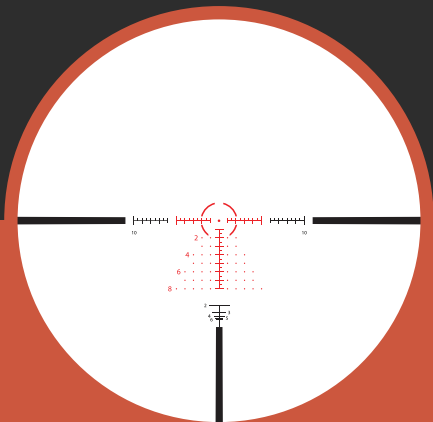# ATHLON
RIDICULOUSLY GOOD OPTICS

AHMR2 FFP IR MIL
## Helos BTR GEN2 Riflescope

FIRST FOCAL PLANE

RETICLE MANUAL

THE ATHLON® AHMR2 FFP IR MIL RETICLE

AHMR2 FFP IR MIL reticle is specifically designed for both hunting and shooting competitions. The 0.3 mil (1 moa) red dot is perfect for zeroing your rifle at 100 yards and the dots below the center red dot are for windage holdover with 0.5 mil increments. The elevation holdover drop line starts 1 mil below center all the way down to 8 mils with 0.5 mil hash marks in between. The center dot with 4 mil diameter circle provides quick aiming point at lower power and enough details for longer distance targets at higher power. The illumination of the reticle provides great visibility during low light conditions. The ranging reticle down below is specially designed for ranging a deer body mass (from belly to the top of shoulder of a whitetail buck) from 200 yds to 600 yds.

Application: Precision Short and Mid Range Shooting for both Tactical and Hunting
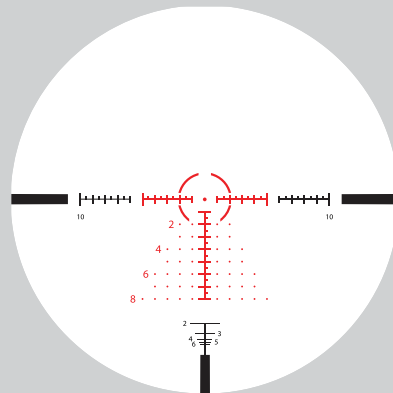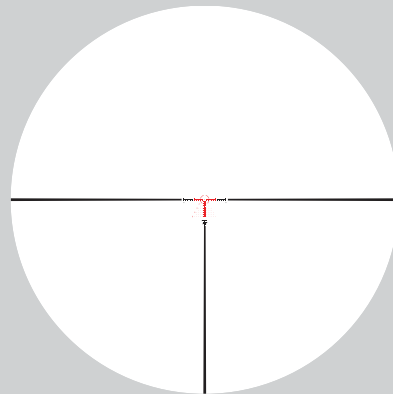
Note: *The reticle image shown above will appear differently among different models due to different magnification and location of the reticle.*

RETICLE SUBTENSIONS

The AHMR2 FFP IR MIL reticle is based on the milliradian, usually shortened to mrad or mil. A "mil" is defined as "one thousandth", or 1/1000. A mil is 1/1000 of a radian (a unit of angular measurement). Since there are 6.2832 radians in a circle, and each radian is chopped up into a thousand pieces, there are 6.2832 x 1000 = 6,283.2 mils in a circle. Since there are 360 degree in a circle, we can get 360 degree/6,283.2 mils=0.573 degree/mil. If the target is 100 yards (3600 inches) away, we can use 3600 Tan (.0573 degree) to get 3.6 inches which means 1mil equals to 3.6 inches at 100 yards

The AHMR2 FFP IR MIL reticle is located at the focal plane in the front of the erector tube which is a key part of achieving variable power inside the riflescope. Size of the first focal plane reticle grows or shrinks at the same ratio with the changing size of the image of your target when you try to zoom in or zoom out. Since the size of the reticle remains constant compared to your target regardless of the magnification, the subtension of the reticle remains valid all the time. The reticle at 1x actually becomes a center dot for effectively engaging shorter range targets while at 10x it provides finer details for a shooter to locate proper hold over positions for longer range targets.
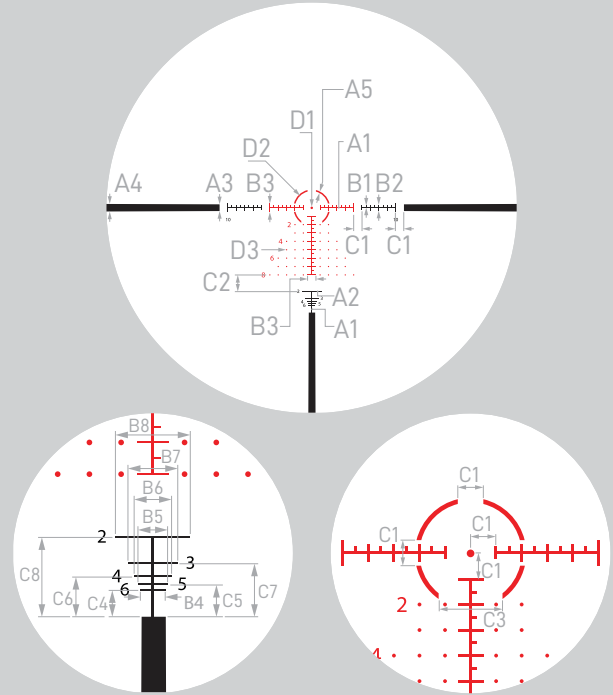
SUBTENSIONS IN MIL

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7
0.08	0.05	0.8	1.3	0.18	0.25	0.7	1	0.79	0.94	1.18	1.57

B8	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3
2.36	1	2	2.5	0.83	1	1.25	1.67	2.5	0.3	4	0.15

DISTANCE RANGING

Equations for ranging distance to a target using mils:

$$\frac{\text{Height of Target (Yards) x 1000}}{\text{MIL Reading on Reticle}} = \text{Distance to Target (Yards)}$$

$$\frac{\text{Height of Target (Meters) x 1000}}{\text{MIL Reading on Reticle}} = \text{Distance to Target (Meters)}$$

$$\frac{\text{Height of Target (Inches) x 27.8}}{\text{MIL Reading on Reticle}} = \text{Distance to Target (Yards)}$$

Because the actual or at least closest estimate of the height of your target is the key part of above equations, you have to know the height of your target or heights of other objects nearby your target that are known to you.

As you can see the actual reading of your target is another key variable in those equations, you want to put your rifle on a steady rest as much as possible so you could get an accurate reading. If needed using the smallest measurement on the reticle to get the most accurate readings.
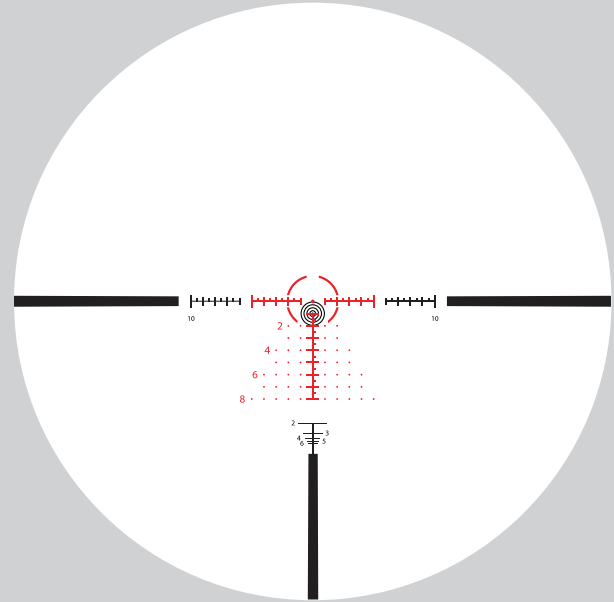
Reading a 3-foot target (1 yard) at 2 mils gives 500 yards

$$\frac{\text{1 yard x 1000}}{\text{2 mils}} = \text{500 yards}$$

HOLDOVER FOR COMPENSATING BULLET DROP

To be able to use the elevation holdovers effectively, you have to know the distance to your target and bullet trajectory (bullet drop in inches or mils). Since most of bullet ballistic charts highlight bullet drops in inches, you have to know that, 1 mil equals to 3.6 inches at 100 yards, 7.2 inches at 200 yards, and 36 inches at 1000 yards, etc.

For example, under no wind condition, if you knew your target is at 500 yards and your ammo has a 54 inch bullet drop at that distance, you want to use 3 mil holdover point. Here is how you got the 3 mil: since 1 mil equals to 3.6 inches x 5 = 18 inches at 500 yards, and then 3 mils equal to 3 x 18 inches =54 inches at 500 yards, you want to hold the 3 mil drop point to compensate the 54 inch bullet drop.

To achieve ultimate precision, it is always a better idea to develop your own D.O.P.E (Data of Previous Engagement) chart so that you can refer back to it for specific bullet drop compensation under different ambient environment and weather condition.
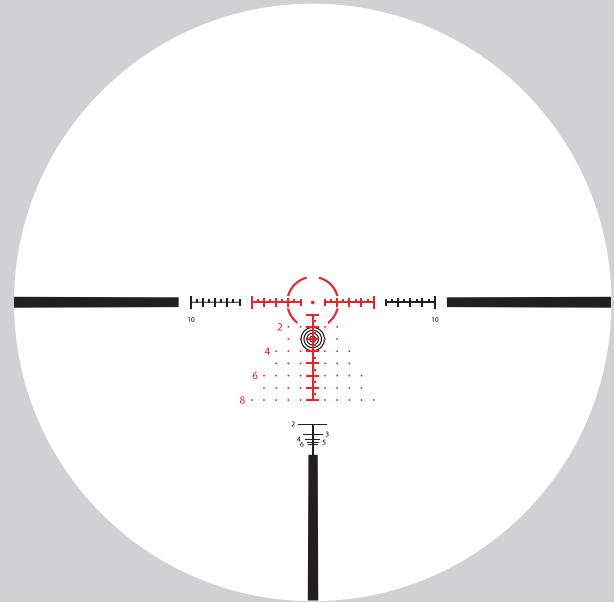
3 mil /54 inch holdover for a target @ 500 yards out. No wind.

HOLDOVER FOR WIND CORRECTION AND MOVING TARGET

The AHMR2 FFP IR MIL reticle, starting with a line of dots in 1.5 mils in each direction at 2 mil drop line and all the way down to 5 mils on each side at 10 mil drop line and having smaller size dots with interval at .2 mils and bigger size dots with interval at 1 mil, the APRS1 FFP IR MIL reticle provides great details of holdover positions to achieve higher level of precision and allows you to spot your holdovers in no time.

The flying time of a bullet, the velocity and direction of the wind and the "slippery-ness" of the bullet expressed in BC (Ballistic Coefficient) determine your holdover for wind correction. Once again you have to understand the impact of those three factors on your bullet's flying path in terms of inches or mils and calculate how much holdover you have to hold, and then finding the corresponding holdover position on the reticle is a much easier task to accomplish.
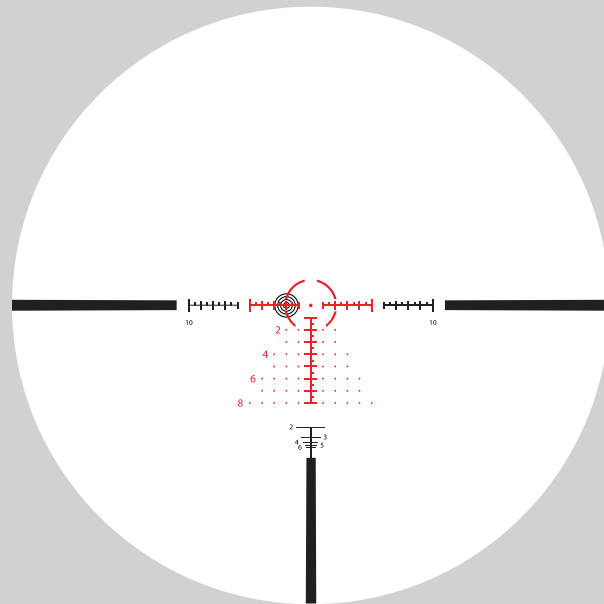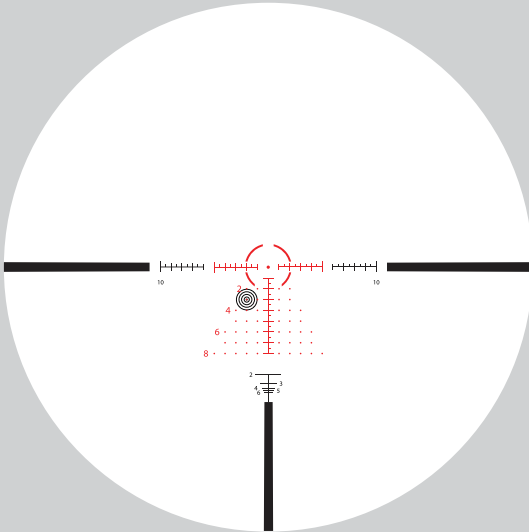
2 mil wind correction for 15 mph wind from right to left at 500 yards. Elevation turret has been dialed up to compensate bullet drop, just simply use center horizontal cross line to holdover for wind correction.

USE VISUAL CROSS POINT FOR WIND CORRECTION AND BULLET DROP

As an alternative, you can use a virtual cross point formed by hash marks on both horizontal and vertical cross lines to holdover bullet drop and wind correction.
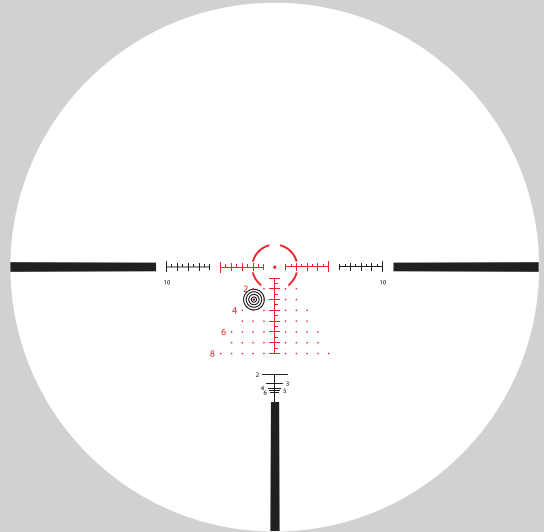
EXAMPLE

Use 3 mil to compensate a 54 inch bullet drop for a target at 500 yards, 2 mil wind correction for 15 mph wind from right to left.

HOLD LEAD CORRECTION FOR A MOVING TARGET

Distance to your target, moving speed of your target, bullet flying time, wind direction are the key factors that determine how much holdover you need to hold for a moving target. As a rule of thumb, you always hold the lead for the net distance of your target moved (add or subtract holdover for wind correction) during the time span your bullet traveled.
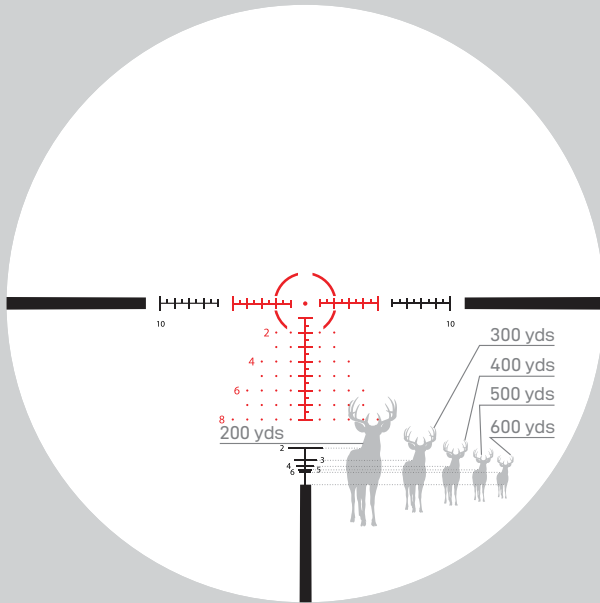
EXAMPLE

1.95 mil lead holdover for a moving target traveling at 2 mph from left to right at 500 yards. Bullet flight time is 1 second during which the target traveled 2.94 feet. No wind.
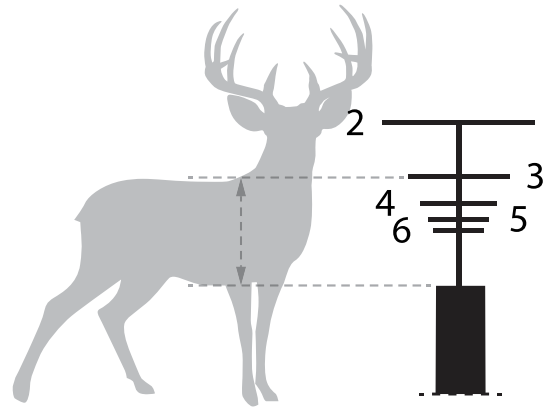
DISTANCE RANGING RETICLE

EXAMPLE

300 yds
400 yds
500 yds
600 yds
200 yds

The gap between the ranging reticle line to the top of the thick black line is 18 inches, that is a typical body height of a whitetail buck from belly to shoulder top.

DETAIL

Example of a whitetail buck at 300 yds.

If you can fit a whitetail buck body mass (belly to shoulder top) into a gap just call out the distance in hundred yards by using the number beside the horizontal line.

THE ATHLON
GOLD MEDAL LIFETIME WARRANTY*

Your Athlon product is not only warranted to be free of defects in materials and workmanship for the lifetime of the product. Athlon will also repair or replace, at no charge to you, your product if you should damage it through normal use. No receipt is needed, no registration is required. This is a commitment that Athlon Optics will be the best product you can buy for your money.

This warranty does not cover damages caused by deliberate damage, misuse, theft or maintenance provided by someone other than the Athlon Authorized Service Department.

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