



# FAST

RED DOT FUSION SIGHT

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OPERATING MANUAL



# Important safety information

## Environmental influences

WARNING! Never point the lens of the device directly at intense heat sources such as the sun or laser equipment. The objective lens and eyepiece can function as a burning glass and damage the interior components. The warranty does not cover damage caused by improper operation.

## Risk of swallowing

Caution: Do not place this device in the hands of small children. Incorrect handling can cause small parts to come loose which may be swallowed.

## Safety instructions for use

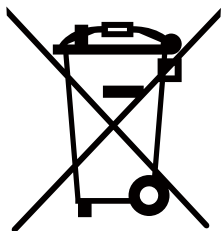
- Handle the device and Battery Pack with care: rough handling may damage the Battery Pack.
  - Do not expose the device to fire or high temperatures.
  - Only use the battery charger included in the delivery package.
  - The battery capacity decreases when operated in a cold ambient temperature. This is not a fault and occurs for technical reasons.
  - Always store the device in its carrying bag in a dry, well-ventilated space. For prolonged storage, remove the batteries.
  - Do not expose your device to extreme temperatures lower than  $-40^{\circ}\text{C}$  and higher than  $+50^{\circ}\text{C}$ .
  - The product shall only be connected to a USB Type C interface.
- If the device has been damaged, send the device to our after-sales service for repair.
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## Safety instructions for the power supply unit

- Check the power supply unit, cable and adapter for visible damage before use.
- Do not use any defective parts. Defective components must be replaced.
- Do not use the power supply unit in wet or humid environments.
- Only use the original cable provided with the battery charger.
- Do not make any technical modifications.

For further information and safety instructions, please refer to the Operation Instructions provided. This is also available on our website in the download center: [www.infirayoutdoor.com](http://www.infirayoutdoor.com).

## Disposal of batteries



In the European Union, this symbol indicates that the battery used in this product may not be disposed of in domestic waste and must be collected for disposal separately. When returning used batteries, please use a collection system that may exist in your country. The materials and substances in the batteries may have a detrimental impact on health and the environment.

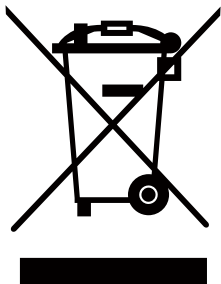
By depositing empty batteries at a recycling facility, you are contributing to the protection, maintenance and improvement of the quality of our environment.

Please only return discharged batteries.

The battery used does not contain mercury, cadmium or lead in quantities exceeding the limits defined in Directive 2006/66/EC.

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## User information on the disposal of electrical and electronic devices (private households)



The WEEE symbol on products and/or accompanying documents indicate that used electrical and electronic products must not be mixed with ordinary household waste. For proper treatment, recovery and recycling, take these products to the appropriate collection points where they will be accepted without charge. In some countries, it may also be possible to return these products

to your local retailer when you purchase a corresponding new product. The proper disposal of this product serves to protect the environment and prevents possible harmful effects on human beings and their surroundings, which may arise as a result of incorrect handling of waste.

For further information and safety instructions, please refer to the Operation Instructions provided. This is also available on our website in the download center: [www.infirayoutdoor.com](http://www.infirayoutdoor.com).

More detailed information on your nearest collection point is available from your local authority. In accordance with state legislation, penalties may be imposed for the improper disposal of this type of waste.

### For business customers within the European Union

Please contact your dealer or supplier regarding the disposal of electrical and electronic devices. He will provide you with further information.

### Information on disposal in other countries outside of the European Union

This symbol is only applicable in the European Union. Please contact your local authority or dealer if you wish to dispose of this product and ask for a disposal option.

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## Intended use

You purchase a corresponding new product. The proper disposal of this product serves to protect the environment and prevents possible harmful effects on human beings and their surroundings, which may arise as a result of incorrect handling of waste.

The device is intended for displaying heat signatures during nature observation, remote hunting observations and for civil use. This device is not a toy for children.

Use the device only as described in this instruction manual. The manufacturer and the dealer accept no liability for damages which arise due to non-intended or incorrect use.

## Function test

- Before use, please ensure that your device has no visible damage.
- Test to see if the device displays a clear, undisturbed image.
- Check that the settings for the device are correct.

## Installing/removing the battery

The Fast series supports CR123 and USB C power supply.



IRay Technology Co., Ltd. thus declares that the Fast series device complies with the directives 2014/53/EU and 2011/65/EU. The full text of the EU declaration of conformity as well as additional information are available at: [www.infirayoutdoor.com](http://www.infirayoutdoor.com). This device may be operated in all member states of the EU.



## Labeling requirements

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.

## Information to the user

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

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 by the instructions, may cause harmful interference to radiocommunications. 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.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

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## Body-worn Operation

This device was tested for typical body-support operations. To comply with RF exposure requirements, a minimum separation distance of 0.5cm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.

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# Specifications

	Model	Fast FAL19/1×34D
Direct View Optics	Magnification	1×
	Display	High luminance OLED
	Window Size	34mm×25mm
	Eye Relief	90mm
Thermal Channel	Resolution, pixels	384×288/12μm
	Objective Lens, mm	f19 /F1.0
	Recognition Distance	450m
	NETD	≤40mk
	Frame Rate, Hz	50Hz
	FOV	13.8°×10.4°
	Focus Range	5m- ∞
	Digital Zoom	1×、2×
	Mode	Red dot/Full/Fusion/Outline
	Polarity	Green hot/Black hot
Electrical	Battery Type	2×CR123
	Battery Life	Thermal mode>4h Red dot mode>65h
	Electrical Interface	5V (USB-C)
Mechanical	Interface	Picatinny
	Weight (with battery)	<660g
	Dimension	175mm×63mm×104mm
Environmental	Operating Temperature	-40°C~+50°C
	Storage Temperature	-50°C~+60°C
	IP Rating	IP67

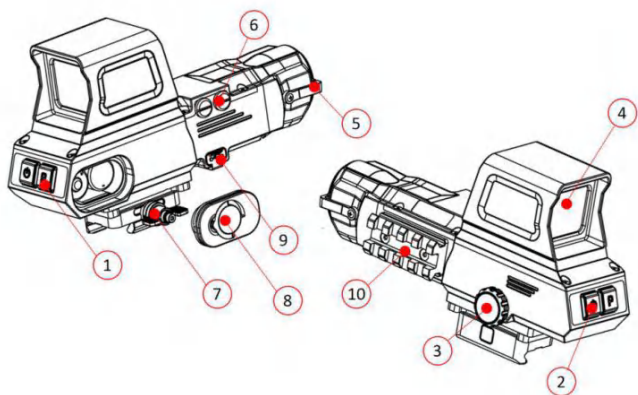
\*The actual service time depends on the use frequency of the product; Improvements may be made to the design and software of this product to enhance its features without prior notice;




You can download this Operating Manual at our official website:

[www.infrayoutdoor.com](http://www.infrayoutdoor.com)

## IV. Device Composition

1. P button
2. Power button
3. Rotary function button
4. Window
5. Objective lens cover
6. Red dot adjusting screw
7. Recoil-absorbing mount
8. Battery compartment waterproof cover
9. USB C interface
10. Picatinny



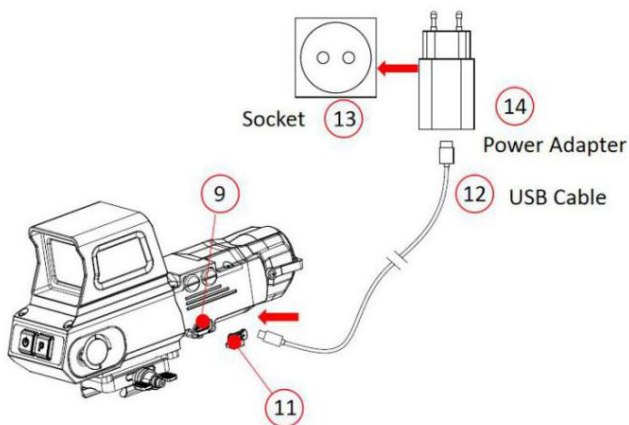
No.	Button	Current Mode	Press	Press and Hold
1	Power button 	Powered off	----	Start up the device
		Home screen	Digital zoom	Shutdown
		Menu screen	Return to the home screen	Shutdown
2	P button 	Home screen	Image calibration	Switch the image mode
3	Rotary function button 	Powered off	----	Turn on/off the red dot
		Home screen	Press: to enter the menu screen Rotate: to change the brightness of the red dot	
		Menu screen	Press: to confirm Rotate: to change an option	

## VI. Battery Charging

The Fast red dot fusion sight adopts two CR123/CR123A batteries for power supply, with the normal power supply time up to 4 hours. The battery should be fully charged before first use.

### Battery Replacement and Installation

- Rotate the battery cover handle clockwise;
- Hold the handle and pull it out;
- Install two CR123 batteries into the battery compartment according to the positive and negative poles;
- Install the battery cover back in the correct direction;
- Rotate the battery cover handle anticlockwise, lock the battery compartment cover, and fix it to the corresponding position.



**Note:** 1. When the USB-C cable is used for power supply, the USB-C cable will be preferred for power supply, and the battery will be stopped.  
2. The product supports 3V and 3.7V batteries. To ensure the correct display of the power level, please select the correct battery voltage in the menu.

## Safety Precautions

- When charging, please use the 5V2A power adapter compatible with the device. Using any other type of adapter may cause irreversible damage to the battery or the adapter itself;
- If the device is not in use for a long time, the battery shall be taken out of the device and stored in a dry place.
- Do not charge the device immediately after it is moved to a warm environment from a cold environment. Wait for 30 to 40 minutes for preheating.
- If the charger is modified or damaged, do not use it;
- The device shall be used at the temperature of 0°C~+40°C, under which the battery is of the best performance, or else the battery activity will be decreased significantly.
- When charging a lithium-ion battery, please do not leave the battery unattended;
- Do not connect the battery to the power supply for more than 24 hours after it is already fully charged;
- The device is equipped with a short circuit protection system, but operations or conditions that may lead to a short circuit should be avoided.
- The recommended operating temperature for the device is from -20°C to +40°C. If the product is used beyond this temperature range, it can work normally, but the battery life may be shortened.
- When the device is used under sub-zero temperature, the battery capacity drops. This is normal and does not indicate a defect.

## VII. External Power Supply

The Fast red dot fusion sight supports external power supplies such as phone chargers (5V2A) or a computer USB interface.

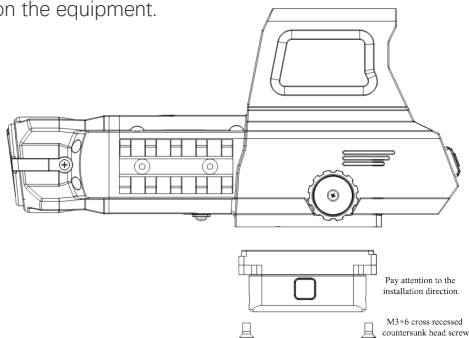
- Connect the external power supply to the USB-C cable (10) of the Fast red dot fusion sight;
  - Then, the device automatically switches to the external power supply;
  - When the external power is turned off or disconnected, the device will switch to the lithium-ion battery for the power supply.
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## VIII. Installation and Usage

### Fixed installation

**WARNING!** The lens of the product must not be pointed at any sources of intense radiation 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.

To ensure shooting accuracy, please fix the Fast at a proper picatinny rail position on the equipment.



● Fixing Fast requires the use of recoil-absorbing mount provided in the packaging, as follows:

- Find the notch of the recoil-absorbing mount and align it with the corresponding notch at the bottom of the product

- Use the support screw (M3×6 cross recessed countersunk head screw) and fixing wrench (L-shaped M3 cross wrench) attached to the package to fix the recoil-absorbing mount at the bottom of the device

● During installation, you can adjust the installation position of the Fast red dot fusion sight according to the comfortable distance between your eyes and the device (eye relief). If you fail to follow this suggestion, the eyesight part may hurt the shooter during the shooting.

● It is recommended to use a torque wrench to tighten the screws of the installation clamps, so as to avoid damaging the support locking mechanism due to being over-tightened, and the recommended torque shall not exceed 2.5Nm;

● When the scope is used for shooting or hunting, please carry out the zeroing operation first according to the instructions as specified in "Chapter IX Zeroing" in this manual;

# I. Package Contents

- Fast red dot fusion sight
- Portable bag
- USB-C cable
- Lens cleaning cloth
- Recoil-absorbing mount
- Support screws: M3×6 cross recessed screw (2 pcs.)
- Wrench: M3 L-shaped cross wrench
- Operating manual

# II. Description

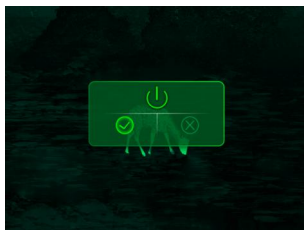
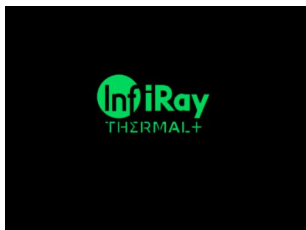
The Fast is a high-end product provided with fast red dot scope and thermal scope. It combines detection chips with ultra-high sensitivity to restore the color and details of thermal images during daytime and night. It also has an eyesight system with ultra large FOV and fast targeting red dot, as well as rich functions. It can be widely used for hunting and observation under complex or harsh conditions, and also can be used in military and police law enforcement occasions to effectively improve the duty efficiency.

# III. Product Features

- 1× red dot, visual magnification of 1, which gives the user a three-dimensional visual effect when observing with both eyes;
  - All-weather application day and night, combining the traditional red dot scope with the thermal scope;
  - Multiple image modes (single red dot/highlight mode/outline mode), including special fusion modes;
  - Multi-layer coating technology, which can effectively reduce the interference of stray light during use;
  - IP67, dust-resistant and waterproof;
  - Impact resistance up to 1,200g, applicable to gun types below 7.62 mm.
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## Power on and Settings


- Open the lens cap (5); **if the outdoor sunlight is relatively strong, pay attention not to face the infrared lens directly to the sun to avoid burns;**
- Press and hold the power button (2) for 3s to power on the device;
- To set the image mode: On the home screen, press and hold the P button (1) green hot, black hot, outline (breathing effect), and fusion in sequence, and the icon on the top status bar is updated in real time;
- To open the aiming point: On the home screen, press and hold the rotary function button (3), and a bright spot appears in the center of the screen, then rotate the encoder to adjust the color and brightness of the aiming point on the screen;
- To set the display brightness and image contrast: Press the rotary function button (3) to enter the main menu to set the display brightness and image contrast (refer to "**Main Menu Functions**" for details);
- After use, press and hold the power button (2) for 3 seconds and a shutdown countdown is displayed. Rotate the encoder, select "√" and press the encoder again, then the display turns black and the device is powered off. **When the device is powering off and saving data, do not disconnect it from the power source. Otherwise, the data cannot be saved.**





## IX. Zeroing

The Fast adopts the "frozen" method for zeroing. It is recommended to carry out the zeroing operation within the range of operating temperature of the scope.

- Fix the scope on the weapon with a support;
  - Select a target of a distance of 100m;
  - Adjust the scope according to the operating instructions as described in Chapter VIII **Power On and Settings**;
  - To select **Zeroing**: Press and hold the rotary function button (3) to enter the advanced menu interface and select the zeroing option, and press the rotary function button (3) to enter the submenu of the zeroing function;
  - Enter the zeroing screen, and the coordinate position (X axis and Y axis) of the reticle are on the upper left corner of the screen;
  - Shoot at the target;
  - Observe the position of the actual point of impact, and now the screen is frozen and a frozen snow icon  appears on the left of the screen. Assume that the red mark × in the figure on the right is the position of the point of impact (This mark is only for illustration. It should actually be a bullet hole);
  - Turn the rotary function button (3) to move the reticle, rotate clockwise to move the cursor left or down, and rotate anticlockwise to move the cursor right or up;
  - Turn the rotary function button (3) to switch between the X axis and Y axis, and the position of the bright cursor indicates the currently selected item, and the icon turns blue;
  - After moving the reticle, a little dot appears on the display, indicating the position of the reticle before moving;
  - After moving the reticle to the actual point of impact, press the rotary encoder to exit moving, and then press the power button to save the current reticle position and return to the main screen of the advanced menu;
  - Repeat aiming and shooting, until the position of the point of impact is consistent with that of the aiming point.
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## X. Digital Zoom

The Fast can enlarge an image to 1× or 2×.


- On the home screen of infrared mode, press the power button (2) to zoom the image;
  - The magnification status is displayed at the status bar of the display area in real time.
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## XI. Status Bar



The status bar is located at the top of the image interface and displays the information related to the current operating status of the device. From left to right, there are:

- 1.Current image mode (green hot, black hot, outline (breathing effect), fusion)
- 2.Current analog video switch
- 3.Calibration mode (manual calibration, automatic calibration, background calibration)
- 4.Digital zoom
- 5.Battery level
- 6.Battery type

**Note:** When the inside of the icon  is in green, it means that the power is higher than 20%, indicating that the battery power is sufficient. When the icon flashes, it means that the battery power is low, please charge it in time.

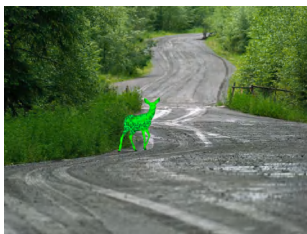
## XII. Shortcut Menu

The shortcut menu can be used for a quick setup of the basic settings of some common functions, including image mode, image contrast, display brightness, reticle brightness, advanced menu, and exit. Press the **rotary function button (3)** to enter the shortcut menu, then press the button to save, and press the power button to return to the home screen.

- On the home screen, press the **rotary function button (3)** to go to the shortcut menu screen;

- Rotate the **rotary function button (3)** to switch between the following function options, and the icon background of the selected option is highlighted:

- **Image mode:** Rotate the **rotary function button (3)** to select this option, and then press the **rotary function button (3)** to adjust between the following image modes: green hot, black hot, outline (breathing effect), and fusion;



- **Image contrast:** Rotate the **rotary function button (3)** to select this option, and then press the **rotary function button (3)** to adjust the image contrast between 0 and 9;
- **Display brightness:** Rotate the **rotary function button (3)** to select this option, and then press the **rotary function button (3)** to adjust the display brightness between 0 and 9;
- **Reticle brightness:** Rotate the **rotary function button (3)** to select this option, and then press the **rotary function button (3)** to adjust the reticle brightness between 0 and 5;
- **Correction mode:** Rotate the **rotary function button (3)** to select this option, and then press the **rotary function button (3)** to switch the shutter correction mode;
- Press the **power button (2)** to return to the home screen.


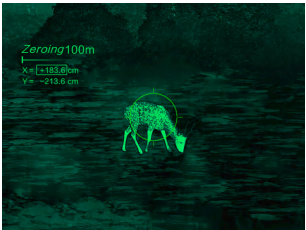
**Note:** After the status bar is automatically hidden and the shortcut menu is opened, if there is no operation within 15s, the device will return to the home screen.



# XIII. Advanced Menu:

- On the home screen, press the **rotary function button (3)** to go to the main menu;
- Rotate the **rotary function button (3)** to switch between the function options in the main menu, rotate clockwise to move right and anticlockwise to move left;
- Press the **rotary function button (3)** to modify the parameters of the current option or go to the submenu;
- On all the menu screens, press the **power button (2)** to go back to the previous menu.
- On some menu screens, the device will automatically return to the home screen without saving the changes when there is no operation within 15s.

## Main Menu Features and Descriptions

<p><b>Zeroing</b></p> 	<ul style="list-style-type: none"><li>● Press the <b>rotary function button (3)</b> to enter the menu, and select to enter the advanced menu screen;</li><li>● Rotate the <b>rotary function button (3)</b>, and select the function option "Zeroing";</li><li>● Press the <b>rotary function button (3)</b> to enter the function screen to set them; see Chapter IX "Zeroing" for details.</li><li>● Save the settings, and press the power button to exit the function.</li></ul> 
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### Reticle Switch



- Press the **rotary function button (3)** to enter the menu, and select to enter the advanced menu screen;
- Rotate the **rotary function button (3)** and select the function option "Reticle Switch";
- Press the **rotary function button (3)** to enable/disable the reticle display function, and then press the **rotary function button (3)** to confirm the selection;
- Press the **power button (2)** to exit the function.



### Reticle Color



- Press the **rotary function button (3)** to enter the menu, and select to enter the advanced menu screen;
- Rotate the **rotary function button (3)** and select the function option "Reticle Color";
- Press the **rotary function button (3)** to confirm the current color;
- The reticle color changes accordingly when this function is turned on or off.



## Analog Video



- Press the **rotary function button (3)** to enter the menu, and select to enter the advanced menu screen;
- Turn the **rotary function button (3)** to select "Analog Video";
- Press the **rotary function button (3)** to enter the "Analog Video" enabling page;
- Rotate the **rotary function button (3)** to set the correct "Analog Video" status;
- After setting, press the **rotary function button (3)** to return to the previous menu.



## Battery type



- Press the **rotary function button (3)** to enter the menu, and select to enter the advanced menu screen;
- Rotate the **rotary function button (3)** to select "Battery Type";
- Press the **rotary function button (3)** to enter the "Battery Type" screen;
- Rotate the **rotary function button (3)** to set the correct "Battery Type" status, and press the **rotary function button (3)** to confirm the selection;
- After setting, press the **power button (2)** to exit.





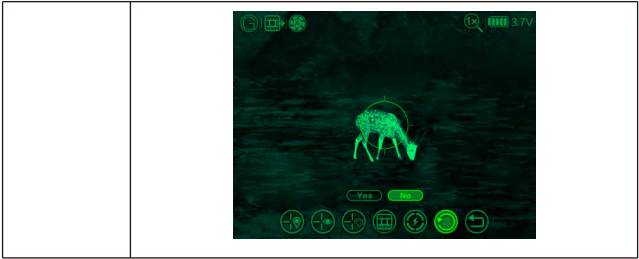
## Factory Reset



- Press the **rotary function button (3)** to enter the menu, and select to enter the advanced menu screen;
- Select "**Factory Reset**", and press the **rotary function button (3)** to open the submenu for factory reset;
- Rotate the **rotary function button (3)** to select Yes or No, with "Yes" for restoring to factory settings or "No" for canceling the operation;
- Press the **rotary function button (3)** to confirm the option;
- If "Yes" is selected, the scope restores to factory settings automatically;
- If "No" is selected, the operation is canceled and returned to the previous menu.

After the Factory Reset is selected, the following functions are restored to default settings:

- Image mode: Green hot;
- Image contrast: 5
- Display brightness: 5
- Reticle brightness: 5
- Shutter correction mode: Automatic
- Zeroing setting: 0 by default
- Analog video: Off
- Reticle display: On
- Reticle color: Green
- Digital zoom: 1.0×



## XIV. Technical Inspection

Perform a technical inspection to check the following items each time before you use the device.

- Exterior of the device (no crack on the enclosure).
- Lens and eyepiece (no crack, oil, stain, or other sediments)
- Status of the rechargeable battery (fully charged in advance) and electrical contact (no salinization or oxidation).

## XV. Product Maintenance

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

- Wipe the surface of metal and plastic parts to clear off dust and dirt by using a cotton cloth. Silicone grease may be used for the cleaning process.
  - Clean the electric contact and battery slots on the device using a non-greasy organic solvent.
  - Check the glass surface of the eyepiece and lens. If necessary, clear off the dust and sand on the lens (it is perfect to use a non-contact method). Use a specialized wiping tool and solvent to clean the optical surfaces.
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## XVI. Troubleshooting

The following table lists all problems that are likely to occur during device operation. Check and address problems by referring to this table. If faults not included in this table occur or you cannot fix the fault, return the device to the vendor or supplier for troubleshooting.

<b>Faults</b>	<b>Possible Causes</b>	<b>Solutions</b>
The scope cannot be started.	The battery is out of charge.	The battery is out of charge.
The device cannot be powered by using an external power supply.	The USB cable is damaged.	Replace the USB cable.
	The external power supply is insufficient.	If necessary, check the external power supply.
Images are unclear, vertical lines are present, or the background is not even.	Calibration is required.	Calibrate the images as instructed in Section IX of the user manual.
Images are too dark.	The display is not bright enough.	Adjust the display brightness
Icons are clear but images are blurry.	The lens is not focused.	Rotate the lens focus ring to adjust the focus.
	The inner or outer optical surface of the lens is dusted or iced.	Wipe the outer optical surface by using a soft cotton cloth or leave the scope to dry in a warm and dry environment for more than 4 hours.
The position of the reticle moves after shooting.	The scope or the fixing clamp is not installed firmly.	Check whether the scope is installed firmly.

		<p>Ensure that the bullet type and caliber you use are consistent with that used for zeroing.</p> <p>If you perform zeroing in summer but use the scope in winter (or vice versa), the zeroing point may move slightly.</p>
The scope cannot focus.	Configuration error.	<p>Set the scope according to the contents as specified in the Section of "<b>Power On and Settings</b>".</p> <p>Check the outer surface of the objective lens and eyepiece, and if necessary, wipe off any dust and frost on it.</p> <p>In cold weather, a special antifogging coating can be applied (such as those used on eyeglasses or car rearview mirrors).</p>
The observed target disappears.	You are observing the target through the glass.	Observe the target directly without the presence of glass.
The image quality is poor or the detection range shortens.	These problems are likely to occur when you use the device in harsh weather (such as snow, rain, and fog).	





**IRay Technology Co., Ltd.**

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