

PARD

Multi-spectral Binocular

Osprey Series



User Manual

Important Reminder

- 1 All PARD products are exclusively designed for civilian use and strictly prohibited for any military purposes.

- 2 All PARD products are not authorized for export to, including but not limited to Russia, Belarus, Palestine, Israel, Sudan, South Sudan, and other conflict zones.

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Introduction

Thank you for your continued support and for choosing PARD Osprey multi-spectral binocular. Please read this manual carefully before using the device for the first time. Please follow the instructions in this manual to avoid any damage caused by improper use and to ensure that your device operates properly.

After reading, please keep this manual in a safe place, for future reference. This manual provides step-by-step instructions on how to use your digital camera and is intended for your reference only.

Please note that PARD reserves the right to update this manual without prior individual notifications. For the latest information and updates, we recommend you to visit our official website. Additionally, PARD reserves the final right of interpretation of this manual.

Precautions

- Please remove the insulating tape on the battery before first use. It is recommended to use a fully charged lithium-ion battery with a rated voltage of 3.7V.
- Please turn off the device and remove the battery when it's not in use for more than 10 days, and store the device & battery in a dry and safe place.
- Be extra cautious and handle the device with care during use or transportation. It is recommended to use the original packaging during transportation.
- Do not use the device to focus directly on strong sources of light such as the sun or electric welding. The detector may be damaged and it will void the warranty.
- Avoid lens scratches and damage caused by oil or chemical contamination of the lens. Keep the lens cap on when not in use.
- The device should be placed in a cool, dry, and ventilated environment without strong electromagnetic fields, and the storage environment temperature should not be lower than $(-30^{\circ}\text{C}/-22^{\circ}\text{F})$ or higher than $(55^{\circ}\text{C}/131^{\circ}\text{F})$.
- Do not disassemble the device without authorization. If you encounter any problems, please contact our after-sales team and report them on our official website. Failure to do so will render the warranty service null and void.
- **Attention!** All PARD night-vision and thermal imaging devices require a license when exported to outside your country.

Package Contents

Icon	Contents	Quantity
1	Osprey 480/640 Unit	1
2	Type-C cable	1
3	21700 Rechargeable Lithium-Ion battery	1
4	User's manual	1
5	After-sales card	1
6	Cloth	2

Description & Key Features

The Osprey series, an innovative multi-spectral binocular, provides 4 channels (thermal imaging, daytime, night vision, and PIP). Users can utilize the thermal channel for target detection and night vision for identification purposes, greatly enhancing detection, recognition, and identification capabilities. It is also the first generation of binoculars featuring a large screen, providing enhanced comfort during observation.

Equipped with an upgraded sensor boasting a resolution of 640*512/480*360 and NETD $\leq 20\text{mK}$, the Osprey series aims to deliver vivid, detailed images with high clarity. The integrated with an IR illuminator and 1200yds modules, the need for additional carrying or installation is eliminated, ensuring portability and efficiency in usage. What's more, coupled with independent, large buttons, the Osprey series offers a user-friendly touch experience, simplifying every button press operation.

Osprey series, the all-in-one solution, equips you well no matter in forest or filed scenarios.

Key Features

- 1000m/1200yds LRF
- 850/940nm IR illuminator
- NETD $\leq 20\text{mK}$
- Interpupillary Adjustment
- One large display, comfortable for observation
- 21700 rechargeable Li-ion battery
- Infrared Image Enhancement Algorithm (IREA)
- WiFi Connection
- IP67 rating

Specifications

Model		Osprey 480	Osprey 640
Classification		Multi-spectral Binocular	
Thermal Sensor			
Type		Uncooled Vox (vanadium oxide)	
Resolution(pixel)		480*360	640*512
Pixel Size(μm)		12*12	12*12
NETD		≤20mK (0.020℃)	≤20mK (0.020℃)
Frame Rate(Hz)		50	50
Detection distance(m)		1800	1800
Image Engine		Pard IREA	Pard IREA
Objective lens(mm)		35	35
Optical Magnification(x)		2.4	1.8
Digital Zoom(x)		2/4/6/8	2/4/6/8
Focus range		3m-∞	3m-∞
Field of view(HxV)	Horizontal	9.4°	12.5°
	Vertical	7.1°	10.0°
	Diagonal	11.8°	16.0°
Visible Light Sensor			
Resolution(pixel)		2688*1520	2688*1520
Pixel size(μm)		2.9	2.9

Sensitivity(lux)		0.001	0.001
Frame rate(Hz)		Color:60/Mono:30	Color:60/Mono:30
Image Engine		PARD VLEA	PARD VLEA
Objective lens(mm)		50	50
Optical Magnification(x)		3.5	3.5
Digital zoom(x)		2/3	2/3
Focus range		3m-∞	3m-∞
Field of view(HxV)	Horizontal	6.4°	6.4°
	Vertical	4.8°	4.8°
	Diagonal	8.0°	8.0°
Display			
Type		LCD	LCD
Resolution(pixel)		640*480	640*480
Scene Mode(Thermal Channel)		City/Rain/Forest	City/Rain/Forest
Image mode		WT-HOT/BK-HOT/ EDGE/RD-HOT/IN-HOT/ SKY/Color/Mono	WT-HOT/BK-HOT/ EDGE/RD-HOT/IN-HOT/ SKY/Color/Mono
Eye relief(mm)		25	25
Diopter adjustment(D)		-5~3	-5~3
Main Function			
LRF detection range(m/yd)		1000/1200	1000/1200
PIP		Yes	Yes
Gyroscope		Yes	Yes
Loop recording		Yes	Yes
E-compass		Yes	Yes
Shutter		Mechanical shutter	Mechanical shutter
Microphone		Yes	Yes
Firmware Upgrade		Yes	Yes
Storage(GB)		Micro SD card(Max. 128)	Micro SD card(Max. 128)

IR Illuminator		
IR power	5W	5W
IR illuminating level	3 Levels	3 Levels
IR distance(m)	350	350
IR Wavelength(nm)	850/940	850/940
Interfaces		
USB Type-C	Yes	Yes
HDMI Output	Yes	Yes
WiFi	Yes	Yes
Supported Apps	PardVision2	PardVision2
Power Supply		
Battery type	Lithium Ion 21700*1	Lithium Ion 21700*1
Output voltage(V)	3.7	3.7
Operating time(h)	≤6	≤6
External power supply(V)	Type-C	Type-C
Environmental characteristic		
Degree of protection	IP67	IP67
Operating temp(°C/°F)	-30 ~ +55 / -22 ~ +131	-30 ~ +55 / -22 ~ +131
Material		
Objective lens	All-glass multi-coated lens	All-glass multi-coated lens
Measuremen		
Product dimension(with IR illuminator&LRF, L x W x H, mm)	220*137*58	220*137*58
N.W/pcs(with LRF&battery, g)	704.5	704.5

Components

Osprey Series

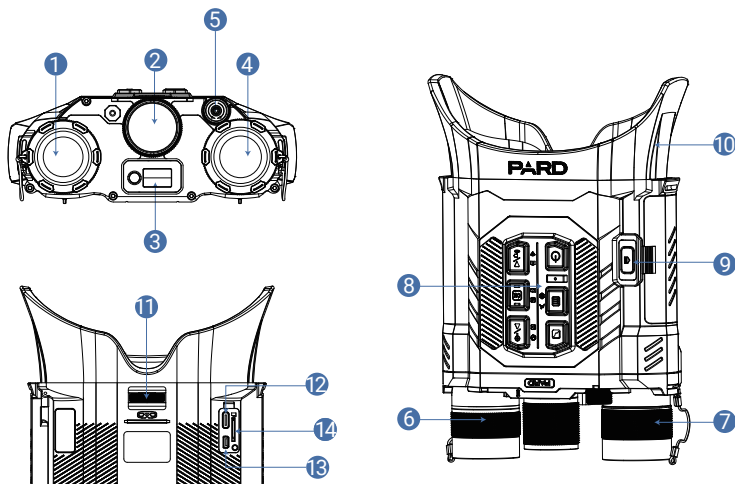


Fig. 1

No.	Name	No.	Name
1	Night vision objective lens	8	Keypad
2	IR illuminator	9	Battery compartment
3	LRF Module	10	Rubber Eyepiece
4	Thermal objective lens	11	Interpupillary Adjustment Wheel
5	Diopter Adjustment wheel	12	Type-C charging Port
6	Night vision Objective Lens Focusing wheel	13	HDMI Port
7	Thermal Objective Lens Focusing wheel	14	Micro SD Card Slot

Installation

1. Unboxing

Before using this device, please do the following:

- 1 Open the box and remove the device.
 - 2 Check to ensure that the package contents listed above are all included in the box.
 - 3 Check the device for any damage to the display, body, lens, buttons, etc.
 - 4 Make sure that the objective lens and eyepiece are clean & functioning properly.
- Note:** If any accessories are missing or damaged, please contact our after sales service.

2. Battery Installation and Startup

The battery installation steps are as follows:

- 2.1. Press the battery button to open the battery compartment and remove the battery.
- 2.2. Remove the insulating tape.
- 2.3. Be careful to put the positive and negative poles of the battery in the correct position.
- 2.4. To turn on the device, press and hold the power button for about 3 seconds. (When the PARD Logo appears on the screen, the device is ready for use.

Note:

- 1 Please use a single 21700 rechargeable lithium-ion battery rated 3.7V voltage.
- 2 Do not expose the battery pack to high temperature or to a naked flame.
- 3 Do not put the device into water when the battery cover is open;
- 4 Do not expose disassemble the device without authorization;
- 5 Do not pierce the device with sharp objects;
- 6 Battery should be kept out of reach of children.
- 7 When using the battery at cold(low) temperatures, the battery capacity decreases, this is normal and not a defect.
- 8 Do not use the battery if it has been damaged in any way.
- 9 After charging is complete do not leave the battery on charge connected to the network.



Please act responsibly and recycle or dispose of all used batteries according to the law.

3. Interpupillary Adjustment

Osprey features interpupillary distance adjustment, guaranteeing comfortable usage tailored to each individual's differences.

How to do: Adjust the appropriate interpupillary distance by toggling the wheel. (as shown in the following picture)

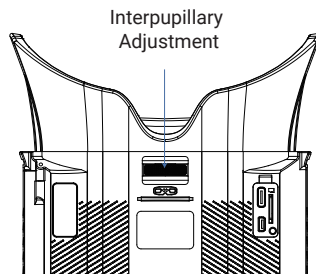


Fig. 2

4. Diopter Focusing

Diopter focusing is used to clearly see the content displayed on the screen.

- ❶ After power on the device, rotate the diopter focusing wheel until you can see the screen clearly.
- ❷ Please note that the image may not be clearly visible before objective lens focus adjusted, only the words and icons on the display are clearly visible at this stage.

5. Objective Lens Focusing

- ❶ Before you focus the objective lens, ensure that the diopter focusing has been completed.
- ❷ Aim at the target you want to see, and rotate the focusing knob of the objective lens until you can see the target clearly.

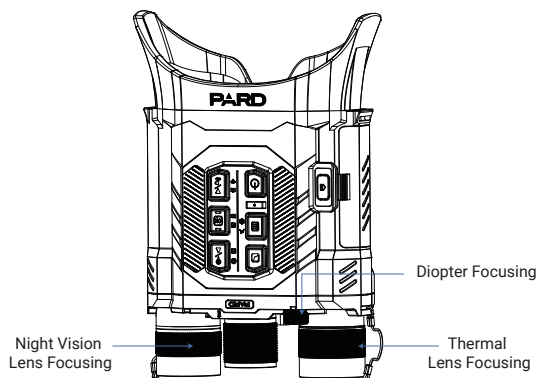


Fig. 3

6. Compass Calibration

Users are required to tilt and move the device in a figure 8 motion until the compass is calibrated, as shown in the picture.



Fig. 4

Operation Instruction

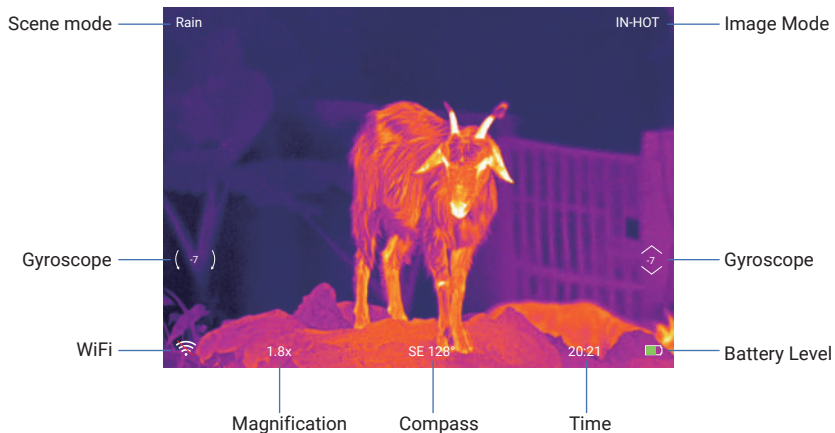


Fig. 5

1. Shortcut Mode

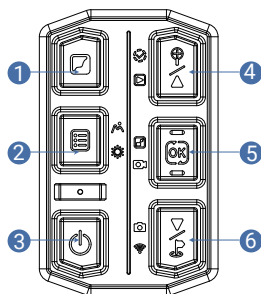


Fig.6

Keypad	Single Press	Press and Hold	Double Press
Key 1	Switch 6 thermal image mode/Adjust IR illuminator level	Switch black&white/color mode	-
Key 2	turn on/off menu	-	Switch scene mode
Key3	Sleep mode	Power on/off	-
Key4	Up/Zoom in	Playback	Shutter correction
Key5	OK/Switch night vision or thermal lens	Record/Save video	Turn on/off PIP
Key6	Down/LRF	Turn on/off WiFi	Take photos

Explanation

Key 1:

1. Single press:

① **In the thermal imaging home screen mode:** single press [Key 1] to switch the image mode among WT-HOT/BK-HOT/EDGE/RD-HOT/IN-HOT/SKY.

② **In the night vision home screen mode:** when the infrared fill light is turned on, press [Key 1] to switch the brightness of the IR illuminator among "Level 1", "Level 2", "Level 3" and "OFF".

2. Press and hold:

In the night vision home screen mode: press and hold [Key 1] to switch between color mode and Black&White mode.

Key 2:

1. Single press:

Home screen mode: single press [Key 2] to turn on/off menu.

2. Double press:

Home screen mode: double press [Key 2] to switch scene among CITY/FOREST/RAIN.

Key 3:

1. Single press:

Home screen/Menu mode: single press [Key 3] to turn on the sleep mode.

2. Press and hold:

Home screen mode: press and hold [Key 3] to turn on/off the device.

Key 4:

1. Single press:

① **Home screen mode:** single press [Key 4] to zoom in.

② **Menu mode:** single press [Key 4] to scroll up or adjust the values.

2. Press and hold:

Home screen mode: press and hold [Key 4] to play back the video.

3. Double press:

Home screen mode: double press [Key 4] to perform shutter correction.

Key 5:

1. Single press:

① **Home screen mode:** single press [Key 5] to switch between thermal lens and night vision lens.

② **Menu mode:** single press [Key 5] to means "OK".

2. Press and hold:

Home screen mode: press and hold [Key 5] to record the video, press and hold [Key 5] again to save the video.

3. Double press:

Home screen mode: double press [Key 5] to turn on/off PIP.

Key 6:

1. Single press:

- ① **Home screen mode:** single press [Key 6] to turn on/off the LRF.
- ② **Menu mode:** single press [Key 6] to scroll down or adjust the value.

2. Press and hold:

Home screen mode: press and hold [Key 6] to turn on/off the WiFi.

3. Double press:

Home screen mode: double press [Key 6] to take photos.

Menu Mode

Home screen mode: single press [Key 2] to enter menu mode. (the shortcut key function is invalid at this time).

1. Image Setting

Users can adjust the image contrast, brightness, detail, sharpness and mode under this setting.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the image setting option, press [Key 5] to enter it.
- Press [Key 5] to switch between contrast/brightness/detail/sharpness/mode options, and press [Key 4]/[Key 6] to adjust the value.
- Press and hold [Key 5] to save and exit.

Note: Upon the next startup, the device will maintain the saved image settings.

2. Display Setting

Users can adjust the display brightness of the screen to adapt to different surroundings.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the display brightness option, press [Key 5] to enter it.
- Press [Key 4]/[Key 6] to move the cursor to select "level 0"/"level 1"/"level 2"/"level 3"/"level 4"/"level 5"/"level 6" options.
- Press [Key 5] to save and exit.

3. Range Unit Selection

Users can choose "meter" or "yard" as the unit of measurement for the device according to habits.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to move the cursor range unit selection option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to choose between "meter" or "yard".
- Press [Key 5] to save and exit.

4. Gyroscope

This function measures the orientation of the device so that the yaw and pitch angles of the device can be displayed and calibrated.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to move the cursor to the gyroscope setting option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to select "Display" or "Calibration".
- Press [Key 5] to enter it.

(1) "Display" indicates whether (or not) to display the yaw and pitch angle of the device on the home screen. Press [Key 4]/[Key 6] to select "Off" or "On", and press [Key 5] to save and exit.

(2) "Calibrate" means to enter the calibration state. After selecting, please place the device on a horizontal plane surface, and press [Key 5] to perform automatic calibration. After calibration, the device will automatically return to the home screen.

5. Scene

There are three scene modes, "City", "Forest" and "Rain". Users can choose any of the available scenes to achieve the best image display effect.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the scene, move the cursor to select "City", "Forest" or "Rain".
- Press [Key 5] to save and exit.

6. Picture in Picture

The PIP mode displays a 2x magnified reticle area in the top of the screen, allowing you to see magnified target details without losing the field of view.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the PIP setting option, and press [Key 5] to enter it.
- Press [Key 4]/[Key 6] to move the cursor to select "Off" or "On".
- Press [Key 5] to save and exit.

7. Hot Track

The device can detect and display the highest temperature point on the screen, and automatically track this target heat source.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the hot track setting option, and press [Key 2] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select "Off" or "On".
- Press [Key 5] to save and exit.

8. Default Magnification

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the default magnification option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select magnification.
- Press [Key 5] to save and exit.

9. Default Color

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the default color setting option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select among "color", "Black&White", "Yellow" and "Green".
- Press [Key 5] to save and exit.

10. Brightness of IR

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the Brightness of IR setting option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select among "OFF", "1", "2", "3".
- Press [Key 5] to save and exit.

11. Auto Power Off

After selecting your preferred time duration, the device will sense the last point of operation before beginning the shutdown. Auto power off will start after the device has been idle then it automatically triggers the auto power off command.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to select the auto power off setting, and press [Key 2] to enter the sub-menu.
- Press [Key 4]/[Key 6] to select "Off", "1 minute", "10 minutes" or "30 minutes" duration options.
- Press [Key 5] to save and exit.

12. Auto Recording

After auto recording is on, device will start recording and continue to record after the next startup.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the auto recording setting option and press [Key 2] to enter the sub-menu.
- Press [Key 4]/[Key 6] to select "Off" or "On" options.
- Press [Key 5] to save and exit.

13. Loop Recording

Users can customize the segment recording duration. This can be set up under loop recording. When the capacity of the memory card is full, the new recording will automatically overwrite the previous saved files. When you select "Off", the recording will stop when the memory card is full, and the oldest video file will not be overwritten.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the loop recording setting option, and press [Key 2] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select preferred loop time duration "Off", "3 minutes", "5 minutes" or "10 minutes".
- Press [Key 5] to save and exit.

14. Date Stamp

Users can set whether to display the time stamp in the lower right corner of photos and videos taken.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the date stamp setting option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select "Off" or "On" options.
- Press [Key 5] to save and exit.

15. Record Audio

User can set whether to record audio synchronously in the video.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the recording audio setting option, press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select "Off" or "On" option.
- Press [Key 5] to save and exit.

16. WiFi

Through the WiFi connection, you can use your phone, PC or tablet as an external viewfinder enabling users to synchronously see the photos and videos on a larger screen.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the WiFi setting option, and press [Key 5] to enter the sub-menu.
 - Press [Key 4]/[Key 6] to move the cursor to select "On" or "Off" option.
- (1) Press [Key 5] to select "Off", and return to the previous page.
- (2) Press [Key 5] to select "On" to enable WiFi and return to the home screen.

Steps to connect to your mobile device:

- Download "PardVision2" from the Apple App Store or the Google Play Store.
- Turn on the WiFi on your device and on your mobile device.
- Search the WiFi on your mobile device (the device WiFi network is a string of characters starting with PARD, which is a unique string of numbers). Please enter the password: 12345678 to connect.
- Enter the application to operate and use.

Note: After the WiFi is turned on, you cannot access the menu. Press and hold [Key 6] to disable the WiFi and then enter the menu interface.

17. Exposure

- Press [Key 2] to enter the menu, press [Key 6] to the "Exposure", and press [Key 5] to enter the "Exposure".
- Press [Key 4]/[Key 6] to move the cursor among "+2.0", "+5/3", "+4/3", "+1.0", "+2/3", "+1/3", "+1.0", "-1/3", "-2/3", "-1.0", "-4/3", "-5/3" and "-2.0".
- Press [Key 5] to save and exit.

18. Language

Users can choose their preferred language.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the language setting option, press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select the desired language.
- Press [Key 5] to save and exit.

19. Date/Time

Users can set the system date and time of the device.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the date/time setting option, press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to adjust the setting date and time value, press [Key 5] to switch options.
- Press [Key 2] to save and exit.

20. Format

If users want to reformat the Micro SD Card, it will delete all the data on the Micro SD card permanently. Data cannot be recovered after reformatting. **Please operate with caution!**

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the format setting option, and press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select "Cancel" or "OK" option.
- Press [Key 5] to save and exit.

21. Blind Pixel Compensation

The blind pixel compensation algorithm enables effective compensation for blind spots that didn't respond to temperature and also reduces image distortion.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the blind pixel compensation option, click [Key 5] to enter it and you will see a prompt:
- Please put on lens cap;
Long press the menu [Key 2] to execute;
Short press the ranging [Key 6] to exit;

Note: perform the function as the prompt.

22. Default Settings

Users can decide whether to return the menu setting to defaults.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to restore default setting option, press [Key 5] to enter the sub-menu.
- Press [Key 4]/[Key 6] to move the cursor to select "Cancel" or "OK" option.
- Press [Key 5] to save and exit.

23. Firmware Upgrade

System firmware can be updated to maintain an optimized current version.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the firmware upgrade option, and press [Key 5] to enter the sub-menu. You will see an important reminder: Upgrading firmware may cause damage to the equipment, please operate with caution!
- Press [Key 5] to confirm and short press [Key 2] to exit.

Note: When performing this operation, please load the device with a fully charged battery and type-C power supply. Powering off the device during the firmware update process may cause damage to the device components. Please operate with caution.

24. Version

This function displays the device's version.

- Press [Key 2] to enter the menu, press [Key 6] to move the cursor to the version option, press [Key 2] to enter the sub-menu to view the version of software.
- Press [Key 2] to exit.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: The Grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. such modifications could void the user's authority to operate the equipment. The device has been evaluated to meet general RF exposure requirement. This equipment complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna(s) must not be co-located or conjunction with any other antenna or transmitter.

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