HI-LUX

PRECISION OPTICS

CMR8 RIFLESCOPE

INSTRUCTIONAL MANUAL

HI-LUX CMR 8 FFP

At Hi-Lux Optics, we pride ourselves upon building high quality, competitively priced precision optics. No longer are you paying for the million dollar advertising campaigns or unnecessary bells and whistles. All your firearms deserve quality optics.

Constructed from a solid 34mm aircraft grade aluminum tube, the CMR8 FFP features a wide 8X Magnification range. At 1X, the outer horseshoe of the AVS-CMR8 reticle naturally directs the operator's attention to the center of the reticle for quick target acquisition. At higher power, the outer horseshoe moves out of the sight picture. There are dots that indicate every whole Mil, which the shooter can use for elevation or windage holdovers. As the CMR8 is a 1st focal plane scope (1FP), the reticle subtensions are accurate at every power!

Unlike some other optics manufactures, we build rifle scopes the right way. From optical system design to verifying zero optical shift when changing magnification, every step of the Hi-Lux manufacturing process requires painstakingly meticulous attention to detail. All glass lenses in the CMR8 are fully multi-coated with DiamondTuff14 for maximum light transmission. Argon purging and rubber gasket seals guarantee fogproof performance in all temperatures and climates. Zero-LOK turrets prevent the operator from losing his scope's zero.

When a shooting situation gets up close and personal, you need a scope that was designed and built specifically for that kind of shooting - during a tactical engagement or while hunting dangerous big game. To compromise with anything else could prove to be life threatening. The CMR8 scope is the scope you need.

TABLE OF CONTENTS

SECTION 1

SPECIFICATIONS AND BASIC DEFINITIONS

(1) SPECIFICATIONS:

Model	Power	Obj. (mm)	F.O.V.@ 100 Yds (Feet)	Eye Relief (Inch)	Length (Inch)	Weight (O.Z.)	Exit Pupil Range In Variable (mm)	Tube (mm)
CMR8	1x – 8x	26	114.8′ - 14.5′	4″	10″	23	16.6 - 3.2	34mm

All air-glass surfaces are fully multi-coated with DiamondTuff14 for optimal light transmission. The Elevation and Windage click adjustment is 0.1 MRAD = 10mm at 100 meters ≈ 0.36 inch at 100 yards. There are at least 34 Mils of Elevation and Windage Adjustment from the center of the tube.

(2) BASIC DEFINITIONS:

A) Fast Focus Eyepiece; B) Magnification Throw Lever; C) Windage Turret; D) Elevation Turret; E) Rheostat; F) Objective Lens

SECTION 2

ADJUSTING THE FAST FOCUS EYEPIECE AND RHEOSTAT

Hold the scope about three inches from your eye and look through the eyepiece at a featureless, well lit area at least 5m away such as a wall or open sky. If the reticle is not sharply defined, you need to turn the fast focus (4) in or out until the reticle appears in sharp focus.

The rheostat has 7 brightness settings for illuminating the reticle. For the best results in low light situations, we recommend that you set the brightness as low as possible

while you are still able to see the reticle clearly. The Nv1, Nv2, and Nv3 settings are designed for use with digital night vision optics. The 4th brightness setting is for low light illumination. The settings 5 and 6 are the intermediate brightness settings that can give you more choices to choose from at the low light situation. The Max position is the brightest illumination setting. There are "Off" positions in between each brightness setting. The rheostat is located on the left side of the scope in relation to the eyepiece. The battery, which is included with the scope, is a 3V lithium coin CR2032 battery. The battery can be changed by first removing the battery compartment cover (1) located at top of the rheostat. Replace the old battery with a new CR2032 battery with "+" side facing up and retighten the cover (1).

SECTION 3

ZRO-LOK™ ELEVATION AND WINDAGE TURRETS

The ZRO-LOK™ turrets prevent you from losing your zero. Before you initially zero your CMR8 scope, you need to loosen the two locking screws (1) on both

elevation and windage turrets. Once you have initially zeroed your elevation, you can rotate the MRAD index mark ring (2) to line up the zero on the turret index ring with the arrow as the picture shows.

Next, retighten the two locking screws on the elevation turret. Now, the elevation turret will be locked down in place and it will only allow you to make one full turn of adjustment. One revolution on the elevation turret is 12 MRADs (41.2 MOA) of adjustment. There is one Mil of elevation adjustment down from 0, reserved for operators shooting down at targets from higher altitude. After you have the windage zeroed, you need to rotate the MRAD index mark ring to line up the zero mark and retighten the two locking screws (1). Once you lock the windage system in place, it only allows you a half turn, which is 6 MRAD (20.1

MOA) left or right. With this ZRO-LOK™ turret stops, you can never lose your scope's zero.

SECTION 4

MOUNTING

To achieve the best accuracy from your rifle, the scope must be mounted properly. You should use a high-quality mount with bases designed to fit your particular rifle.

To mount the scope:

A. The scope should be mounted as low as possible without touching either the barrel or the receiver.
B. Prior to tightening your scope rings, look through the scope in your normal shooting position. Adjust the scope (either forward or backward) until you find the farthest point forward (to ensure maximum eye relief) that allows you to see a full field of view.
C. Rotate the scope in the rings until the reticle pattern is perpendicular to the bore and the elevation turret is on top.
D. Tighten the mounting screws.

WARNING: AVOID OVER-TIGHTENING THE RINGS. WE RECOMMEND TIGHTENING SCOPE RINGS TO NO MORE THAN 20 INCH LBS OF TORQUE. OVER TIGHTENING THE RINGS WILL DAMAGE THE SCOPE, AFFECTING PERFORMANCE OR RENDERING IT INOPERABLE. THERE SHOULD BE A SLIGHT EVEN GAP BETWEEN THE SHOULDERS OF THE RING HALVES. BE SURE THAT THE SCOPE IS MOUNTED FAR ENOUGH FORWARD. ITS REARWARD MOTION MAY INJURE THE SHOOTER WHEN THE RIFLE RECOILS

SECTION 5

HOW TO RESET THE SCOPE TO OPTICAL OR MECHANICAL CENTER

The elevation and windage adjustments on the Hi-Lux CMR8 are preset to the optical/mechanical center at the factory. For all new scopes, you do not need to reset the erector unit to optical and physical center for the scope. However, if you are mounting a scope that was previously zeroed on another rifle, you should reset the scope's internal adjustment prior to zeroing on the new rifle. Centering the Elevation and Windage adjustments to optical center will maximize the total range of internal adjustment. If the erector unit inside the scope is not centered, the Elevation and Windage adjustments will not give equal travel in all directions. To regain the full adjustment range, you need to recenter the adjustments as following:

(1) First loosen the set screws on the elevation and windage turrets.
(2) Turn the Windage adjustment all the way counter-clockwise until the turret stops turning. DO NOT FORCE ANY CLICKS!

(3) Turn the Elevation adjustment all the way counter-clockwise until the turret stops turning. DO NOT FORCE ANY CLICKS

(4) Turn the Windage adjustment all the way back clockwise until you cannot turn the turret anymore. Count the total number of clicks while you are turning the adjustment turret. Remember the total number of clicks.

(5) Adjust the Windage turret to the Left with half the amount of the clicks counted in the previous step. Now the Windage adjustment is at optical center.

(6) Repeat the steps (3) and (4) to reset Elevation to optical and physical center.

(7) Now the scope is in optical center. At optical center, there is about 43.6 MRADs (150 MOA) of total adjustment for elevation and windage.

SECTION 6

BORESIGHTING YOUR RIFLE SCOPE

Pre-zero sighting can be done either manually, or with a bore-sighting device.

To bore sight manually:

A. It is necessary to be able to see through the bore from the breech end. In the case of a bolt action, this usually means removing the bolt.

B. Set the CMR8 to 1X.

C. With the firearm in a rested position, loosen the two locking screws on both Windage and Elevation. Then you can turn the windage and elevation turrets freely.

D. Look through the bore and center the target. Adjust the Windage and Elevation turrets to position the reticle on the center of the target.

E. Turn the Windage adjustment turret clockwise to move the point of impact right and counter-clockwise to move the point of impact Left as the arrow on the turret indicates.

F. In the same manner, turning the Elevation adjustment turret clockwise lowers the point of impact, while turning the turret counter-clockwise to raises the point of the impact. **If a large amount of adjustment is required to align the reticle, make approximately one-half of the Windage correction, then approximately one-half of the required Elevation correction. Finish by applying the balance of Windage and Elevation correction.

If you can't see through the bore then it will be necessary to use some type of bore-sighting device. When using a bore-sighting device, follow the instructions provided with the bore-sighting device.
NOTE: If your mounting system allows for adjustments of the scope, the gross adjustments should be made in the mount and then the final adjustments will be made with the scope's internal adjustment system.

SECTION 7

ZEROING YOUR CMR8

DANGER: IF A BORE SIGHTING COLLIMATOR OR ANY OTHER BORE OBSTRUCTING DEVICE WAS USED; IT MUST BE REMOVED BEFORE PROCEEDING. ANY OBSTRUCTION CAN CAUSE SERIOUS DAMAGE TO THE GUN AND PERSONAL INJURY TO YOU AND OTHERS NEARBY.

The zero range will depend on your shooting needs and range conditions.

A. In general, if most of your shots will be at close to mid distances, zero-in the center dot of the AVS-CMR8 Proportional Ranging System reticle at 25 meters. This will give the approximate combat zero for a 315m zero.
B. Loosen the two set screws on both Elevation and Windage.
C. From a rested position, fire three rounds at the target.
D. Observe the center of the points of impact on the target and adjust the Windage and Elevation screws as needed to bring the point of aim to the desired relationship to the points of impact. The point of impact moves in the direction indicated on the adjustment turrets and by the amount indicated.

E. Repeat as necessary.
F. Once the zeroing of the scope is completed, you can re-index the mrad index mark ring to line up with the zero mark and then retighten the two locking screws on both Elevation and Windage to lock the turrets in place. You can reference Section 3 for details how to use the ZRO-LOK™ turret locking system.

The CMR8 adjustments are calibrated in MRAD adjustment (MIL). Each click of the adjustment changes bullet impact at 100 meters by 0.1 MILS (approximately 1cm @ 100m) . To calculate how much each click moves the point of impact at distances greater than 100 meters, use the following formula:

Adjustment Click Value = {**Distance to Target in Meters /100 Meters**} * **1cm**

For Example: You are shooting at a 200 meter range. Divide 200m by 100m which equals 2. Multiply the result by 1cm and you get 2cm. Thus, at 200m, each click on the adjustment turret moves the point of impact by 2cm. For 400 meters, you would multiply 1cm (click value per 100m) by 4, which gives 4 cm adjustment per click at 400m.

WARNING: ALL SHOOTING SHOULD BE DONE AT AN APPROVED RANGE, OR SAFE AREA. EYE AND EAR PROTECTION IS RECOMMENDED.

SECTION 8

MAGNIFICATION THROW LEVER

The CMR8 FFP scope's magnification throw lever allows the shooter to quickly and easily change power. Because the scope is in first focal plane, the reticle stadia lines and holdovers can be used at any magnification setting.

SECTION 9

MAINTAINING YOUR RIFLESCOPE

Your scope, though amazingly tough, is a precision instrument that deserves reasonable and cautious care. For normal maintenance:

A. Do not attempt to disassemble or clean the scope internally.

B. The external optical surfaces should occasionally be wiped with the microfiber lens cloth provided or an optical quality lens wipe.

C. Keep the protective lens covers in place when the scope is not in use.

D. Remove any external dirt or sand with a soft brush so as to avoid scratching the finish.

E. Wipe the scope with a damp cloth, followed by a dry cloth.

F. Then go over the metal portions of the scope with a silicon threaded cloth in order to protect the scope against corrosion.

G. Store the scope in a moisture-free environment.

H. Avoid storing the scope in a hot place, such as the passenger compartment of a vehicle on hot days. The high temperatures could adversely affect the lubricants and sealants. A vehicle's trunk, a gun cabinet or a closet is the preferred storage locations.

I. Never leave the scope where direct sunlight can enter either the objective or the eyepiece lens. Damage may result from the concentration of the sun's rays (burning glass effect).

WARNING: UNNECESSARY RUBBING OR USE OF A COARSE CLOTH MAY CAUSE PERMANENT DAMAGE TO LENS COATINGS.

SECTION 10

DIAMONDTUFF GUARANTEE

Hi-Lux, Inc. warranties its products against defects arising from faulty workmanship or materials, for the lifetime of the product. Normal wear and tear, accidental or intentional misuse, and theft are not covered under this warranty policy. After one year, optical components may need to be serviced as part of general optic care. Such services are not warrantable. Any attempt to alter, dismantle or change the standard specifications of the products, will make this warranty null and void. This warranty is made to the original purchaser of the goods, and applies only to the products purchased in the United States. The warranty is transferable. Warranty obligation is limited to the repair or replacement of any product returned to Hi-Lux, Inc. that is determined by the manufacturer to have defects arising from faulty workmanship or materials that adversely affect the satisfactory operation of the product. It should be noted that on items containing an etched glass reticle, which the occasional appearance of some small particles is common and not a warrantable repair. Hi Lux provides a two-year warranty for the electronic components that

are contained on the products. Hi-Lux, Inc. reserves the right to request proof of purchase and purchase date. Hi Lux assumes no liability for any incidental or consequential damages, theft, or incidental expenses. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply. No warranties are made, or are authorized to be made, other than those expressly contained herein.

To file a claim under this warranty, please contact the Customer Service Department of Hi-Lux, Inc. at (310)257-8142 to obtain a Return Authorization number (RA number). After receiving your RA number, please mark the number on the outside of the package; enclose the defective item with a brief explanation of the problem. Please be sure to include your name, address and phone number. Failure to obtain a RA number may result in either refusal upon delivery, or lengthy delays for warranty repairs and service required for the item returned to us. All returns are to be shipped prepaid direct to Hi-Lux, Inc. including a check or money order in the amount of $21 to cover postage and handling. Additional fees will be applied to all returns from outside of the United States.

Attn.: Warranty & Service Dept.
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Torrance, CA 90505
Tel: (310) 257-8142, Fax: (310) 257-8096
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In the event of a non-warranty repair, you will receive an estimate prior to any work being done. This warranty gives you specific legal rights and you may have other rights, which vary from state to state. As defined by federal law, this is a limited warranty.

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