

For Patent Information go to <https://goo.gl/2z62aS>

GLX™ FIRST FOCAL PLANE RETICLE MANUAL

ATHENA™ BPR MIL



PRIMARY ARMS®
OPTICS

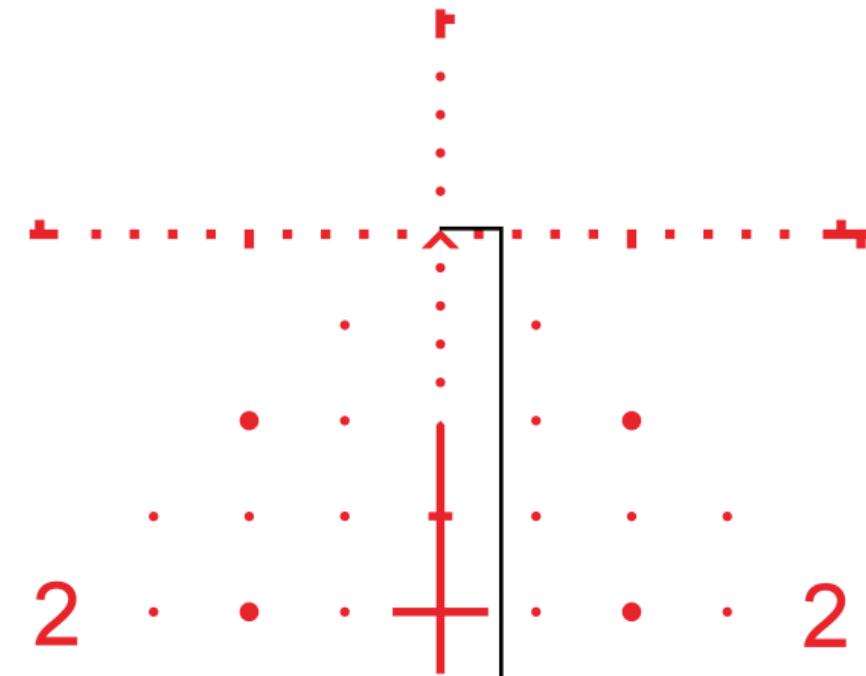
THE ATHENA BALLISTIC PRECISION MIL RETICLE

Athena BPR includes very fine subtensions for accurate ranging and fire correction at extended ranges and high magnification. Overall, the reticle extends 10 MIL up, left, and right of the center chevron, and 15 MIL down. Large hash marks are found in 1.0 MIL increments, with smaller marks between them at 0.5 MIL increments.

ESTABLISHING ZERO, OR DIALING IN YOUR SCOPE

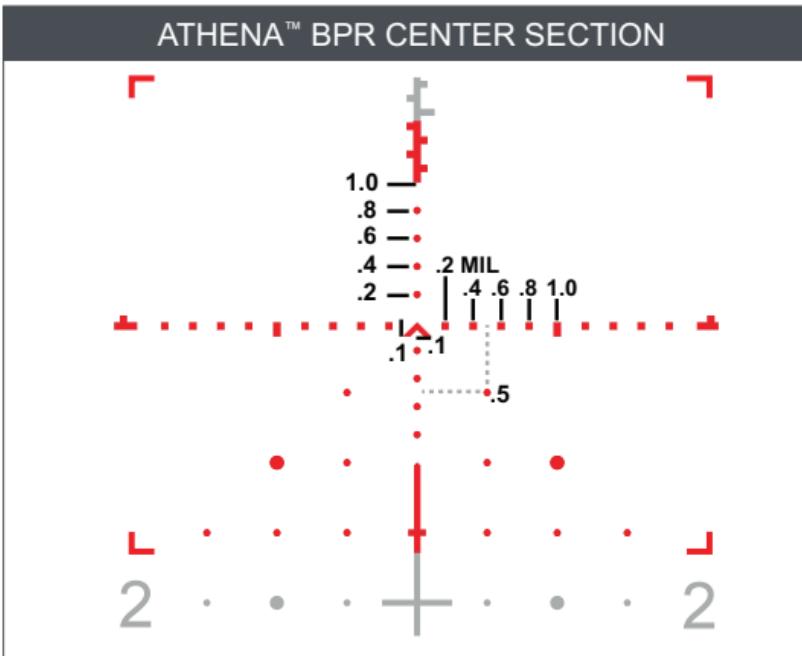
Athena BPR uses a chevron as the center aiming point of the reticle. When zeroing your rifle, adjust your Windage and Elevation knob positions so that the point of impact coincides with the tip of the chevron. Using the chevron tip allows for an infinitely small point of aim that never covers up the part of the target you want to hit, giving the chevron tip a precision advantage over traditional crosshairs or a center aiming dot.

FAST ACQUISITION

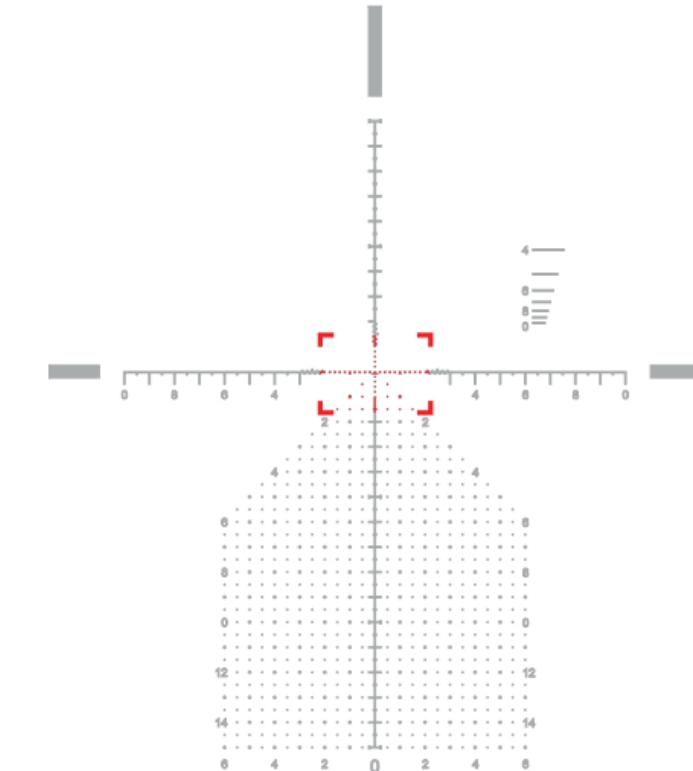


ATHENA CENTER SECTION

The tip of a very small chevron occupies the center. The chevron measures just 0.1 MIL down from center and 0.1 MIL to the left and right of center. Thus, the outer tips of the chevron legs are located 0.1 MIL from center, and 0.2 MIL apart from each other.

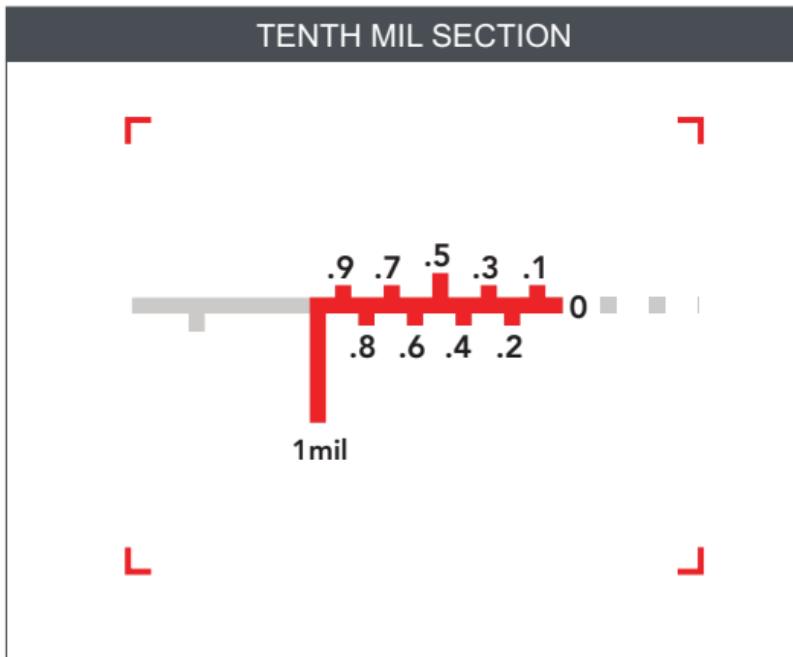


ATHENA™ BPR MIL RETICLE

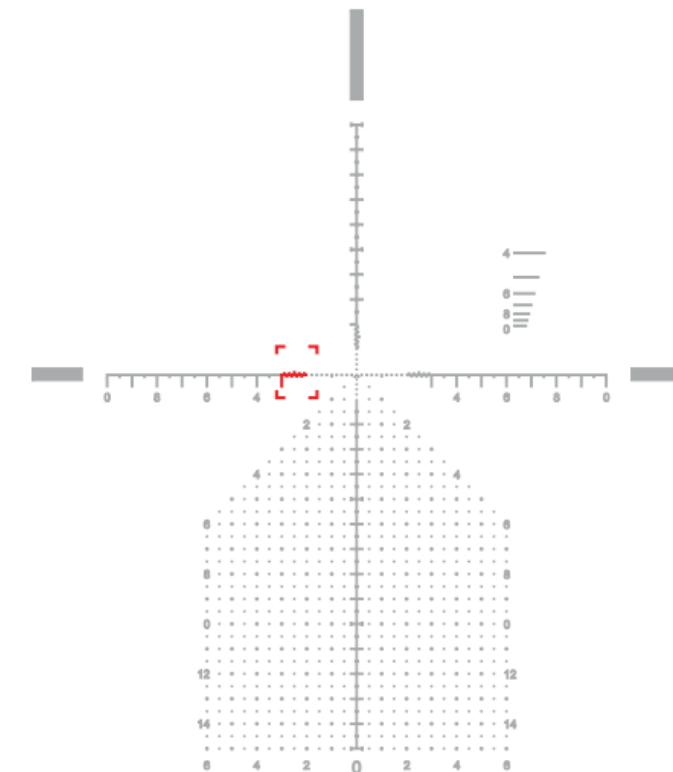


ATHENA OUTER SECTION

At 2 MIL distance left/right from center, the solid crosshair line begins, using alternating upper and lower marks forming a MIL ranging section. These can be used to range targets using extremely fine 0.1 MIL increments. At 3 MIL left/right from center, the 0.5 MIL hash marks begin.



ATHENA™ BPR OUTER SECTION

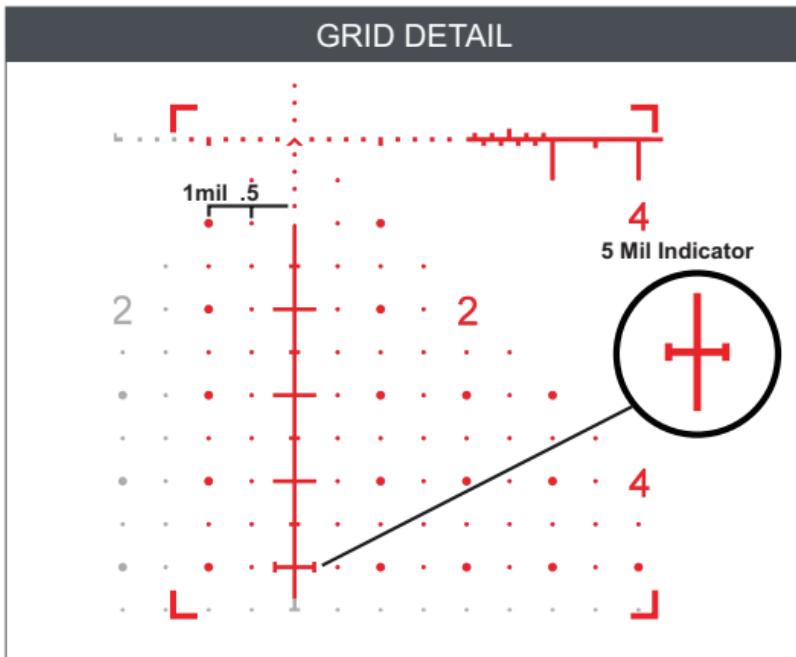


THE MIL GRID

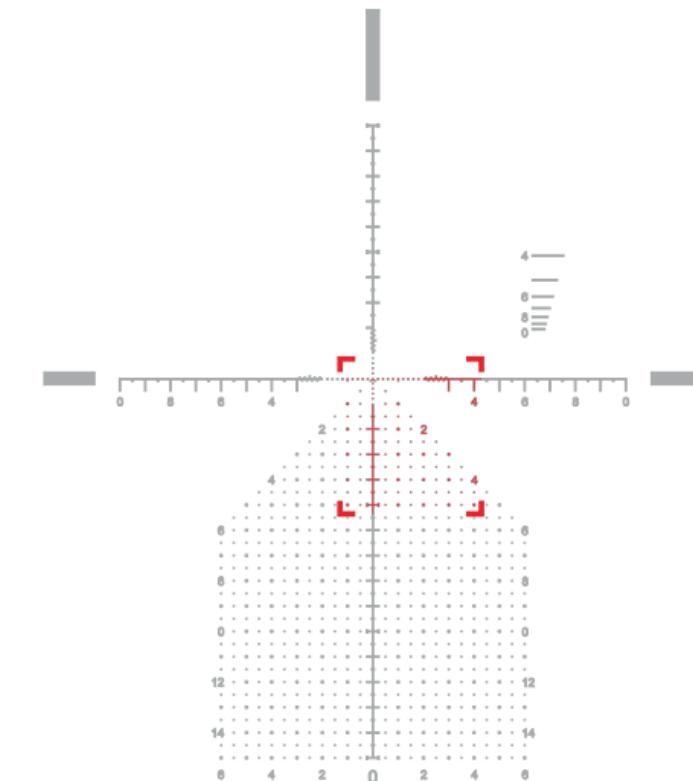
The MIL grid consists of small 0.05 MIL thick dots located at intervals of 0.5 MIL below center and 0.5 MIL left/right of center. The grid continues downwards adding a dot or number every 0.5 MIL. The full grid reaches 15 MIL down and 6 MIL left and right of center.

To help with navigation, at 1.0 MIL intervals the dot size grows to 0.1 MIL thickness. Numbers 2, 4, and 6 located on the outer edges of the grid represent total MIL both down from center and left or right from center. Numbers 8 through 14 represent total MIL down from center, but the grid stops expanding to the left and right at 6 MIL.

Beginning 1.0 MIL below center, the centerline “backbone” crosshair features small hash marks that extend just 0.1 MIL left and right from center, alternating with large hash marks measuring 0.5 MIL left and right of center. To help with navigation, every 5.0 MIL the large hash marks are embellished with indicator bars on the ends, giving them a distinctive barbell shape.



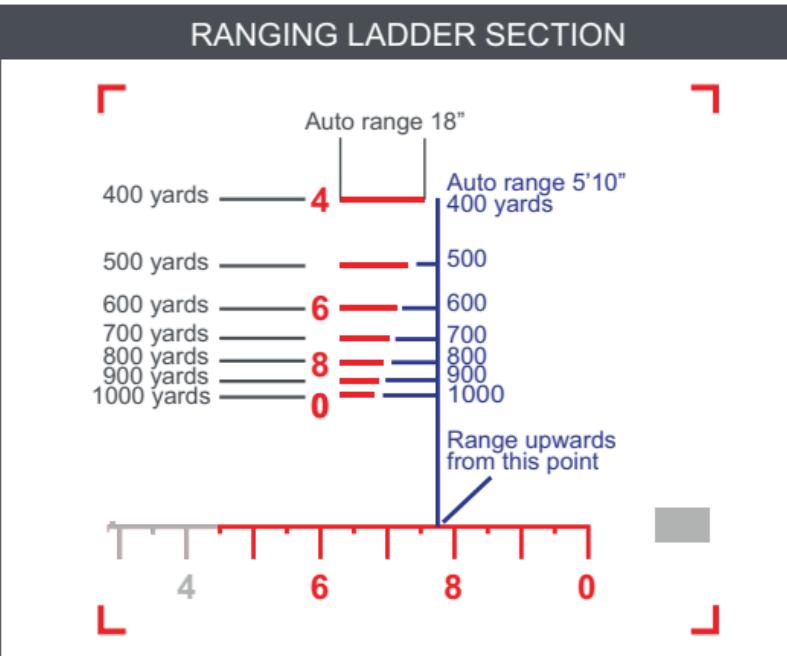
ATHENA™ BPR GRID DETAIL SECTION



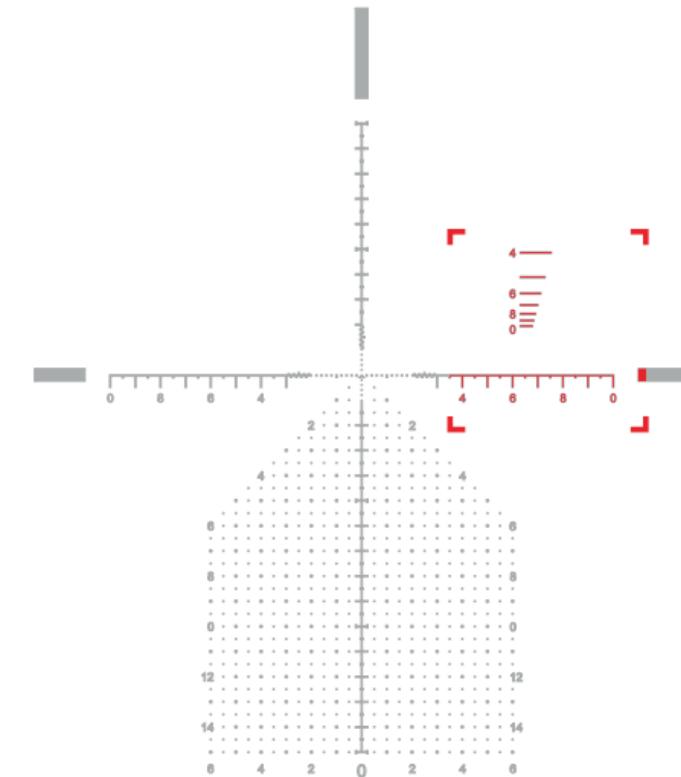
THE RANGING LADDER

Located high and right of center is the ranging ladder. Vertical ranging is calibrated for a 5'10" tall target. Looking through the scope at the target, line up the bottom of the target with the horizontal crosshair. The line that coincides with the top of the target indicates the distance to the target. For example, if the top of the target touches the line with a "4" next to it, the target is 400 yards distant. The ranging lines may be used as reference points to make more precise, yet quick ranging determinations. You can also use the ranging lines to estimate distances within the hundred-yard increments. If a 5'10" target measures halfway between the "4" and "5" lines, the target's approximate distance is 450 yards.

Horizontal ranging is calibrated for an 18" wide target. Simply line up the target's width with the appropriate line to determine range to target. For instance, an 18" wide target matches the "6" horizontal ranging line at 600 yards. This method is useful when the target's height is partially obscured, as with a target in tall grass.



ATHENA™ BPR RANGING LADDER



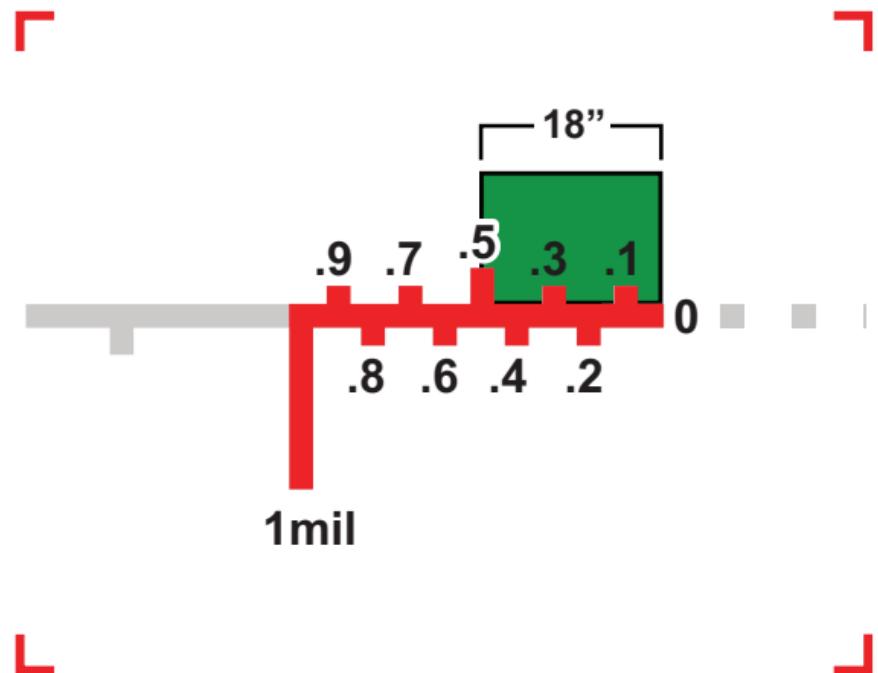
HOW TO RANGE ESTIMATE USING THE 0.1 MIL RANGING SECTION

There are two common systems of measurement in the optics world: MOA and MIL. MOA reticles using Minute of Angle subtensions, which equal 1.047" at 100 yards and usually adjust in .25 MOA increments. MIL reticles use Milliradian subtensions, which equal 3.6" at 100 yards and usually adjust in .1 MIL increments. The Athena BPR MIL reticle utilizes MILs with a first focal plane design, so your scope's MILs are accurate at any magnification power.

A Milliradian, by definition, is an angular measurement equaling 1/1000th the distance between the observer and the target. Simply put, 1 MIL represents 1 yard at 1000-yard distance. This ratio is true across all units, so 1 MIL equals 1 foot at 1000-foot distance, and 1 MIL equals 1 meter at 1000-meter distance. Because MILs are an angular measurement, MIL sizes scale with distance. When observing a target 500 yards away, 1 MIL is equal to 0.5yd. When observing a target 200 yards away, 1 MIL is equal to 0.2yd. This is the basis of MIL-based ranging.

MIL ranging combines size estimation and simple math to deliver incredibly accurate range estimation. Many estimates can be done completely within one's head without the need for a calculator. Once you memorize the steps, you can quickly measure targets at any range with precision.

RANGING SECTION



Here's an example of a ranging process:

You see a window at a distance, and you know that window is 18" tall (or 0.5yd). This is your starting point.

Once you have an estimated size of target, find the size of the target in MILs by using your MIL grid for comparison. Because you're using a first focal plane scope, you can perform this estimate at any magnification, as your MIL subtensions are always accurate. In this example, you measure the window to be 1 MIL tall.

Once you have both the actual target size estimate and the MIL size estimate, the math is easy:

Target Distance in Yards = Target Size in Yards * 1000 / Target MIL Measurement

For the window, this math equals: $0.5\text{yd} * 1000 / 1 = 500\text{yd}$. The window is 500 yards away.

The same formula can be used for meters. Simply use the target size in meters to receive a meters-based distance.

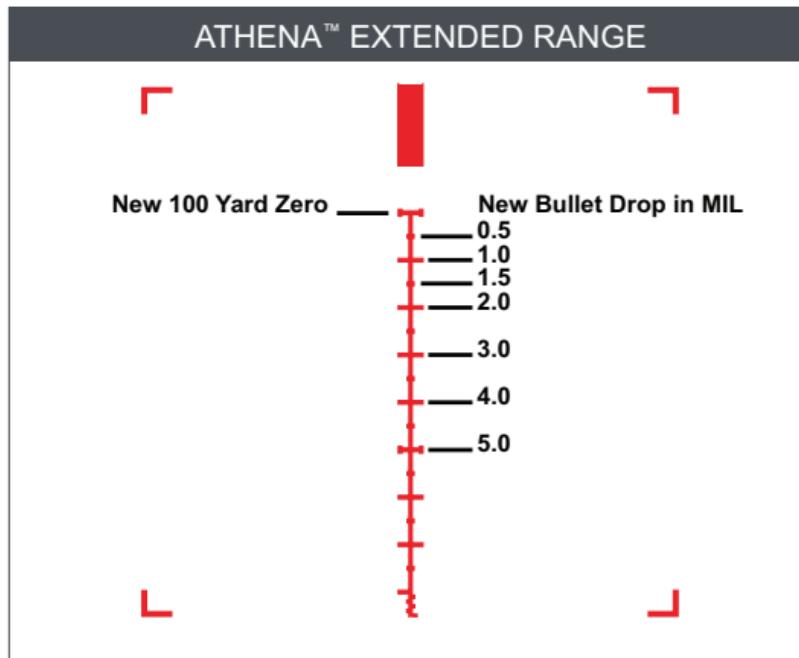
If you want to use target size in inches but still want range in yards, the math is harder, as you will have to convert between units. The easiest method is dividing 1000 by 36(in/yd) for your new constant. The resulting number is 27.8, which replaces 1000 in the in-to-yd MIL formula.

Target Distance in Yards = Target Size in Inches * 27.8 / Target MIL Measurement

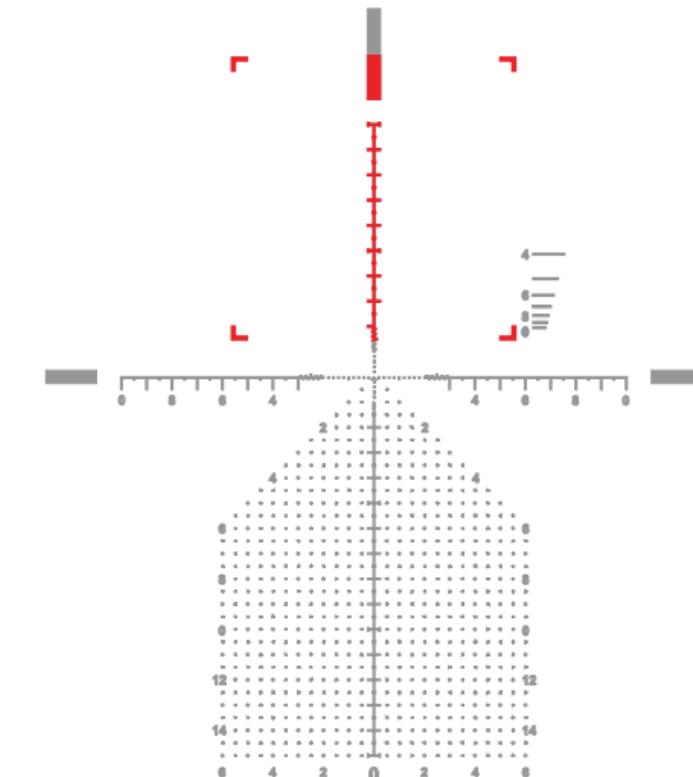
While this math is harder, it returns the same answer. For the window, this math equals: $18" * 27.8 / 1 = 500\text{yd}$. The window is still 500 yards away.
Inches are best used when estimating the size for irregular shapes that cannot be easily expressed in yards or meters.

EXTREME LONG DISTANCE SHOOTING USING ATHENA

To engage targets beyond 15 MIL of bullet drop using Athena BPR, employ a ballistic calculator program and use the vertical crosshair hashmarks to your advantage. Abandon using the 100 yard zero at the chevron, and instead dial in a higher zero using one of the 0.5 MIL hash marks on the vertical crosshair. For example, dialing in your rifle using the “barbell” hash mark located at 10 MIL above center as your point of aim creates a total 25 MIL of drop available in the reticle. The horizontal crosshairs or MIL grid can still be utilized for wind call holdovers.



ATHENA™ EXTENDED RANGE ALTERNATE ZERO



NOTES:

NOTES:



LIFETIME WARRANTY

Your Primary Arms GLx scope is covered by the Primary Arms Lifetime Warranty. If a defect due to materials or workmanship, or even normal wear and tear has caused your product to malfunction, Primary Arms will either repair or replace your product. You can find more details about our lifetime warranty at www.primaryarmsoptics.com.

Email: info@primaryarmsoptics.com
713-344-9600
www.primaryarmsoptics.com