

15. Obtaining warranty service

The warranty varies by geographic location; please refer to the website www.beringoptics.com. You may also contact the local dealer or distributor.

16. Limitation of liability

The manufacturer will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising from the use of this product. Operation and use of the product are the sole responsibility of the user. The provision of products sold and services performed by manufacturer to the user shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of creating any obligation toward any third party of legal entity outside manufacturer and the user. The remedies of the purchaser set forth herein are exclusive and the total liability of manufacturer shall not exceed the purchase price of the unit. The user is solely responsible to comply with local and national laws regarding use of this product. In no event shall manufacturer be liable for consequential, incidental, special or other damages.

17. Avenger Gen2+ BE16250T acceptance certificate

Date of production _____

Serial # _____

Quality control _____

Adaptation on the weapon: Completed

Stamp

Date of sale _____

Dealer name _____

Dealer Stamp

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AVENGER Gen 2+ NIGHT VISION RIFLESCOPE



Instruction manual for operating

SKU#BE16250T

www.beringoptics.com

Phone/Fax + 1-817-453-9886

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Navigation: > about > where to buy > service > contacts > catalog SEARCH

Product: NV Monocular eXact 2.6x44

Features:

- LIGHTWEIGHT
- WIDE FIELD OF VIEW
- 70-HOUR BATTERY LIFE
- FULLY MULTICOATED OPTICS
- LIMITED LIFETIME WARRANTY
- AUTO SHUT OFF AGAINST LIGHT EXPOSURE
- TWO BUILT-IN 1/2" TRIPOD SOCKETS
- LONG RANGE VIEWING UP TO 220 METERS
- WEAVER RAIL FOR MOUNTING ACCESSORIES
- INTEGRATED POWERFUL INFRARED ILLUMINATOR

Model	BE14244
Magnification, x	2.4
Objective lens diametr, mm	44
Lens system	50mmF/1.2
Focus range, yards	162
Diopiter setting, D	or 1.5 to infinity
Detection distance (approx) y	15
Overall dimensions, (h) mm	7.18"x3.94"x2.56" / 182x100x65
Weight, (oz)	14.98 / 422
Estimated battery life (w/out IR), hour	
Storage temperature, °F/C	
Humidity, %	

In Box

- Night Vision Monocular eXact 2.6x44 Gen 1 - 1 piece
- Lens Cap - 1 piece
- Protective carrying case - 1 piece
- User manual - 1 piece
- Lens cleaning tissue - 1 piece

The product is packed into a box.

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1. Overview

Avenger 3.0x50 Tactical Gen 2+ is one of the most compact and lightweight Tactical NV weapon sight. It is nitrogen purged, weatherproof, lightweight and highly durable. Its manufacturing employs aircraft aluminum, modern technologies, a sleek design and innovative engineering approaches. The device is equipped with the specially developed recoil proof Gen2+ electronic-optical image intensifier, employing the principle of multiple intensification of the image brightness in the visible and IR radiation, which guarantees an up to 400m detection range*.

A built-in, powerful infrared illuminator is easily activated to enhance image brightness and increase range in total darkness. Additional features include a precision windage and elevation adjustment and reticle brightness control. The riflescope is equipped with solid Weaver MIL-STD-1913 rail mount system. The sight is available in 3x high magnification and can be mounted on almost any type of weapon. The sight is superior for medium and long range shooting with outstanding accuracy in the most unfavorable conditions. It has one of the best in the industry for Gen2+ riflescopes power consumption of 72 hours of battery run time.

*Maximum Detection range is the distance at which a human figure can be recognized under ideal viewing conditions; defined as clear conditions (no cloud cover, fog, dust etc).

2. Features

- Lightweight and Compact
- Ergonomic and highly durable design
- Easy and rapid operation
- Built-in, power sufficient (25mW) hazard-free IR illuminator
- Illuminated red-on-green MIL dot reticle
- Functions with one CR-123 (3V) battery
- Accurate front lens focus adjustment
- Close observational range of 10 meters
- Ultra-precise internal windage/elevation adjustment, 1/8 MOA per click
- Shockproof with the use of heavy recoil ammunition (.12 Gauge, 30-06, 7.62x54 etc.)
- Vertical positioning of the battery ensures an uninterrupted power supply when firing
- The image intensifier tube is protected with automatic brightness control
- Incremental reticle brightness adjustment
- The red LED indicator of IR illuminator will blink, serving as a low battery indicator, 20 minutes before the device automatically shuts down
- Standard Weaver MIL-STD-1913 rail mount system
- Additional Weaver MIL-STD-1913 rail for accessories
- Rubber objective lens cover

3. General instructions

The AVENGER Gen2+ has been designed for extensive usage. To ensure longevity and performance, it is necessary to adhere to the following:

Under illuminated conditions measuring more than 1 lux (deep dusk), do not power on the riflescope with the objective lens cap open and do not point the product towards any direct light source! Daylight, vehicle headlights, flame, sun or similar light sources can irreversibly decrease the device performance.

Some examples of common illuminated conditions:

Conditions	Natural illumination in the field, lux
No moon, cloud cover	10^{-4} (0.0001)
Starry sky, no moon, clear	10^{-3} (0.001)
Quarter moon, clear	0,05
Full moon, clear	0,38 \approx 0.4
Deep dusk	1,0
Dusk	10
Cloudy weather	500

1. When using in twilight conditions, such as early morning or late evening, do not leave the device on with the objective lens cap open for more than 30 minutes. Continuous observation of bright stationary objects can cause the electronic-optical converter to fade, leading to the appearance of dark spots in the field of vision.
2. Do not forget to turn off the scope after each use!
3. Store with the lens cap on, in the accompanying carrying case.
4. The scope meets IPX4 rating and can be used in inclement weather; however, it is not intended for full submersion.
5. Attempting to disassemble or repair the scope will void the warranty!
6. Clean the scope's optical surfaces only if necessary, and use caution. First, remove any dust or sand particles by blowing or carefully wiping them off the device. Then proceed to clean the scope by using a soft cotton tissue and alcohol, or a cleaning solution approved for use with multi-coated lenses. Do not pour the solution directly onto the lens!
7. The scope can be used in operating temperatures ranging from -30°C to $+40^{\circ}\text{C}$. However, if it has been brought indoors from cold temperature, do not turn it on for 3 to 4 hours.
8. If not able to mount the riflescope onto the rifle securely, or if there are doubts about the mounting system, see a qualified gunsmith. Using a weapon with a poorly mounted scope can cause a shift of the aiming point!
9. To ensure reliable performance, it is recommended to carry out regular technical inspections of the device.

Warning:

Be sure that the weapon is unloaded and the safety is on before installing the scope.

4. Specifications

GENERAL

Magnification, x	3
Field of view, deg	13
Lens system	80mm F/1.5
Lens aperture, mm	50
Focus range, m/yard	8 / 9 to infinity
Eyepiece diopters setting, D	±4
Eye relief, mm	50
Exit pupil, mm	12
Overall dimensions, mm/in	218 × 107 × 79 / 8.6" × 4.2" × 3.1"
Weight, g/oz	950 / 33.5
Power supply	CR123 Lithium battery (1x3V)
Estimated battery life w/out IR under 73°F or 20°C, hour	72
Reticule type	Mil-Dot illuminated Red-on-Green
Reticule windage/elevation adjustment	1/8 MOA per click
At distance 100 m/110 yard, mm/in	5 / 0.20" per click
Range of reticle adjustment at the distance of 100 meters, m	± 1.6 (±36 MOA)
IR LED output power, mW	25
IR illuminator Wave length (nm)	850
IR illuminator effective distance, m/ yard	up to 50/55

Gen2+ IMAGE INTENSIFIER TUBE

Classification	Gen2 +
Photocathode type	S25
Photocathode response, typical, μA/lm	600
Resolution, typical, lp/mm	typical 57; max 64
Luminous gain, typical, fl/fcd	35000
Tube reliability standard, hour	10000
Keep time, typical, year	12
Warranty, year	2

EFFECTIVE RANGE

Detection range, approx., m/yard	up to 400/440
- quarter moon	up to 250/275
- cloud cover	
Recognition range, approx., m/yard	
-quarter moon	up to 300/350
-cloud cover	up to 200/220

ENVIRONMENTAL DATA

Operating temperature, C°/F°	-30 to +50/-22 to +122
Storage temperature, recommended, C°/F°	0 to +50/ +32 to +122
Water intrusion	Meets IPX4 rating
Max humidity, %	98

The product is shipped with the following:

- Weapon sight assembly
- Carrying case
- Operating manual
- Weaver or EURO prism or AK type side rifle mount

The AVENGER is a complex electro-optical device designed using innovative technology.

We strongly recommend reading and following all the instructions carefully before turning on, or using, the riflescope.

Failure to follow the instructions and guidelines outlined in this instruction manual can cause damage to the device, as well as voiding any applicable warranty.

- 1- Body of the device
- 2- Objective lens cap
- 3- "ON/IR/OFF" activation button
- 4- Reticle brightness control buttons
- 5- "ON" LED indicator
- 6- "IR" LED indicator
- 7- Diopter setting ring
- 8- IR illuminator
- 9- Objective focus ring
- 10- Windage/elevation adjustment knobs
- 11- Rubber eyepiece guard
- 12- Battery compartment
- 13- Battery compartment cap
- 14- Rifle mount
- 15- Additional weaver rail for accessories
- 16- Base mount



5. Battery installation

- Unscrew the cap (13) of the battery compartment (12) counter-clockwise
- Install one CR 123 (3V) battery, so that the (+) and (-) match the markings on the battery compartment cap (13) of the unit
- Tighten the cap (13)

6. Operating instructions

- Install the batteries per the instructions found in the section BATTERY INSTALLATION
- Enter dark environment
- Remove the objective lens cap (2)
- To turn the device on, press and hold "ON/IR/OFF" button (3) for 2-3 seconds until the green "ON" LED indicator (5) lights up; the screen of the electronic-optical intensifier will start emitting green light too.
- If necessary, turn on the IR illuminator (8) by quickly pressing "ON/IR/OFF" button (3); red "IR" LED indicator (6) will light up. To turn IR off, quickly press "ON/IR/OFF" Button (3); red "IR" LED indicator will turn off.
- The scope can be checked in the illuminated environment, but this should be done solely for testing purposes. The lens cap (2) must tightly cover the objective lens.
- To adjust the brightness of the red reticle, press reticle brightness control buttons (4) marked "+" and "-" on the device housing.
- Pick a stationary object to observe, located at a distance of about 100 meters
- To focus, rotate the objective lens focusing ring (9) until the image of the observed object is sharp. Then adjust the diopter setting ring (7) until the image is crisp and clear.
- After setting the diopter ring, no further adjusting of the diopter ring is required, regardless of the observation distance or other factors. To perfect the image quality, use only the objective lens focusing ring (9).
- To turn the device off, press and hold "ON/IR/OFF" button (3) for 2-3 seconds until the green "ON" LED indicator (5) is off. Place the objective lens cap (2) back onto the objective lens.

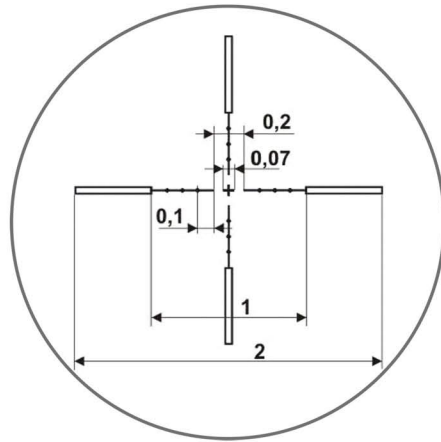
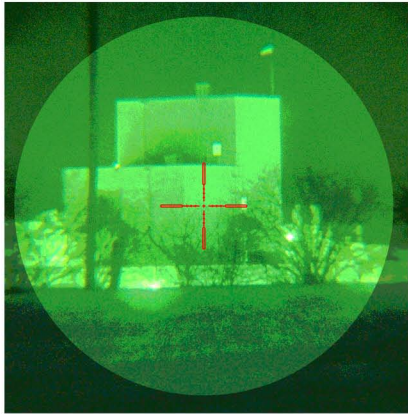
NOTE: In order to prevent the device from accidentally turning on or off, the "ON/OFF" button was designed with the delayed activation, therefore to turn the device "ON" or "OFF", it is required to press and hold button for 2-3 seconds.

7. Sighting instructions

Sighting in of the scope should be done at operating temperatures, by following the order of these steps:

- Mount the Avenger scope to the rifle and place the rifle onto the bench rest
- Make sure that no sources of light are visible through the scope's field of vision
- Set a target at a distance of about 100 meters. The light levels around the target should not exceed 0.1 lux.
- Remove the objective lens cap (2) from the objective lens
- Turn on the scope by pressing the "ON/OFF/IR" button (3) until the green "ON" LED indicator (9) light up
- Aim the rifle at the target, using a mechanical sight
- Adjust focus and diopter setting and set the optimal reticle brightness level using steps from the Operating Instructions section.
- If the center of the reticle crosshairs and the target center do not line up, remove the covers protecting the windage/elevation adjustment knobs (10). To move the reticle horizontally, rotate the windage adjustment knob, located on the right-hand side of the scope body; to move the reticle vertically, rotate the elevation adjustment knob, located on the top of the scope body. Remember, that one click corresponds to a 5-mm shift of the hit point at a distance of 100 meters.
- Fire 3-4 control shots and examine the target to determine if the aiming point coincides with point of impact; if you determine that it is necessary to make corrections, perform further adjustments by rotating windage/elevation knobs.
- Check the accuracy of your adjustments by firing another 3 or 4 control shots
- Re-zeroing in is not required for distances less than 100 meters. The scope should be re-zeroed-in for the specified distance greater than 100 meters.

8. Windage/Elevation Adjustment Knobs Mil-Dot LED illuminated Red-on-Green RETICLE



The dimensions are indicated in meters at 100 m distance.

When using the Mil-dot reticle, it is important to know the actual size of the target.

1. View the object through the scope
2. Position the object between the dots by placing the edge of one marker of the crosshair against one edge of the target so that the crosshair extends along the object's width or height.
3. Using the markers, measure along the crosshair to the opposite edge of the target.

For example, if the center of the crosshair is against one edge of the target and the opposite edge of the target is positioned behind the center of the second dot, the target measures 2 mils. The more accurate you are in your estimation of the size of the target in mils (2.75 mils, etc.), the more accurate your results will be. This is especially important in estimating the range of a small target or in estimating the range of a target at a great distance (i.e. beyond 500 meters). Once the measurement of the target has been determined in mils, the range can be estimated. This can be done by using the following formula:

$$\text{(Height of Target in meters} \times 1,000) \div \text{Height of Target in Mils} = \text{Range of the Target in meters}$$

9. Technical inspection

It is recommended to inspect the riflescope before every use. Make sure to check for the following:

- Visually inspect that the unit is free from any physical damage
- Check the sturdiness and proper fit of the mounting system
- Ensure the condition of the objective lens, eyepiece and the IR illuminator; make sure these are free of cracks, grease spots, dirt, water stains and other residue before use
- Visually inspect the condition of the battery and the battery compartment; the battery should be free of electrolyte and oxidation residue, especially where the battery makes contact with metal
- Verify the proper function of the following: power "ON/IR/OFF" button (3), reticle brightness control buttons (4)
- Verify the smoothness of the objective lens focusing mechanism (9) and diopter setting ring (7)

10. Technical maintenance

Technical maintenance should be done no less than twice a year, and is comprised of the following steps:

- Clean outside metallic surfaces from dust, dirt and moisture; wipe the scope with a soft cotton tissue, lightly coated with gun oil or petroleum jelly
- Clean the battery compartment's electric contact points using an oil-free solvent
- Inspect the eyepiece lens, objective lens and IR illuminator; gently blow off any dust or sand, and clean using lens cleaner and a soft cloth.

11. Using the built-in weaver rail

The scope has a built-in weaver rail (15) affixed on the right hand side of scope body. The rail allows mounting additional accessories, such as:

- Bering Optics weaver mountable IR flashlight
- Directional microphone with an adapter
- Laser sighting device

12. Generation 2+ image intensifier tube operational defects

Some IIT operational defects are related to the reliability of the image intensifier tube and are an indication of instability. If identified, they are an immediate cause for rejection of the NV unit. Examples of operational defects include shading, edge glow, flashing, flickering and intermittent operation. However, some types of blemishes can get worse over time and interfere with night-time viewing. Cosmetic blemishes are acceptable if they do not interfere with viewing ability. Black spots are cosmetic blemishes in the image intensifier, or dirt and debris between the lenses, and are acceptable as long as they do not interfere with viewing ability. Please see images below.



A. Flashing, Flickering, or Intermittent Operation

The image may appear to flicker or flash; if there is more than one flicker, check for a loose battery adapter or a weak battery. Return to the manufacturer if repetitive flickering is interfering with viewing ability.

B. Shading

Shading is a dark, high contrast area with a distinct line of demarcation. Shading always begins on the outer edge and migrates inward, eventually blocking the entire viewing area and making it impossible to see an image through it. If shading is present, it will not be possible to see a fully circular image. Make sure the shading is not the result of improper eye-relief adjustment before returning to the manufacturer.



C. Edge Glow

Edge glow is a bright area, sometimes sparkling, in the outer portion of the viewing area. To check for edge glow, block out all light by cupping a hand over the lens. If the image intensifier tube is displaying edge glow, the bright areas will still show up.



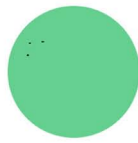
E. Emission Points and Bright Spots

Emission points and bright spots are acceptable if they do not interfere with viewing ability or performance.

An emission point is a steady or fluctuating pinpoint of bright light in the image area that does not disappear when light is blocked from the objective lens of the unit.

Not all emission points render a unit defective, but if the position of the emission point within the image area does not move, and is interfering with viewing ability, return the unit to the manufacturer; make sure that the emission point is not simply a light source in the scene being viewed.

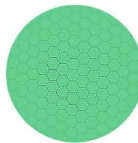
A bright spot is a small, non-uniform, bright area that may flicker or appear constant; however, not all bright spots render a unit defective. Cup a hand over the lens to block out all light; if the bright spot disappears when the light is blocked out, it is not a reason for rejection. Make sure that the bright spot is not simply a bright area in the scene being viewed.



D. Cosmetic Blemishes and Black Spots

Cosmetic blemishes and black spots are normal and do not affect the image intensifier reliability. However, some types of blemishes can get worse over time and interfere with nighttime viewing. Cosmetic blemishes are acceptable if they do not interfere with viewing ability.

Black spots are cosmetic blemishes in the image intensifier, or dirt and debris between the lenses, and are acceptable as long as they do not interfere with viewing ability.



F. Fixed-Pattern Noise

Fixed-pattern noise is usually a cosmetic blemish characterized by a faint hexagonal, or honeycomb, pattern seen throughout the viewing area that most often occurs at intense light levels or when viewing very bright lights. This pattern can be seen in every image intensifier if the light level is intense enough. This condition is acceptable as long as the pattern does not interfere with performance.



G. Chicken Wire

Chicken wire is an irregular pattern of dark thin lines in the field of view, either in parts or throughout the image area. Under the worst-case scenario, these lines will form hexagonal, or square-wave, shaped lines. No action is required if this condition is present unless it interferes with viewing ability or performance.

NOTE: Please note that spots/blemishes do not affect the performance of an image intensifier tube.

13. Storage

Always store the unit in its carrying case in a dry, well-ventilated space. Store at temperatures above 33 °F (0 °C) and at humidity levels no higher than 70%. For prolonged storage, remove the battery.

14. Troubleshooting

Listed below are some potential problems that may occur when using the AVENGER. Carry out the recommended checks and troubleshooting steps in the order listed. Please note that the table does not list all of the possible problems. If the problem experienced with the scope is not listed, or if the suggested action meant to correct it does not resolve the problem, please contact the manufacturer.

Problem	Possible cause(s)	Corrective action
1. The riflescope does not turn on.	1.1 The battery has been installed incorrectly. 1.2 The total battery charge is less than 2.0V. 1.3 Oxidized contact points in the battery compartment due to "leaky" batteries or contact points becoming exposed to a chemically-reactive solution.	1.1 Reinstall the battery with the correct polarity orientation. 1.2 Install fresh battery. 1.3 Clean the battery compartment, focusing on the contact points.
2. The red reticle is blurred and cannot be focused with the diopter setting ring.	2.1 The diopter cannot be adjusted to your vision.	2.1 If you wearing prescription glasses with a range of +/- 5, keep glasses on when looking through the eyepiece.
3. With a crisp image of the reticle, the image of the observed target that is at least 30 m away is blurred.	3.1 Dust and moisture are covering the outside optical surfaces. 3.2 Moisture is on the inside of the objective and the eyepiece lenses, or is on the optical surfaces of the electronic-optical converter and may be caused by the unit fogging up due to a rapid change in temperature; when the device is brought in from the cold into a warm environment, for example. 3.3 The total battery charge is less than 2.0V.	3.1 Clean the lens surfaces with a soft cotton tissue or cloth. 3.2 Let the riflescope dry by leaving it in a warm environment for 4 hours. 3.3 Install fresh batteries.
4. Distinct black dots or specs on the screen.	4.1 The dots on the screen are cosmetic blemishes in the intensifier tube and are a by-product of the manufacturing process; they do not in any way affect the life or performance of the unit, and if there is dust on the lens, please clean according to the instructions.	4.1 No need to take corrective action or return the device.
5. The aiming point shifts after firing rounds.	5.1 The riflescope is not mounted securely.	5.1 Check how securely the riflescope has been mounted and make sure that the same type and caliber bullets are being used as when the scope was initially sighted in; if your scope was sighted in during the summer, and is now being used in the winter (or the other way around), a small displacement of the aiming point is possible.
6. The riflescope does not focus.		6.1 Adjust the riflescope according to the OPERATING INSTRUCTIONS section; check the surfaces of the eyepiece and objective lenses and clean them, if necessary, from dust, condensation, frost, etc; to prevent fogging in cold weather, apply a special anti-fog solution.