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ZK1 Series Thermal Rifle Scope

Specifications

Customer :	
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Specification submitted			Please confirm your acceptance of this approve sheet return to send by post.
Specification <u> 1 </u>			
Others:			Customer's signature :
Approved	Checked	Prepared	
			DATE :

ZK1 Series Thermal Rifle Scope



SAFETY SUMMARY:

STUDY CAREFULLY THE MANUAL BEFORE OPERATING

CAUTIONS !

The ZK1 Series Thermal Rifles scopes are precision electronic- optical instruments and requires careful handling. To provide safe use of the systems the following instructions should be observed:

- Do not dismantle the device.
- Keep the device clean; protect it from moisture, sharp temperature drops and shocks.
- Be careful not to touch the glass surfaces. If you put finger- prints on, or contaminate the glass surfaces, use only clean and soft materials to clean it.
- Do not leave the device in on position during stops in operation.
- Remove the batteries from the device for the period of storage

CAUTIONS:

THIS PRODUCT CONTAINS NATURAL RUBBER LATEX WHICH MAY CAUSE ALLERGIC REACTIONS

WARNING

Do not permanently attach the scope to dynamic-mount applications that continuously transmit vibration (such as on vehicles or heavy machinery).

WARNING

Do not point the scope directly at any high-intensity objects that you must not view with your eyes (such as the sun or a welding arc). If you do, you will damage the scope.

WARNING

Operating ZK1 Series outside of its specified operating temperature range or voltage range can cause permanent damage and will void the warranty.

WARNING

Use the power button to turn the scope off before you remove power (remove batteries or disconnect external power supply).

WARNING

ZK1 series operates over a wide operating temperature range (-40°C to +50°C).

Not all lithium batteries are specified over this same temperature span. Check the manufacturer's specifications of your selected battery to verify the valid temperature range.

WARNING

Do not use any battery other than a CR-123 lithium battery. DO NOT use any batteries providing a (combined) voltage greater than 9.0 volts.

WARNING

Do not install different types of batteries (lithium with lithium-ion rechargeable). All batteries must be of the same type.

WARNING

Do not replace batteries in a possibly explosive environment, such as a gas station (or any place where

you must turn off your vehicle engine). If you do, sparks can cause an explosion.

WARNING

Remove the batteries before you store the rifle scopes for extended periods (2 weeks or more).

WARNING

Do not carry batteries in pockets containing metal objects such as coins, keys, etc.

Metal objects can cause the batteries to short circuit and become very hot. In the case of lithium batteries, a short circuit could cause them to explode.

WARNING

Observe battery manufacturer's guidelines for safe handling and proper disposal of batteries.

WARNING

The ZK1 series can stand 500-600G recoil, if you are using rifle over 600G, please inform manufacturer for customizing.

EQUIPMENT LIMITATIONS

- The ZK1 Series detector spectral band provides a better penetration through smoke, smog, dust, water vapor etc.
- Infrared radiation does not travel through glass and therefore the scope does not sense objects if they are behind a glass window

TABLE OF CONTENTS

SECTION I. INTRODUCTION

1.1 General Information.....	5
1.1.1. Description.....	5
1.1.2. Use purpose.....	6
1.2. Specification and Data.....	6
1.2.1. Features.....	6
1.2.2. Standard Components.....	6
1.2.3. Technical Specifications.....	7

SECTION II. OPERATION

2.1. Operation procedure.....	8
2.1.1. Parts guide.....	8
2.1.2. Turn on and off.....	9
2.1.3. Note.....	9
2.1.4. Menu Operation Instruction.....	10
2.1.4. 1-2.Menu Operation color mode / reticle mode.....	11
2.1.4. 3-4.Menu Operation reticle adjustment / cursor exit menu.....	11
2.1.5. Language modes.....	11
2.1.6. Focus.....	12
2.1.7. Polarity.....	12

2.1.8. Brightness.....	12
2.1.9. Zoom.....	13
2.2.0. Video out and extra power supply.....	13
2.2.1. Dead pixel replacement.....	13
2.2.2. Mounting systems.....	14
2.3.0. Package type.....	14
SECTION III. STORAGE	
3.1. Storage.....	14
SECTION IV. AFTER SALES SERVICE	
4.1. Warranty information.....	14
4.1.1. 3 years product warranty.....	14
4.1.2. Limitation of liability.....	15
4.1.3. Obtaining warranty service.....	15
SECTION V. CLEANING	
5.1. Cleaning procedures.....	16
SECTION VI. EXTENDED STORAGE AND CERTIFICATION	
6.1. Preparing for extended storage.....	16

INTRODUCTION

1.1.GENERAL INFORMATION

This manual contains instructions for use in operating and maintaining the ZK1 Series Thermal Rifle scopes. Throughout this manual, the ZK1 Series will be referred to as the scope.

1.1.1. DESCRIPTION

We are proud to introduce the newest line of ZK1 Thermal Scopes. The most advanced night vision technology available is brought to you by the premier company dedicated to providing night vision systems at affordable prices. The new ZK1 line is rich with features and options making it the best value of any comparable system on the market. This model is lightweight and small enough to fit in the palm of your hand, yet it's rugged and durable. The entire system is built in the China, utilizing Mil-Spec Lenses that make the ZK1 worthy for most any mission, operation, or outdoor activity. Each system features

You can select a number of reticle options as well as choose a reticle color best suited for your specific application. No more black reticle on a black and white screen –ZK1 features a color OLED display giving you a sharp color reticle every time. Or switch to full color mode and overlay it with either a black, green or red reticle depending on the conditions and the environment.

These scopes provide amazing image quality through total darkness, fog, or smoke.

Darkness, camouflage or bright lights will not affect the sensitivity of these units. All units have feature

E-Zoom to expand your optical magnification. They are ideal for night-time hunting, camping, competitive games and other outdoor sports.

These units are priced like no other thermal devices in their class – as much as half of what you would expect to pay! No other product is comparable in value or price.

The ZK1 functions equally well as a hunting scope or a hand held viewer. Once you experience Thermal scope. You may not want to use anything else again!

1.1.2. PURPOSE

The ZK1 Series Thermal Rifle scopes combines the ergonomic features of a hand held and the convenience of weapon mounting. Based on the proven 384x288, 640x480 micro bolometer core, the ZK1 is an ideal product for hunting, camping, security and other outdoor sports providing them the tools they need to be successful in all field conditions both day and night. Uncooled thermal imaging cuts through dust, smoke, fog, haze, and other battlefield obscurants. Its use cannot be detected as it emits no visible light or RF energy and operates without the use of illuminator or IR lights.

1.2. SPECIFICATION AND DATA

1.2.1. FEATURES

ZK1 series has the following important features:

- High resolution thermal imaging
- Compact, lightweight and durable housing
- True magnification
- High end OLED display 800*600 pixels
- Three-colors reticle system (optional: B/W, Red and Green)
- Rapid start-up in 3-5 seconds
- Up to 6-8 hours operation with four lithium batteries
- Three-Years Warranty
- Aluminum constructed body with class 3 hard anodized coating
- Power-off safety feature prevents accidental shut down
- Recoil rated up to. 338/.308 caliber etc.
- Six colors modes: red, green, white, yellow, black, blue
- Batteries: (4) 3V lithium (CR123)
- E-zoom: 2x/4x

1.2.2. STANDARD COMPONENTS

Item	Description	QTY
1	The thermal imaging scope.	1

2	Mounting systems to weapon (1913 Picatinny Rail)	1
3	A protective case used for shipping/storing ZK1 and accessories	1
4	Cleaning cloth of lenses surface	1
5	Four CR123 lithium batteries used to power the unit (optional)	4
6	Video / extra power cable line	1
7	Repairing/services card	1
8	Manual in English	1

1.2.3. TECHNICAL SPECIFICATIONS:

Model	ZK1-35-3/6	ZK1-50-3/6	ZK1-75-3/6	ZK1-100-3/6
Sensor (micro bolometer) :	384x288 /640x480 pixels			
Detector sensor type:	Uncooled			
Material:	Amorphous silicon			
Image Size (output resolution):	800x600 pixels			
Frame rate:	50 Hz			
Display:	Color OLED matrix, SVGA< 800x600			
Thermal Sensitivity:	<50 Km			
Spectral Response ;	7-14			
Lens System:	35 mm	50 mm	75mm	100mm
Field of View:	(H x V) 10.7x8.0 °/ 17.7x13.3°	(H x V) 7.5x5.6° / 8.3x6.2°	(H x V) 5.0x3.7° / 8.3x6.2°	(H x V) 3.7x2.8° / 6.2x4.7°
Eye Relief:	52 mm			
Optical Magnification:	2.6/1.5x	4.0 /2.5x	6.0 /3.5x	9.2 /5.5x
E-Zoom :	5.2-10.4x/3-6.0x	8-16x / 5-10x	12-24x / 7-14x	18.4-36.8x / 11-22x
Diopter Adjustment:	-5 to +5			

Distance of the human detection:	1000/1250 m	1200/1550 m	1400/1800 m	2550/3180
Distance of the human Recognition:	400 /460 m	500/620 m	600/750 m	1120/1400
Distance of the human Identification:	270 /320 m	300/370 m	350/460 m	610/760 m
Brightness adjustment :	Manual			
Sharpness adjustment :	Automatic			
Polarity control :	White hot / Black hot / Multiple Color Modes			
Starting time:	Starting time: <5 sec			
Environmental Rating:	Waterproof / Dust proof			
Operating temperature:	-40° to +50°C			
Storage temperature:	-45° to +85°C			
Battery type :	4 x CR123 battery type or 2 x CR123 battery type			
Battery Life:	6-8 hrs			
Video out :	Optional			
Low Battery Indicator:	Yes			
Dimensions(without bracket):	240 x 80 x 83 mm	274 x 80 x 92.5 mm	308 x 80 x 98.5 mm	345 x 111 x 107 mm
Weight	740g	900g	1070g	1550g
Warranty	3 year			

2.1. OPERATING PROCEDURE

2.1.1. PARTS GUIDE:



Figure 1

1. Objective lens cap (protect the lens from damaging and against the strong light)
2. Objective lens
3. Side focus knob (distance adjustment, turn it to right or left until you get a sharp image)
4. Mount rails (different mount rails for options)
5. Battery position (4 pieces CR123 batteries or 2 x CR123 battery type in total)
6. Power button (controls scope power, to turn the unit on and off press the button)
7. Up arrow button (controls reticle color, elevation up adjustment)
8. Right arrow button (Reticle adjustment, Windage right adjustment)
9. Down arrow button (Digital zoom, elevation down adjustment)
10. Left arrow button. (Windage left adjustment.)
11. Enter button. (Used to select or enter the selection)
12. Diopter adjustment.
13. Ocular protection. (Protect ocular lens and keep the eye has a comfortable position)

2.1.2. TURNING ON AND OFF

Open the objective lens cover.

2.1.3. NOTE

The objective lens cover protects the scope from inadvertent exposure to extremely high levels of radiant flux. Never leave the scope with the objective lens cover off.

2.1.3.1. Turn on

- According to the operating rules, connect the system line well and check, make sure everything is correct, then turn on the unit.
- Press KEY POWER button about 5 seconds, the screen will show up and the unit is ready to work.
- At first, the screen will be not stable or balance,(does not affect viewing),this situation will keep about 20 seconds(the change depends on environment temperature.) This means the focal plate is during pre-heating process
- After the screen becomes stable, the unit will work normally.


2.1.3.2. Turn off

Press the KEY POWER button about 5 seconds, the components will turn off automatically, then cut off power supply of thermal device.



Figure 2---Switchboard

2.1.4. MENU OPERATION INSTRUCTIONS

Key 6 is power button  ;

Key 3 M is menu button, and enter;

Key 1 U and Key2 D are specs adjusted button;

Key 4 L and Key5 R are moving button on right and left;

Key 1 U is shortcut button for black hot, white hot or other colors, and key2 D is e-zoom 2x/4x button under non menu mode.

When long press Key3 M button, the color adjustment and reticle systems will be shown, and you can move them by Key4 L and Key5 R. Like above figure 2.

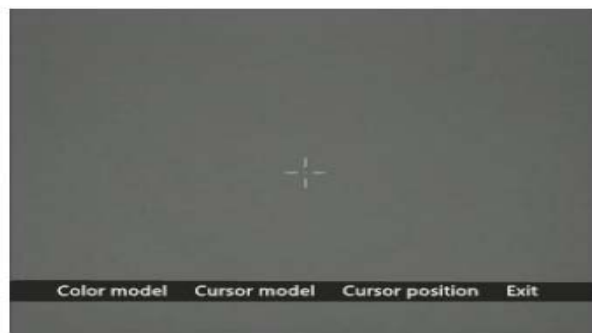


Figure 3

Menu: 2.1.4.1.Color mode: long press Key3 M enter into next menu for choosing color mode with 6 types by Key1 U and Key2 D button, after that, press Key3 M for saving and back on the first level menu. The ZK1 has 4 additional color pallets to choose in addition to the white hot and black hot polarity. They are Green, light blue, light yellow, red. To select a different colors mode, you can also go through shortcut key Key1 to select the 6 different color pallet. Like above figure 3, and below Figure 3-1.

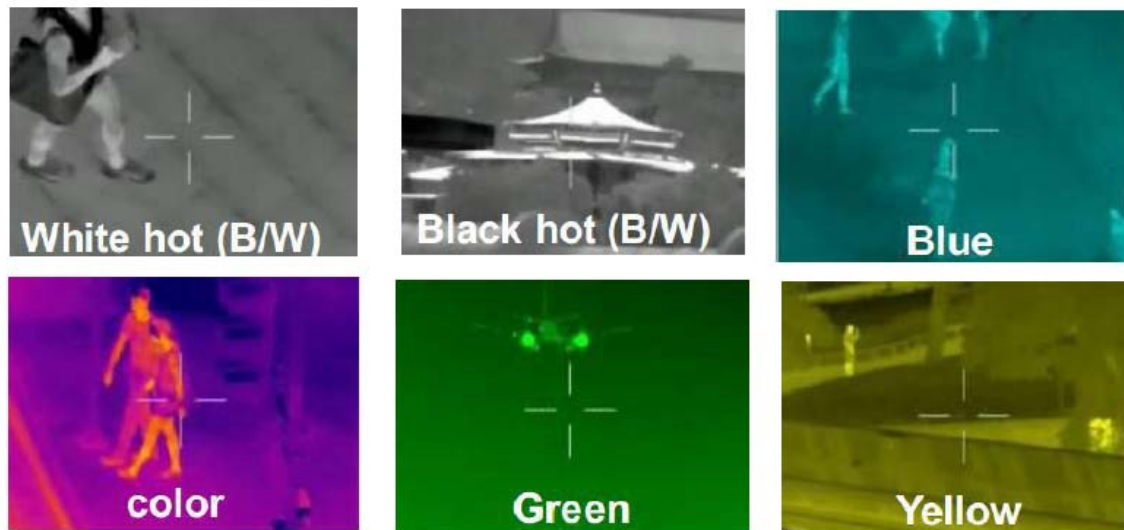


Figure 3-1

2.1.4.2. Reticle mode: when enter into reticle mode, and long press Key3 M enter into next menu for choosing reticle type from 0 to 3 four modes through Key1 U and key3 D, after that, press Key3 M for saving and back on the first level menu, like below Figure 4



Optional

Figure 4

2.1.4.3. Reticle adjustment: long press Key3 M enter into next menu for adjusting reticle position and move it through Key4 L and Key5 R, after that, long press key3 M for saving the position (0.0) and back on the first level menu, and if lightly press Key3 M, will not save exist position, and directly return back on the first level menu.

2.1.4.4. Cursor exit menu: choose exit and press Key3 M for confirmation.

2.1.5. LANGUAGE MODES

Short press Menu key 3 button to enter, and move forward by Key3 button until you see the language

then push Up key1 or key2 down arrow button for changing the language.

2.1.6. FOCUSING

To focus the scope you need to adjust the diopter first. The scope has an adjustable eyepiece with a range of +5 to -5 diopter. Simply turn the diopter clockwise until it stops. Then concentrate on any object and slowly turn the diopter back counter clockwise until the grain in the image is sharp. Then rotate the eyepiece lens to accommodate use over the left or right eye.

The ZK1 with 2x, 4x models have ability to focus either long range or short. Focus the front lens to rotate the button on the lens or directly rotate the hand wheel of lens until the image and the grain are both sharp.

2.1.7. POLARITY (optional)

The function of Polarity switching is accessible only in black and white models



Figure 5

POLARITY button switches the direct display mode into the reverse one, i.e. from hot-white / cold-black into hot-black/cold-white mode. If the polarity is white-hot, the image will be with hotter objects displayed as white, and the rest of the image displayed as black, and vice versa: with hotter objects displayed as black, if the polarity is black-hot.

To select polarity go to Main menu and push left arrow button to cycle between white hot and black hot polarities.

2.1.8. BRIGHTNESS

Brightness allows you to dim or increase the brightness of the display. To cycle through the BRIGHTNESS steps go to ISM Main menu and push the down arrow button for brightness adjustment. Each short push of the buttons will cycle through the BRIGHTNESS modes, correspondingly, in step wise way.

NOTE

Levels 1 to 100% range from full dim to full bright, usually 50-60% is better.

2.1.9. ZOOM

ZOOM button activates a digital zoom function.

384x288 models have 2 steps of digital zoom (factor of 2x and 4x)

640x480 models have 2 steps of digital zoom (factor of 2x, and 4x)

To cycle through the digital zoom steps go to ISM Main menu and move forward by Key3 button until you see the zoom then push up key1 or key2 down arrow button for changing the zoom. Or go by shortcut key Key1 to adjust the zoom.

2.2. VIDEO OUT AND EXTRA POWER SUPPLY

When you want to use monitor with BNC port instead of eyes for viewing target, just connect cable line with video port (cable line: 2 into 1, video out: analog video), and USB line can be connected with portable packed battery (5.0v) or computer or power adapter (5.0v) with USB port when battery is low or running off, but not charge the battery. See below figure 6.



Figure 6

2.2.1. DEAD PIXEL REPLACEMENT.

2.2.1.1. Press Key U and Key D, then press Key M 4 times, then come out menu of dead pixel replacement, see below figure 7.

Menu options just can be moved to right way by Key M.



Figure 7

2.2.1.2. Clear off dead pixel replacement in Manual

1. **X:** Press Key U and Key D move the X Horizontal coordinate
2. **Y:** Press Key U and Key D move the Y Vertical coordinate
3. **Dead pixel replacement:** move the cursor into dead pixel place by X or Y, and then press Key L to clear it off, and press Key L again cancel dead pixel replacement.
4. **Save:** after you do dead pixel replacement, choose save, then press Key U then save it.
5. **Exit:** choose exit, and then press Key U then exit.

2.2.2. MOUNTING SYSTEMS

The Zk1 series scope have standard mounting systems 1913 Picatinny Rail, can stand all kinds of rifle recoil rated up to 500-600G etc., like rifle with . 338/.308 caliber.

2.3.0. PACKAGE TYPE



Carrying case (Optional 1)



hard case (Optional 2)

3.1. STORAGE

Storage of ZK1 should be done in the factory packing. This will ensure the scope remains in mission ready condition during storage. Batteries should be stored separately from the scope. The scope should not be placed on the floor, in any area exposed to high temperatures or direct sunlight. Presence of acid and alkaline vapor, as well as of other aggressive admixtures in the air is unacceptable.

4.1. WARRANTY INFORMATION

4.1.1. 3 YEARS PRODUCT WARRANTY

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of 3 (three) years from the date of purchase. In addition the uncooled thermal sensor array carries a 10 year warranty.

This warranty does not cover a product (a) used in other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than manufacturer/dealer without prior written consent of manufacturer/dealer; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either manufacturer/dealer; Or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are

not available due to reasons beyond the control of manufacturer/dealer, which shall not be responsible for any defects or damage that in manufacturer / dealer's opinion is a result from the mishandling, abuse, misuse, improper storage or improper operation, including use in conjunction with equipment which is electrically or mechanically incompatible with or of inferior quality to the product, as well as failure to maintain the environmental conditions specified by the manufacturer. This warranty is extended only to the original purchaser. Any breach of this warranty shall be waived unless the customer notifies manufacturer/dealer at the address noted below within the applicable warranty period. The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

4.1.2. LIMITATION OF LIABILITY

Manufacturer/dealer will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. Manufacturer / dealer's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by manufacturer/dealer to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside manufacturer/dealer and the Customer;

Manufacturer / dealer's obligations under this Agreement extend solely to the Customer.

Manufacturer /dealer's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to manufacturer/dealer by the customer or customer's dealer. Manufacturer/dealer shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability or any other theory of liability.

4.1.3. OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, End-user must notify manufacturer/dealer's service department by calling or via e-mail to state the problem filling on the warranty card. When returning please take or send the product, postage paid, with a copy of your sales receipt to our service center. All merchandise must be fully insured with the correct postage; we will not be responsible for improper postage or, missing or damaged merchandise during shipment. When sending product back, please clearly mark the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, Name, Return Address, reason for service return, Contact information such as valid telephone numbers and/or e-mail address and proof of purchases that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA listed may be refused or a significant delay in

processing may occur. Estimated Warranty service time is 10-20 business days. End-user/customer is responsible for postage with destination custom duty to us for warranty service. We will cover return postage/shipping to continental Chinese end-users/customers after warranty repair only if product is covered by aforementioned warranty. We will return product after warranty service by domestic ground service and/or domestic mail. Any other requested, required or international shipping method the postage/shipping fee and destination custom duty will be the responsibility of the end user/Customer.

CAUTION

The ZK1 is a precision electro-optical instrument and must be handled carefully at all times to prevent damage.

5.1. CLEANING PROCEDURES

a. Cleaning the scope

1. Gently brush off any dirt from the sight body using only a clean soft cloth.
2. Moisten the cloth with fresh water and gently wipe the external surfaces (except lenses).
3. Dry any wet surfaces (except lenses) with another dry and clean soft cloth.
4. Using lens brush, carefully remove all loose dirt from the lenses.
5. Slightly dampen a cotton swab with ethanol and lightly and slowly wipe the lenses.

Clean the glass surfaces by circular movements from the center to the edge, not touching the lens holder and changing cotton swab after each circular stroke.

Repeat this step until the glass surfaces are clean.

b. Cleaning of accessories

Clean accessories with a soft brush (cloth) and soap and water as required.

CAUTION

Dry thoroughly each item before replacing into the storage case.

6.1. PREPARING FOR EXTENDED STORAGE

To prepare the ZK1 for extended storage, perform the following:

1. Remove the batteries.
2. Clean the scope and accessories.
3. Replace all items in the case.