefly to confirm your selection. 	
	<p>Automatic (A) The software determines the need for calibration in automatic mode. The calibration process starts automatically.</p>	
	<p>Semi-automatic (SA) The user independently determines the need for calibration (according to the image being observed).</p>	
	<p>Manual (M) Manual calibration. Close the lens cover before starting calibration.</p>	

MENU ITEM	SUBMENU
Zeroing 	Add New Distance  <p>To zero your riflescope, you need to set a zeroing distance first in the range of 1 to 910 m (955 yards).</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring to select a menu item  and enter by briefly pressing the controller button. Press the controller button (6) briefly to enter the Add New Distance submenu . Rotate the controller ring to select a value for each digit. Press the controller button (6) briefly to switch between digits.  150 m  Having set the desired distance, press and hold the controller button to save it. <p>The distance you set first becomes a primary distance – shown with icon  on the right to the distance value.</p> <p>Note: Maximum number of zeroing distances is ten for each profile.</p>
	Distance 100m  200m +7.0
	Zeroing Parameters Settings  <ul style="list-style-type: none"> To zero at any distance again, rotate the controller ring (6) to select the required distance and briefly press the controller button (6). Rotate the controller ring (6) to select the Zeroing Parameters Settings  and enter by briefly pressing the controller button (6). Zeroing screen, which allows the change of zeroing coordinates, will appear.
	Windage/Elevation  <p>The Windage/Elevation additional menu item allows you to adjust the reticle position. For a detailed description of the reticle adjusting, refer to the Zeroing section</p>
	Magnification  <p>Magnification allows you to magnify a digital zoom of the riflescope when zeroing, which reduces the minute of angle click. It improves the zeroing accuracy.</p> <ul style="list-style-type: none"> Rotate the controller ring (6) to select the Magnification  submenu item and enter by briefly pressing the controller button. Rotate the controller ring (6) to select a digital magnification value of the riflescope (e.g., x4). Press the controller button (6) briefly to confirm your selection. <p>The minute of angle click when using the Magnification function is indicated in the Table of Technical Specifications.</p>
	Freeze  <p>The feature of the function is that there is no need to constantly keep the riflescope at the point of aiming.</p> <ul style="list-style-type: none"> Rotate the controller ring (6) to move the cursor to the Freeze function. Align the reticle with the point of aiming and press the controller (6) or ON (3) button. A screenshot will be taken, an icon  will appear. Go to the additional Windage/Elevation submenu and adjust the position of the reticle (see the Zeroing section). Select the Freeze submenu item again and briefly press the controller (6) or ON (3) button - the image will “unfreeze”.
	Name Distance  <ul style="list-style-type: none"> Rotate the controller ring (6) to select the Name Distance submenu item  and enter it by briefly pressing the controller button. Rotate the controller ring (6) to select a value for each digit. Press the controller button (6) briefly to switch between digits. Press and hold the controller button (6) to confirm the selection.
	Change Primary Distance  <ul style="list-style-type: none"> Select a non-primary distance and enter the submenu for operating the distance with a brief press of the controller button (6). Select Change Primary Distance item . Press the controller button (6) briefly. Icon  next to the selected distance confirms the change of primary distance. <p>The differences of other distances from the new primary distance are recalculated as per clicks.</p>
	Delete Distance  <ul style="list-style-type: none"> Select the distance you wish to delete and enter the submenu for operating the distances with a brief press of the controller button (6). Select Delete Distance  item. Select “Yes” in the appeared dialog box to delete a distance. “No” – to cancel deletion. <p>Attention! If the primary distance is deleted, the first distance on the list automatically becomes the new primary distance.</p>
Microphone 	Turning on/off Microphone This item allows you to enable (or disable) the microphone for recording sound during video recording. <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Microphone menu item. To turn on the microphone, briefly press the controller button (6).   On To turn off the microphone, briefly press the controller button (6).   Off

MENU ITEM	SUBMENU															
Color Modes 	<p>Color mode selection. White hot is a default display mode for an observed image. The Color Modes menu item allows you to select an alternative palette:</p> <ul style="list-style-type: none">• Press and hold the controller button (6) to enter the main menu.• Select the Color Modes  menu item.• Press the controller button (6) briefly to enter the Color Modes submenu.• Rotate the controller ring (6) to select one of the palettes described below.<ul style="list-style-type: none">- White hot – a black and white palette (the black color corresponds to cold temperature, the white color – hot temperature).- Black hot – a black and white palette (the white color corresponds to cold temperature, the black color – hot temperature).- Red hot- Red monochrome- Rainbow- Ultramarine- Violet- Sepia• Press the controller button (6) briefly to confirm your selection. <p>Attention! The device does not measure the temperature of objects being observed. The image is formed based on the temperature differences of the objects.</p>															
General Settings 	<p>This menu item allows you to configure the following settings:</p> <hr/> <p>Language  Language selection</p> <ul style="list-style-type: none">• Press the controller button (6) briefly to enter the Language submenu .• Rotate the controller ring (6) to select one of the available interface languages: English, German, Spanish, French, Italian or Russian.• Confirm your selection with a short press of the controller button (6).• Press and hold the controller button (6) to save your selection and exit from the submenu. <hr/> <p>Date  Date Setting</p> <ul style="list-style-type: none">• Press the controller button (6) briefly to enter the Date submenu . The date is displayed in dd/mm/yyyy format.• Rotate the controller ring (6) to select the desired year, month and date. Press the controller button (6) briefly to switch between digits.• Press and hold the controller button (6) to save your selected date and exit from the submenu. <hr/> <p>Time  Time Setting</p> <ul style="list-style-type: none">• Press the controller button (6) briefly to enter the Time submenu .• Rotate the controller ring (6) to select the time format - 24 or AM/PM.• Press the controller button (6) to proceed to the hour setting.• Rotate the controller ring (6) to select the hour value.• Press the controller button (6) to proceed to the minute setting.• Rotate the controller ring (6) to select the minutes value.• Press and hold the controller button (6) to save your selected time and exit from the submenu. <hr/> <p>Units of Measure  Units of measurement selection</p> <ul style="list-style-type: none">• Press the controller button (6) briefly to enter the Units of measure submenu .• Rotate the controller ring (6) to select the unit of measurement - meters or yards, press the controller button (6).• Return to submenu will happen automatically. <hr/> <p>Default Settings  Restore default settings.</p> <ul style="list-style-type: none">• Press the controller button (6) briefly to enter the Default Settings submenu  with a short press of the controller button (6).• Rotate the controller ring (6) to select “Yes” to restore default settings or “No” to cancel the action.• Confirm your selection with a short press of the controller button (6).• If “Yes” is selected, display will show “Do you want to restore default settings?” and “Yes” and “No” options. Select “Yes” to restore default settings.• If “No” option is selected: the action will be aborted and you will return to the submenu. <p>The following settings will be returned to their defaults:</p> <table><tr><td>• Operating Mode – Video</td><td>• Magnification – initial value</td><td>• Weapon Profile – A</td></tr><tr><td>• Mode – Forest</td><td>• PiP – off</td><td>• Reticle selection from the riflescope's memory – 1</td></tr><tr><td>• Calibration Mode – automatic</td><td>• Color Mode – White hot</td><td></td></tr><tr><td>• Interface Language – English</td><td>• Units of Measurement – metric</td><td></td></tr><tr><td>• Wi-Fi – off (default password)</td><td>• Side Incline – Off</td><td></td></tr></table> <p>Attention! After restoring default settings, the date, time and user pixel map as well as the zeroing profiles data entered by the user are saved.</p>	• Operating Mode – Video	• Magnification – initial value	• Weapon Profile – A	• Mode – Forest	• PiP – off	• Reticle selection from the riflescope's memory – 1	• Calibration Mode – automatic	• Color Mode – White hot		• Interface Language – English	• Units of Measurement – metric		• Wi-Fi – off (default password)	• Side Incline – Off	
• Operating Mode – Video	• Magnification – initial value	• Weapon Profile – A														
• Mode – Forest	• PiP – off	• Reticle selection from the riflescope's memory – 1														
• Calibration Mode – automatic	• Color Mode – White hot															
• Interface Language – English	• Units of Measurement – metric															
• Wi-Fi – off (default password)	• Side Incline – Off															

MENU ITEM	SUBMENU	
General Settings 	Format 	<p>Format. This function enables formatting the memory card (delete all files).</p> <ul style="list-style-type: none"> Press the controller button (6) briefly to enter the Format submenu . Rotate the controller ring (6) to select “Yes” to format the memory card, or “No” to return to the submenu. Confirm your selection by pressing the controller button (6). If the “Yes” option has been selected, the Do you want to format memory? message and “Yes” and “No” options will appear on the display. Select “Yes” to format the memory card. The Memory is formatting message means that formatting is in progress. The Memory format complete message means that formatting is completed. If “No” option is selected: formatting is cancelled and return to the submenu.
Wi-Fi Settings 	<p>This item enables you to set up your riflescope for operation in a Wi-Fi network.</p>	
	Password Setup 	<p>This item enables you to set a password to access the riflescope from an external device. The password is used to connect an external device (i.e. smartphone) to the riflescope.</p> <p>Press the controller button (6) to enter the Password Setup submenu.</p> <ul style="list-style-type: none"> The default password (12345678) will appear on the screen. Rotate the controller ring (6) to set the desired password. Press the controller button (6) to toggle through the digits. Press and hold the controller button (6) to save the password and exit from the submenu.
	Access Level Setup 	<p>This sub-function enables you to configure the appropriate level of access to your device made available to the Stream Vision application.</p> <p>Owner level. A Stream Vision user has full access to all the device’s functions.</p> <p>Guest level. A Stream Vision user can only view video footage from the device in real time.</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Press the controller button (6) briefly to enter the submenu. Rotate the controller ring (6) to select the access level. Press and hold the controller button (6) to confirm your selection and exit from the submenu.
Accelerometer 	<p>This menu item includes two subitems - Auto Shutdown and Side Incline.</p>	
	Auto Shutdown 	<p>This item allows you to activate auto shutdown function for riflescope in a non-operating position (tilt up or down at an angle of more than 70°, right or left - at an angle of more than 30°). In this event, the controls (buttons, controller) are disabled.</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Accelerometer submenu, confirm the selection by briefly pressing the controller (6). Rotate the controller ring (6) to select Auto Shutdown. Press the controller button (6) briefly to enter the submenu. Rotate the controller ring (6) to select the time period (1 min, 3 min, 5 min) upon expiry of which the riflescope will automatically shut down, or select Switch off if you wish to deactivate Auto Shutdown. Confirm your selection with a short press of the controller button (6). <p>Note: If the automatic shutdown function is activated, the status bar shows an icon and shutdown time period as  1 min.</p>
	Side Incline 	<p>This item allows you to turn on/off the indication of horizontal (side) incline of the weapon. Side incline is indicated by “sector” arrows to the right and left of the reticle. Arrows show the direction in which you should move your rifle to eliminate incline.</p> <p>There are three modes of incline:</p> <ul style="list-style-type: none"> 5°-10 ° – one sector arrow; 10°-20 ° - two sector arrow; > 20° - three sector arrow. <p>A side incline of less than 5° is not displayed.</p> <ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring to select the Accelerometer menu item. Press the controller button (6) briefly to enter the Accelerometer submenu. Rotate the controller ring to select Side Incline Press the controller button (6) briefly to enter the Side Incline submenu. Rotate controller ring to select On for turning on the incline indication or Off for turning it off. Confirm your selection with a short press of the controller button (6).

MENU ITEM	SUBMENU	
Defective Pixel Repair 	Defective Pixel Repair 	<p>When using the device, defective (dead) pixels may appear on the microbolometer. These are bright or dark points of a constant brightness that are visible on the image. Defective pixels on the microbolometer can increase in size relatively when digital zoom is activated. THERMION riflescopes offer the possibility of removing any defective pixels on the microbolometer using software, as well as to cancel any deletion.</p> <ul style="list-style-type: none"> Press the controller button (6) to open the submenu. Press the controller button (6) briefly to select the icon . A marker  will appear on the left side of the display. A “magnifying glass” will appear on the right side of the display — a rectangle with an enlarged view of the marker  for precise pixel selection — and marker coordinates under the “magnifying glass”  $X=100$ $Y=100$. Rotate the controller ring (6) to move the marker to align its center with the defective pixel. Press the controller button (6) shortly to switch the marker direction from the horizontal to the vertical and vice versa. Rotate the controller ring (6) to align the defective pixel with the fixed cross in the frame – the pixel should disappear. Delete the defective pixel with a short press of the ON (3) button. Where the pixel has been successfully deleted, the OK message will appear on the screen for a short time. Then, by moving the marker across the display, you can delete the next defective pixel. Press and hold the controller button (6) to exit the Defective Pixel Repair function.
	Restore Default Pixel Map 	<p>Return all defective pixels previously disabled by the user to their original state:</p> <ul style="list-style-type: none"> Press the controller button (6) to open the submenu. Press the controller button (6) to select the icon . Select “Yes” if you want to return to the factory pixel map and “No” if you do not. Press the controller button (6) briefly to confirm the selection. <p>Attention! One or two pixels on the display of the riflescope in the form of bright white, black or colored (blue, red or green) dots may appear. These points cannot be removed and not a defect.</p>
Device Information 		<ul style="list-style-type: none"> Press and hold the controller button (6) to enter the main menu. Rotate the controller ring (6) to select the Device Information menu item. Press the controller button (6) briefly to enter the Device Information submenu. <p>This item allows the user to view the following information about the riflescope:</p> <ul style="list-style-type: none"> - Full name of the riflescope, - SKU number, - Serial number of the riflescope, - Riflescope software version, - Hardware version, - Service information - Battery information



⚡ Status Bar



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

- Color Mode (shown only when the Black Hot color mode is selected)
- Actual zeroing profile (e.g., A).
- Zeroing distance (e.g., 100 m)
- Observation mode (e.g., Forest)
- Calibration mode (a countdown timer ⌚ 00:03 will appear instead of the calibration icon when in automatic calibration mode with 3 seconds remaining until automatic calibration).
- Current magnification
- Microphone
- Wi-Fi connection
- **Auto Shutdown** function (e.g., 1 min.)
- Clock
- Batteries discharge level (when riflescope is powered by a built-in or removable battery pack) or
- External battery power indicator (if the riflescope is powered by an external power supply) or
- Battery indicator with current percentage of charge (when charging from an external power source)

Note: a display image freezes until the calibration is in progress.

⚡ Video Recording and Photography

The riflescope is equipped with a function for video recording (photography) of the observed image that is saved on the built-in memory card.

Before using the photo and video functions, read the **Date Setting** and **Time Setting** subsections of the **Main Menu Functions** section of this Manual.

Built-in recorder operates in two modes:

- **Photo** (photography; the icon is displayed in the upper left corner of the display).
- **Video** (video recording; the icon is displayed in the upper right corner of the display, the total remaining recording time is given taking into account the current resolution in the HH:MM format (hours:minutes).

When switched on, the riflescope is in the Video mode. Toggle (switch) between the riflescope operating modes with a long press of the **REC (4)** button. Switching between the modes is cyclical (Video→ Photo→ Video...).

Photo mode. Photographing an image

- Switch to Photo mode.
- Press the **REC (4)** button briefly to take a photo. The image freezes for 0.5 sec - a photo is saved to the internal memory.

Video Mode. Recording a video

- Switch to the Video mode with a long press of the **REC (4)** button.
- Press the **REC (4)** button briefly to start video recording.
- When the video recording starts, the icon will disappear, instead of it the **REC** icon as well as the video recording timer displayed in the MM:SS (minutes:seconds) format will appear;
- Pause/continue recording by briefly pressing the **REC** button **(4)**.
- Press and hold the **REC (4)** button to stop video recording.

- Video files are stored in the built-in memory card after video recording has been turned off.
 - after turning off the video recording / after photography;
 - upon powering the riflescope off if recording was on;
 - When the memory card is overfilled during recording (**Memory Full** message appears on the display).

Notes:

- You can enter and navigate the menu during video recording.
- Recorded videos and photos are saved to the built-in memory card of the riflescope in the format **img_XXX.jpg** (for photos); **video_XXX.mp4** (for video). **XXX** – three-digit counter (for videos and photos);
- The counter used for the names of multimedia files cannot be reset;
- If a file is deleted from the middle of the list, its number is not taken by the other file;
- When the counter is full, a new folder is created: img_XXXX; XXXX being a file counter;
- Maximum duration of a recorded video file is 5 minutes. After this time expires, the video is recorded to a new file. The number of recorded files is limited by the capacity of unit's internal memory.
- Regularly check free memory within the built-in memory card and move the footage to other storage media to free up the memory card space.

⚡ Wi-Fi Function

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

- To enable the wireless module, enter the main menu by long pressing the controller button **(6)**.
- Rotate the controller ring **(6)** to select the **Wi-Fi activation** menu item.
- Press the controller button **(6)** briefly to turn on/off Wi-Fi module.
- Wi-Fi is displayed in the status bar as follows:

Connection Status	Indication in the status bar
Wi-Fi is switched off	
Wi-Fi is switched on by the user, Wi-Fi connection in the riflescope is in progress.	
Wi-Fi is switched on, there is no connection to the riflescope	
Wi-Fi is switched on, there is connection to the riflescope	

- The riflescope is recognized by an external device under the name Thermion_XXXX, where XXXX are the four last digits of the serial number.
- After entering the password (default: 12345678) on a mobile (see **Password Setup** section of the **Main Menu Functions** section of the Manual for more information on setting a password) and setting up a connection, the icon in the riflescope status bar changes to .
- Launch **Stream Vision** application on your mobile device (see **Stream Vision** section).
- Video broadcasting on a mobile screen starts after the viewfinder button on the mobile screen is activated.

⚡ Stadiametric Rangefinder

Thermal imaging riflescopes are equipped with a stadiametric rangefinder, which allows you to determine the approximate distance to an object, if its size is known.


- To select the **Stadiametric rangefinder** function, enter the quick access menu by briefly pressing the controller button **(6)**
- Press the controller button **(6)** briefly to select the icon .
- The display will show the lines for measurements, the icons and numbers of the measured distance for three objects.

- There are three predefined values for objects:

- **Hare** – 0.3 m high
- **Boar** – 0.7 m high
- **Deer** – 1.7 m high

- Place the bottom fixed line under the object and rotating the controller ring (6), move the upper line relative to the lower horizontal fixed line so that the object is located directly between the lines. A target range automatically recalculated along with movement.

- If the object is not measured within 10 seconds, the information disappears from the display.

- To select a unit of measurement (meters or yards), go to the **General Settings** menu item => **Units of measurement** submenu .

- The measured range value is rounded off before being displayed – for large range values up to 5 m, for shorter range – up to 1 m.

- To exit the rangefinder mode, briefly press the controller button (6) or wait 10 seconds to exit automatically.



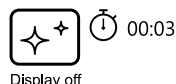
⚡ Display Off Function

This function deactivates the image transmission to the display by minimizing its brightness. This helps prevent accidental disclosure. However, the device stays on.

Options for operating with the Display Off function

Option 1. Riflescope off. It is necessary to power the riflescope on and activate the **Display Off** function.

- Press the **ON (3)** button briefly to power the riflescope on.
- Activate the **Display Off** function: press and hold the **ON (3)** button. The **Display off** message with a countdown will appear on the screen.
- Release the **ON (3)** button.
- Press the **ON (3)** button briefly to deactivate the **Display Off** function (to activate the display).




Option 2. The **Display off** function is activated; the riflescope should be turned off.

- Press and hold the **ON (3)** button. **Display off** message with 3, 2, 1 countdown will appear on the screen.
- Hold **ON (3)** button until the riflescope turns off (the riflescope turns off after counting up to 1).

⚡ PiP Function

The **PiP** function (**Picture-in-Picture**) allows you to see both a magnified image in a particular dialog box and the main image.

- Press and hold the **ZOOM** button (5) to turn on/off the **PiP** function.
- To change digital magnification in the PiP window, rotate the controller ring (6), while the icon  is visible on the screen.
- The magnified image is displayed in a particular dialog box, with the full magnification being used.
- The rest of the image is displayed only with the optical zoom (digital zoom is off).
- When **PiP** is turned off, the display shows the full magnification set for the **PiP** mode.

⚡ Stream Vision

THERMION thermal imaging riflescopes support **Stream Vision** technology, which allows you to stream an image from the thermal imager to smartphone or tablet via Wi-Fi in real time mode.

You can find detailed instructions on **Stream Vision** in the separate brochure or at the site pulsar-vision.com.

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](https://play.google.com/store/apps/details?id=com.yukon.app) or [App Store](https://apps.apple.com/us/app/stream-vision/id1069593770). Scan the QR codes or follow the links 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**.

Important:


- if your **Pulsar** device is connected to the phone, please turn on mobile data (GPRS/3G/4G) on your mobile device to download an 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 an update.

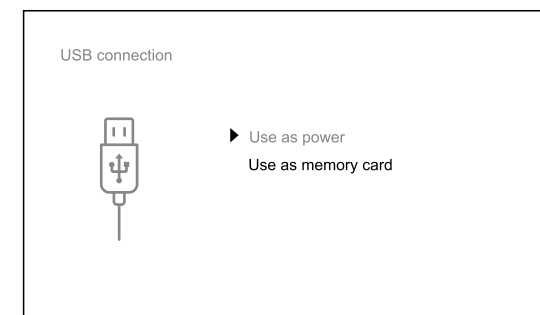
⚡ Wait for the update to download and install. **Pulsar** device will reboot and will be ready to operate. **USB**

Connection

- Press the **ON (3)** button briefly to power the riflescope on (the computer will not detect the riflescope if it is turned off).
- Connect one end of the USB cable to the riflescope micro USB port (10), and the other one to the port on your computer.
- The riflescope is detected by the computer automatically and no installation of drivers is required.
- After a few seconds, two connection options appear on the display: **Power** and **Memory card**.
- Rotate the controller ring (6) to select the connection mode.
- Press the controller button (6) briefly to confirm your selection.

Connection options:

- Power.** Upon choosing this mode, your PC is used as an external power supply. An icon  will appear in the status bar. The riflescope continues operating and all functions are accessible. The Battery Packs installed in the riflescope are not charged.



- **Memory card.** When selecting this mode, the computer recognizes the riflescope as a memory card. This mode is designed to manage the files saved in riflescope's memory. The riflescope's functions are not available in this mode; the riflescope turns on. The device continues to operate after being disconnected from the computer.
 - If a video was being recorded at the moment of connection, the recording will stop and will be saved.

USB disconnection

- When the USB is disconnected from the riflescope connected in the **Power** mode, the riflescope continues to operate on battery packs when they are sufficiently charged.
- When the USB is disconnected from the riflescope connected in the **Memory card** mode, the riflescope remains switched on.

⚡ Technical Inspection

It is recommended to carry out a technical inspection each time before using the riflescope. Check the following:

- The riflescope appearance (there should be no cracks on the body).
- The condition of the lens and eyepiece (there should be no cracks, greasy spots, dirt or other deposits).
- The state of the battery pack (must be charged to a level of 50-70%) and the electric contacts within it (there should be no signs of salts or oxidation).
- The controls should be in working order.

⚡ Maintenance

The maintenance should be carried out at least twice a year and includes the following steps:

- Wipe the exterior surfaces of metal and plastic parts off dust and dirt with a cotton cloth. Silicone grease may be used for this.
- Clean the electric contacts of the battery pack and battery slots on the riflescope using a non-greasy organic solvent.
- Check the optics of the eyepiece and the lens. If necessary, 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.

⚡ Troubleshooting

The table shows a list of problems that may occur when using the riflescope. Carry out the recommended checks and troubleshooting steps in the order listed in the Table. If there are defects that are not listed in the Table or it is impossible to repair the defect yourself, return the riflescope for repair service.

MALFUNCTION	POSSIBLE CAUSE	CORRECTIVE ACTION
Riflescope will not turn on.	The batteries are completely discharged.	Charge the battery.
Riflescope will not work from an external power source.	USB cable is damaged.	Replace USB cable.
	External power source is discharged.	Charge the external power source.
The image is fuzzy. There are distortions in the form of bars of different widths lying in different directions, or dots of different size and brightness.	Calibration is required.	Perform image calibration according to Microbolometer Calibration section of the Manual.
The image is too dark.	Brightness or contrast level is too low.	Adjust brightness or contrast.

MALFUNCTION	POSSIBLE CAUSE	CORRECTIVE ACTION
Color bars appeared on the display or image disappeared.	The device was exposed to static stress during the operation.	After the exposure to static stress, the device may either reboot automatically or require to be switched off and on again.
There is a clear image of the aiming reticle, but a fuzzy image of the object.	There is dust or condensate on the interior or exterior optical surfaces of the lens.	Wipe off the outside optical surfaces with a soft cotton cloth. Let the riflescope dry by leaving it in a warm environment for 4 hours.
	The lens is not focused (except for Model XM30).	Adjust the image sharpness by rotating the lens adjuster.
The aiming reticle shifts after firing rounds.	The riflescope is not mounted securely or the mount is not fixed on the riflescope.	Check that the riflescope has been securely mounted. Make sure you are using the same type and caliber of the bullets as when the riflescope and weapon were initially zeroed. If your riflescope was zeroed in the summer and using in the winter (or the other way round), a slight shift of the zero point is possible.
The riflescope will not focus.	Wrong settings.	Adjust the riflescope according to the Powering On and Image Setting section. Check the outer surfaces of the objective lenses and eyepiece and, where necessary, wipe them from dust, condensation, frost, etc. In cold weather, you can use special anti-fogging coatings (e.g., the same as for corrective glasses).
Smartphone or tablet cannot be connected to the riflescope.	Password in the riflescope was changed.	Delete network and connect again typing the password saved in the riflescope.
	The device is in an area with a large number of Wi-Fi networks that may cause interference.	To ensure stable Wi-Fi connection, relocate the device to an area with fewer Wi-Fi networks or into an area with none.
Wi-Fi signal is missing or interrupted.	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).	Relocate smartphone or tablet into the Wi-Fi signal line of sight.
The image of the object being observed is missing.	Observation through glass.	Remove the glass from the field of vision.
Poor image quality/Reduced detection distance.	These problems may occur during the observation in adverse weather conditions (snow, rain, fog etc.).	
When the riflescope is used in low temperature conditions the image quality of the surroundings is worse than in positive temperature conditions.	In positive temperature conditions, objects being observed (surroundings and background) heat up differently because of thermal conductivity, thereby generating a high temperature contrast. Accordingly, image quality produced by the thermal imager will be higher.	
	In low-temperature conditions, objects being observed (background) will cool down to roughly the same temperature, as a rule, and thus the temperature contrast is substantially reduced and image quality (zoom) goes down. This is a distinctive feature of the thermal imaging riflescopes.	

Repair of the device is possible within 5 years.

By following the link below you can find answers to the most frequently asked questions about thermal imaging <https://www.pulsar-nv.com/glo/support/faq/79>



Package Contents

- **THERMION** Thermal Imaging Riflescope
- Rechargeable APS2 Battery Pack
- APS battery charger
- DC charger
- USB cable
- Carrying case
- Lens-cleaning cloth
- Quick User Manual
- Warranty card
- APS3 battery cover

Attention! **THERMION** thermal imaging riflescopes require a licence when exported outside your country.

Electromagnetic compatibility. This product complies with the requirements of European standard EN 55032: 2015, Class A.

Caution: Operating this product in a residential area may cause radio interference.