PRODUCT MANUAL

RAZOR® HD 4000 GB

BALLISTIC LASER RANGEFINDER

TABLE OF CONTENTS

SPECIFICATIONS

MAGNIFICATION	7x		
OBJECTIVE LENS	25mm		
	MAX REFLECTIVE RANGE	**TREE RANGE**	**DEER RANGE**
NORMAL MODE	Up to 2400 yds. (2195m)	Up to 1800 yds. (1646m)	Up to 1600 yds. (1463m)
NORMAL MODE (SCAN)	Up to 2400 yds. (2195m)	Up to 2200 yds. (2012m)	Up to 2000 yds. (1829m)
ELR MODE	Up to 4000 yds. (3658m)	Up to 2500 yds. (2286m)	Up to 2200 yds. (2012m)
MINIMUM RANGE	5 yds. (4.5m)		
ACCURACY	± 0.5 yds. @ < 200 yds.		
	± 1 yd. @ ≥ 200 yds. & ≤ 1000 yds.		
	± 2 yds. @ > 1000 yds.		
MAXIMUM ANGLE READING	± 89°		
FIELD OF VIEW	Linear @ 1000 yds.	341'	
	Angular	6.5°	
EYE RELIEF	19mm		
BATTERY TYPE	CR2		
LENGTH	4.4" (111.8mm)		
HEIGHT	3.2" (81.3mm)		
WIDTH	1.9" (48.3mm)		
WEIGHT W/ BATTERY	10.1 oz. (286.3g)		

RAZOR® HD 4000 GB BALLISTIC LASER RANGEFINDER

The Razor® HD 4000 GB is an essential companion for the extreme hunter and shooter. The angle compensated ballistic laser rangefinder features four targeting modes (Normal, First, Last, and ELR) and two ranging modes, Horizontal Component Distance Mode (HCD) and Ballistics Mode (BAL), for any ranging environment. Using an array of built-in environmental sensors in conjunction with the state-of-the-art GeoBallistics® solver and patented Vortex® Wind Bearing Capture Mode, the Razor® HD 4000 GB will raise your level of long-range precision shooting ability to a new height.

The Razor® HD 4000 GB pairs, via Bluetooth®, with your mobile device and the GeoBallistics® App. Scan the QR code below to download the GeoBallistics® App with your Apple or Android device.

The QR code below will also give access to instructional videos.

GeoBallistics®

Scan QR code to get started.

Images are for representation only. Product may vary slightly from what is shown.

BASIC OPERATION

Battery Installation and Replacement

To insert a new battery, flip up the finger tab on the Battery Cap and unscrew, counterclockwise, to remove. Insert a CR2 battery with the positive side (+) facing outwards. Reinstall the Battery Cap and ensure it is tightly closed.

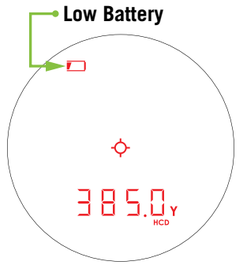
Power Up

Once the battery is installed, the Razor® HD 4000 GB is in ready condition – the normal power-off condition when not ranging. To power up the Razor® HD 4000 GB from ready condition, press and release the "Measure" button. The HCD or BAL ranging screen will display. The Auto-Shutoff feature can be adjusted to 30, 45, 60, or 180 seconds. See the Auto-Shutoff section on page 13.

Note: While in the menu, the Razor® HD 4000 GB will auto-shutoff after 30 seconds if no buttons are pressed.

Low Battery Icon

The Low Battery Icon displays once the battery reaches 25% life and stays on until there is no power or the battery is replaced.



Adjust the Eyecup

The Adjustable Eyecup on the Razor® HD 4000 GB twists in and out so any viewer can see the full field and enjoy comfortable viewing and ranging – with or without eyeglasses. When not using eyeglasses or sunglasses, keep the Eyecup fully extended. For best viewing when wearing eyeglasses, twist the Eyecup in to allow closer contact to your glasses.

Focus

Adjust the Diopter until the image is sharp. Make note of this Diopter setting in case you need to set it again.

Attaching the Lanyard

The Lanyard provides a secure way to carry your rangefinder.

Loop the Lanyard through one of the Attachment Sockets.

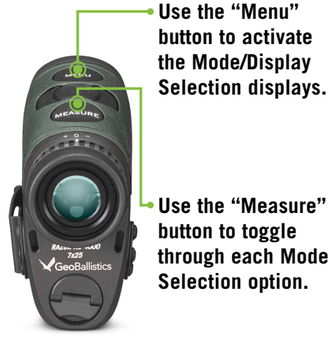
Utility Clip

The Razor® HD 4000 GB comes with a Utility Clip on the unit's left-hand side. You can switch the Utility Clip's side by unscrewing the 2mm hex screws on the left-hand side, and the 2mm hex screws on the unit's right-hand side. Reinstall the Utility Clip on the unit's right-hand side and the Utility Clip Plate on the unit's opposite side with the 2mm hex screws.

MODE SELECTION

Changing Modes on the Razor® HD 4000 GB

The Razor® HD 4000 GB is factory set to the angle compensating HCD Range Mode, Normal Target Mode, Brightness Level 4, Auto-Shutoff at 30 seconds, and displayed in Yards.



Use the "Menu" button to activate the Mode/Display Selection displays.

Use the "Measure" button to toggle through each Mode Selection option.

To Change Modes

Press and release the "Measure" button to power on the unit, and then press and hold the "Menu" button for at least four seconds. Once the Mode Selection screen displays, release the button.

As you progress through Mode Selection, you may exit at any time and save your settings by pressing and holding the "Menu" button for at least four seconds – the unit will then return to the power-up condition.

Target Mode Selection

The Razor® HD 4000 GB provides four target modes:
Normal Mode, First Mode, Last Mode, and Extended Laser Range (ELR) Mode.

After activating the Mode Selection, press the "Measure" button to toggle between Normal Mode, First Mode, Last Mode, and Extended Laser Range (ELR) Mode. Press the "Menu" button to save your desired choice and continue through to the Ranging Mode Selection screen.

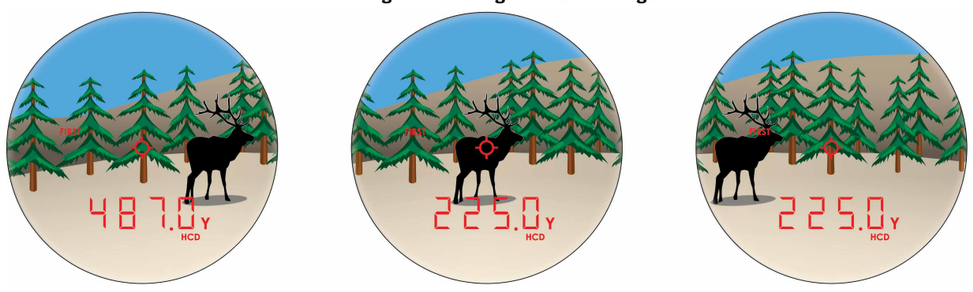
Normal Mode

The Razor® HD 4000 GB comes preset to Normal Mode. This is the standard mode providing the target's range with the strongest range result. Normal Mode is the recommended target mode for most situations.

First Mode

This mode displays the closest distance when panning and scanning. It is ideal for ranging a smaller target in front of other larger or more reflective objects.

Scanning and Panning From Left to Right



Initial range captured on trees. **Range captured on closer elk.** **Scanned to further trees. Range remains locked on closer elk.**

Last Mode

This mode displays the farthest distance when panning and scanning. It is ideal for ranging a specific target behind a group of objects, such as rocks, trees, brush, etc.

Scanning and Panning From Left to Right

Initial range captured on trees. **Range captured on farther elk.** **Scanned to closer trees. Range remains locked on farther elk.**

Extended Laser Range (ELR) Mode

This mode allows for ranging smaller, less reflective targets at extended distances. It is ideal for ranging when Normal Mode is unable to obtain a desired range. A longer response time may be required to receive the desired range. For best results, use a tripod.

Ranging Mode Selection

Choose Between the HCD and BAL Modes

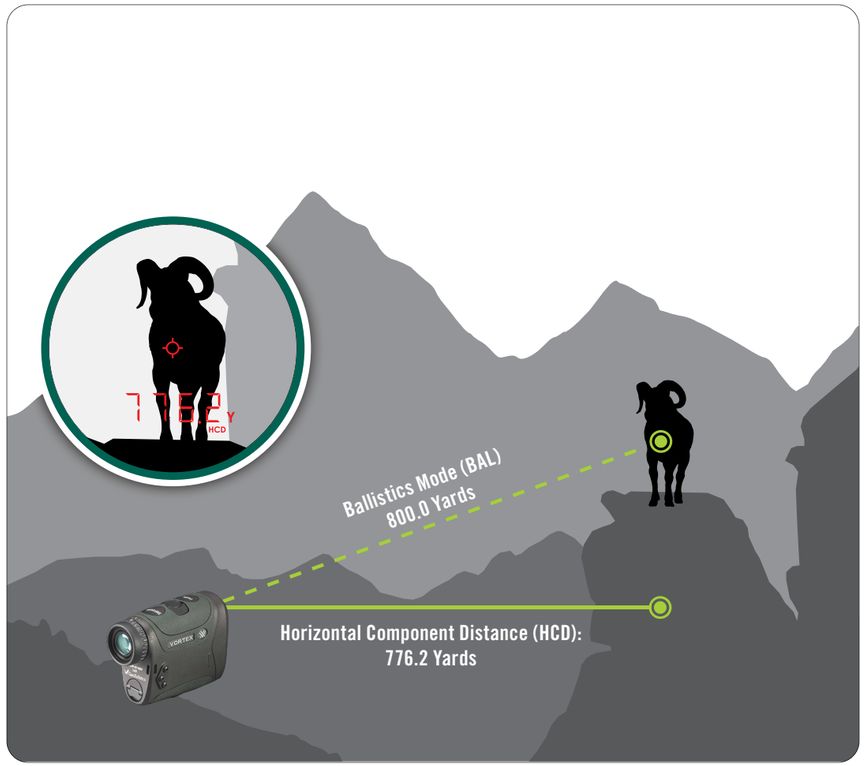
Press the "Measure" button to toggle between the HCD and BAL displays. Press the "Menu" button to save your desired choice and continue through to the Range Unit Selection screen.

HCD Mode **BAL Mode**

HCD Mode

The Horizontal Component Distance (HCD) Mode will be your primary mode when not using the on-board ballistic solver. The yardage number displayed is the critical horizontal component distance. The displayed HCD yardage number is corrected for shot angle and needs no extra user input; shooters simply use the appropriate level ground bullet drop for the range displayed and shoot. Archers use the appropriate level ground sight pin for the range displayed.

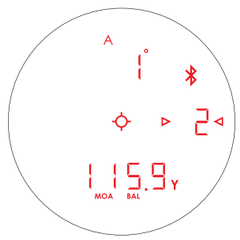
Note: To correctly account for wind, you need to know the line of sight distance to the target as it is based on how far the arrow or bullet travels to the target. This can be achieved using the BAL Mode.



BAL Mode

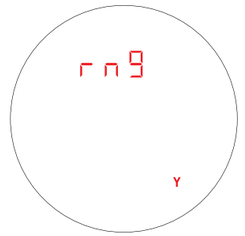
When in Ballistics (BAL) Mode, an additional number is displayed above the range number. This number is shot angle shown in degrees.

This number is automatically calculated into the wind/drop solution provided in the display and in the GeoBallistics® App. If you are not using the on-board solver, enter the shot angle number into ballistic programs or field cards to help calculate precise bullet drop in mountainous terrain. To use the Razor® HD 4000 GB on-board ballistic solver, you need to be in BAL Mode.

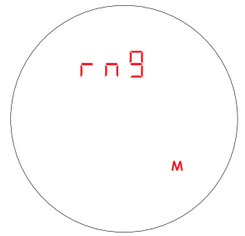


Range Unit Selection

Press the “Measure” button to toggle between the Yards and Meters display. Press the “Menu” button to save your desired choice and move to the Brightness Selection screen.



Yards

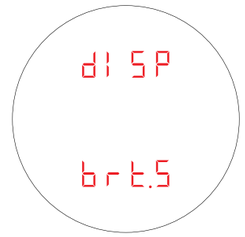


Meters

Brightness Selection

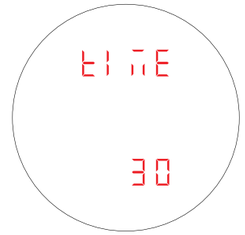
Choose Between Five Brightness Settings

The Razor® HD 4000 GB features five Brightness Settings. Press the “Measure” button to toggle through the five Brightness Settings. Press the “Menu” button to save your desired setting and move to the Auto-Shutoff Selection screen.



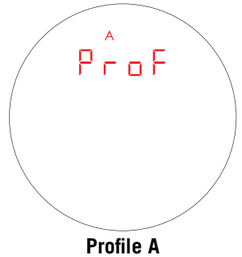
Auto-Shutoff

The Razor® HD 4000 GB offers four Auto-Shutoff program options: 30 seconds, 45 seconds, 60 seconds, and 180 seconds. Press the “Measure” button to select the Auto-Shutoff time. If you are in HCD Mode, this will be the last Mode Selection. Press and hold the “Menu” button for four seconds to save and exit Mode Selection. Press the “Menu” button to save your desired choice and return to Target Mode Selection or continue through to the Ballistic Profile Selection screen (BAL Mode only).

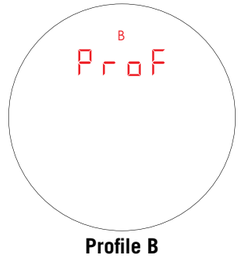


Ballistic Profile Selection (Only Available in BAL Mode)

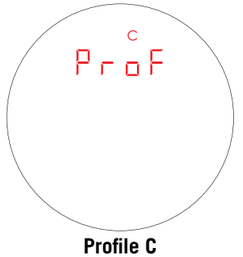
Select the Ballistic Profile for the wind/drop solution to be displayed when in BAL Mode. You can choose between three different profiles, “A,” “B,” or “C.” See the Ballistics Section on page 24 for more information and how to set up and select a Ballistic Profile. Press the “Menu” button to save your desired choice and continue through to the Bluetooth® Selection screen (BAL Mode only).



Profile A



Profile B

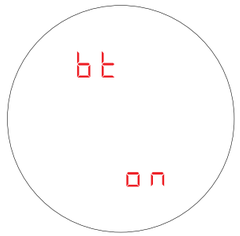


Profile C

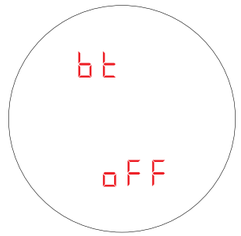
Bluetooth® Selection (Only Available in BAL Mode)

The Razor® HD 4000 GB is equipped with a Bluetooth® chip to allow the unit to wirelessly pair with Kestrel® wind meters and the GeoBallistics® App. Navigate to the Bluetooth® display in the menu and press the "Measure" button to turn Bluetooth® on/off. Press the "Menu" button to save your desired choice and continue through to the Temperature Selection screen (BAL Mode only).

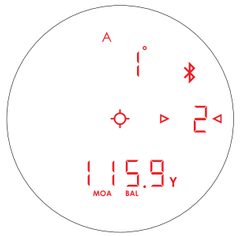
Note: The Bluetooth® icon (ᛒ) will blink when looking for a connection and remain on when connected to a compatible peripheral device once you exit the menu.



Bluetooth® On



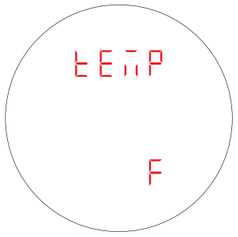
Bluetooth® Off



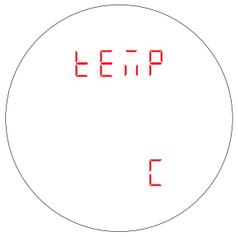
Bluetooth® On Example

Temperature Selection (Only Available in BAL Mode)

Temperature can be displayed in Celsius (˚C) or Fahrenheit (˚F). Navigate to the Temperature display in the menu and press the "Measure" button to select "C" or "F." Press the "Menu" button to save your desired choice and continue through to the Pressure Selection screen (BAL Mode only).



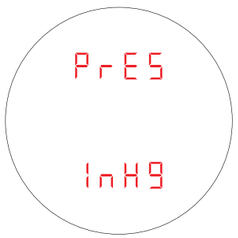
Fahrenheit



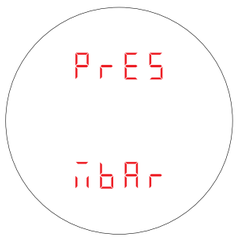
Celsius

Pressure Selection (Only Available in BAL Mode)

Pressure can be displayed in inches of mercury (inHg) or millibars (Mbar). Navigate to the Pressure display in the menu and press the "Measure" button to select "inHg" or "Mbar." Press the "Menu" button to save your desired choice and continue through to the Wind Speed Selection screen (BAL Mode only).



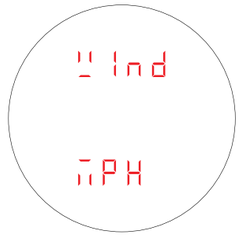
Inches of Mercury (inHg)



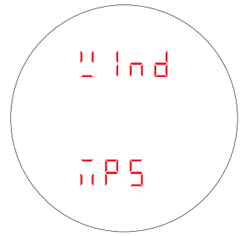
Millibars (MBar)

Wind Speed Selection (Only Available in BAL Mode)

Wind Speed can be displayed in miles per hour (MPH) or meters per second (MPS). Navigate to the Wind display in the menu and press the "Measure" button to select "MPH" or "MPS." Press the "Menu" button to save your desired choice and return to Target Mode Selection. Press and hold the "Menu" button for four seconds to save and exit Mode Selections.



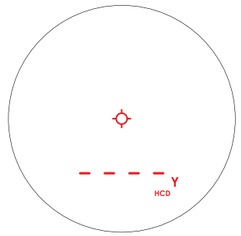
MPH



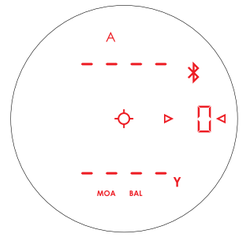
MPS

RANGING

With the Razor® HD 4000 GB powered up, position the reticle on the target object you wish to range, then press and release the "Measure" button to get the distance measurement. If the laser is not able to range due to the reflectivity of the target object, or being too close, you will see a display similar to that shown here. To range a new target, simply re-aim and press the "Measure" button again.



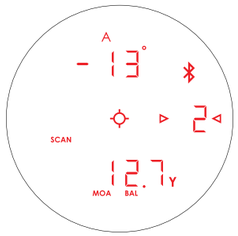
No Range Returned (HCD Mode)



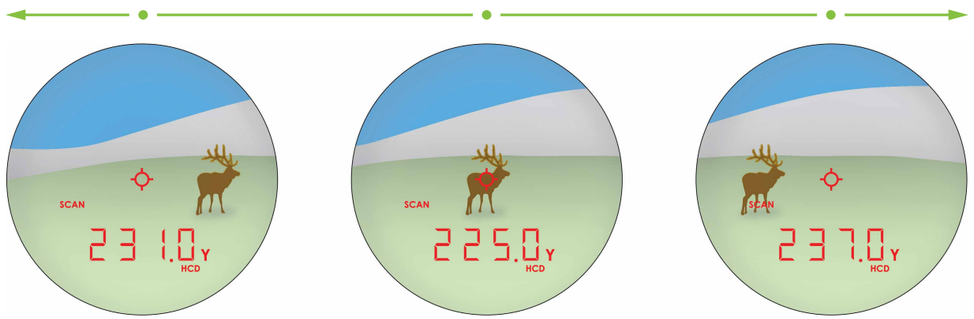
No Range Returned (BAL Mode)

SCAN FEATURE

Activate the Scan Feature by pressing and holding the “Measure” button. Keeping the button depressed will continuously measure for ten seconds before displaying the last measurement as you pan back and forth across the target objects. The word “SCAN” will blink on the left hand side of the display as you pan. Both HCD and BAL Modes will offer a Scan Feature.



Note: For best results, use a tripod while attempting to range targets past 1,000 yards.



Scan back and forth, watching for yardage number to display or change.

VIEW DATA SCREENS

When your Razor® HD 4000 GB is in BAL Mode, you will have access to five data screens: Range Ready, Temperature, Pressure, Target, and Wind.

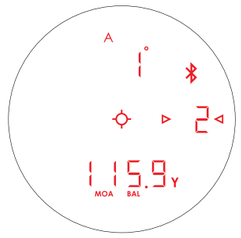
Range Ready Data Screen

When your Razor® HD 4000 GB first powers on, the screen you see is called the Range Ready Data screen. This will display:

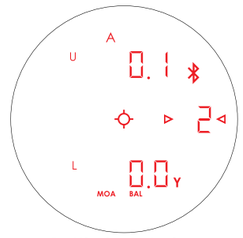
- Ranged distance (yards or meters)
- Shot angle (degrees)
- Wind speed (miles per hour or meters per sec), see the Manually Entering Weather in GeoBallistics® App section on page 51 for more information on how to set your wind speed and direction
- Ballistic solution (elevation correction on top of screen and windage correction on the bottom of the screen)
- Rifle profile selection, see page 41 for more information on how to set your rifle profile selection
- MRAD or MOA as the units based on your selection

Every two seconds, the screen will change its display to show either ranged distance and shot angle or your ballistic solution.

Press the “Menu” button to continue to the Temperature Data screen.



Ranged Distance & Shot Angle

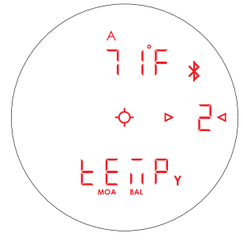


Ballistic Solution

Temperature Data Screen

This will display the ambient temperature (°F or °C) measured from the on-board Environmental Sensors in your Razor® HD 4000 GB. Press the “Menu” button to continue to the Pressure Data screen.

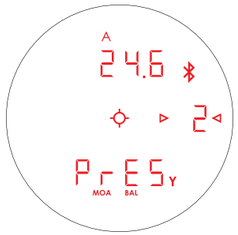
Note: The Environmental Sensors in your Razor® HD 4000 GB take time to acclimate to your current environment. This acclimation time can vary depending on your current conditions.



Pressure Data Screen

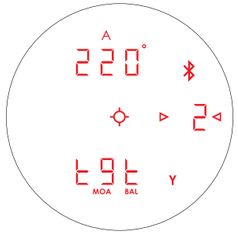
This will display the atmospheric pressure (inHg or Mbar) measured from the on-board Environmental Sensors in your Razor® HD 4000 GB. Press the “Menu” button to continue to the Target Data Screen.

Note: The Environmental Sensors in your Razor® HD 4000 GB take time to acclimate to your current environment. This acclimation time can vary depending on your current conditions.



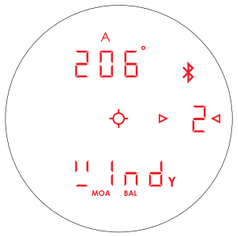
Target Data Screen

This will display the direction of the target you ranged in relation to north in degrees. Press the “Menu” button to continue to the Wind Data screen.

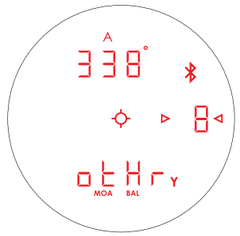


Wind Data Screen

If the bottom of the screen displays “Wind,” the data screen will display wind direction and speed based on your inputs using the Full Crosswind Mode or the Wind Bearing Capture. See the Weather section for more information. If the bottom of the screen displays “other,” the data screen will display wind direction and speed based on data measured from your connected Kestrel® device. See the Using a Kestrel® with the Razor® HD 4000 GB and the Geoballistics® App section for more information. Press “Menu” again to return to the Range Ready screen.



From Full Crosswind Mode or Wind Bearing Capture Mode inputs.



From Connected Kestrel®.

GENERAL INFORMATION FOR GEOBALLISTICS® APP

Go to your device’s app store and download the GeoBallistics® App.

From the main screen of the GeoBallistics® App, you will see these main icons:

ICON	NAME	FUNCTION
	Account	On the Account page you may log into your account to access your rifle profiles and range cards.
	App Settings	On the App Settings page you may customize your app experience by selecting preferences, units, and more.
	Rifles	On the Rifles page you may create, edit, delete, and sort rifle profiles to be used for your ballistic solutions.
	Atmospherics	On the Atmospherics page you may view and input weather data, connect to a Kestrel® device, or select a nearby airport to pull weather data from.
	Range Cards	On the Range Cards page you may save your range card data created in the GeoBallistics® App.
	Manage Devices	On the Manage Devices page you may connect compatible devices to the GeoBallistics® App and edit your preferences with each device.

Scan QR code for tutorial videos.

NAVIGATING THE GEOBALLISTICS® APP

Across the top of the main screen of the GeoBallistics® App, there are four tabs: HUD, Chart, Map, and Comp. See the App Settings Menu section for more information regarding how to select which tab is your default when first opening the GeoBallistics® App.

HUD Tab

From the HUD tab, you will see your ballistic solution displayed in either MOA or MRAD based on your preferences.

You will also see wind and shot information based on data collected from either the Razor® HD 4000 GB, GeoBallistics® App, or a compatible Kestrel® device. Here you may also click any buttons below each data point to capture measurements from your mobile device. Wind speed can be changed manually. If your Razor® HD 4000 GB is connected to the GeoBallistics® App, you will see a (ᛒ) appear next to the word MEASURE on the screen. Press the "Measure" button on the screen to range a distance with the Razor® HD 4000 GB via the app. Clicking either left or right arrow next to MEASURE will manually change the ranged distance value.

For Target, you may select the speed and direction of a moving target to add this data to your ballistic solution.

On the bottom of the screen is Ballistic Data. This is based on information from your selected rifle profile. See page 38 for more information about rifle profiles.

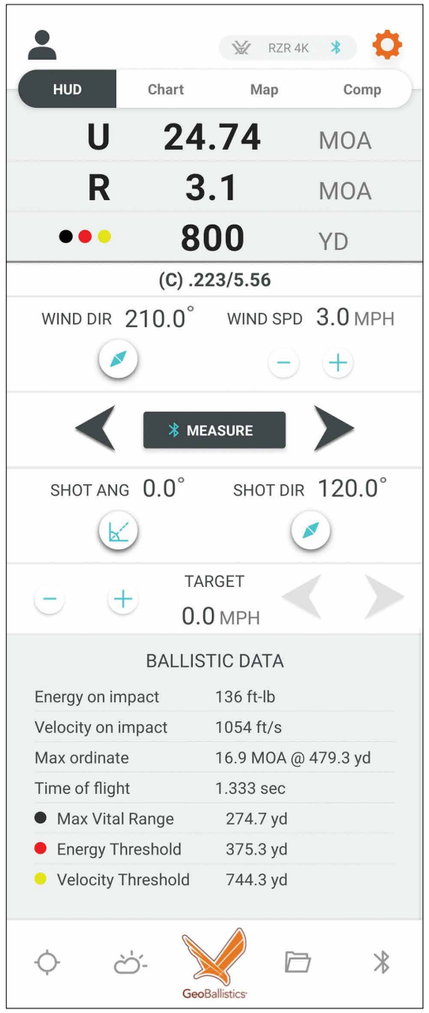


Chart Tab

From the Chart tab, you will see data for shot angle, shot direction, and range. Here you may also manually input this data to change your ballistic solution.

Angle°

This displays your shot angle in degrees from the horizon (ex: level = 0°, straight up = 90°).

Direction°

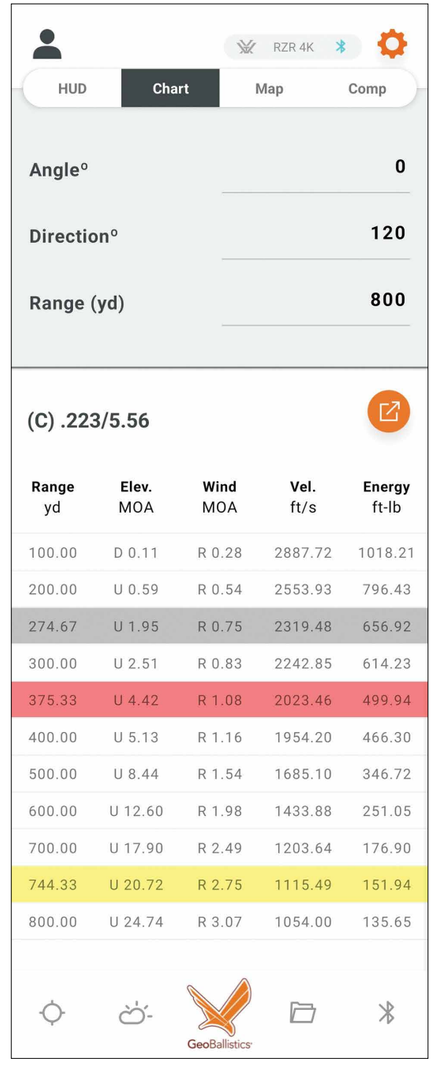
This displays shot direction in degrees from due north (ex: north = 0°, east = 90°, south = 180°, west = 270°).

Range (yd)

This displays the ranged distance in either yards or meters.

You will also see a chart containing ballistic information based on your selections. You can modify the range increments and units on the App Settings page. The gray, red, and yellow highlighted rows are GeoBallistics® Overlays. See the GeoBallistics® Overlays section on page 45 for more information.

You may export the chart data using the button.



Range yd	Elev. MOA	Wind MOA	Vel. ft/s	Energy ft-lb
100.00	D 0.11	R 0.28	2887.72	1018.21
200.00	U 0.59	R 0.54	2553.93	796.43
274.67	U 1.95	R 0.75	2319.48	656.92
300.00	U 2.51	R 0.83	2242.85	614.23
375.33	U 4.42	R 1.08	2023.46	499.94
400.00	U 5.13	R 1.16	1954.20	466.30
500.00	U 8.44	R 1.54	1685.10	346.72
600.00	U 12.60	R 1.98	1433.88	251.05
700.00	U 17.90	R 2.49	1203.64	176.90
744.33	U 20.72	R 2.75	1115.49	151.94
800.00	U 24.74	R 3.07	1054.00	135.65

Map Tab

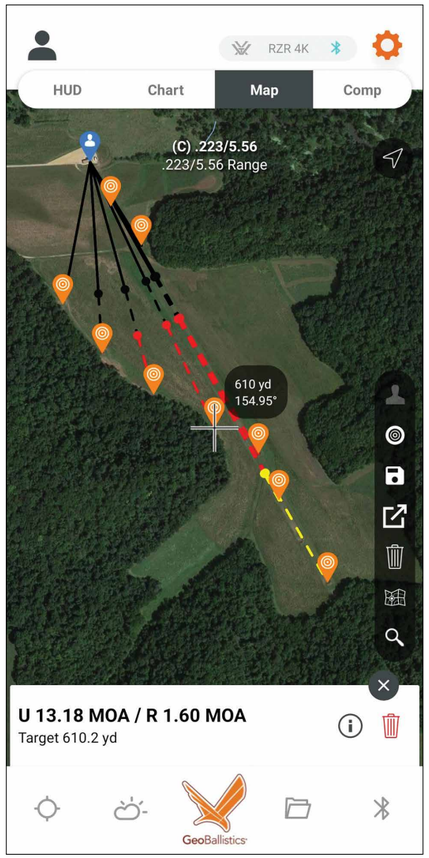
From the Map tab, you may locate your current position by clicking . For best results, make sure the GeoBallistics® App and Razor® HD 4000 GB are calibrated correctly. See page 29 for instructions on how to calibrate your Razor® HD 4000 GB.

While on this tab, you can use the shooter icon to drop a pin to denote your location and the target icon to drop pins for your target's locations. You may also use the Razor® HD 4000 GB to range a target, which will then drop a pin on the map representing that target's position.

Use your finger to move the cursor around the map screen. If you have dropped the "shooter position pin," you will be shown the distance and direction of that point from your position. If you have dropped multiple target pins, you may click on each one to see the calculated ballistic solution on the bottom of the screen.

If your target position is far enough to show your GeoBallistics® Overlays, they will appear using a black dashed line (Max Vital Range), red dashed line (Energy Threshold), and yellow dashed line (Velocity Threshold).

You can save the pin positions to your range card folders by clicking floppy disk icon or export them to your Comp tab by clicking export icon . You can also change the map view to either topographical, road view, hybrid view, or satellite view by pressing the map icon .



Comp Tab

From the Comp tab, you may manually enter shot Angle, Direction, and Range. This information can also be populated with data from the Razor® HD 4000 GB.

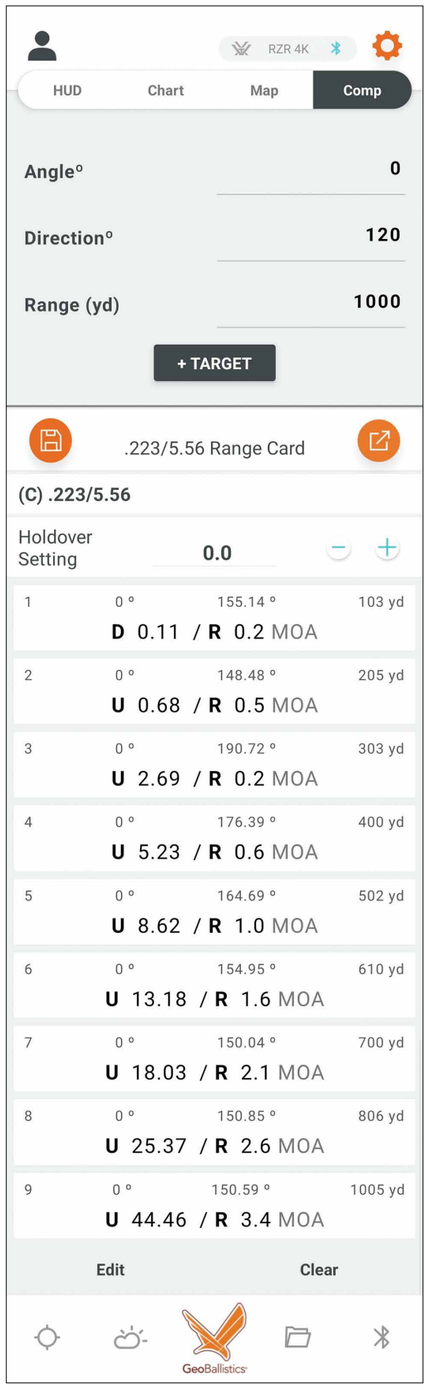
On this screen, you can begin building out your range card. Make sure you have the desired rifle profile selected from the Rifles page. The selected profile is shown next to the (A), (B), or (C) designation depending on how your profiles are sorted.

Once the desired values for shot angle, shot direction, and range are populated, press the +TARGET button to save the ballistic solution for that target. You will see the ballistic solution appear at the bottom of the screen.

Repeat this process for additional targets if desired. By clicking the "Edit" button, you can modify the input parameters for an individual target entry by clicking the box next to the entry, or all entries at once by clicking the box next to "Select All Targets." You may also re-order the target entries by either pressing the up and down arrows or by typing the order number in the space provided. Click "Save" to save your changes. You can also click "Clear" to delete all target entry data.

Once you have at least one target entry saved, you may modify the Holdover Setting by clicking or . This setting can be used to set the elevation value on your reticle that you plan to use as a holdover. For example, if you add a suppressor to a gun that is already zeroed and it changes your point of impact by .5 MRAD in the downward direction, but you do not want to re-zero your optic, you can change your Holdover Setting to - .5 to update your drop chart to reflect the change in zero.

Once you've created your range card, you can save the data to your Range Card folders by clicking save or export the data to several options by clicking .



BALLISTICS SECTION

Connection Scenarios

= Ballistic Solution using environmental data from the Razor® HD 4000 GB (must first sync Rifle Profiles with GeoBallistics® App) displayed in Razor® HD 4000 GB.

+

= Ballistic Solution using environmental data from the Razor® HD 4000 GB and GeoBallistics® App displayed in both Razor® HD 4000 GB and GeoBallistics® App.

+

+

= Ballistic Solution using environmental data from the Razor® HD 4000 GB or a compatible Kestrel® device displayed in both Razor® HD 4000 GB and GeoBallistics® App.

+

= Ballistic Solution using environmental data from a compatible Kestrel® device displayed in the GeoBallistics® App.

Set Up

Be sure you have reviewed the Razor® HD 4000 GB Basic Operation before reading the Ballistics Section.

Go to your device's app store and download the GeoBallistics® App.

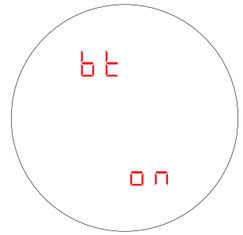
GeoBallistics®

Scan QR code to get started.

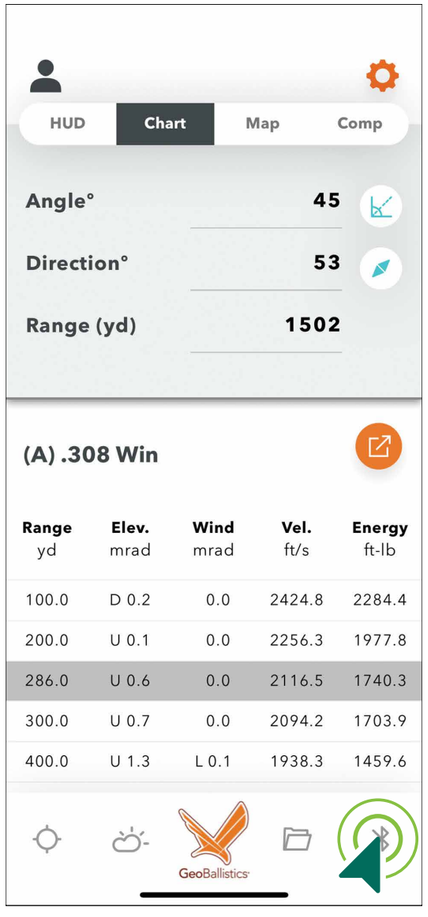
Pairing the Razor® HD 4000 GB to the GeoBallistics® App

To pair your Razor® HD 4000 GB with your mobile device, ensure the Bluetooth® on your mobile device is turned on and the GeoBallistics® App has been allowed access to your mobile device's location services.

1. Press the "Measure" button to turn on the Razor® HD 4000 GB.
2. Ensure the Razor® HD 4000 GB is in BAL Mode (see page 11).
3. Go to the Razor® HD 4000 GB menu (press and hold the "Menu" button for four seconds). Press the "Menu" button to cycle through the options. When you see the "bt" symbol, press the "Measure" button to toggle on the Bluetooth®. Make sure your device also has its Bluetooth® functionality turned on to pair wirelessly with the Razor® HD 4000 GB.

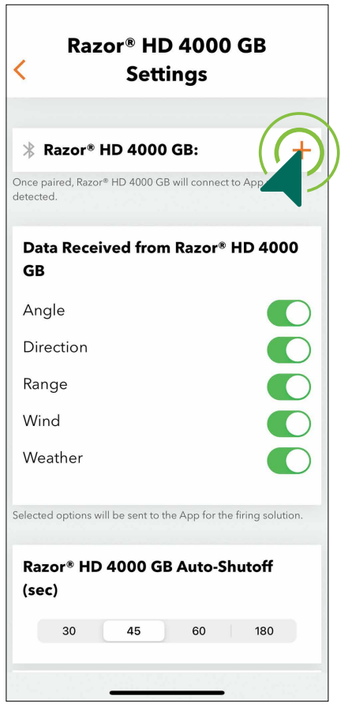


4. Press and hold the "Menu" button for four seconds to leave the menu and save your selection.
5. The Bluetooth® symbol will blink until it is connected to the GeoBallistics® App or a compatible peripheral device.
6. Open the GeoBallistics® App and select the Bluetooth® symbol in the lower right-hand corner of the screen.



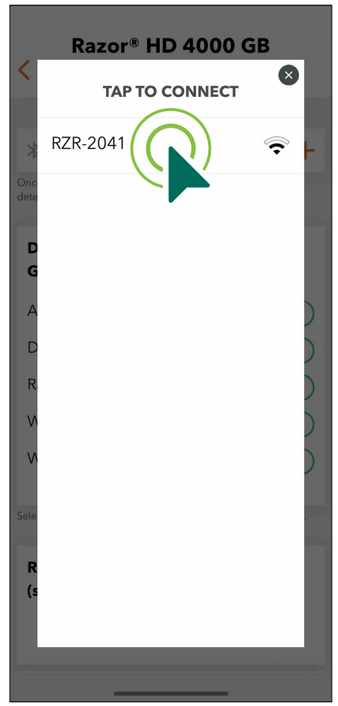
7. Select the Razor® HD 4000 GB by pressing the ellipsis ••• .

8. Press the + icon.

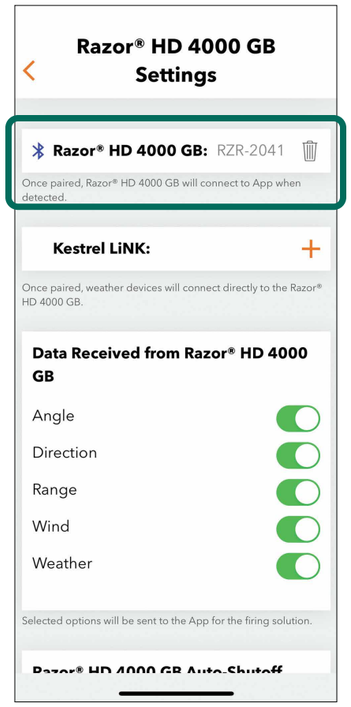


9. Tap on your Razor® HD 4000 GB referencing the last four digits of the serial number on the bottom of your Razor® HD 4000 GB. This will connect the unit to the GeoBallistics® App.

Attention: If you are unable to see your Razor® HD 4000 GB in the GeoBallistics® App, make sure it's BAL Mode and Bluetooth® is turned on.



The GeoBallistics® App and the Razor® HD 4000 GB are now connected.



RAZOR® HD 4000 GB SETTINGS MENU

Data Received From the Razor® HD 4000 GB

Angle

Toggle on/off whether the Inclination Angle from the Razor® HD 4000 GB is used by the GeoBallistics® App's on-board solver. If toggled off, the solver will use the Inclination Angle received from the mobile device.

Direction

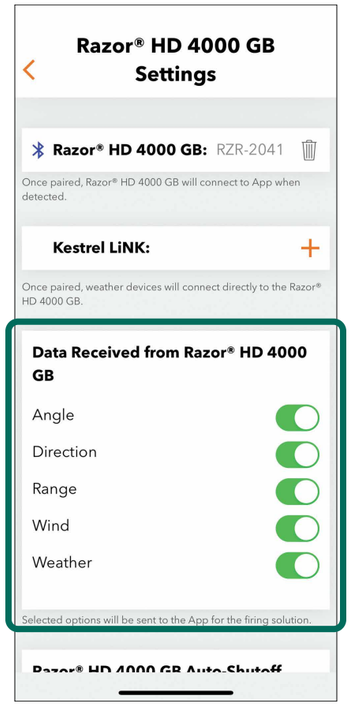
Toggle on/off whether the Target Direction from the Razor® HD 4000 GB is used by the GeoBallistics® App's on-board solver. If toggled off, the solver will use the Target Direction received from the mobile device or manually entered by the user.

Range

Toggle on/off whether the Target Range from the Razor® HD 4000 GB is used by the GeoBallistics® App's on-board solver. If toggled off, the solver will use the Target Range manually entered by the user in the GeoBallistics® App.

Wind

Toggle on/off whether the Wind Direction and Speed from the Razor® HD 4000 GB is used by the GeoBallistics® App's on-board solver. If toggled off, the solver will use the Wind Direction and Speed either manually entered by the user, imported from a local weather station via the GeoBallistics® App, or from a compatible Kestrel® device.



Weather

Toggle on/off whether the Atmospheric Data (Temperature, Pressure, and Humidity) from the Razor® HD 4000 GB is used by the GeoBallistics® App's on-board solver. If toggled off, the solver will use the Atmospheric Data either manually entered by the user, imported from a local weather station via the GeoBallistics® App, or from a compatible Kestrel® device.

Note: The Razor® HD 4000 GB's on-board Environmental Sensors will need to acclimate to your current environment for accurate readings. The time required for acclimation can vary depending on the current conditions. As an alternative, you may manually enter weather data to use in the calculation of your ballistic solution until the Razor® HD 4000 GB has had time to acclimate.

Auto-Shutoff

Allows for the Razor® HD 4000 GB's Auto-Shutoff to be set via the GeoBallistics® App. The Auto-Shutoff can be set to either 30, 45, 60, or 180 seconds.

Calibrating the Compass and Inclinometer

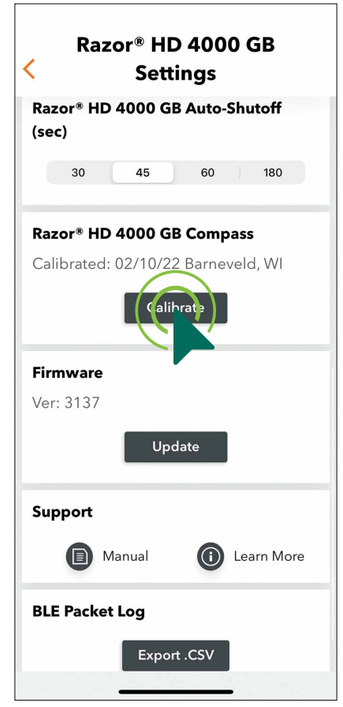
The Razor® HD 4000 GB needs to be calibrated during initial setup and should be re-calibrated every time you significantly change location, typically 30 miles or more. Calibration is important for the accuracy of Wind Bearing Capture Mode and the on-board compass. It may take 2-3 cycles of turning the Razor® HD 4000 GB in each direction before it calibrates. Read steps 1-5 before starting the calibration process.

Note: Calibrate your Razor® HD 4000 GB outside and away from large metal structures or objects.

Note: There is a video example in the app to demonstrate proper speed and turning of the Razor® HD 4000 GB for calibration. You can also see product videos for the Razor® HD 4000 GB at vortexoptics.com.

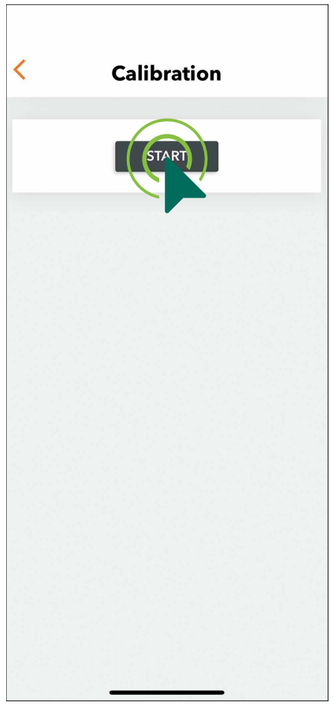
Important: Do not press any buttons on the Razor® HD 4000 GB during this process unless specifically instructed to do so in the following steps.

1. After pairing the device, navigate to the bottom of the Razor® HD 4000 GB Settings Screen and select the "Calibrate" button under Razor® HD 4000 GB Compass. The date and location of the last calibration is also shown for your reference.



2. To begin the calibration process, select the “START” button. Ensure you see “cAL” in the Razor® HD 4000 GB display before proceeding to step 3.

Note: The calibration animation will begin immediately after pressing the “START” button.

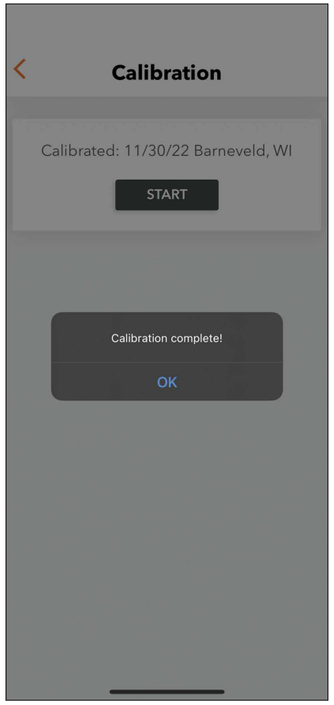


3. Orient the device so that it is facing away from you and the Measure button is closest to you, and turn the device end over end three times.

4. Then keeping the same orientation of the device so that it is facing away from you and the Measure button is closest to you, rotate it around in a full circle three times.

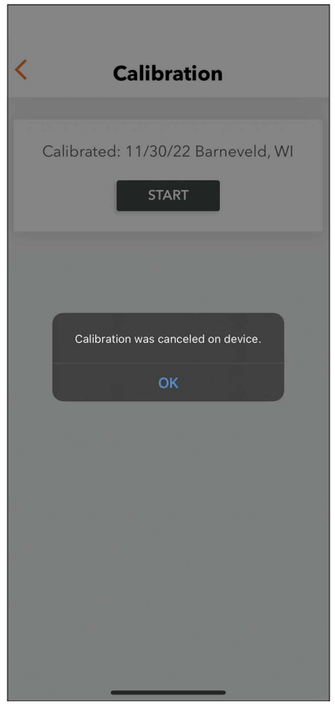
5. Then orient the device so that it is on its side with the Measure button to the right and the eyepiece facing you, and turn the device over three times.

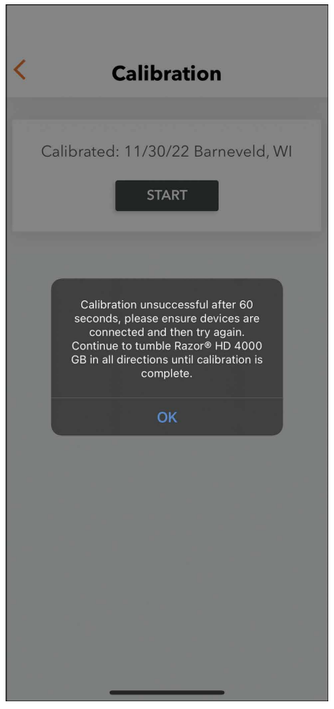
6. Repeat steps 3 through 5 until the GeoBallistics® App indicates the calibration is complete. Select “OK” and the date and location will update on the Razor® HD 4000 GB Settings page.



7. Select the back arrow < in the upper left-hand corner of the app to go back to the main menu.

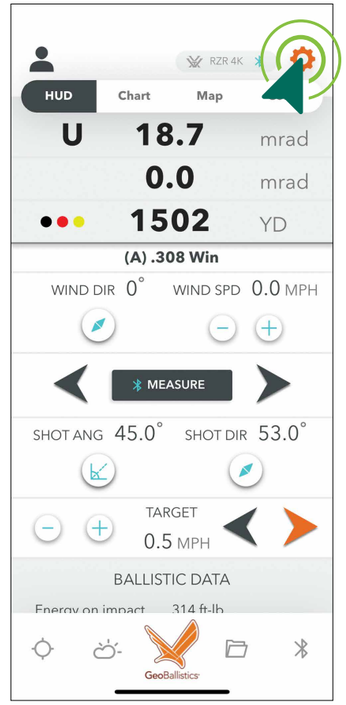
Note: If at any time you would like to cancel the compass calibration, simply press and release the “Measure” button. There is a 60 second time limit to complete the calibration process after pressing the “START” button. If the unit fails to calibrate within this timeframe, please repeat steps 1-7.



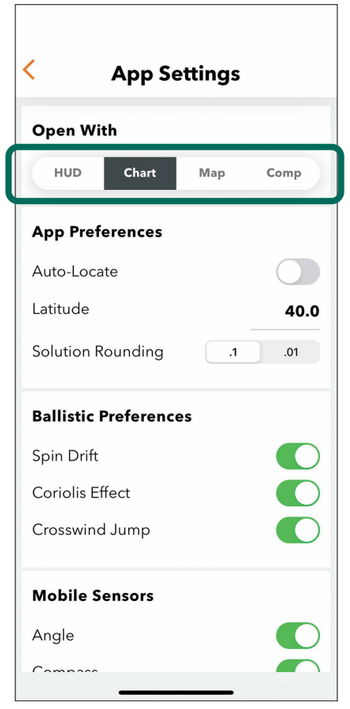


App Settings Menu

To navigate to the App Settings Menu, select the settings icon in the upper right-hand corner of the screen. While in the App Settings Menu, you will be able to change App Preferences, Ballistic Preferences, Mobile Sensors, Chart Increments, Distance Units, Rifle Profile Units, and Weather Units.



At the top of the App Settings Screen, you’ll see HUD, Chart, Map, and Comp. By selecting one of these options, that page will be the default screen when opening the app.



App Preferences

Auto-Locate

Auto-Locate will use your mobile device's latitude for ballistic calculations.

Latitude

Latitude allows for manual entry of latitude. This is disabled if Auto-Locate is on.

Solution Rounding

Solution Rounding allows you to set as many decimal places as you would like the app solution to display.

Ballistic Preferences

For the most accurate ballistic solution, have Spin Drift, Coriolis Effect, and Crosswind Jump enabled.

Spin Drift

Spin Drift is a bullet's drift left or right due to the spin imparted by the bullet length in conjunction with your rifle's barrel twist rate, and the interaction of gyroscopic and aerodynamic forces.

The Razor® HD 4000 GB can account for the effect of Spin Drift on the bullet when solving for your ballistic solution. To turn Spin Drift on/off, tap the toggle icon.

Coriolis Effect

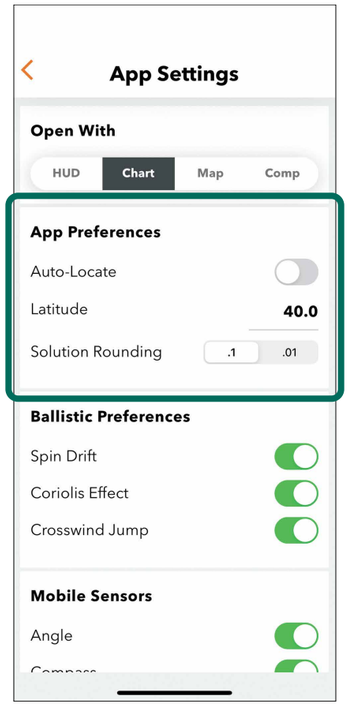
Coriolis Effect is the effect that Earth's rotation will have on long-range shot precision, moving the target slightly away from the bullet's intended point of impact during the time of flight.

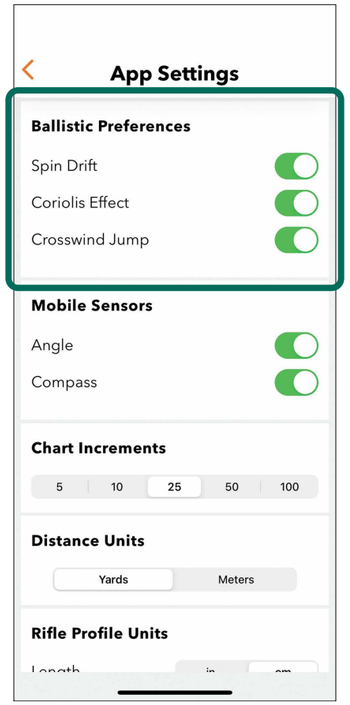
The Razor® HD 4000 GB can account for the Coriolis Effect on the bullet when solving for your ballistic solution. To turn Coriolis Effect on/off, tap the toggle icon.

Crosswind Jump

Crosswind Jump refers to the small but measurable +/- vertical influence on a bullet's flightpath by a crosswind. The higher the wind velocity, the greater the influence.

The Razor® HD 4000 GB can account for the effect of Crosswind Jump on the bullet when solving for your ballistic solution. To turn Crosswind Jump on/off, tap the toggle icon.





Mobile Sensors

Mobile Sensors are for use when not using the Razor® HD 4000 GB. This allows for use of your mobile device's compass and inclinometer in the GeoBallistics® App.

Angle

Angle turns on/off mobile inclination angle sensor to determine the target's angle. Tap the icon to toggle on/off.

Compass

Compass turns on/off mobile Compass Sensor to determine the target's direction. Tap the icon to toggle on/off.

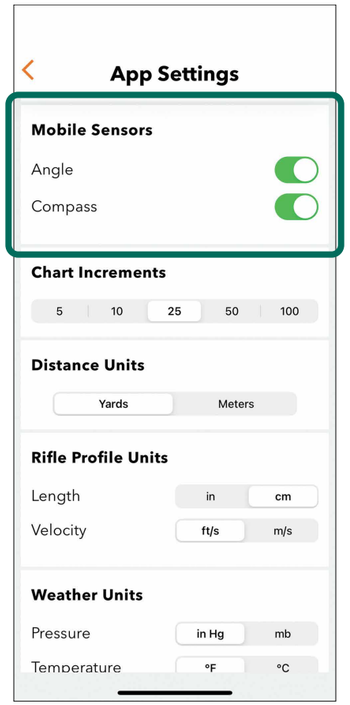
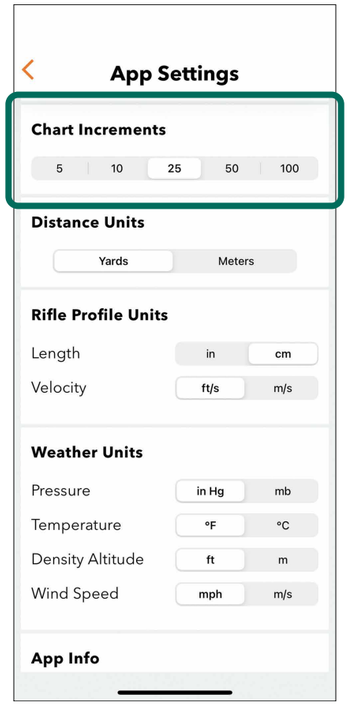


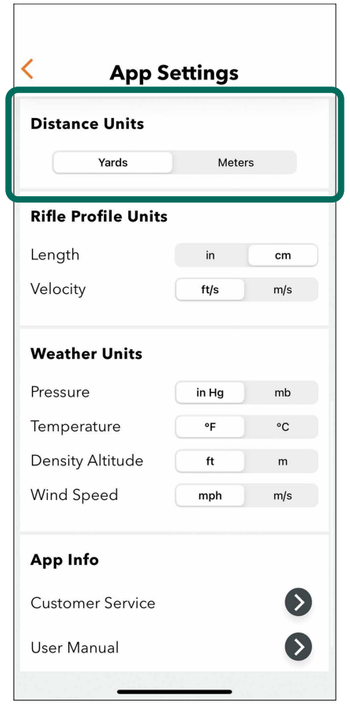
Chart Increments

Tap on the distance increments you wish the chart to be laid out in. (5, 10, 25, 50, 100 yards or meters)



Distance Units

The distance to the target can be displayed in yards or meters. Select the desired distance option in the menu. If the Razor® HD 4000 GB is connected to the GeoBallistics® App, the distance option selected will be displayed in both the app and in the rangefinder.



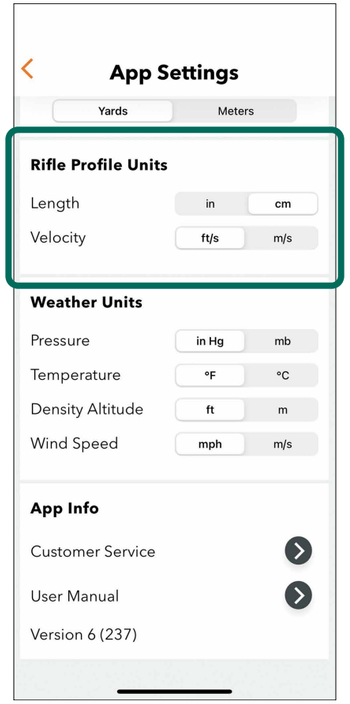
Rifle Profile Units

Length

The measured Sight Height, Elevation Offset, Windage Offset, and Vital Size can be displayed in either inches (in) or centimeters (cm). Select the desired option in the menu.

Velocity

The measured Muzzle Velocity and Velocity Threshold can be displayed in either feet per second (ft/s) or meters per second (m/s). Select the desired option in the menu.



Weather Units

Pressure

Pressure corresponds to the ambient atmospheric pressure surrounding you and your equipment. Atmospheric Pressure can be displayed in inches of mercury (in Hg) or millibars (mb). Select the desired option in the menu. It will display in both the app and the rangefinder.

Temperature

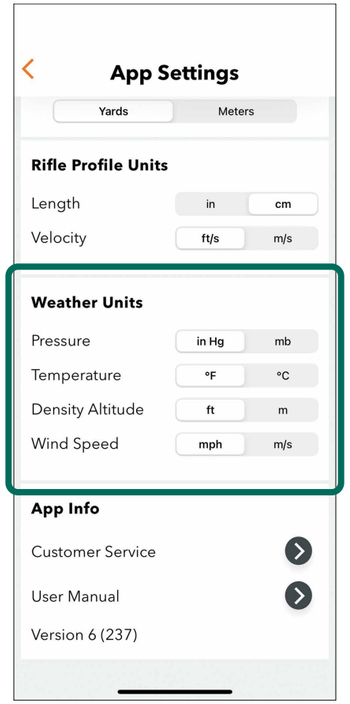
Temperature corresponds to the ambient temperature surrounding you and your equipment. Temperature can be displayed in Celsius (°C) or Fahrenheit (°F). Select the desired option in the menu. It will display in both the app and the rangefinder.

Density Altitude

Density Altitude is a value derived from a combination of Temperature, Pressure, and Relative Humidity and can be used as a quick reference for atmospheric conditions. The Density Altitude can be displayed in feet (ft) or meters (m). Select the desired option in the menu. It will display in the app only.

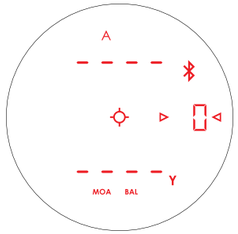
Wind Speed

Wind Speed corresponds to the wind speed at your measurement device. Wind Speed can be displayed in miles per hour (mph) or meters per second (m/s). Select the desired option in the menu. It will display in both the app and the rangefinder.



Rifle & Ammunition Profiles

You can load and store up to three profiles in the Razor® HD 4000 GB. These profiles are represented by the letters A, B, or C in the upper portion of the Razor® HD 4000 GB display and are set in the GeoBallistics® App.



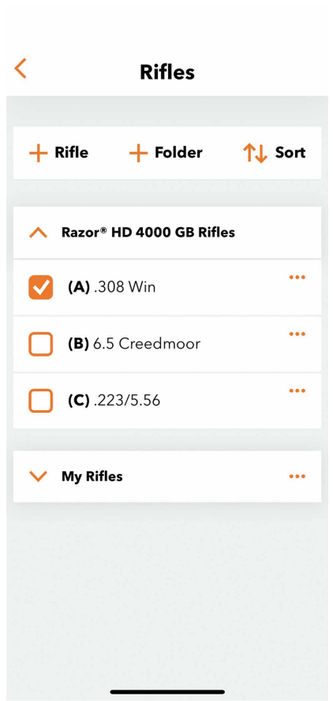
Default Profiles

The Razor® HD 4000 GB laser rangefinder and the GeoBallistics® App come preloaded with three default ballistic profiles for some of the most common calibers - .308 Win, 6.5 Creedmoor, and .223/5.56. These will populate the first time the Razor® HD 4000 GB is connected to the GeoBallistics® App in the Razor® HD 4000 GB Rifles folder. The default profiles can be deleted as long as there are at least three complete profiles. Copying and editing profiles is covered in more detail beginning on pg 44. See the Index starting on page 62 for details on the default profiles.

The GeoBallistics® App also comes preloaded with the My Rifles folder. This folder can be used to store unlimited rifle profiles.

Syncing Profiles to the Rangefinder

After connecting the Razor® HD 4000 GB to your device, the profiles will automatically sync between the Razor® HD 4000 GB and your device. The app and the laser rangefinder will automatically be synced anytime changes are made to the ballistic profiles and are saved. To view the profiles currently synced between your device and the Razor® HD 4000 GB, navigate to the Rifles page by selecting the ⌖ icon on the lower left corner of the main screen and expand the Razor® HD 4000 GB Rifles folder. The currently synced profiles will be annotated with (A), (B), and (C) before their names.

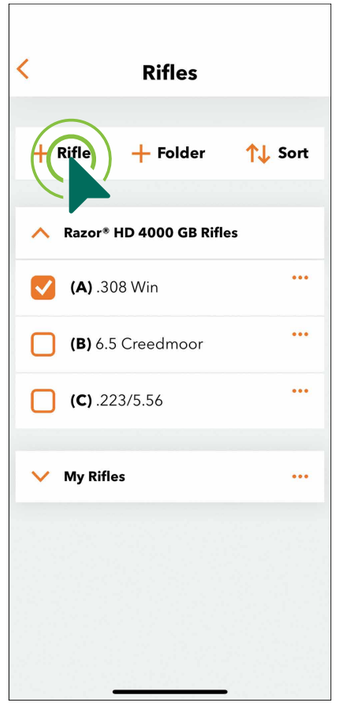


Creating Custom Ballistic Profiles

Custom ballistic profiles can be created in the GeoBallistics® App.

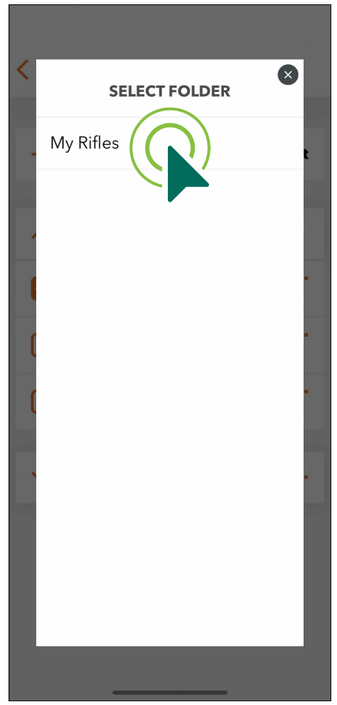
To create a custom ballistic profile:

1. Select ⌖ from the home screen, then select + **Rifle** on the Rifles screen.

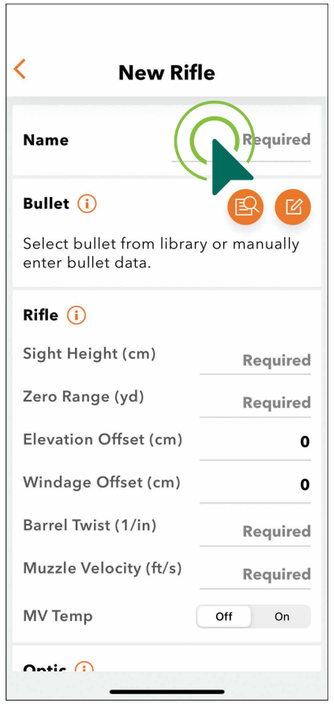


2. Select the folder that you wish to add the profile to. “Razor® HD 4000 GB Rifles” is the only folder that syncs profiles with the Razor® HD 4000 GB.

   Note: You can change folders after the profile is created.



3. Name the new profile.



4. Enter the bullet data by selecting the icon. Select your ammunition's caliber and bullet weight from the list. Then, select the exact bullet you are using. Find this information on your ammunition's box. Bullet data may also be added by simply selecting the edit icon and inputting the following:

Caliber (in): The bullet's diameter in inches.

Weight (gr): The bullet's weight in grains.

Length (in): The bullet's length in inches.

Ballistic Coefficient: The bullet's ballistic coefficient as it correlates to the drag function.

Drag Model: See Drag Model section below.

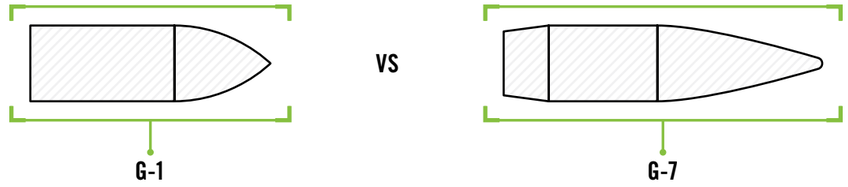
Metro: See Meteorological Conditions below.

Note: Find these values on the ammunition's box or on the manufacturer's website.

Drag Model – G1 vs. G7

If you are using manufactured bullets, this information may be printed on the bullets' box. If you are using custom loads, use the Drag Model listed on the packaging for your bullet. If the Drag Model is not listed on the packaging, this information can usually be found on the bullet/ammo manufacturer's website.

In general, G1 is better for flat-based bullets typically used with pistols and muzzleloaders. G7 is more common and better for longer, boat-tailed bullets commonly used for centerfire cartridges.



Meteorological Conditions (Metro) – Army vs. ICAO

This will be a standard set of atmospheric conditions used to calculate a projectile's Ballistic Coefficient (BC). This choice only applies to manual bullet entries. Using the bullet library will automatically populate Army or ICAO. For manual bullet entries, if you know the atmospheric standard that was used to calculate your bullet's BC, select it here. If you do not know which standard is used by a manufacturer, choosing a bullet from that manufacturer in the library will let you know which standard that manufacturer uses. The difference between the two atmospheric standards is very slight but using the correct standard for your bullet BC will yield slightly improved ballistic numbers at long ranges.

Note: The ballistic solution provided by the Razor® HD 4000 GB is only as reliable as the data provided by the user. Please contact Vortex Optics at 1-800-4VORTEX (1-800-486-7839) Ext. 5 with any questions.

Rifle Information

Sight Height

Height from the center of the rifle bore to the center of the optic. The measurement units can be set to standard (inches) or metric (centimeters) in the Settings Menu.

Zero Range

The distance at which you have zeroed your rifle. The measurement units can be set to standard (yards) or metric (meters) in the Settings Menu.

Elevation Offset

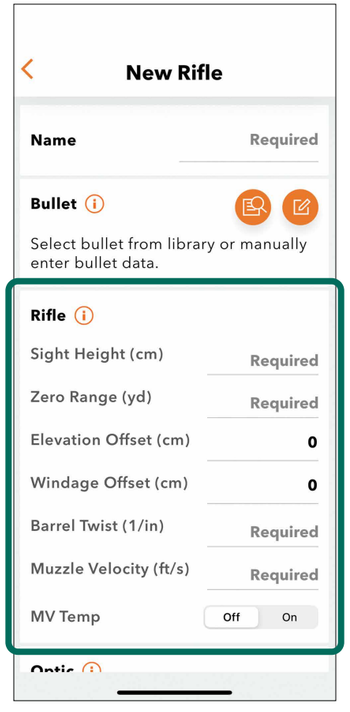
Vertical offset from the point of aim at your zero distance. For example, if you entered 100 yards for your Zero Range and at 100 yards your point of impact is 1 inch high, enter “1” here. The measurement units can be set to standard (inches) or metric (centimeters) in the Settings Menu.

Windage Offset

Horizontal offset from the point of aim at your zero distance. For example, if you entered 100 yards for your Zero Range and at 100 yards your point of impact is 1 inch right, enter “1” here. The measurement units can be set to standard (inches) or metric (centimeters) in the Settings Menu.

Barrel Twist Rate

Barrel Twist Rate is the distance covered for each revolution of the bullet within the barrel. For example, if your barrel is denoted as “1:8,” this means the bullet will complete one full rotation every 8 inches and you should enter “8” into this space. This information may be marked on the rifle barrel, or on the manufacturer’s website. Update the Twist Rate to match your rifle.



Note: Use a negative or minus sign in front of the entered value to denote a left-hand twist. If the twist direction is not known, do not use a negative or minus sign and assume right-hand twist.

Muzzle Velocity

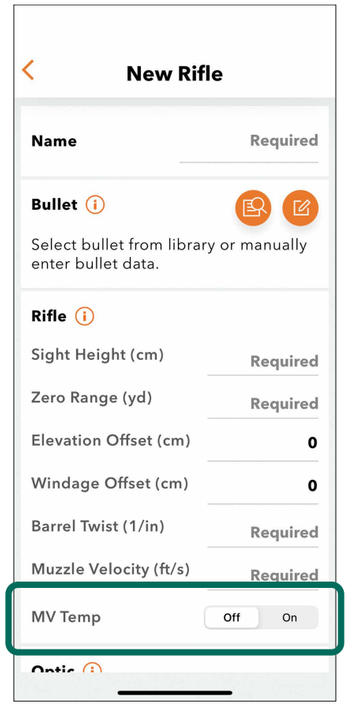
Muzzle Velocity is the projectile’s speed as it leaves the muzzle. You can find this information on the packaging from most ammunition manufacturers, or their websites. We highly recommend that you use a chronograph to verify this information. The measurement units can be set to standard (ft/s) or metric (m/s) in the Settings Menu.

MV Temp (Optional)

Muzzle Velocity Temperature (MV Temp) allows you to add recorded muzzle velocity as it correlates to the ambient temperature at the time of the shot. This can be important to fine tuning your ballistic solution. MV Temp is defaulted to off, but it may be turned on by toggling the switch to on.

After you have toggled the MV Temp on, Muzzle Velocity will be “Disabled” in the field above. You can enter a custom muzzle velocity temperature table. The use of a chronograph is required for this information. Enter the muzzle velocity measured, and the temperature at which it was measured. Vortex® recommends entering at least two temperatures with corresponding muzzle velocities. For best results, each temperature entry should increase/decrease by at least 10 degrees. The measurement units can be set to standard (°F) or metric (°C) in the Settings Menu.

Note: You can import the latest temperature reading received by the app by selecting the “+ current” button.



Optic Information

Solution Units

Choose the Solution Unit you would like to have your drop chart displayed in, MRAD or MOA. This information will be based off the angular unit of measurement your riflescope's turrets and reticle are laid out in.

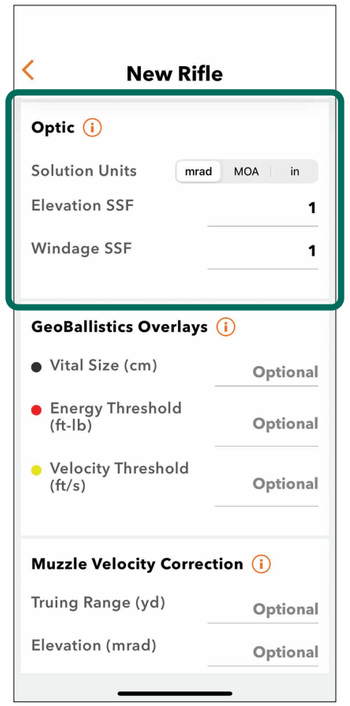
Note: Inches are not compatible with the Razor® HD 4000 GB. You must choose either MOA or MRAD.

Elevation SSF (Sight Scale Factor)

Elevation Sight Scale Factor is used to account for any inconsistencies in turret tracking, specifically the elevation turret. Default is set at "1.00," indicating there is no tracking inconsistency. SSF is calculated by taking the elevation dialed divided by the actual point of impact change. For example, if 20 MOA is dialed, but the point of impact changes by 19 MOA, the correction factor is 20/19 = 1.052.

Windage SSF (Sight Scale Factor)

Windage Sight Scale Factor is used to account for any inconsistencies in turret tracking, specifically the windage turret. Default is set at "1.00," indicating there is no tracking inconsistency. SSF is calculated by taking the windage dialed divided by the actual point of impact change. For example, if 20 MOA is dialed, but the point of impact changes by 19 MOA, the correction factor is 20/19 = 1.052.



GeoBallistics® Overlays (Optional)

Vital Size

For Vital Size, estimate the diameter of your target's vital area and enter here. The ballistic solver will take this value into account when calculating and displaying your ballistic solution in the GeoBallistics® App. If the Point of Aim (POA) is in the middle of the vital area, the GeoBallistics® App will show the range at which your bullet drop will be outside of the vital area. This is denoted by a black overlay on the ballistics chart.

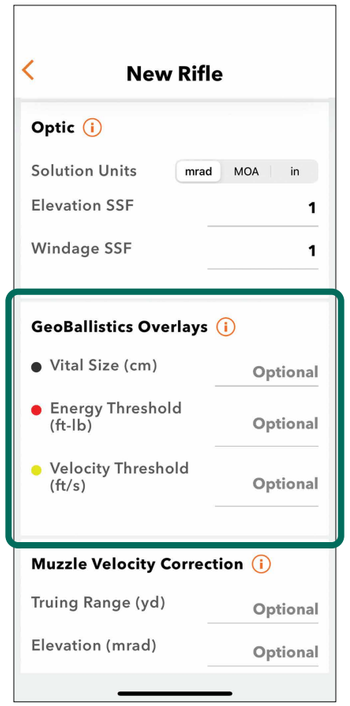
Energy Threshold

The Energy Threshold, the desired bullet energy at impact to perform an ethical shot, may be entered and then the ballistic solver will take this into account when calculating and displaying the solution on the GeoBallistics® App. This is denoted by a red overlay on the ballistics chart.

Velocity Threshold

The Velocity Threshold, the desired bullet velocity at impact to perform an ethical shot, may be entered and then the ballistic solver will take this into account when calculating and displaying the solution on the GeoBallistics® App. This is denoted by a yellow overlay on the ballistics chart.

Note: For more information on these overlays please refer to the GeoBallistics® Pro Manual located at the bottom of the App Settings page in the GeoBallistics® App.



Muzzle Velocity Correction (Optional)

The Muzzle Velocity Correction can be used to fine tune the ballistic solver by calculating a hypothetical muzzle velocity based on your rifle, riflescope, and ammunition. You can input a Truing Range and Elevation, which is the shot distance and elevation correction where the Point of Aim (POA) was observed to equal the Point of Impact (POI). By clicking "Apply," the calculated muzzle velocity will then replace the muzzle velocity in the rifle profile. This process is essentially replacing the predicted muzzle velocity with an observed muzzle velocity that was built from your personal equipment. The measurement units can be set to standard (feet per second) or metric (meters per second) in the Settings Menu.

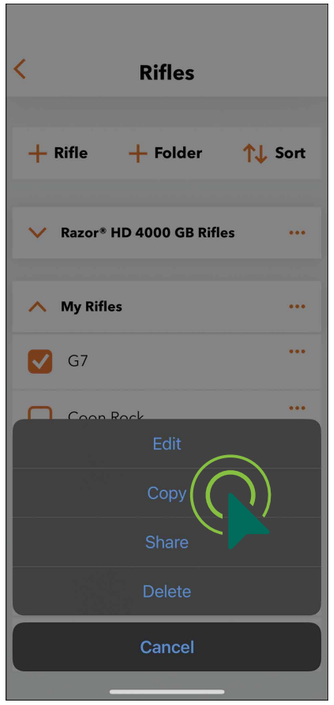
Truing Range will vary depending on your situation; generally, the further the Truing Range the more accurate the results will be.

Note: For more information on Muzzle Velocity Correction please refer to the GeoBallistics® Pro Manual located at the bottom of the App Settings page in the GeoBallistics® App.

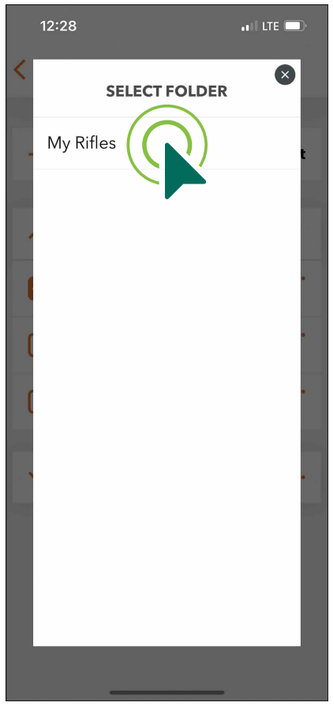
Copying a Profile

To copy a profile:

1. While in the Rifles section, select the profile that you wish to duplicate by tapping the ellipsis ••• on the right of the profile.
2. Select “Copy.”



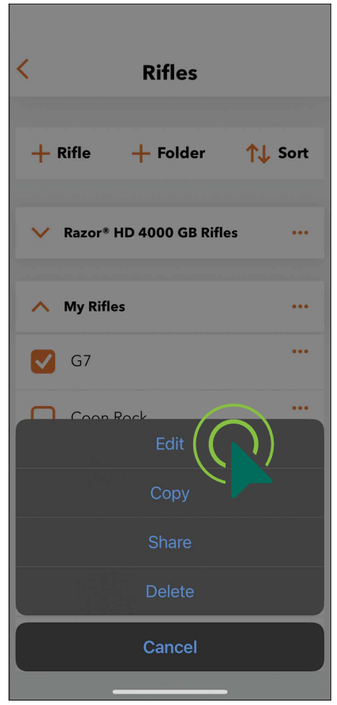
3. Select the folder you wish to add the profile to.
4. Once a profile has been copied, the profile will automatically rename with “(copy)” at the end of the profile name. If desired, rename the profile.



Editing a Profile

Profiles can be edited to update specific data to represent the ballistic information most accurately for your firearm and ammunition. To edit a ballistic profile:

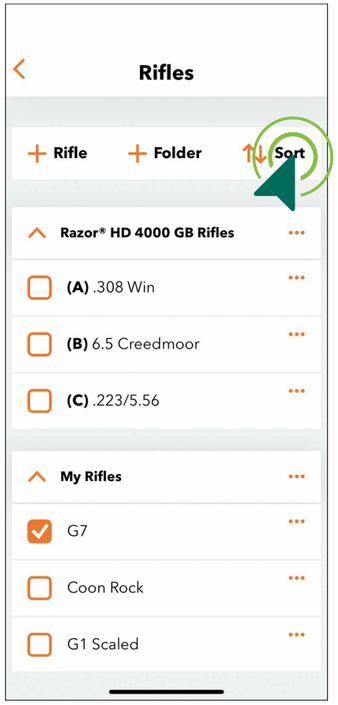
1. Press the ellipsis ••• and select “Edit”.
2. Update the data points for your firearm and ammunition.
3. The edits will save automatically when you exit the profile.



Setting Up & Switching Profiles in the GeoBallistics® App

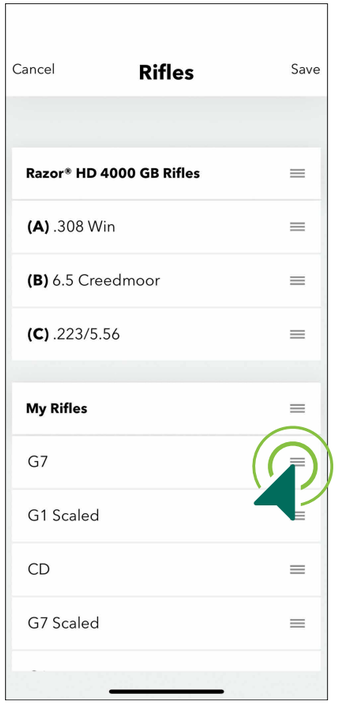
You can change the identifier (A, B, or C) assigned to a profile in the GeoBallistics® App. Only profiles in the Razor® HD 4000 GB Rifles folder can be assigned an identifier.

1. At the top of the Rifles screen select the ↑↓ **Sort** icon.



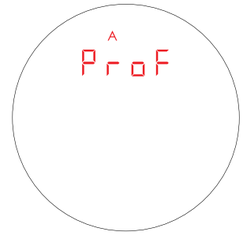
2. Press and drag the profile to the desired location. The top profile in Razor® HD 4000 GB Rifles will be identified as (A), the second profile will be (B), and the third profile will be (C).
3. Once the profiles are identified correctly and are in the correct folder, tap "Save" in the top right-hand corner.
4. The profile will automatically sync to the Razor® HD 4000 GB the next time it is connected to the GeoBallistics® App.

   Note: Only three profiles can be in the Razor® HD 4000 GB Rifles Folder at a time. To add a new profile, you must remove one of the current profiles by dragging it into a different folder.



Switching Between Profiles in the Razor® HD 4000 GB

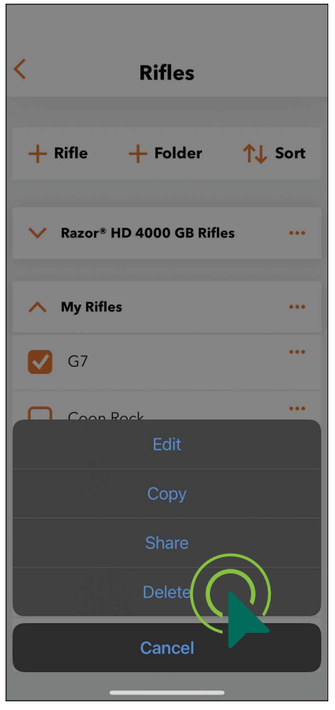
1. Press and hold the "Menu" button on the Razor® HD 4000 GB for four seconds.
2. Cycle through the menu by repeatedly pressing the "Menu" button until you come to "Prof."
3. Press the "Measure" button to switch between profiles until you come to the desired profile.
4. Press and hold the "Menu" button for four seconds to exit the menu and return to the ranging mode.



Deleting a Profile in the GeoBallistics® App

While in the Rifles section, select the ellipsis ••• next to the profile that you wish to delete. Select "Delete."

Note: You're required to have a minimum of three complete rifle profiles in the Razor® HD 4000 GB Rifles folder.



WEATHER

The Razor® HD 4000 GB comes with on-board Environmental Sensors to capture the following data:

- Direction (compass)
- Temperature (thermometer)
- Angle of Incline (inclinometer)
- Pressure (barometer)
- Humidity (hygrometer)

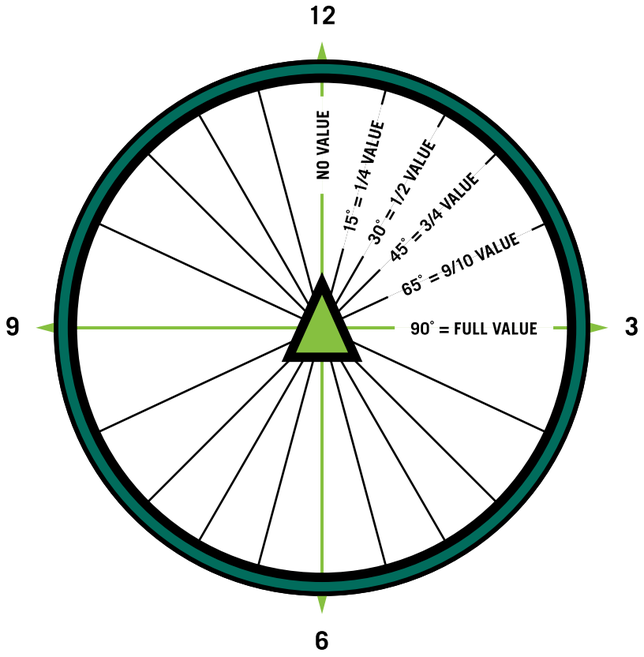
Wind Modes

When calculating wind/drop solutions in BAL Mode, it will be necessary to account for wind.

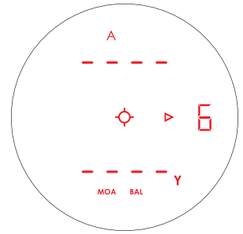
The Razor® HD 4000 GB uses two methods to manually input wind information.

Full Crosswind Mode

The Razor® HD 4000 GB comes preset in Full Crosswind Mode. When in Full Crosswind Mode, the Razor® HD 4000 GB will assume any wind speed is coming from either the full 9 o'clock position (wind blowing from left to right) or the full 3 o'clock position (wind blowing from right to left). You can use this mode with any direction of wind with some simple math.



Entering the wind speed:



1. Press the "Measure" button to turn on the Razor® HD 4000 GB. Make sure you are in BAL Mode.
2. Press either the Right-Hand Wind Direction Button ◁ or the Left-Hand Wind Direction Button ▷ to increase the wind speed until the correct wind speed/direction is displayed.
   - The Right-Hand Wind Direction Button ◁ indicates the wind is blowing from the 3 o'clock position.
   - The Left-Hand Wind Direction Button ▷ indicates the wind is blowing from the 9 o'clock position.

   - To decrease the wind speed, press the opposite wind direction button until the correct wind speed/direction is displayed.
   - To remove the wind speed (indicating no wind), press the arrow button opposite of what is displayed until the "0" is displayed. Or press and hold both wind direction buttons simultaneously for one second to zero the wind speed/direction. The wind speed/direction number will flash to indicate the wind speed/direction has been zeroed.
3. Press the "Measure" button to take the target's range.

Wind Bearing Capture Mode

The Razor® HD 4000 GB is equipped with the Vortex® patented Wind Bearing Capture Mode. Holding the "Wind Bearing Capture" button for two seconds will change from Full Crosswind Mode into Wind Bearing Capture Mode. When in Wind Bearing Capture Mode, the Razor® HD 4000 GB will keep track of wind direction regardless of the direction the user is facing.

Note: Be sure that the Razor® HD 4000 GB has been properly calibrated (see page 29) before attempting to use the Wind Bearing Capture Mode.

Establishing the Wind Bearing and Ranging:

1. Press the "Measure" button to turn on the Razor® HD 4000 GB.
2. Press and hold the "Wind Bearing Capture" button for two seconds until the Razor® HD 4000 GB goes to the Wind Bearing Capture display. The bearing and wind speed/direction will flash when switching between Wind Bearing Capture Mode and Full Crosswind Mode.
3. While looking through the Razor® HD 4000 GB, position yourself into the wind so you feel the wind directly on your face. Press the "Wind Bearing Capture" button once to capture the wind direction.
4. The captured wind bearing will be displayed in the Razor® HD 4000 GB display.
5. Use the Right-Hand Wind Direction Button ◁ to increase the wind speed until the correct speed is displayed. To reduce the wind speed, use the Left-Hand Wind Direction Button ▷ until the desired wind speed is displayed, or until the wind speed is back to zero. Or, press and hold both the wind direction buttons simultaneously for one second to zero the wind speed and direction.

   Note: Because Wind Bearing Capture Mode tracks wind direction using the on-board compass, wind speed is only increased using the Right-Hand Wind Direction Button and decreased using the Left-Hand Wind Direction Button.

6. Press the "Measure" button once. The Razor® HD 4000 GB will display the range/incline, and wind/drop solution according for wind direction and speed.
7. If the wind changes direction, repeat steps 3-5.

   Note: The ballistics solution will not update until another range measurement has been taken.
8. To exit Wind Bearing Capture Mode and return to Full Crosswind Mode, press and hold the "Wind Bearing Capture" button for two seconds. The left and right arrows will flash and eventually disappear, signaling you are in Full Crosswind Mode with a wind value of "0".

Manually Entering Weather in GeoBallistics® App

Wind

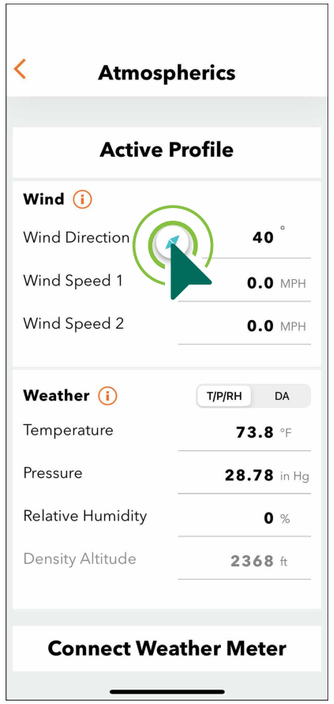
1. Select the from the main page on the GeoBallistics® App to view the Atmospherics page.
2. Under Active Profile, press the button while facing into the wind to capture wind bearing.
3. Input the Wind Speed.

Note: Once you range with the Razor® HD 4000 GB while it is connected to the GeoBallistics® App, any manually inputted data will be overwritten by data collected from the Razor® HD 4000 GB's on-board sensors. See page 28 on how to toggle on/off which data is sent from the Razor® HD 4000 GB to the GeoBallistics® App.

Weather

Ambient temperature, absolute pressure, and relative humidity can be manually entered, or obtained by the Razor® HD 4000 GB, a Kestrel®, or a nearby airport. Density altitude can be manually entered or obtained from the Kestrel® when connected to the GeoBallistics® App.

Note: See page 28 on how to toggle on/off which data is sent from the Razor® HD 4000 GB to the GeoBallistics® App.

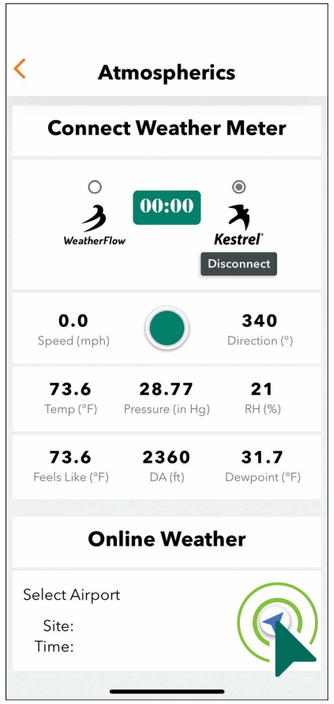


Connect Weather Meter

This section will display live environmental data measured from your Kestrel® once the Kestrel® is connected to the app. Refer to "Connecting/Disconnecting a Kestrel®." Tap the green button to lock in the Kestrel® environmental data into your Active Profile displayed above.

Online Weather

Tap the arrow to select a nearby airport as your weather data source. The drop-down menu will display the nearest airports. Once selected, you can tap "Use" next to the Wind Speed/Direction Data and the Temperature, Pressure, Humidity, and Density Altitude Data that was obtained from the selected airport. This data will then be displayed under Active Profile.



CONNECTING/USING/DISCONNECTING A KESTREL®

The GeoBallistics® App is compatible with Kestrel® devices for gathering environmental conditions and wind. When connected to a Kestrel®, the Razor® HD 4000 GB will use the Kestrel® environmental data to provide a ballistic solution from the Razor® on-board solver. If the Kestrel® is only connected to the GeoBallistics® App, the ballistic solution is provided by the app's on-board solver using environmental data from the Kestrel®.

To Connect

To connect the Razor® HD 4000 GB to a compatible Kestrel® device:

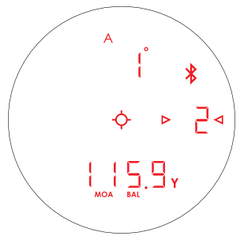
There are two ways to connect to a Kestrel® device:

1. Razor® HD 4000 GB + Kestrel® via the GeoBallistics® App
2. Kestrel® + GeoBallistics® App

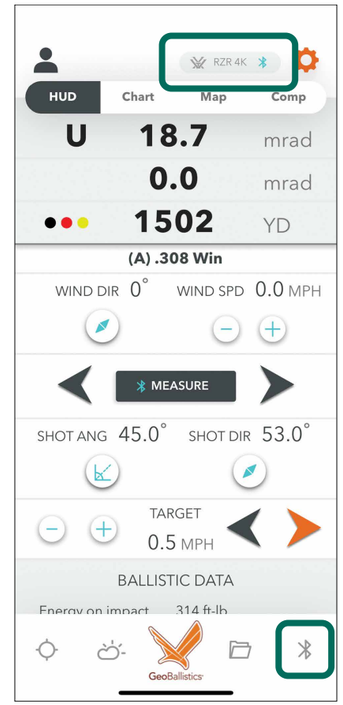
Razor® HD 4000 GB + Kestrel® Via the GeoBallistics® App

Note: This method will allow you to use only wind speed and direction from your Kestrel® to calculate your ballistic solution as well as display all data in the GeoBallistics® App.

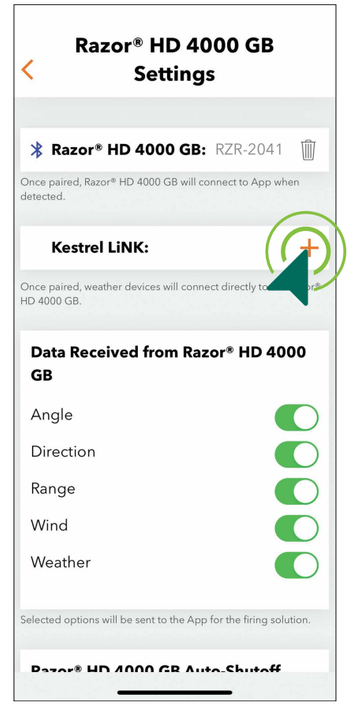
1. To connect the Razor® HD 4000 GB to a Kestrel® via the GeoBallistics® App, make sure your Kestrel® has Bluetooth® enabled and is in PC/Mobile mode.
2. To connect the Razor® HD 4000 GB to a Kestrel® via the GeoBallistics® App, your Razor® HD 4000 GB needs to be in BAL Mode. Press and hold the "Menu" button for 4 seconds. Once the menu appears, toggle to the Range Mode screen and press the "Measure" button to change to BAL Mode.
3. Once in BAL Mode, toggle to the Bluetooth® menu screen and press the "Measure" button to turn Bluetooth® on.
4. Press and hold the "Menu" button for 4 seconds or until the reticle appears to exit the Menu screen. You will now see the (ᛒ) blinking on the right-hand side of your display.



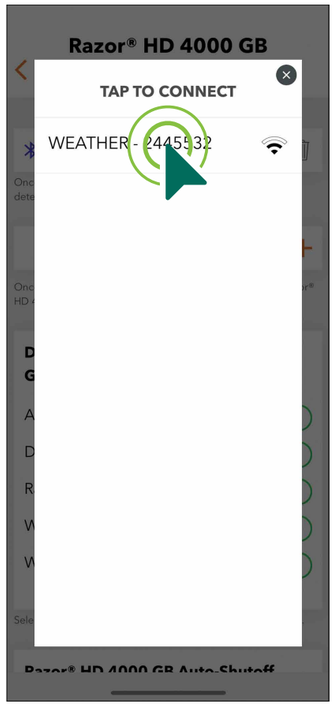
5. From the main screen of the GeoBallistics® App, select the (ᛒ) in the bottom right and then select the Razor® HD 4000 GB on the Manage Devices screen by pressing the ellipsis. You may also select the RZR 4K ᛒ symbol on the top right of the GeoBallsitics® App's main screen to access the Razor® HD 4000 GB Settings page if your Razor® HD 4000 GB is already connected to the GeoBallistics® App. If your Razor® HD 4000 GB is not already connected to the GeoBallistics® App, reference page 25.



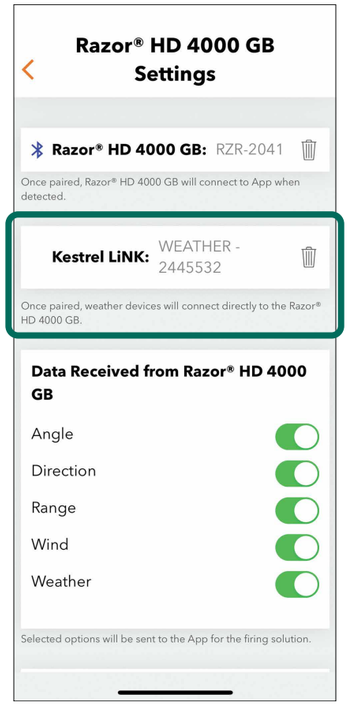
6. Once the Razor® HD 4000 GB is paired to the GeoBallistics® App, the option to add a Kestrel® LiNK will appear below. Tap the + to see a drop-down list of devices.



7. Tap the device name to connect. Reference the serial number on the back of your Kestrel®.



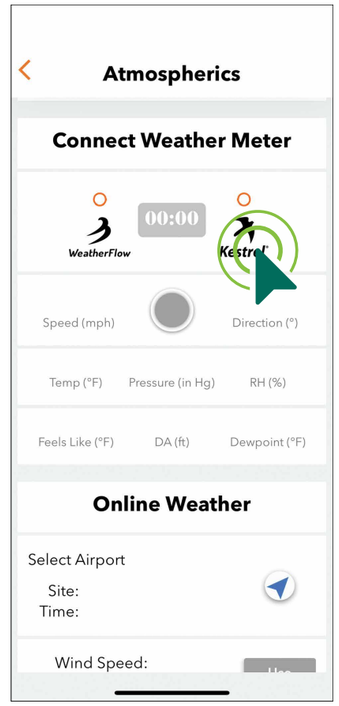
8. Make sure the Kestrel® device name and serial number are shown next to Kestrel® LiNK. You are now connected and can put your phone away if you wish. As long as your Kestrel® remains on, the devices will remain connected.



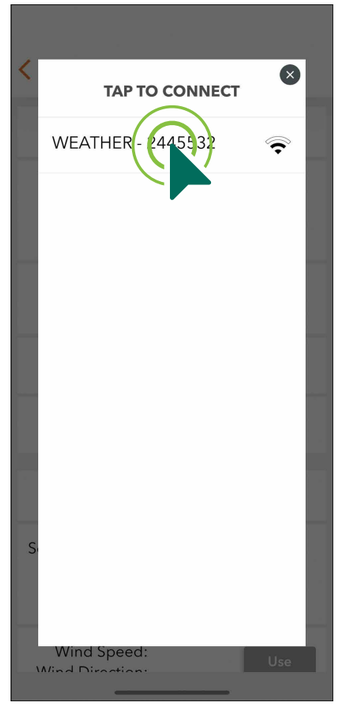
Connecting a Kestrel® to the GeoBallistics® App

Note: This method will allow you to use environmental data from your Kestrel® device including wind speed and direction, ambient temperature and pressure, relative humidity, density altitude, and dewpoint.

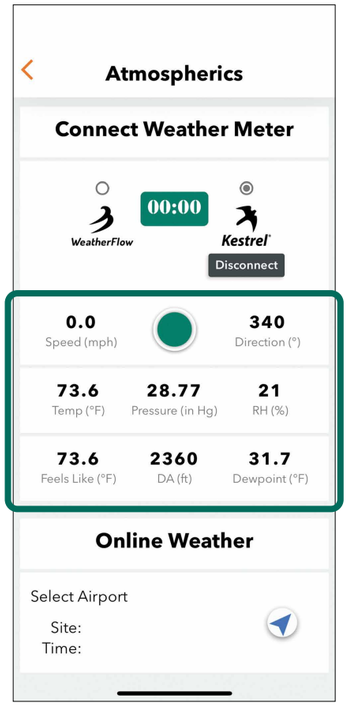
1. Make sure your Kestrel® device has Bluetooth® enabled and is in PC/Mobile mode. The Razor® HD 4000 GB can be already connected to the GeoBallistics® App but the Kestrel® must not already be connected to the Razor® HD 4000 GB.
2. From the main screen of the GeoBallistics® App, select to access the Atmospherics screen. Scroll down until you see Connect Weather Meter.

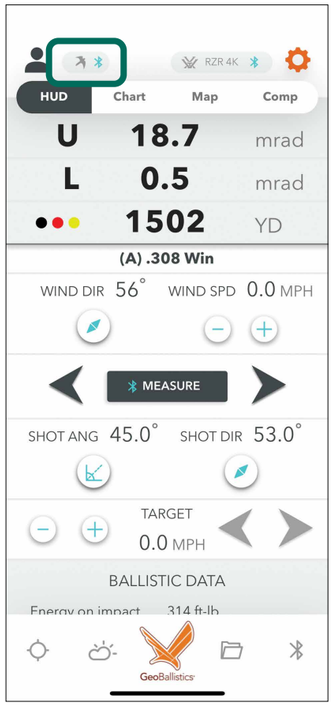


3. Select the Kestrel® logo and tap the device name to connect. Reference the serial number on the back of your Kestrel®.



4. Make sure you see data from the Kestrel® populate the Atmospherics screen. You are connected. When your Kestrel® device is connected to the GeoBallistics® App using this method, a button will appear on the top left of your main screen in the GeoBallistics® App denoting the Kestrel® has successfully connected.





Using a Kestrel® With the Razor® HD 4000 GB and the GeoBallistics® App

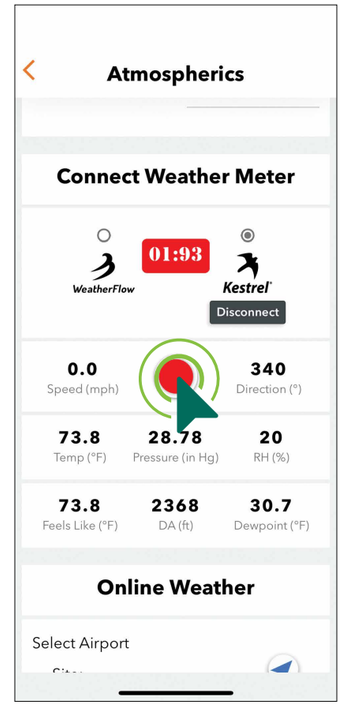
If your Kestrel® is connected to the Razor® HD 4000 GB via the GeoBallistics® App, the Kestrel® will provide wind speed and direction in order to calculate your ballistic solution. With this method, you will be able to see the wind direction and wind speed captured by the Kestrel® displayed in the GeoBallistics® App on the Atmospherics page under Active Profile and with your ballistic solution on the HUD tab. Follow the steps below.

1. Make sure your Kestrel® is connected to your Razor® HD 4000 GB. Reference the above sections for further information regarding connections.

2. Press the “Wind Bearing Capture” button on your Razor® HD 4000 GB to display the wind direction and wind speed that was measured using your Kestrel® device.

3. The wind speed and direction will be saved and used in the ballistic calculations as long as the Razor® HD 4000 GB and the Kestrel® device remain connected. Press the “Wind Bearing Capture” button to record a new measurement.

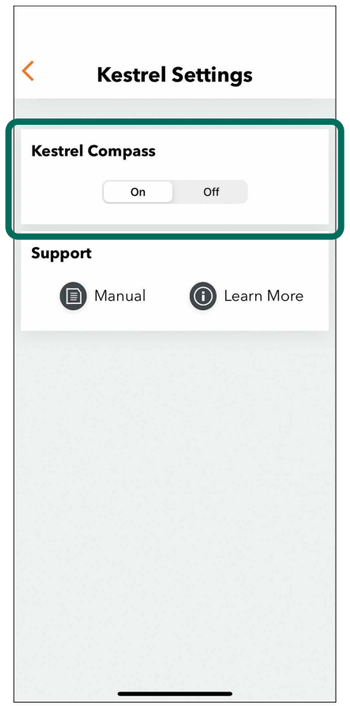
   Note: For this method, make sure that Wind and Weather are toggled to on under Data Received from Razor® HD 4000 GB in the Razor® HD 4000 GB Settings page. With those options toggled on, your ballistic solution and GeoBallistics® App will reference the captured wind speed and direction that is stored in your Razor® HD 4000 GB.



If your Kestrel® is connected to only the GeoBallistics® App, the Kestrel® can provide all environmental data to the GeoBallistics® App in order to calculate your ballistic solution. Once your Kestrel® is properly connected to the GeoBallistics® App, press the green button under Connect Weather Meter on the Atmospherics page to lock in the data measured from the Kestrel® to your Active Profile. You may also press and hold the green button to capture an average of data while you’re holding the button, which will turn red and display a timer while holding.

Note: For this method, make sure that Wind and Weather are toggled to off under Data Received from Razor® HD 4000 GB in the Razor® HD 4000 GB Settings page. With those options toggled off, your ballistic solution and GeoBallistics® App will reference the wind speed and direction captured from your connected Kestrel®. If those options are toggled on, the wind speed and direction will default back to the captured data within the Razor® HD 4000 GB each time you range.

From the main screen of the GeoBallistics® App, you will see a button appear on the top left if your Kestrel® is properly connected to ONLY the GeoBallistics® App. Select this button to toggle the Kestrel® compass on or off. Enabling the Kestrel® compass will populate the wind direction in the GeoBallistics® App with the data received from the Kestrel®.

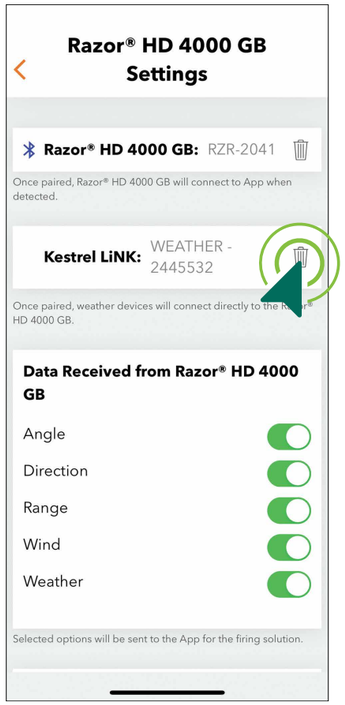


Disconnecting

To disconnect the Kestrel® from the Razor® HD 4000 GB, select the trashcan icon on the Razor® HD 4000 GB Settings screen. This will remove the Kestrel® name and serial number from the Kestrel® LiNK section and disconnect it from the Razor® HD 4000 GB.

To disconnect the Kestrel® from the GeoBallistics® App, select Disconnect from the Atmospherics page under Connect Weather Meter.

Note: A Kestrel® cannot be connected to the GeoBallistics® App via the Atmospherics page while it is also connected to the Razor® HD 4000 GB on the Razor® HD 4000 GB Settings page. You must disconnect in one of these places before attempting to connect to the other.



RANGEFINDING TIPS

Laser rangefinders work by emitting a brief pulse of light aimed at a target object. Distance is determined by the amount of time taken for the light to emit and return to the laser's internal receiver. A laser's ability to read range can be affected by many things, mostly relating to the target object.

- Light colors will usually reflect better than dark ones.
- Snow, rain, air quality, and fog will have adverse effects on ranging ability.
- Dull or textured surfaces will not reflect as well as a hard, shiny surface.
- Ranging under cloud cover can improve laser performance compared to bright, sunny conditions.
- Solid objects, such as rocks, will reflect better than bushes.
- Flat surfaces perpendicular to the laser will reflect better than curved surfaces or surfaces angled in relation to the laser.
- Ranging over water can sometimes cause false reflections and readings.
- At longer distances, larger objects will be easier to range than smaller objects.
- Using a tripod to steady the Razor® HD 4000 GB will greatly increase your ability to range small targets at longer distances.
- If you are having difficulty ranging an animal or object, try ranging a different nearby object, or use the Scan Feature to pan back and forth while watching for changes in range number. You can also switch to ELR Mode.

MAINTENANCE

Cleaning

Your Razor® HD 4000 GB requires very little routine maintenance other than periodically cleaning the exterior lenses. The exterior may be cleaned by wiping with a soft cloth. When cleaning the lenses, be sure to use products that are specifically designed for use on coated optical lenses.

- Be sure to blow away any dust or grit on the lenses prior to wiping the surfaces.
- Using your breath, a small amount of water or pure alcohol, can help remove stubborn dried water spots.

Lubrication

All components of the Razor® HD 4000 GB are permanently lubricated, so no additional lubricant should be applied.

Note: Other than to remove the Battery Cap and Utility Clip, do not attempt to disassemble any components of the rangefinder. Disassembling of rangefinder may void warranty.

Storage

If possible, avoid storing your rangefinder in direct sunlight or any very hot location for long periods of time.

TROUBLESHOOTING GUIDE

The Razor® HD 4000 GB will not show up in the GeoBallistics® App in my device.

- Bluetooth® modules of a certain age may not be able to communicate with modern devices. It is recommended that your device use iOS 13+ (iPhone 8 or newer) or Android 6.0+.
- If the device is not showing up in the app, remove and reinsert the battery.

I have paired my Razor® HD 4000 GB with my device, but they are not communicating.

- If you have successfully paired before, and the device and Razor® HD 4000 GB will not communicate, toggle Bluetooth® on and off on both your device and on the Razor® HD 4000 GB.
- Ensure you see the connected (ᛒ) symbol in the upper right corner of the Razor® HD 4000 GB.

My compass will not calibrate.

- If the compass will not calibrate, ensure you are calibrating the compass outside and away from buildings, cell towers, or other structures.
- If the Razor® HD 4000 GB calibration is off, then repeat the calibration sequence on page 29 and ensure that the device is rotated three times per axis before completing the calibration process. The Razor® HD 4000 GB will need to be recalibrated after replacing the battery and when changing geographic location, typically 30 miles or more.

INDEX

PROFILE	.308 WIN - DEFAULT
Set As	A
Bullet Data	Library
Bullet Diameter	.308 in
Bullet Weight	175gr
Bullet Length	1.24 in
Drag Function	G7
METRO	ICAO
Bullet Coefficient	0.243
Sight Height	1.75 in
Zero Range	100 yds.
Elevation Offset	0
Windage Offset	0
Barrel Twist	12 (1:12)
Muzzle Velocity	2600 ft/s
MV - Tempt	Off
Solution Units	MRAD
Elevation SSF	1
Windage SSF	1
Vital Size	12 in
Energy Threshold	1000 ft-lb
Velocity Threshold	1116 ft/s

PROFILE	6.5 CREEDMOOR® - DEFAULT
Set As	B
Bullet Data	Library
Bullet Diameter	.264 in
Bullet Weight	140gr
Bullet Length	1.38 in
Drag Function	G7
METRO	ICAO
Bullet Coefficient	0.326
Sight Height	1.75 in
Zero Range	100 yds.
Elevation Offset	0
Windage Offset	0
Barrel Twist	8 (1:8)
Muzzle Velocity	2710 ft/s
MV - Tempt	Off
Solution Units	MRAD
Elevation SSF	1
Windage SSF	1
Vital Size	12 in
Energy Threshold	1000 ft-lb
Velocity Threshold	1116 ft/s

PROFILE	.223/5.56 - DEFAULT
Set As	C
Bullet Data	Library
Bullet Diameter	.224 in
Bullet Weight	55gr
Bullet Length	0.75 in
Drag Function	G7
METRO	ICAO
Bullet Coefficient	0.131
Sight Height	2.7 in
Zero Range	100 yds.
Elevation Offset	0
Windage Offset	0
Barrel Twist	12 (1:12)
Muzzle Velocity	3240 ft/s
MV - Tempt	Off
Solution Units	MOA
Elevation SSF	1
Windage SSF	1
Vital Size	12 in
Energy Threshold	500 ft-lb
Velocity Threshold	1116 ft/s

COMPLIANCE

United States

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Contains FCC ID: T7V1760A

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada

CAN ICES-3B/NMB-3B

Contains IC: 216Q-1760A

Australia and New Zealand

Japan

Class B ITE

この装置は、クラスB 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。 VCCI－B

Translation:

This is a Class B product based on the standard of the VCCI Council. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

FCC REQUIREMENTS

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

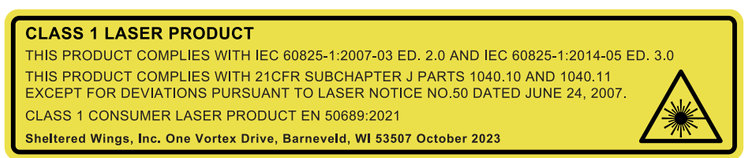
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

SAFETY AND PRECAUTIONS

Do not stare into beam or view directly without laser eye protection. Staring continuously into beam for prolonged periods of time could cause harm to your eyes. If used properly, this device is safe for your eyes and laser eye protection is not needed.

- Use the correct battery (CR2) and proper battery orientation.
- Do not look at sun.
- Do not activate Menu or Measure buttons while aiming at eye or looking into objective lens.
- Do not disassemble.
- Do not allow children to play with unit.
- Consumer laser product EN 50689:2021



Caution: Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.

NOTICE

Virtual Patent Marking Notice by Vortex Optics

This product may be protected by patents in the U.S. and elsewhere for Vortex Optics. **http://vtx.legal** website is provided to satisfy the virtual patent marking provisions of various jurisdictions including the virtual patent marking provisions of the America Invents Act and provide notice under 35 U.S.C. §287(a). Please visit **http://vtx.legal** to view list of products that may be covered by one or more U.S./Foreign patents or published patent applications.

VIP® WARRANTY

OUR UNCONDITIONAL PROMISE TO YOU.

We promise to repair or replace
the product. Absolutely free.

- **Unlimited.**
- **Unconditional.**
- **Lifetime Warranty.**

You do not have to register, save the box, or a receipt
for the Warranty to be honored.

Learn more at VortexOptics.com

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Note: *The VIP® Warranty does not cover loss, theft, deliberate damage, or cosmetic damage not affecting product performance.*

For additional and latest manuals, visit **VortexOptics.com**

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