QUANTUM

User Guide

For Android and iPhone

QUANTUM

Applied Ballistics Quantum™ is a state-of-the-art app integrating the most complete ballistics solver and profile management tool for long-range shooting. AB Quantum™ includes a host of tools and features that will enable shooters and hunters to be more successful in the field.

AB Quantum™ creates a new paradigm for ballistic solvers and integration with Bluetooth®-enabled devices. With a host of new features, the platform is designed to save time and add performance for users of all skill levels.
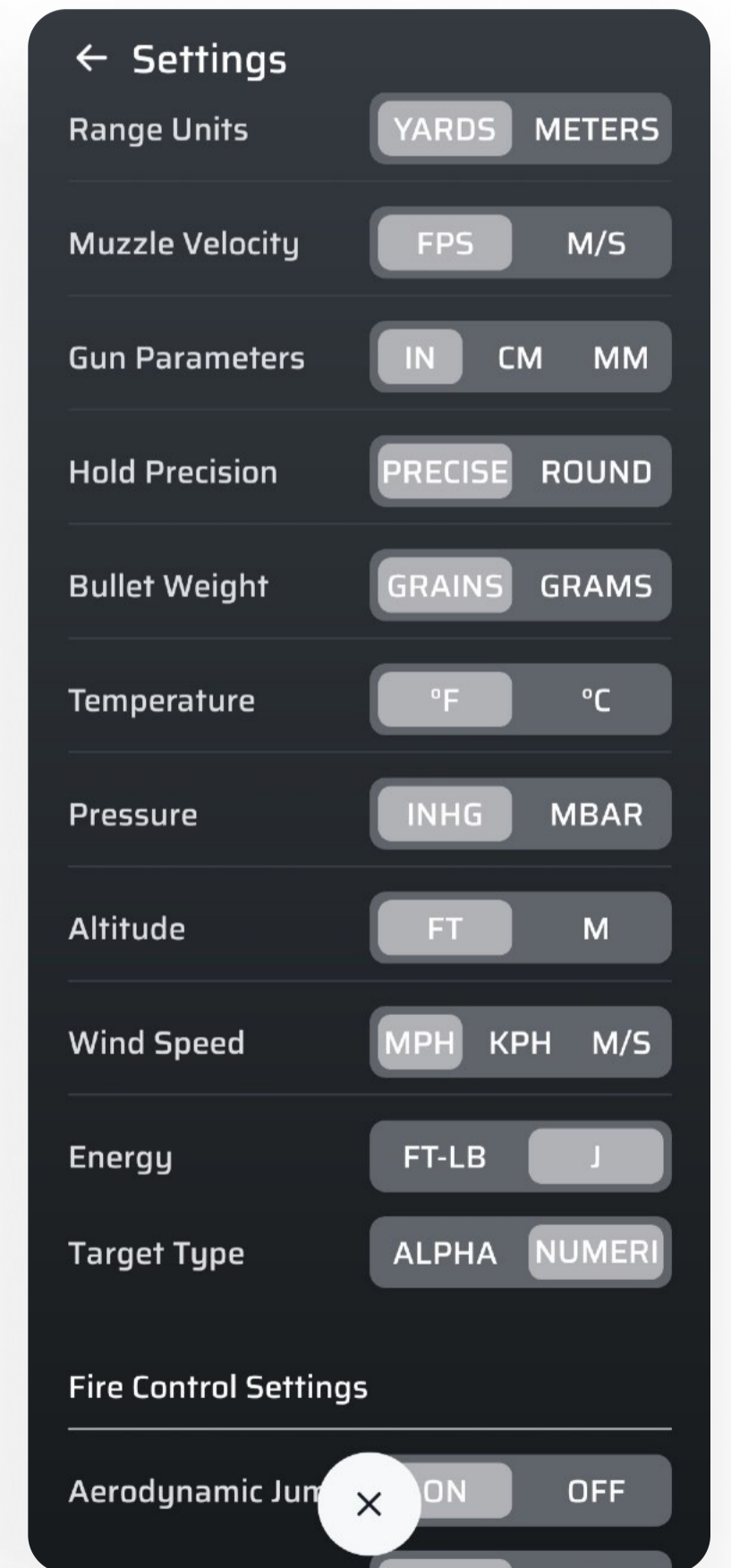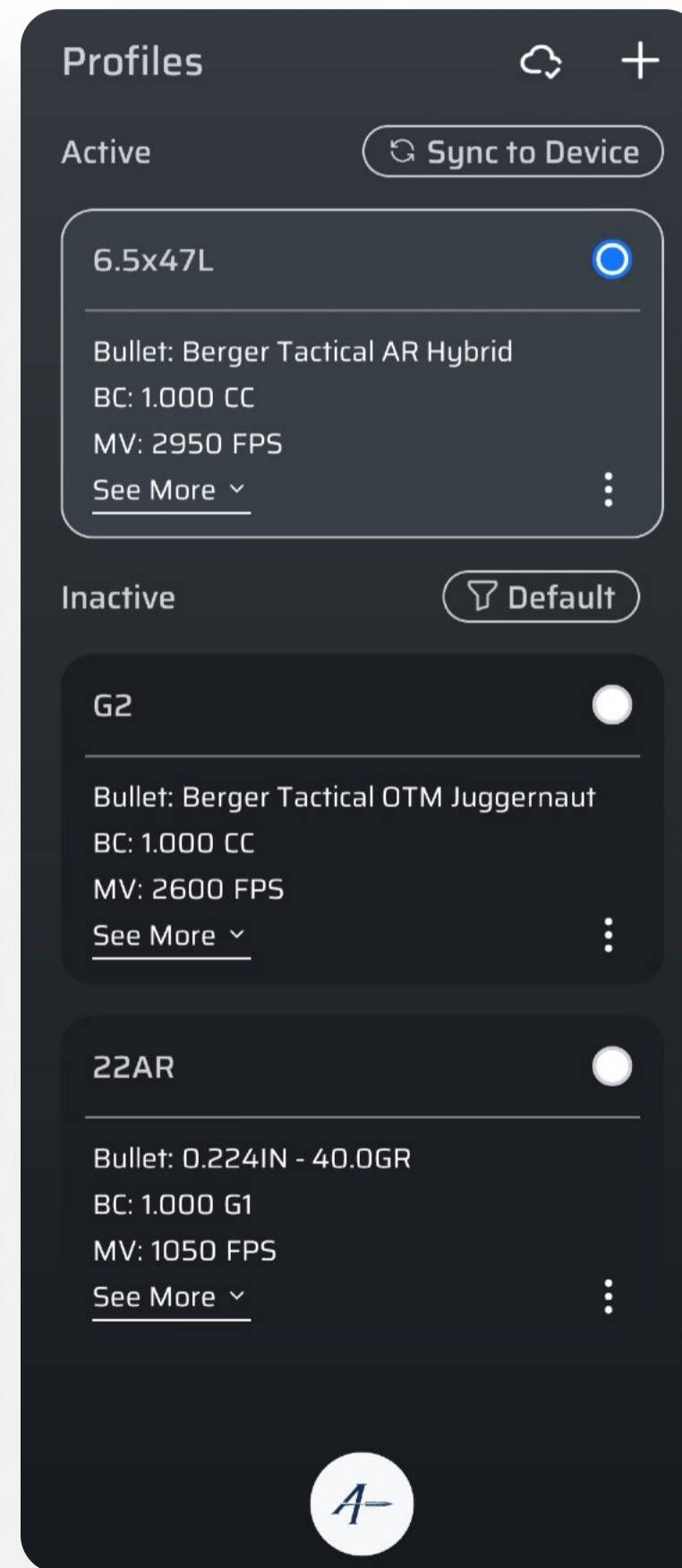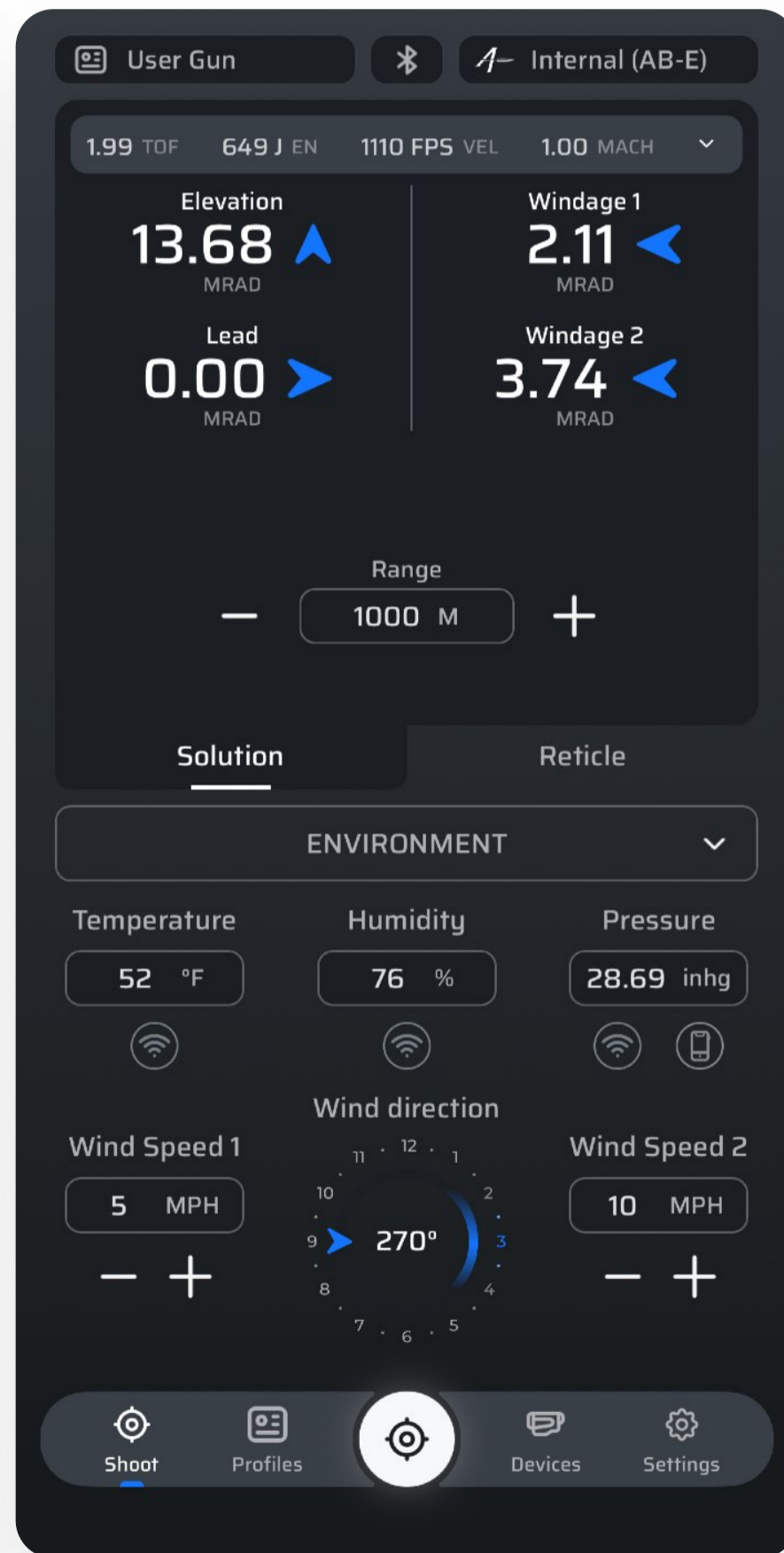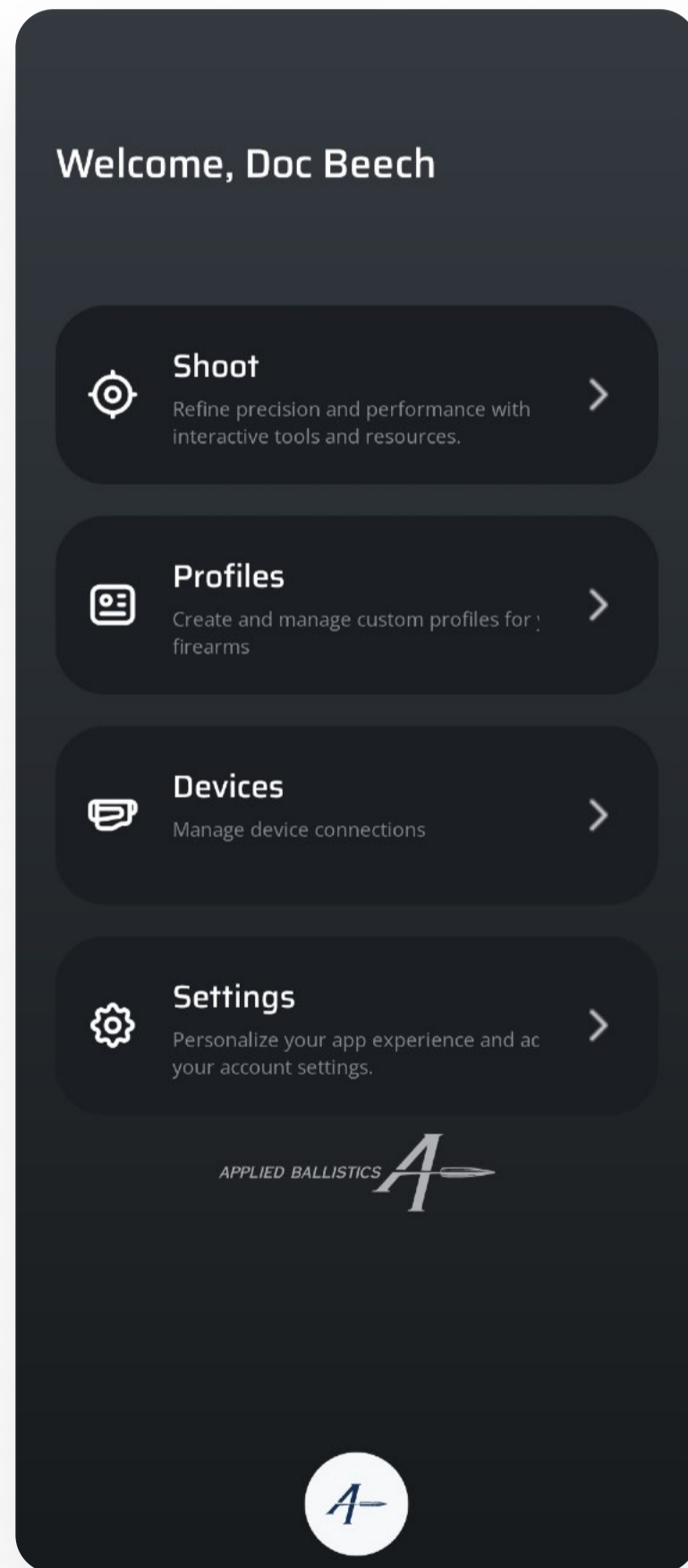
Table of contents

1.0 Introduction

The Applied Ballistics® Quantum™ Application is the most versatile, accurate and user-friendly ballistics program available. All screens are relatively the same between Android and iPhone and all functions are the same where appropriate.

Screen 1: Welcome

Welcome, Doc Beech

Shoot
Refine precision and performance with interactive tools and resources.

Profiles
Create and manage custom profiles for firearms

Devices
Manage device connections

Settings
Personalize your app experience and ac your account settings.

APPLIED BALLISTICS

Screen 2: Shoot Solution

User Gun | Internal (AB-E)

1.99 TOF | 649 J EN | 1110 FPS VEL | 1.00 MACH

Elevation
13.68 MRAD

Windage 1
2.11 MRAD

Lead
0.00 MRAD

Windage 2
3.74 MRAD

Range
1000 M

Solution | Reticle

ENVIRONMENT

Temperature	Humidity	Pressure
52 °F	76 %	28.69 inhg

Wind direction
270°

Wind Speed 1
5 MPH

Wind Speed 2
10 MPH

Shoot | Profiles | Devices | Settings

Screen 3: Profiles

Profiles

Active — Sync to Device

6.5x47L
Bullet: Berger Tactical AR Hybrid
BC: 1.000 CC
MV: 2950 FPS
See More

Inactive — Default

G2
Bullet: Berger Tactical OTM Juggernaut
BC: 1.000 CC
MV: 2600 FPS
See More

22AR
Bullet: 0.224IN - 40.0GR
BC: 1.000 G1
MV: 1050 FPS
See More

Screen 4: Settings

← Settings

Setting	Options
Range Units	YARDS / METERS
Muzzle Velocity	FPS / M/S
Gun Parameters	IN / CM / MM
Hold Precision	PRECISE / ROUND
Bullet Weight	GRAINS / GRAMS
Temperature	°F / °C
Pressure	INHG / MBAR
Altitude	FT / M
Wind Speed	MPH / KPH / M/S
Energy	FT-LB / J
Target Type	ALPHA / NUMERI

Fire Control Settings

Aerodynamic Jum... ON / OFF

2.0 Features

The following table lists the features of the Applied Ballistics (AB) Quantum™ app and gives a brief explanation of what they are/do. Greater detail along with directions for how to properly use all the features is given below in the instructional sections.

Helpful Definitions

AB Quantum™ User Interface	Take control of ballistic data and find solutions with ease using the new layout designed with one-handed operation in mind.
New Bluetooth® Device Manager	Find and connect AB Bluetooth® devices quickly and sync data between devices using AB Quantum Connect™.
AB Quantum Sync™	User gun profiles are automatically uploaded to an encrypted server to allow easy access for other devices and backup, providing peace of mind and security.
Customizable Range Card and Target Card Modes	The new expandable and customizable range and target card modes allow users to select what data to see for each Range or Target. Use the share function to send range and data cards in just seconds.
New Reticle Library	The AB Reticle library is hosted online and updates in AB Quantum™ automatically, providing users with up-to-date solution drawing for their favorite rifle scopes.
Improved Truing Interface	Easy to access ballistic truing features without leaving solution screens.
Chronograph Integration	Connect Bluetooth®-enabled chronographs - such as the Optex Systems SpeedTracker™ - directly to the app and save the velocity data to rifle profiles.

License levels	Free	Elite
Max range	875 yds	10 seconds ToF
Profiles in ballistics app	5	Unlimited
Profiles in ballistics app		
Applied Ballistics bullet library	✕	✕
G1 and G7 models	✕	✕
Applied Ballistics custom drag models		✕
Aero dynamic jump correction		✕
Coriolis effect correction		✕
Sight scale factor		✕
Spin drift correction		✕
Utility features		
Target card	✕	✕
Range card	✕	✕
Twist rate		✕
Zero height		✕
Zero offset		✕
Sight-in conditions	✕	✕
Muzzle velocity calibration	✕	✕
Drop scale factor calibration		✕

3.0 Operational Overview

The AB Quantum™ app is organized to allow a user to rapidly enter the necessary data for a typical shooting engagement and obtain an accurate firing solution.

3.1 Applied Ballistics Quantum Sync™

The app incorporates AB Quantum Sync™, that synchronizes the user's gun profiles to an encrypted web server for easy retrieval and peace of mind that they will not be lost. The user has the option to create an account or log into an existing account when the AB Quantum™ app is first opened.

NOTE: Applied Ballistics recommends that the user utilize the same login method across AB-enabled apps. At this time, gun profiles will NOT sync with other apps (e.g. Sig Sauer, Bushnell, Leica), but using the same login will allow for future integration.

3.2 App Overview

The app is designed to allow the user to access all of the inputs and outputs needed to accurately put rounds on target. It is organized into the following main screens:

|	
Home Screen	The user can navigate from here to the other pages. Accessing this page on startup can be disabled in settings, which will send the user to Shoot instead.
Shoot (Section 4.0)	The user can access the Firing Solution Calculator and its outputs, including the HUD, Range Card, Target Card, Graphs, Reticle Drawing, and remote firing solutions. This section also allows adjustments to Environmental Inputs, Range Card Settings, Target Data, Muzzle Velocity, Drop Scale Factor, and Moving Target Speed/Direction.
Profiles (Section 5.0)	The user can add or delete gun profiles, edit parameters for those gun profiles and then share & sync gun profiles.
Devices (Section 6.0)	The Devices tab allows the user to connect to and manage AB-enabled devices.
Settings (Section 7.0)	This is where the user can manage the app's Units, Firing Settings, General Settings, and view current Library status and operations.

3.3 Navigation

The screens listed above are accessible through the navigation bar along the bottom of the app.

When on the Shoot screen, the center button presents the user with different Views; see Section 4.0 for a description.
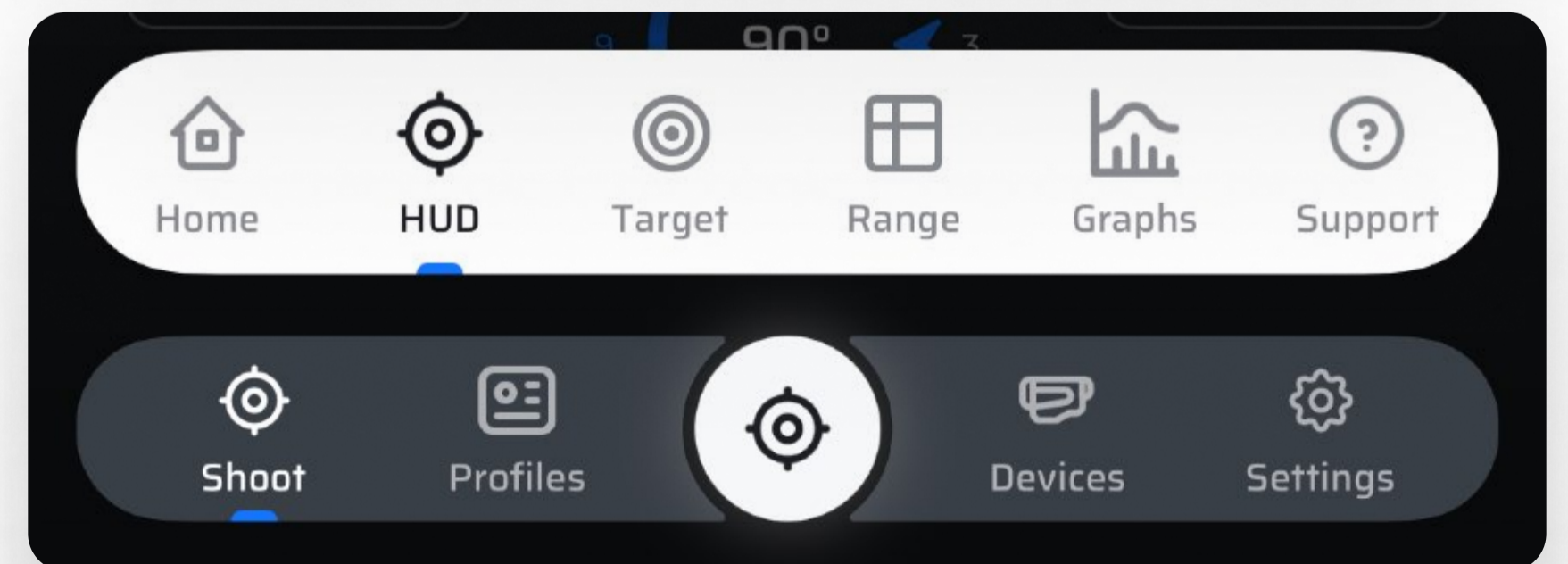
4.0 Shoot Interface

The Shoot interface is broadly organized into two primary sections:

|	
Viewer	The top half of the screen shows firing solution information, including target cards, reticle drawings, graphs, etc.
Controller	The bottom half of the screen is where the user edits parameters like Environmental Conditions, Reticle Settings, Range Card Settings, etc.

This concept places the data that the user interacts with (like editing temperature) within reach for single-hand operation, in the Controller area. The information that the user needs to primarily look at is located in the Viewer area.

4.1 Viewer Management

There are several different Views available for the top half of the screen, accessed through the central navigation button.

4.1.1 HUD

The primary view is the HUD, an easy-to-read set of values that show firing data for the user's current set of parameters (like gun profile, environmental conditions). Above the main solutions, there is a dropdown that shows additional information like time of flight, coriolis components, and mach number at target.
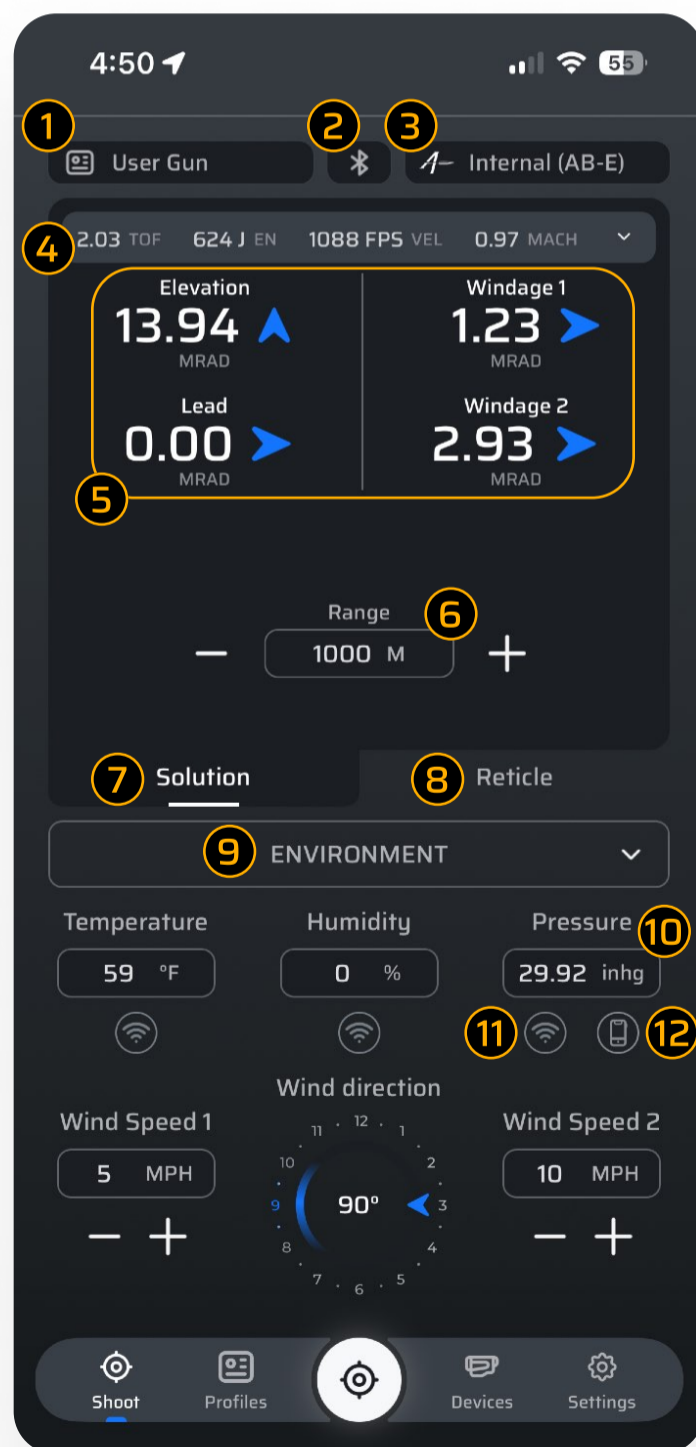
1. Currently selected profile
2. Device connection status
3. Solution source
4. Solution details
5. Firing solution
6. Range edit
7. Show solution
8. Show reticle drawing
9. Access controllers
10. Edit parameter
11. Get data from internet
12. Get data from phone
13. Access shoot viewers
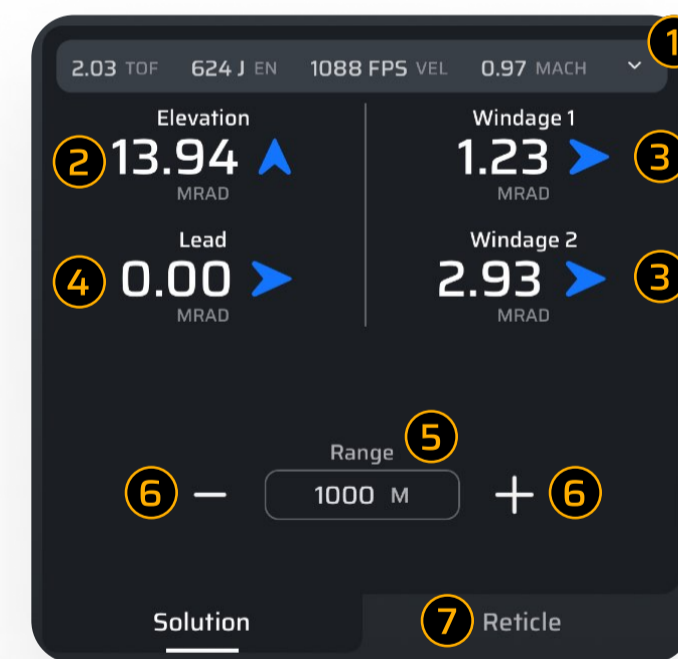
1. Expand to see additional info about the firing solution
2. Elevation solution
3. Windage solutions
4. Lead for moving target
5. Manually edit range value
6. Increment/decrement range
7. Show reticle drawing

The solution updates automatically as values in the Controller section are updated, or as the user changes the Range value in the Viewer area. The Reticle Drawing feature is described later in this document.

4.1.2 Range Card

From the central navigation menu, the user can switch the View to show a range card, which utilizes the settings from the Range Card Controller (section 4.2.4 below) to set the start & stop ranges, as well as the increments.

Range (M)	Elev. (MRAD)	Wind 1 (MRAD)	Wind 2 (MRAD)	Lead (MRAD)
100	0.04 D	0.11 R	0.22 R	0.83 R
200	0.63 U	0.20 R	0.44 R	0.86 R
300	1.58 U	0.30 R	0.67 R	0.90 R
400	2.70 U	0.40 R	0.92 R	0.94 R
500	3.98 U	0.52 R	1.19 R	0.98 R
600	5.45 U	0.64 R	1.4	1.03 R

Range Card   Reticle

① Range to target

② Elevation solution

③ Windage solutions

④ Lead for moving target

⑤ Scroll to view additional ranges

⑥ Scroll left/right to see additional solution data

⑦ Expand the Viewer

⑧ Export the range card

The View can be scrolled up/down to view additional solutions at other ranges and left/right to view additional solution information, like Energy, Time of Flight and Mach Number at that range. Rows that are highlighted in red indicate the transonic portion of the bullet's flight.

The share icon in the lower right corner allows the user to export the range card.

Range (Y)	Elev. (Inches)	Wind 1 (Inches)	Wind 2 (Inches)	Lead (Inches)
100	0.15 D	0.06 R	0.12 R	0.61 R
200	3.00 U	0.10 R	0.36 R	1.24 R
300	11.65 U	0.14 R	0.74 R	1.87 R
400	25.99 U	0.18 R	1.26 R	2.52 R
500	46.22 U	0.22 R	1.94 R	3.18 R
600	72.57 U	0.27 R	2.76 R	3.85 R
700	105.24 U	0.32 R	3.75 R	4.53 R
800	144.48 U	0.37 R	4.91 R	5.23 R
900	190.52 U	0.42 R	6.23 R	5.93 R
1000	243.62 U	0.48 R	7.72 R	6.65 R
1100	304.05 U	0.54 R	9.39 R	7.39 R
1200	372.08 U	0.60 R	11.24 R	8.14 R
1300	448.00 U	0.66 R	13.27 R	8.90 R
1400	532.12 U	0.71 R	15.49 R	9.68 R

Collapse table

Range (Y)	Elev. (Inches)	Wind 1 (Inches)	Wind 2 (Inches)	Lead (Inches)
100	0.27 D	0.11 R	0.17 R	0.61 R
200	2.77 U	0.32 R	0.56 R	1.24 R
300	11.31 U	0.65 R	1.20 R	1.88 R
400	25.57 U	1.11 R	2.10 R	2.52 R
500	45.75 U	1.69 R	3.27 R	3.18 R
600	72.07 U	2.41 R	4.72 R	3.86 R
700	104.76 U	3.26 R	6.44 R	4.54 R
800	144.07 U	4.26 R	8.46 R	5.24 R
900	190.24 U	5.40 R	10.77 R	5.95 R
1000	243.54 U	6.69 R	13.39 R	6.67 R
1100	304.26 U	8.13 R	16.32 R	7.41 R
1200	372.67 U	9.72 R	19.58 R	8.16 R
1300	449.09 U	11.47 R	23.16 R	8.93 R
1400	533.83 U	13.38 R	27.07 R	9.71 R

Collapse table

Shoot   Profiles   Devices   Settings

① Rows highlighted for transsonic ranges

② Scroll left/right for additional solution data

4.1.3 Target Card

Similarly, the Target Card View presents a table of values with an important difference: the user can manually edit the individual range values (which causes the solution to be recalculated when complete). The Target Card View also has the option to add rows to the list using the plus button in the lower right. To delete a target from the list, long-press on the row of data and choose "Delete Target" on the pop-up that appears. When an LRF is connected and a target is ranged, the target range will automatically populate in the row that is selected.

① Edit target range value

② Add a target to the list

③ Show reticle for the target card

For both the Range Card and the Target Card, the view can be expanded to view more range rows at a time.

4.1.4 Reticle

On each of the above Views (HUD, Range Card, Target Card), there is a Reticle tab. When the user clicks on that tab, a drawing of the current solution (or multiple solutions) is displayed overlaid on the reticle that is set in the Active Gun Profile.

NOTE: when the app is first used, the default gun profile does NOT have a rifle scope or reticle configured. Select a reticle frome the gun profile editor.

On the HUD screen, the solution is for the single value that is shown on HUD.

① Firing control solution from HUD overlaid on the user's selected reticle

② Tap to expand the reticle view

User can pinch to zoom in/out on the reticle display

Similarly, the solutions from the Target Card table are drawn on the reticle when on the Target Card View.
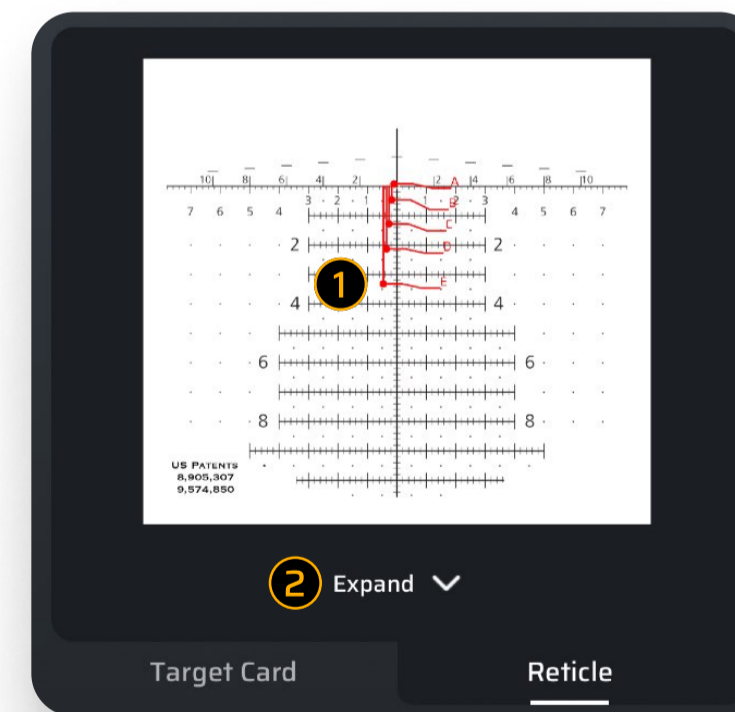
① Firing control solutions from the Target Card are overload on the reticle

② Tap to expand the reticle view

User can pinch to zoom in/out on the reticle display
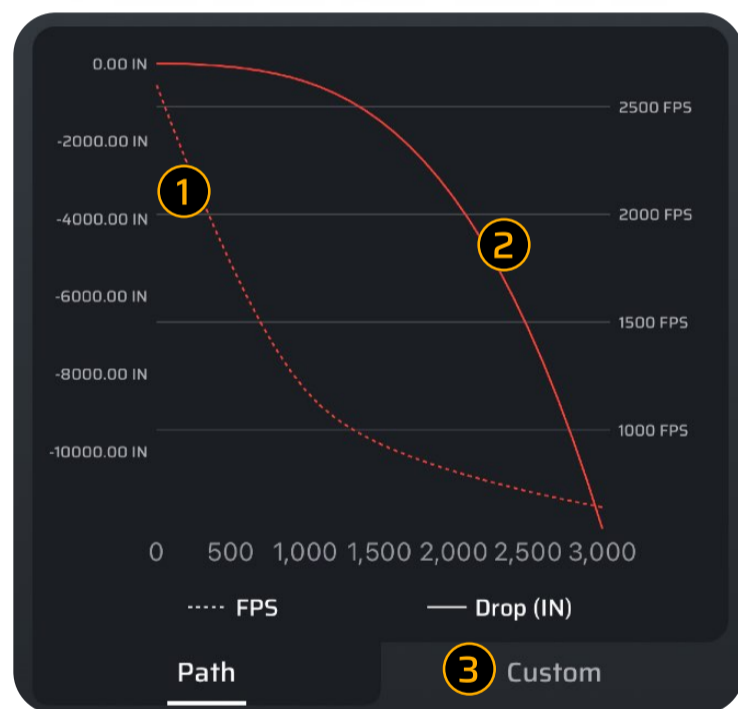
And the Range Card displays those solutions as well.
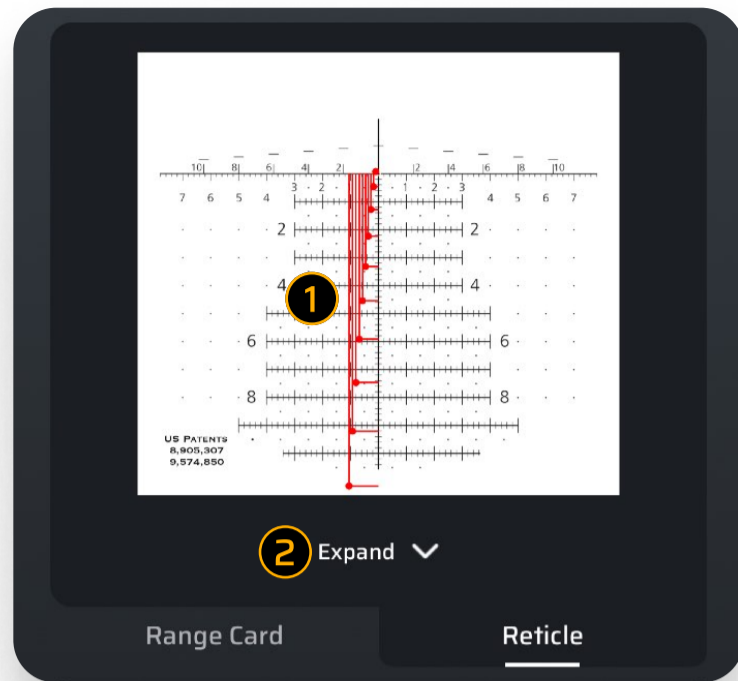
① Firing solutions from the Range card are overlaid on the reticle

② Tap to expand the reticle view

User can pinch to zoom in/out on the reticle display

4.1.5 Graphs

The trajectory graph shows the ballistic curve, along with velocity.

① Bullet velocity

② Bullet drop in inches

③ Tap to access custon graphs

The Custom option allows you to select if you want to draw out Elevation, Windage, Time of Flight (TOF), Energy, Muzzle Velocity (MV), Mach, Aerodynamic Jump, Spin Drift, Horizontal or Vertical Coriolis, Lead, Drop, or Drift. Note, that Drop is not the Elevation for the Firing Solution; it is the total true drop from the time the bullet left the barrel uncorrected for the zero range.
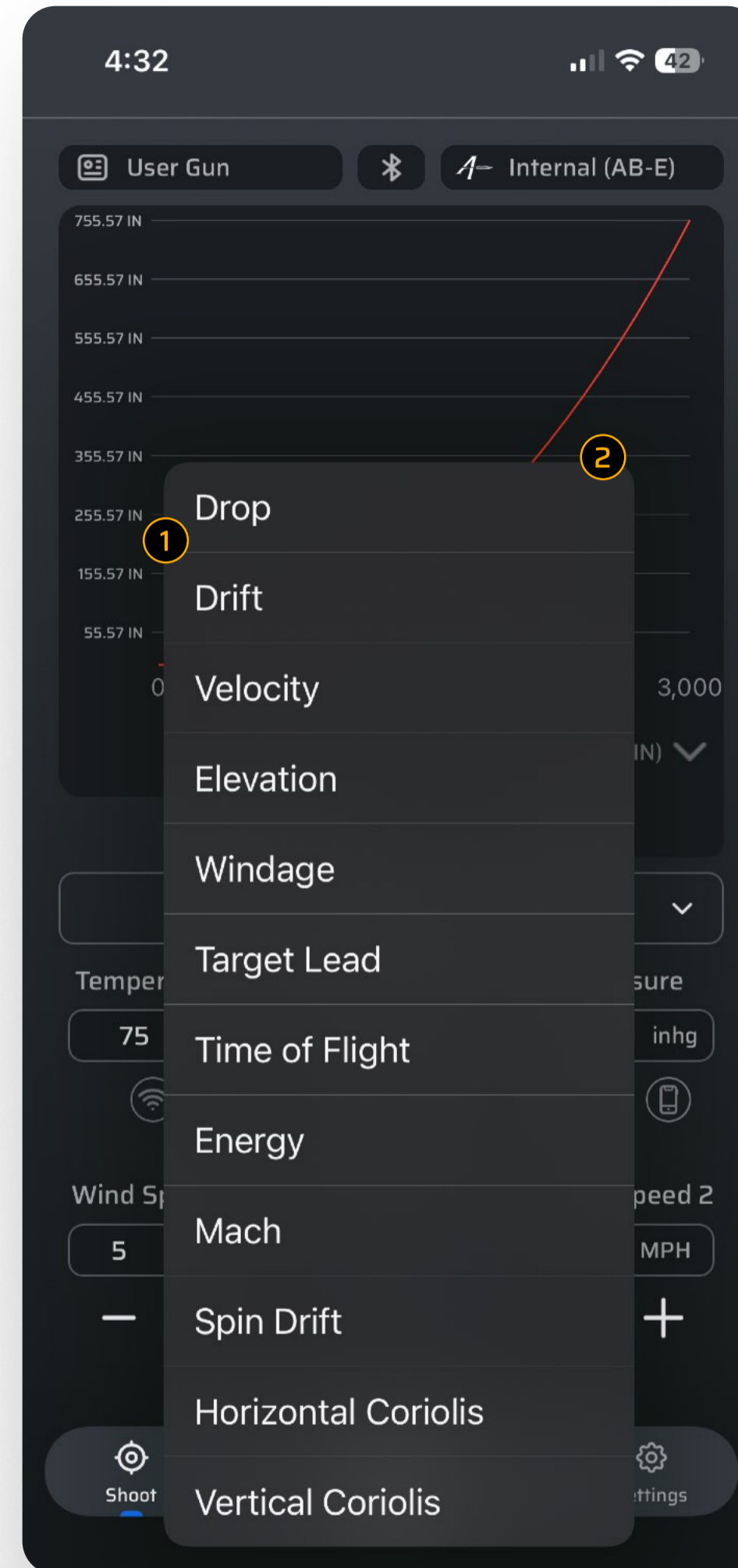
① Choose which parameter to graph against the range

② Graph will automatically update once selected

4.1.6 Support

The AB Quantum™ app has a built-in direct support function. From the Shoot Navigation Menu, you will find a button on the far-right side labeled "Support". Once you click this button, an email will open where you can place the information related to the support issue you have. It will automatically generate relative information to the app version, and the profile you are currently using so we can help you.
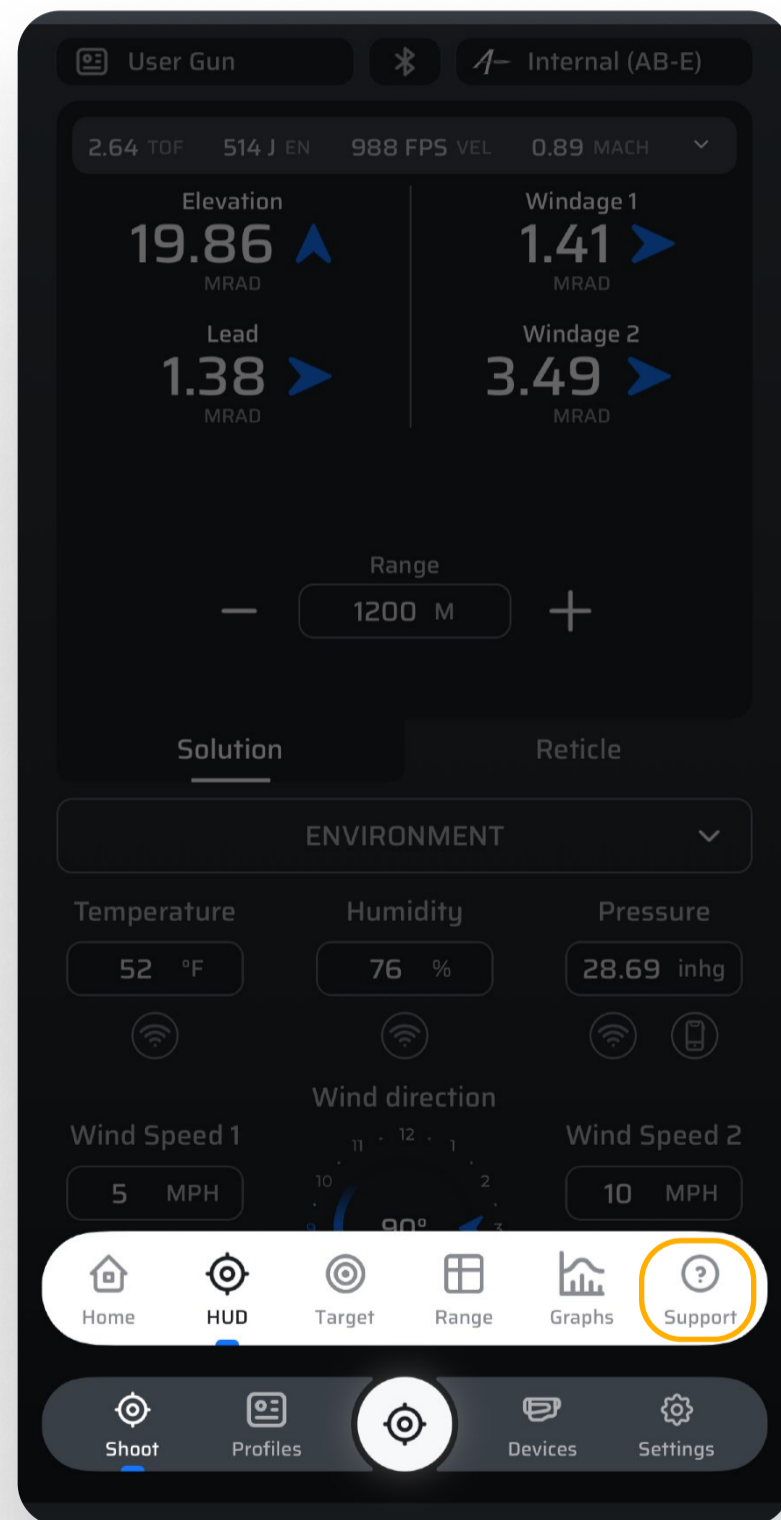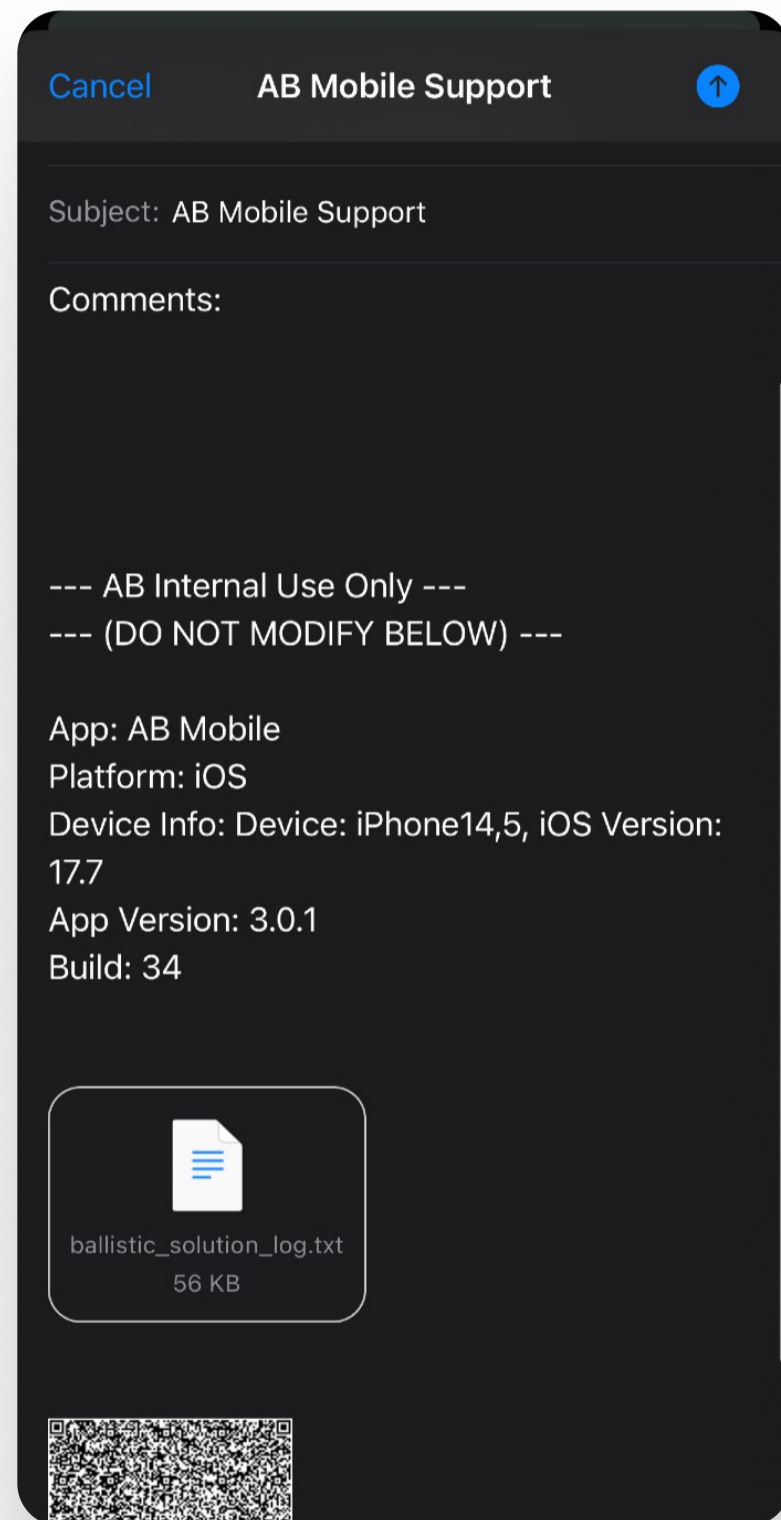
4.2 Controller Management

The bottom half of the Shoot interface allows the user to quickly access different parameters and edit them to see the solution(s) update in real-time in the Viewer section.

The various controllers are accessed through the dropdown in the middle of the Shoot interface.
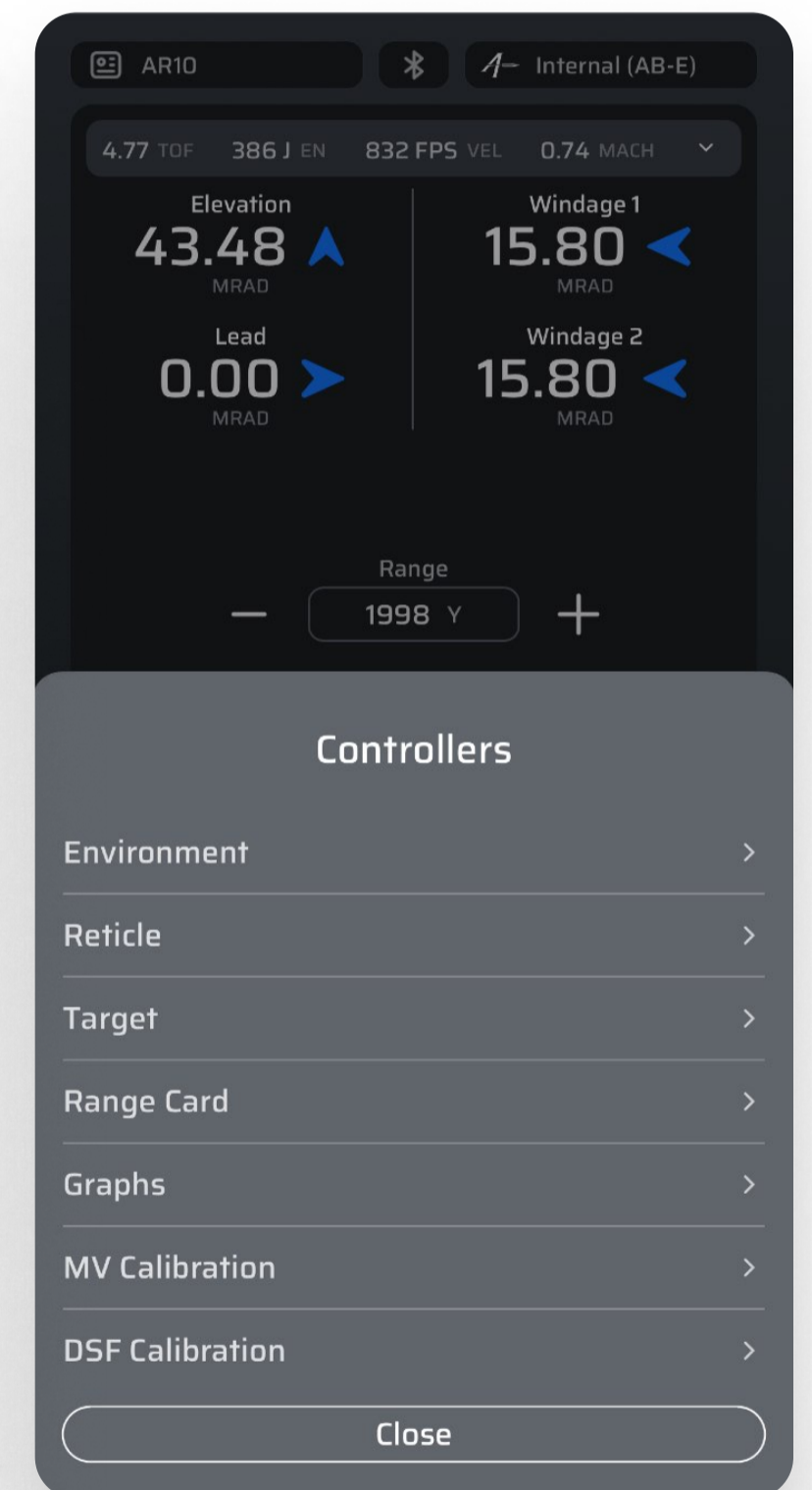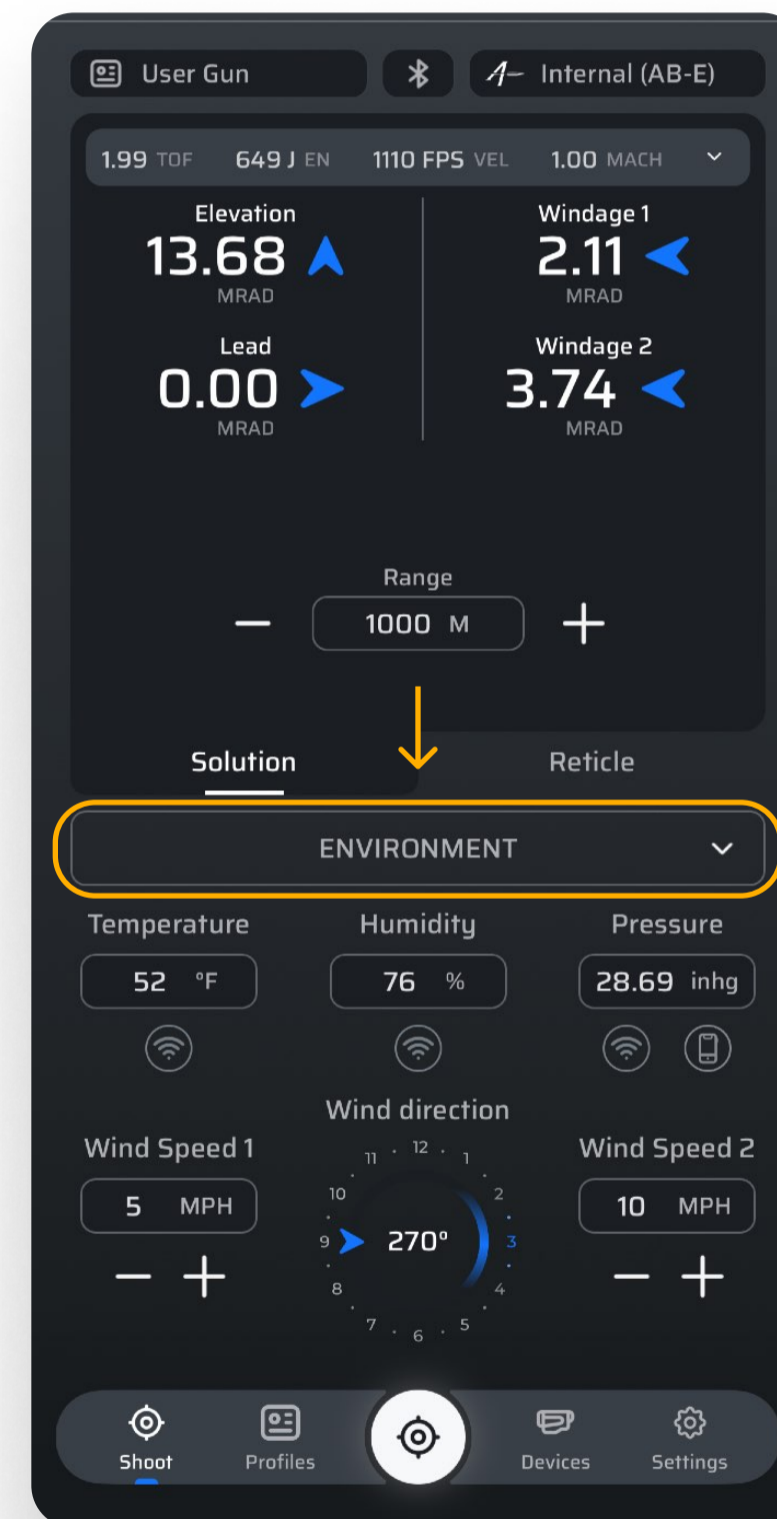
Once selected, the lower half of the screen updates to show the parameters for that controller. Each controller is described in greater detail below.

4.2.1 Environment Controller

The Environment Controller allows the user to edit parameters like temperature, humidity, pressure, wind speeds 1 & 2 and wind direction. Wind Speed 1 determines Aerodynamic Jump (Aerodynamic Jump can be turned on/off in the settings).


① Manually edit parameter

② Get value from internet

③ Get value from /H/hiee device (if available)

④ Get value from phone (if available)

Units for the environmental parameters are changed on the Settings page. The buttons under the values allow the user to obtain that value automatically from other sources, like the internet, the phone itself or an externally connected device.

4.2.2 Reticle Controller

This is where the user may adjust the reticle zoom, dialed elevation, and switch between Solution (described above) or subtensions for outputs. The subtensions drawing places the dot on the major subtension lines for the selected reticle and shows the user what range corresponds to that subtension.
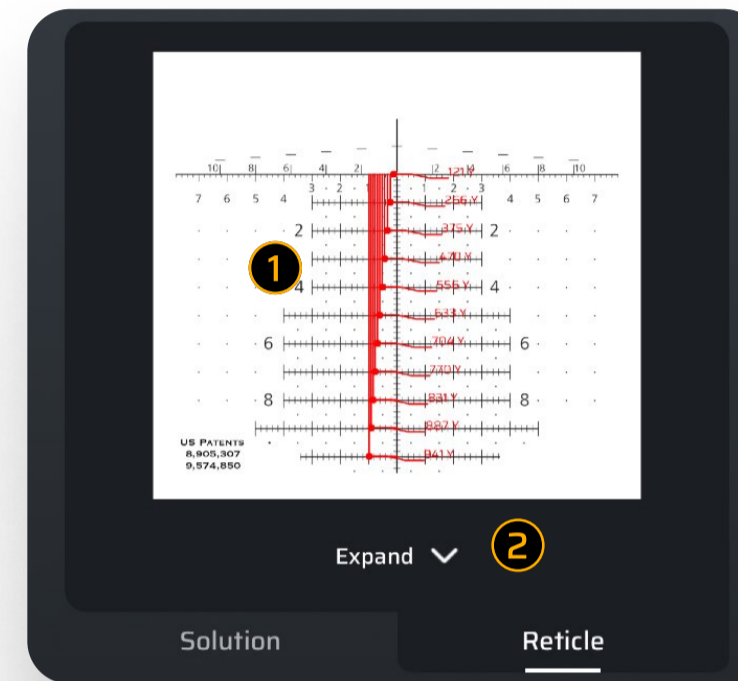
① When in subtension mode, the solution dots are drawn on the major reticle subtensions with the corresponding range

② Expand for larger view

If the user applies a Dialed Elevation, then it is applied to the subtension solutions and the ranges updated accordingly.
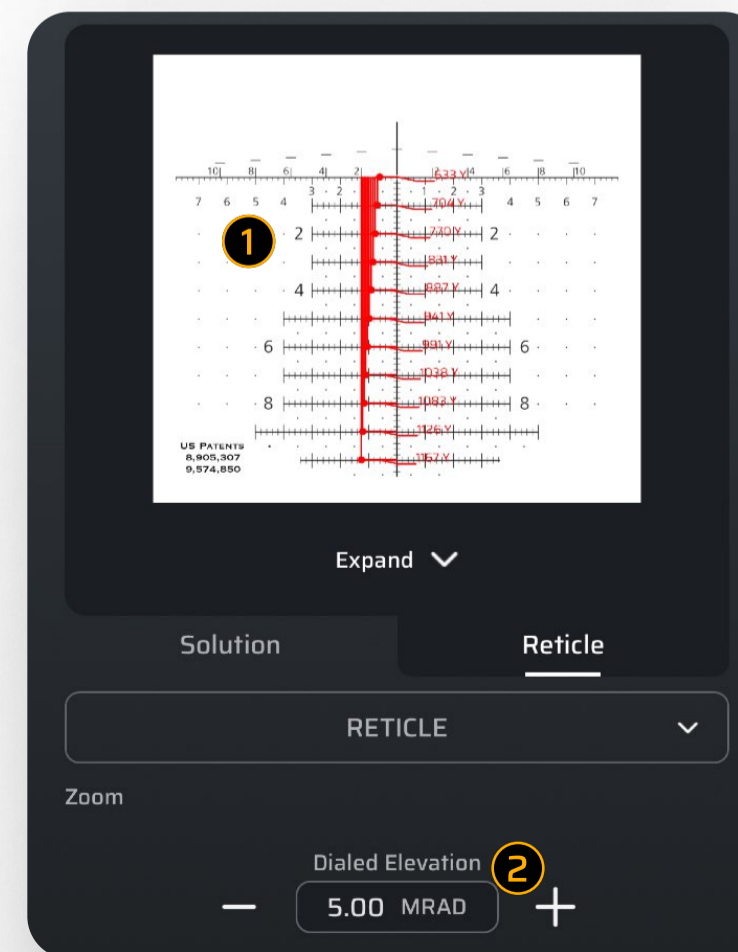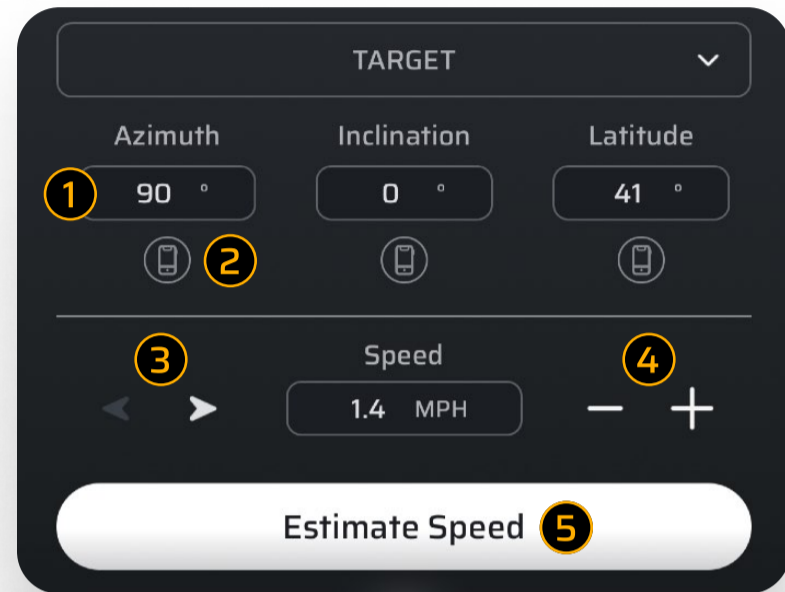

① Dialed elevation is applied to the range values

② Manually enter or increment/ decrement the dialed elevation
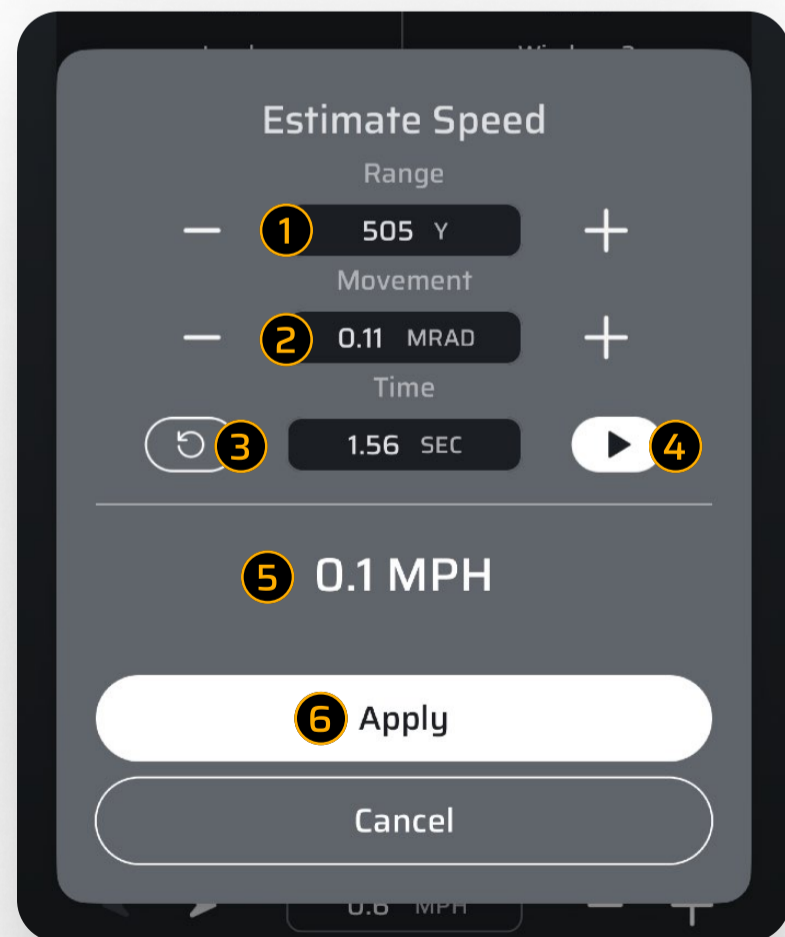
4.2.3 Target Controller

The Target Controller allows the user to edit parameters like Azimuth, Inclination, and Latitude. Values may be manually entered or automatically obtained from the phone or connected device (if supported).

1. Manually edit parameter
2. Get value from phone
3. Set target direction
4. Increment speed value up/down
5. Tap for pop up to estimate target speed

The speed estimation calculator allows the user to calculate the target's speed given its range and how much it moved in a certain amount of time.

1. Set target range
2. Enter how far the target moved
3. Reset timer
4. Start/stop the timer
5. Computer speed once the timer is stopped
6. Apply the calculated speed to the target

4.2.4 Range Card Controller

This adjusts the minimum (start) range, maximum (stop) range, and range increments for the range card. The Stop range also sets how far the Graphs are plotted out.
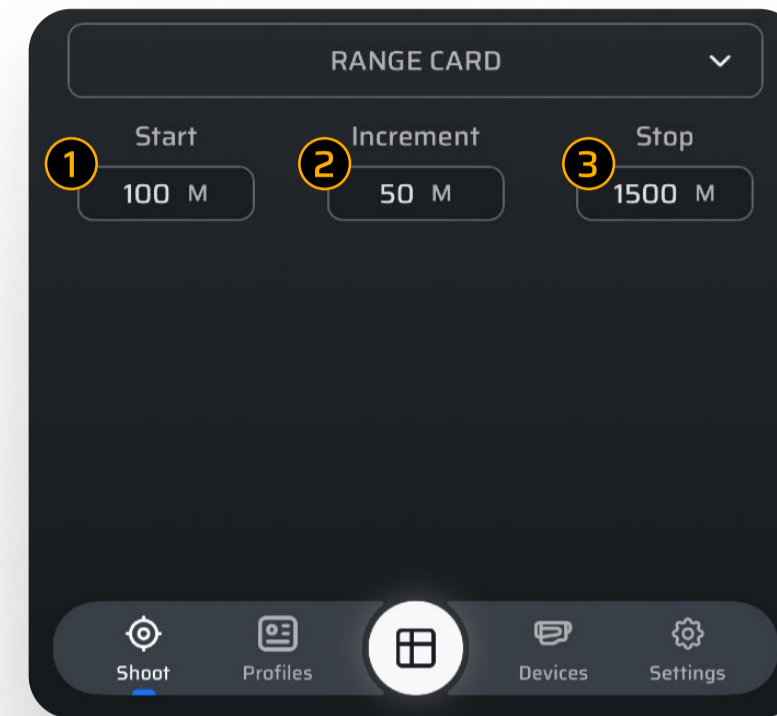
1. Start range of the range card.
2. Range interval increment.
3. The stop range of the range card.

4.2.5 MV Calibration Controller

Note on ballistic calibrations:
To learn more details about how to do a ballistic calibration we have provided a video **here**.

Warning
Ballistic Calibrations of any kind require accurate atmospheric, target range, target direction, and target location data. Skipping any of these with "close enough" will result in errors. Because of this, it is only advised to do these during live fire at the range.

When To Use
MV vs DSF Cal: Correct Supersonic trajectories with MV Calibration and in the Subsonic range use Drop Scale Factor (DSF).

To use a calibration feature, you input the true drop, not the corrected drop. For instance, if you shoot at 1000 yards and the prediction was 5.25 mils, but you impacted at 5.5 mils then you would input 5.5 mils into the calibration tool.

The recommended range will result in the least amount of error but ranges outside of this can be used. It is not advised to perform MV Calibrations at short ranges (less than 600 yards) unless the rifle is subsonic or rimfire. MV Calibration should be used at Mach 1.2 or faster. This can be accessed from the MV Cal Sub Menu in the Shooting section of the app.

When completed select "Apply MV" and then a confirmation prompt will appear.

Important Note
If an MV Temp Table is in use, the MV Calibration will not be applied. An MV Temp Table disables the MV Input in the Profile in favor of the MV Temp Table. You will need to manually input the Calibrated MV and Temp into a slot in the MV Temp Table in this case.
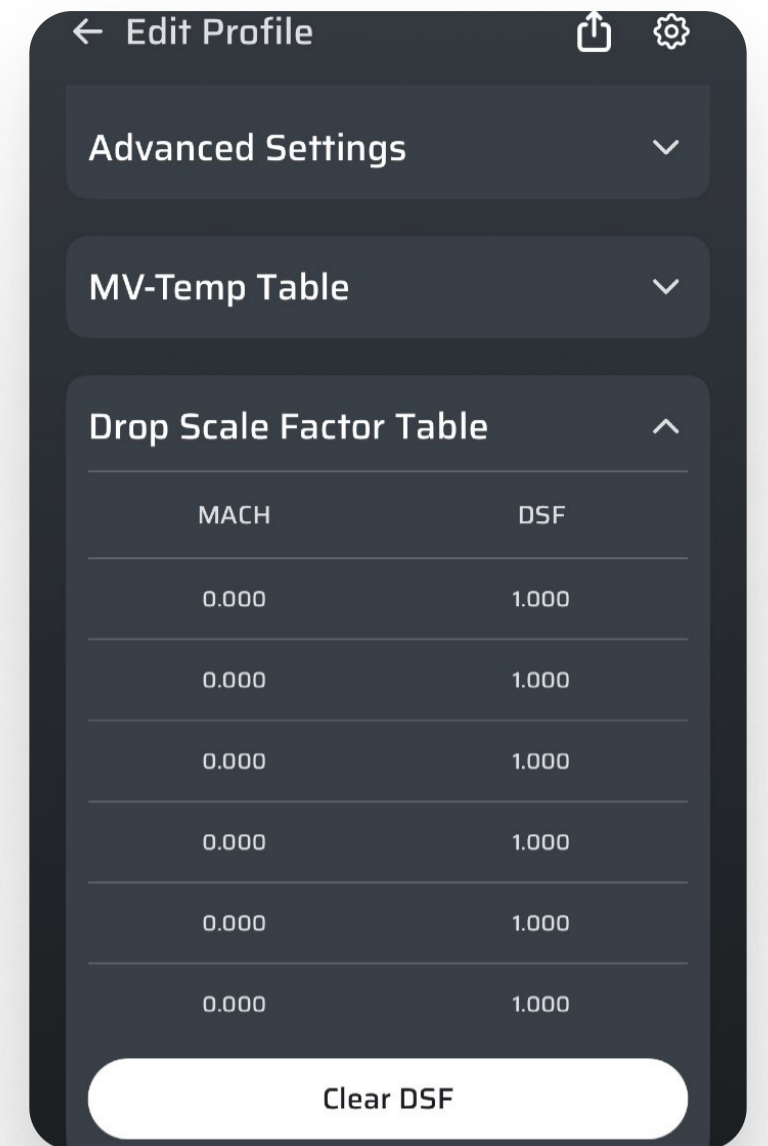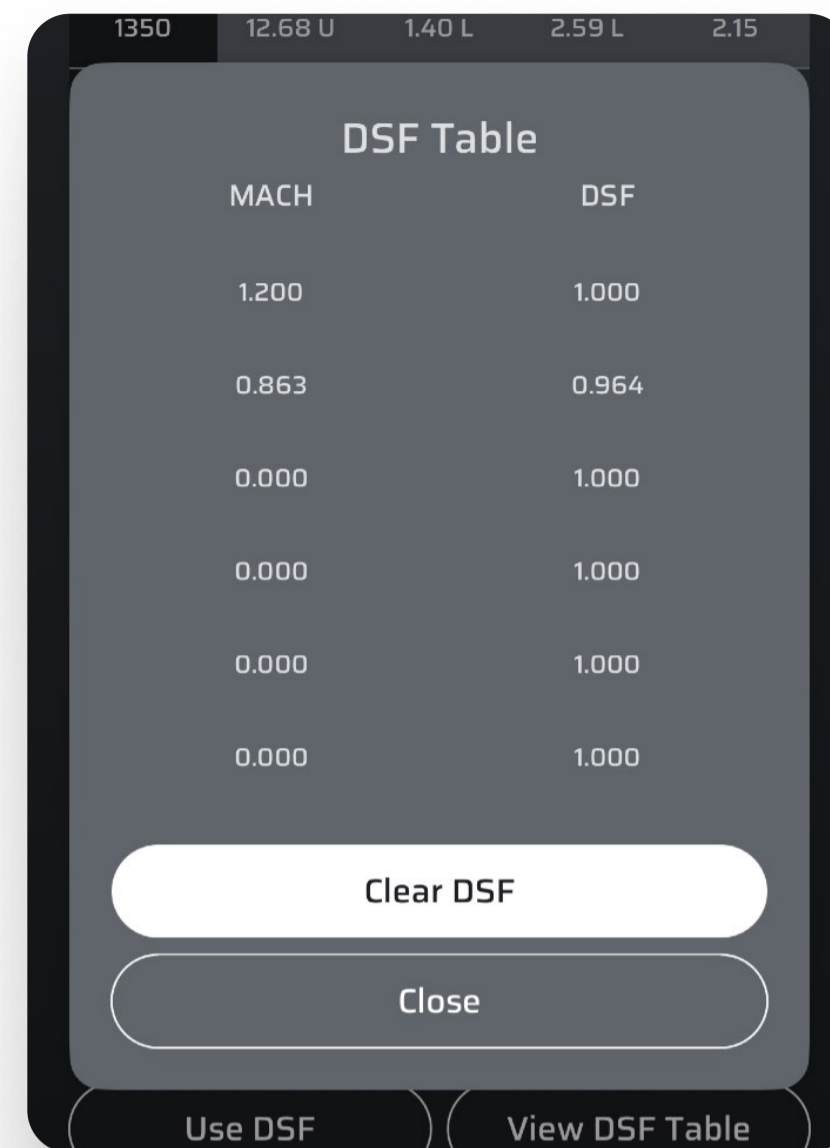
4.2.6 DSF Calibration Controller

This is a Ballistic Calibration, and you can have up to 6 inputs in this table and is covered in more detail on the Ballistic Calibration topic. Drop Scale Factor is for calibrating firing solutions in the sub sonic zone. DSF should only be used at Mach 1.2 or slower. DSF allows for up to 6 calibration points. The DSF Table can be seen from both the Shoot Menu, and the Weapons Profile.

DSF Calibrations can only be performed from the Shoot Sub Menu. It is very important to perform this during live fire, as the current Target Range, Latitude, Wind Speed/Direction & Environmental data is critical to performing a good DSF Calibration.

Once you complete a DSF Cal then select "USE DSF" to populate it into the table. If you need to clear the calibration out, you can select "Clear DSF" from the Profile or from the DSF Calibration Sub Menu.

DSF Table

MACH	DSF
1.200	1.000
0.863	0.964
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000

Clear DSF

Close

Use DSF   View DSF Table

1350   12.68 U   1.40 L   2.59 L   2.15

← Edit Profile

Advanced Settings ⌄

MV-Temp Table ⌄

Drop Scale Factor Table ⌃

MACH	DSF
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000

Clear DSF

4.2.7 SpeedTracker

Allows a live view from a shot tracker Mach4+ and for you to select a MV reading to actively use.

MV CALIBRATION ⌄

Enter a range between 680 and 765 and the drop.

Range	Drop
− 750 M +	− 8.20 MRAD +

Current MV	Calculated MV
2600 FPS	2578 FPS

Apply MV

Shoot   Profiles   Devices   Settings

5.0 Profiles

The Profiles list is accessible from the main navigation bar.

At the top of the screen, the user can view whether a device is connected, the status of the connection to AB Quantum Sync™, and a button to create a new profile. Under that, there is a button to sync all selected profiles to the currently connected device. The user's active profile is shown next, with details about the profile shown.
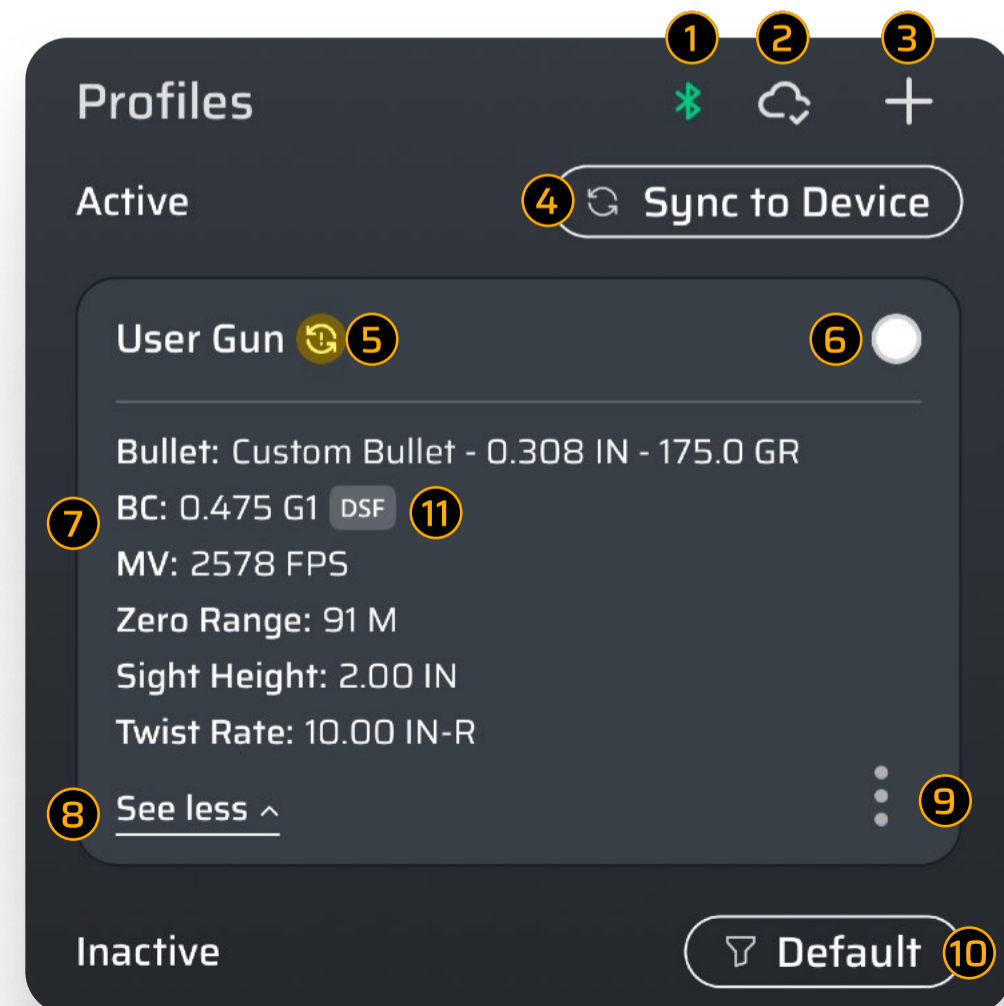
1. Device connection status
2. Sync to cloud
3. Create new profile
4. Sync selected profiles to device
5. Profile device sync status
6. Select profiles
7. Current active profile
8. Tap to expand/collapse additional info
9. Manage profile(s)
10. Choose sort order for the profile list
11. If the BC is highlighted in yellow or red, the bullet has low stability.

When the user clicks the Mange Profile button (the three dots), several options are presented to the user. From here, the user can set the current profile as Active (if it isn't already), edit that profile, export that profile, duplicate the profile or delete it.
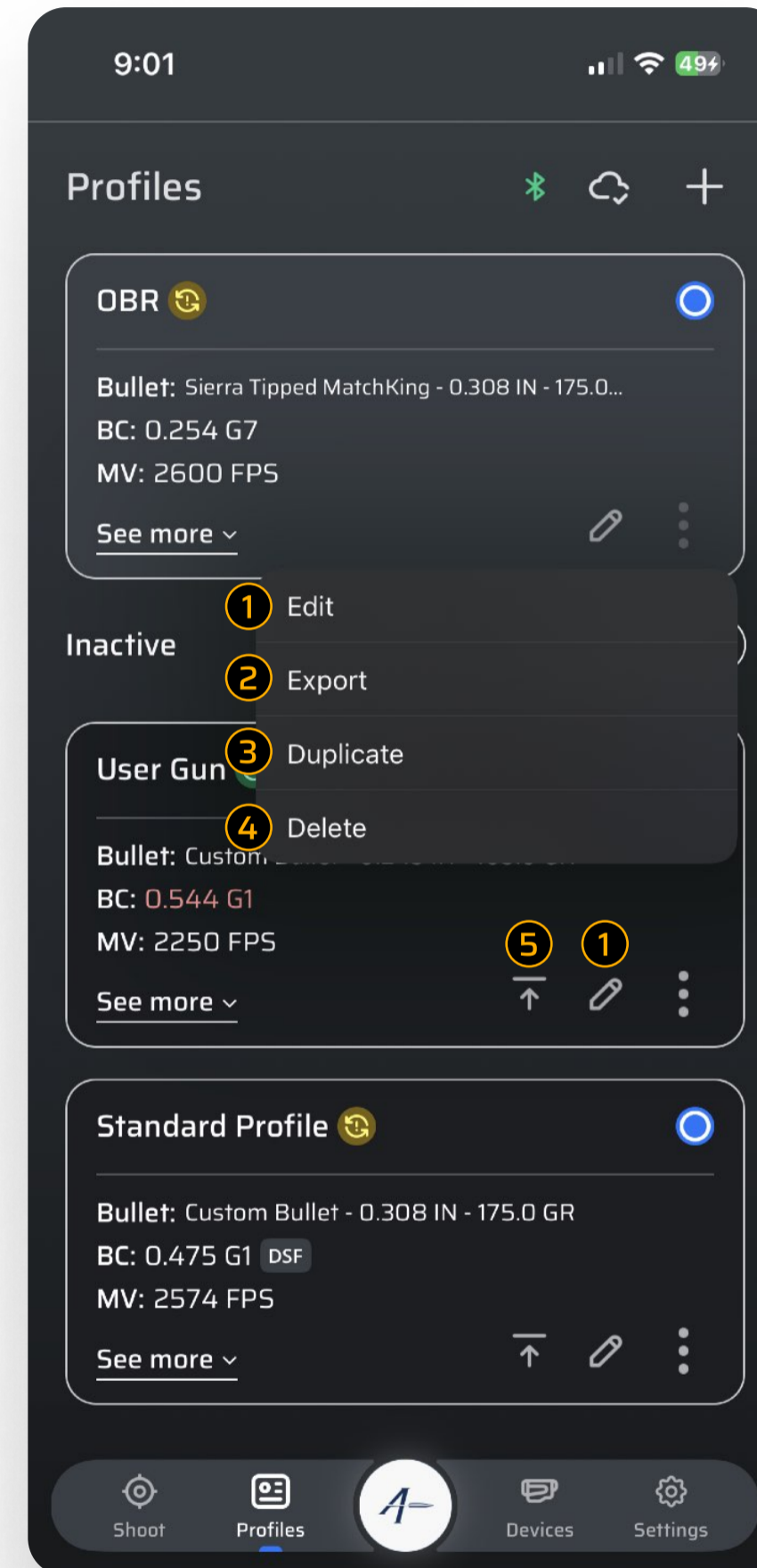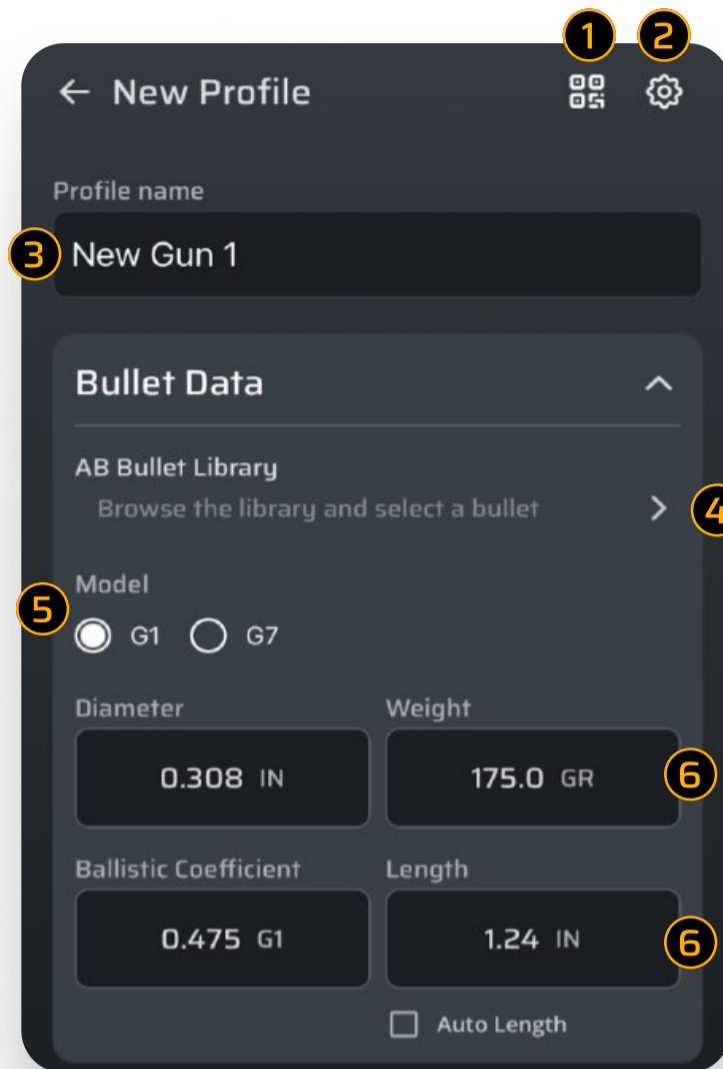
1. Edit this profile
2. Export the profile through QR code
3. Create a copy of the current profile
4. Delete the current profile
5. Set the current profile as the active one

5.1 Profile Edit

The profile edit screen allows the user to set parameters related to his current gun and bullet configuration.

Tap to scan QR code from another Applied Ballistics app

2 App settings

3 Edit gun profile name

4 Tap to access the AB bullet library

5 Select bullet drag model

6 Edit bullet parameters

At the top of the screen is an option to scan a QR code to import a profile, this is covered further in a later section. The user can edit the profile name, select bullet data from the Applied Ballistics bullet library and edit parameters related to the bullet itself.

The bullet library contains laboratory data of bullets that have been tested at the Applied Ballistics Lab. Custom Drag Models (CDMs) and Personal Drag Models (PDMs) generated by AB will be found here. No information from manufacturers is used to create this library, only direct testing from in the lab in front of industry-leading radar systems. The library in the app is divided by Caliber, then Brand, then Weight. When selecting a bullet from the library the Bullet Diameter, Weight, Length and BC will automatically be populated. When using a CDM or PDM the "BC" box will show 1.00 indicating a BC is not being used.

To use the bullet library:

1 Start by creating a new profile or editing a current profile.

2 Select AB Bullet Library.

3 Next select your desired Caliber.

4 Then select your desired Bullet Manufacturer (Note: This is for bullets, not cartridges. Many ammo companies source bullets from other companies).

5 Next select your desired Bullet from the list.

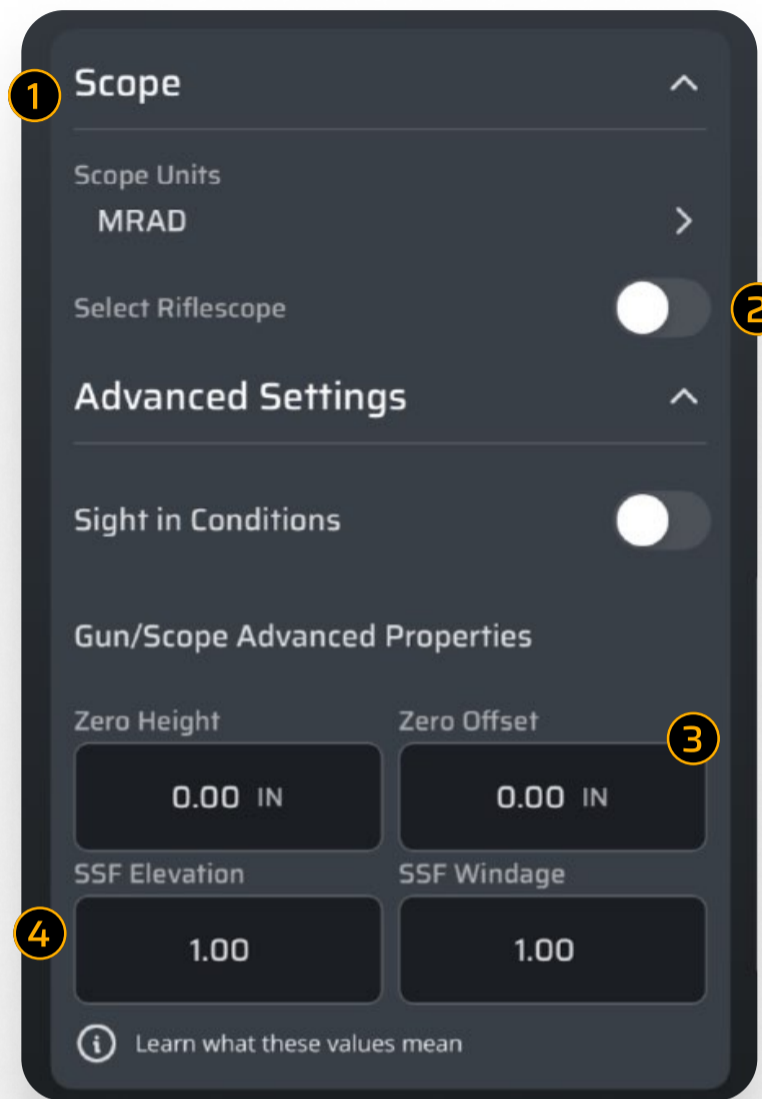**6** Finally select if you wish to use G1, G7, or CDM. (An Elite License is Required to access the CDMs).

Below the Bullet Data section is the place to edit Gun Data, including Muzzle Velocity, Zero Range, Sight Height and Barrel Twist. This section also displays a computation of the bullet's stability factor, color-coded on whether the bullet is expected to be stable based upon its muzzle velocity and twist.
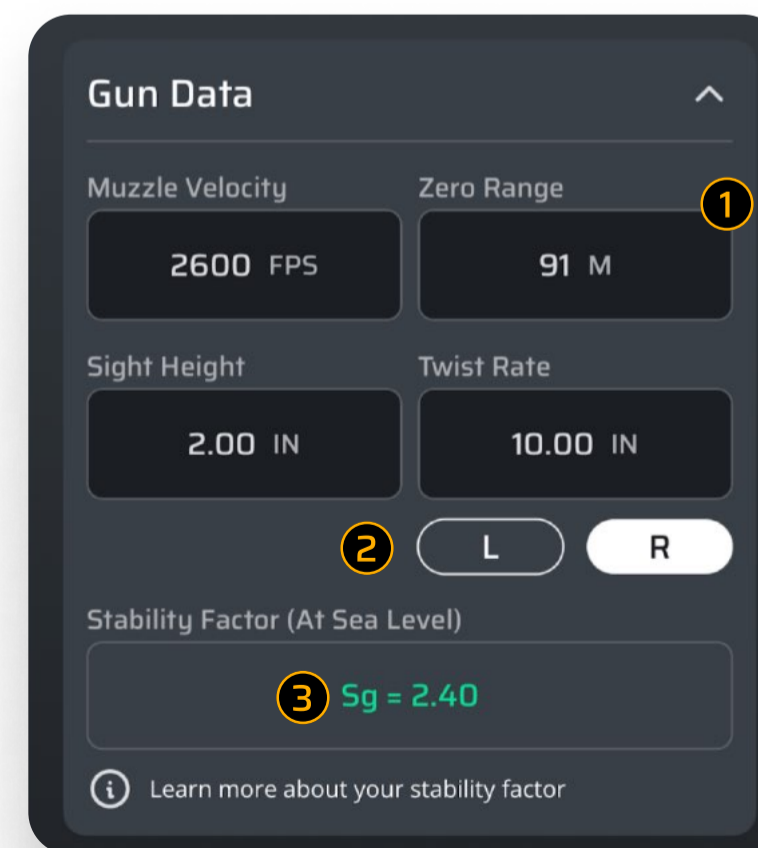
1 Edit gun parameters

2 Choose barrel twist direction

3 Bullet stability factor

Below that is the Scope section.

Scope

Scope Units
MRAD

Select Riflescope

Advanced Settings

Sight in Conditions

Gun/Scope Advanced Properties

Zero Height   Zero Offset
0.00 IN   0.00 IN

SSF Elevation   SSF Windage
1.00   1.00

ⓘ Learn what these values mean

Select Brand

🔍 Search scope brand

Select Brand

Bushnell
4 Reticles

EOTech
1 Reticle

Hensoldt
2 Reticles

Leica
12 Reticles

Leupold
3 Reticles

March
18 Reticles

Maven
24 Reticles

NightForce
6 Reticles

Schmidt Bender

Select Riflescope

🔍 Search riflescope

March / Select Scope

March

8 Reticles

March F

5 Reticles

March FX

5 Reticles
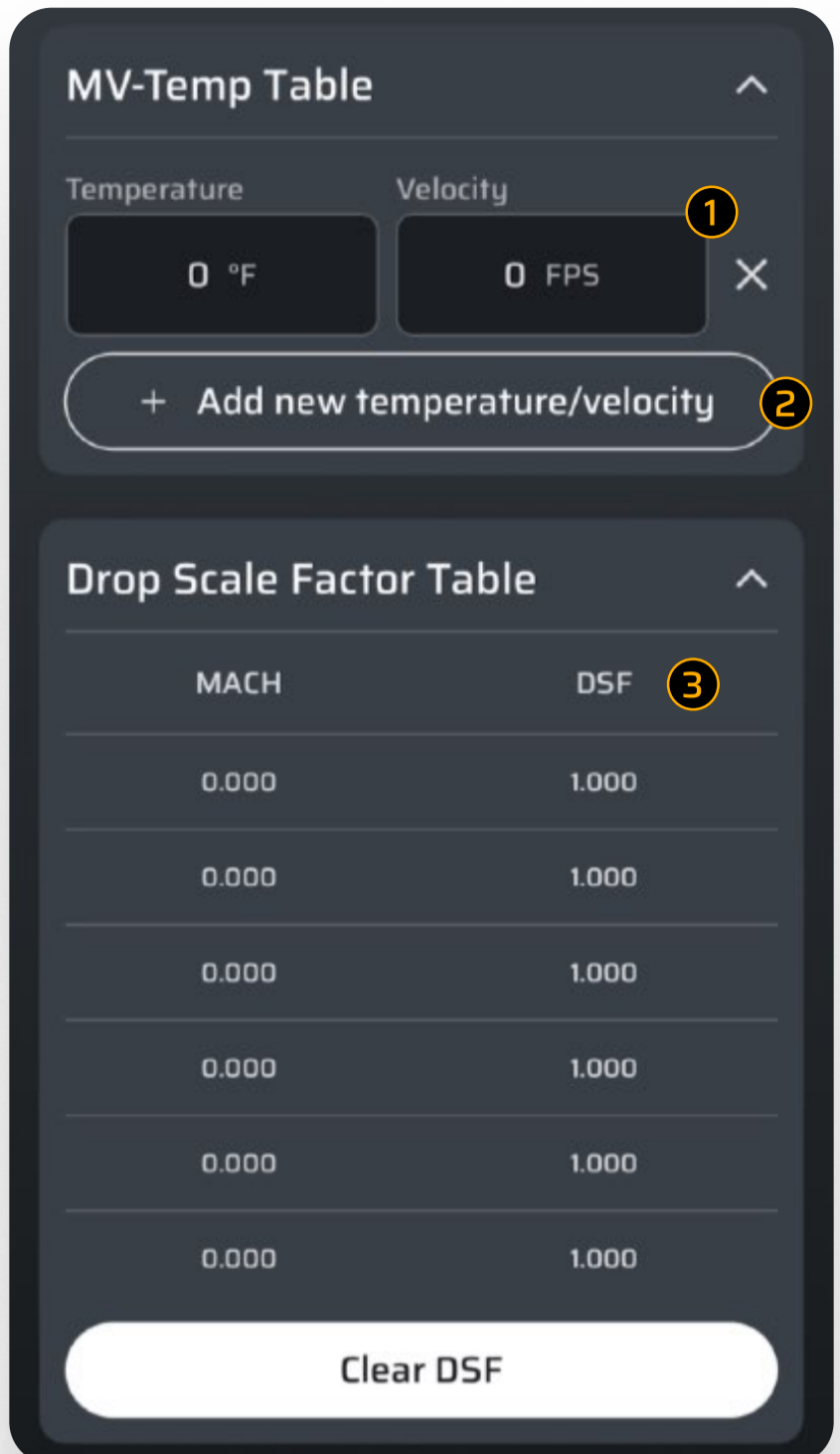
① Select scope units

② Toggle to choose reticle from AB's online library

③ Edit parameters

④ Tap to learn more about the values onscreen

At the top of this section, the units for the scope can be set; this will drive what the output units of the firing solution are on the Shoot screen. Next is a toggle that provides access to a library of rifle scopes and associated reticle options. Note that a reticle needs to be selected for the reticle drawing capabilities on the Shoot page.
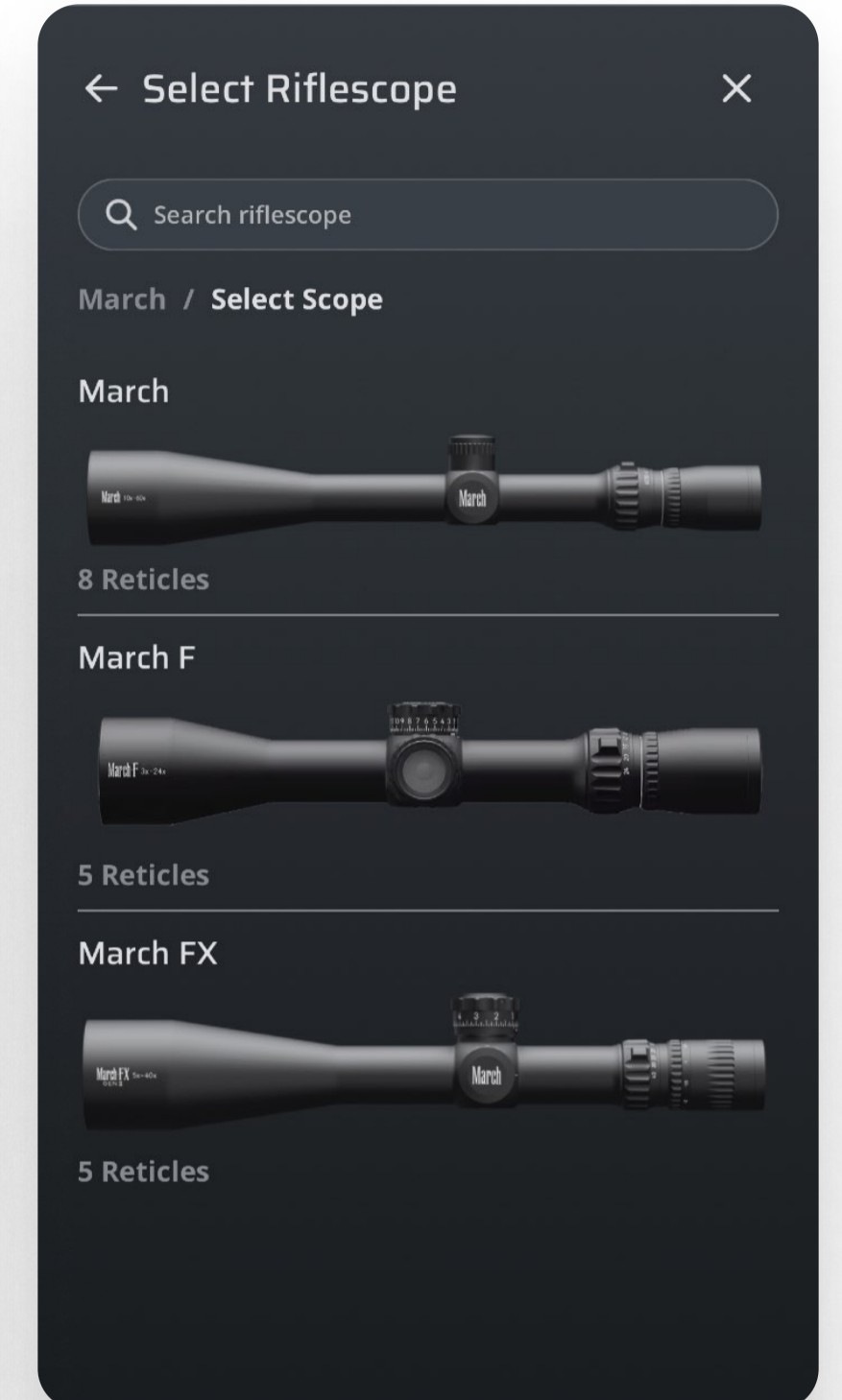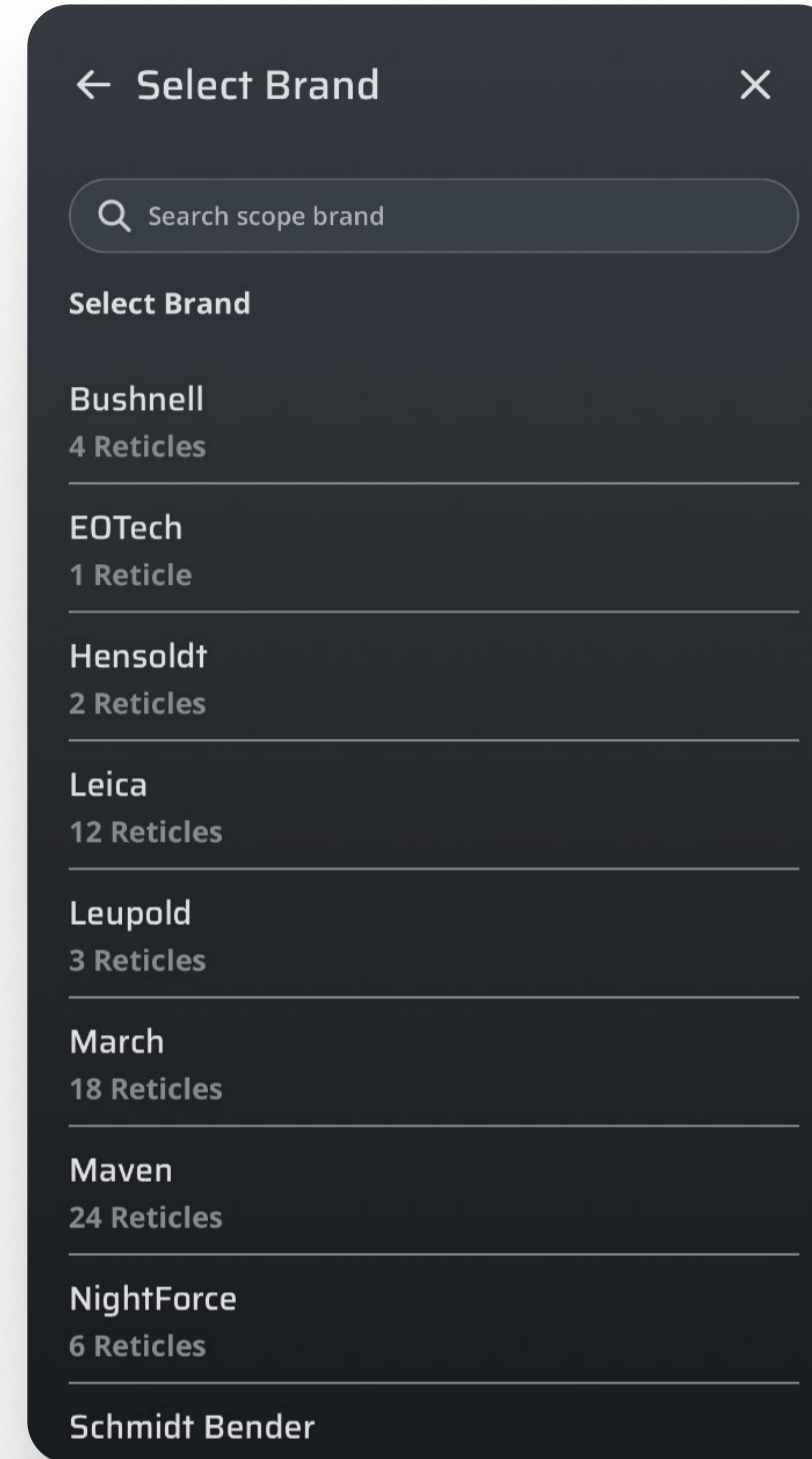
Below the Scope section is the MV-Temp table and DSF Table. The user enters the temperature and associated muzzle velocity in the table, starting with the highest temperature and working down.

MV-Temp Table ∧

Temperature	Velocity ①
0 °F	0 FPS ✕

+ Add new temperature/velocity ②

Drop Scale Factor Table ∧

MACH	DSF ③
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000
0.000	1.000

Clear DSF

① Edit MV-Temp table parameters

② Tap to add a new row to the MV-temp table

③ View current DSF table values

Once the table has been populated, any change in the temperature will update the muzzle velocity. The app automatically interpolates for values between table entries and linearly extrapolates for values beyond the bounds listed within the table.

5.2 Sharing a Profile via QR Code

Generating a QR Code to Scan or Share is the simplest way to transfer a profile to another phone or tablet. To do this, click on the 3-dot menu button and select "Export". A QR code like the below is shown onscreen. On the receiving device, create a new profile (+ button), and at the top right corner select the QR Code Button. Then scan the QR code, and the data will automatically populate.

New Gun 1
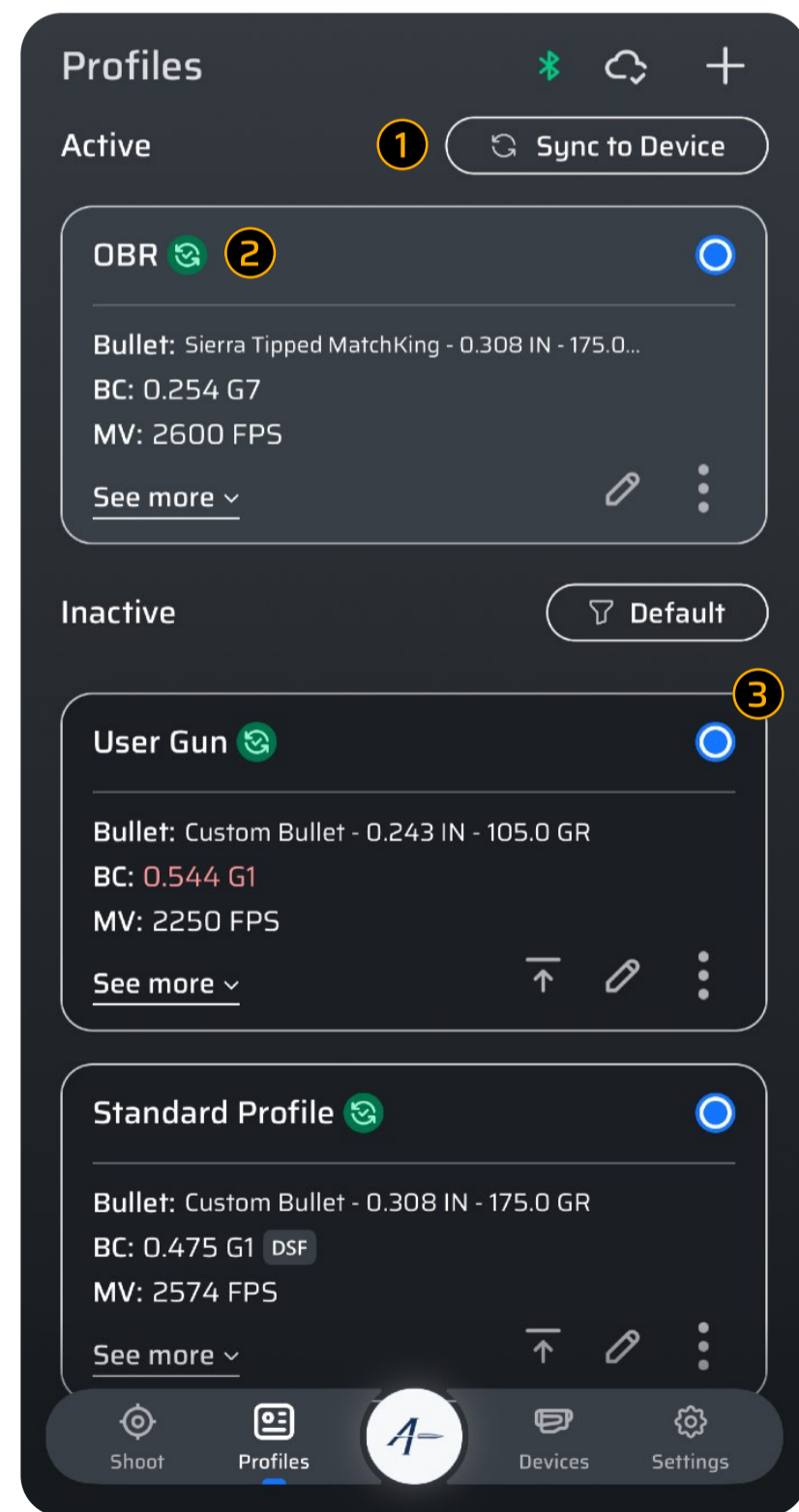
Close

Scan Profile

Cancel
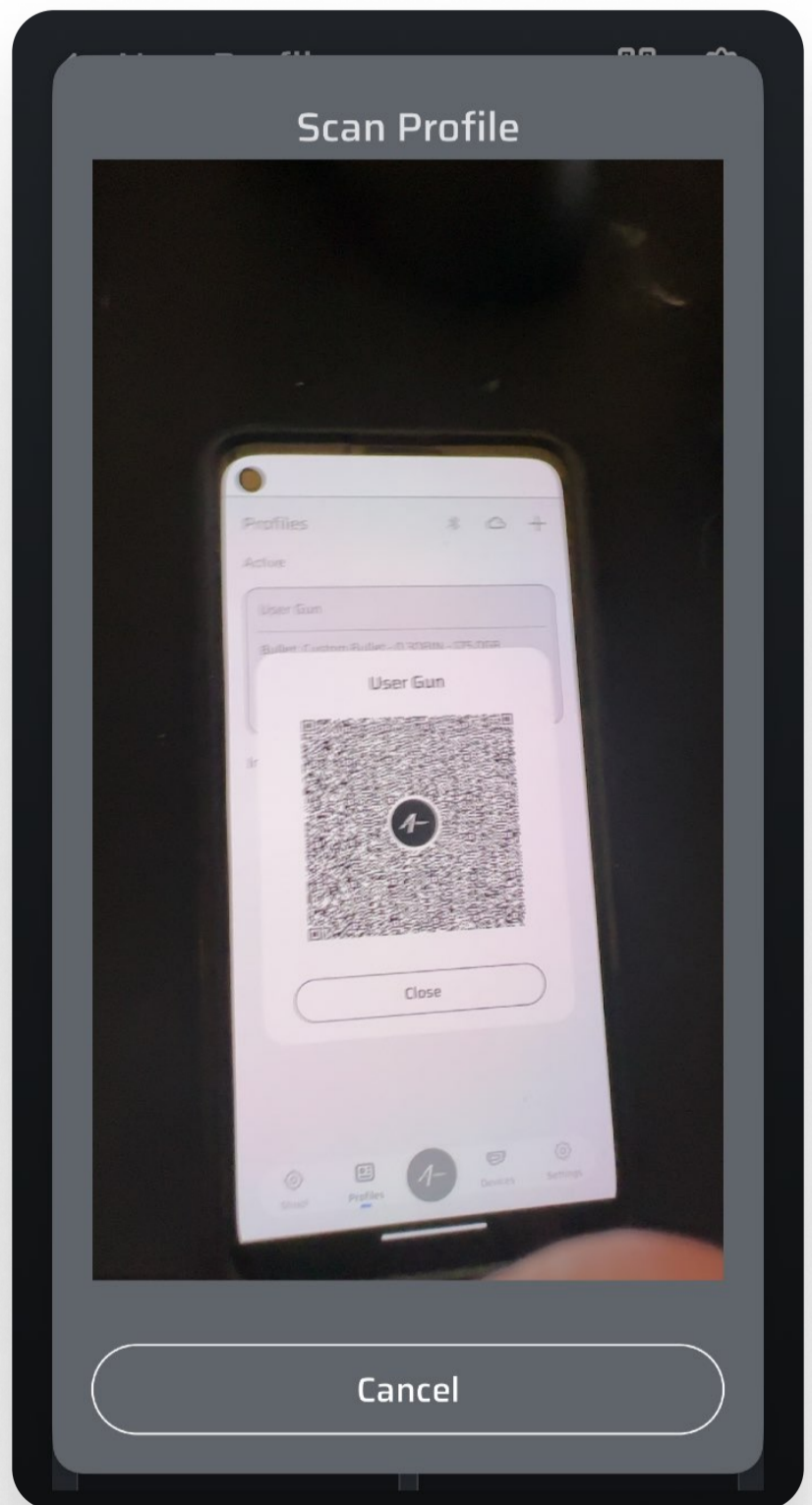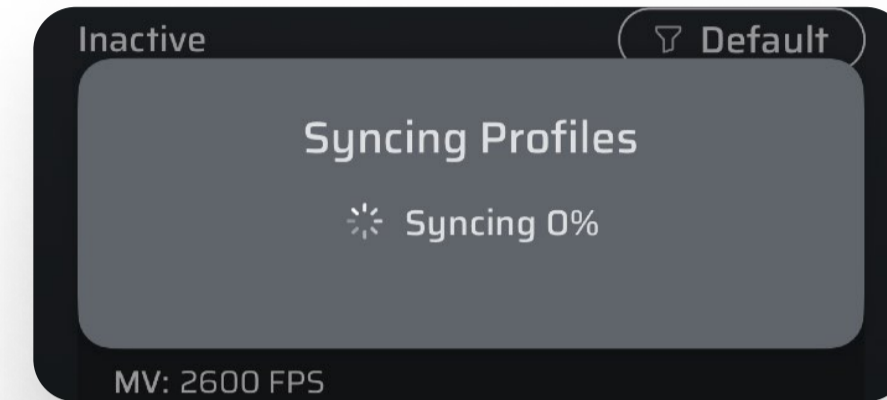
5.3 Syncing Profiles with Devices

To transfer profiles to a compatible AB Ecosystem device, the device needs to be paired to AB Quantum™ - see such instructions in the Device Pairing Section. When the device is connected, the Bluetooth® symbol is green on the Profiles List screen.

To transfer profiles, start by clicking on the white dot next to the profile name. A filled in dot indicates that the profile is selected. Click the "Sync To Device" button to complete the transfer.
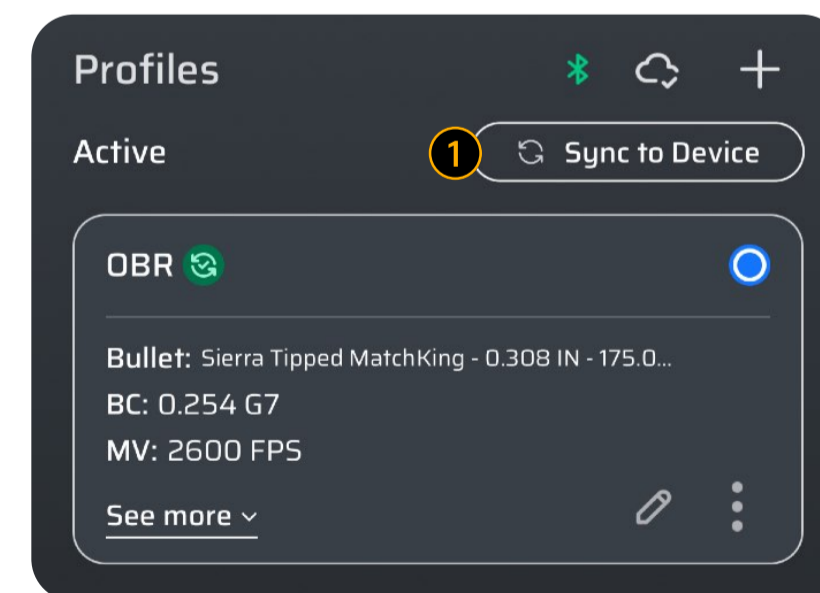
A dialog box will appear that indicates the current status of the profile sync to the device, as seen below. When the sync completes, the dialog will automatically close.

5.4 Syncing Profiles to Cloud Server

Cloud Sync allows the user to backup profiles to the cloud for safe keeping and to mirror profiles across devices. Cloud Sync can be used between Android and iOS versions of AB Quantum™. To use this feature, the user must be signed in to cloud sync (found on the settings page). Once signed in, a cloud sync will occur automatically every time the app is started or a profile is edited. The sync status will be indicated at the top of the Profiles page.

1 Click to Sync to Device

2 Profiles that are synced will be green. Profiles not synced will be yellow.

3 Select the gun profiles to sync

Sync status is indicated at the top of the Profiles page. A sync can also be forced by tapping the icon.
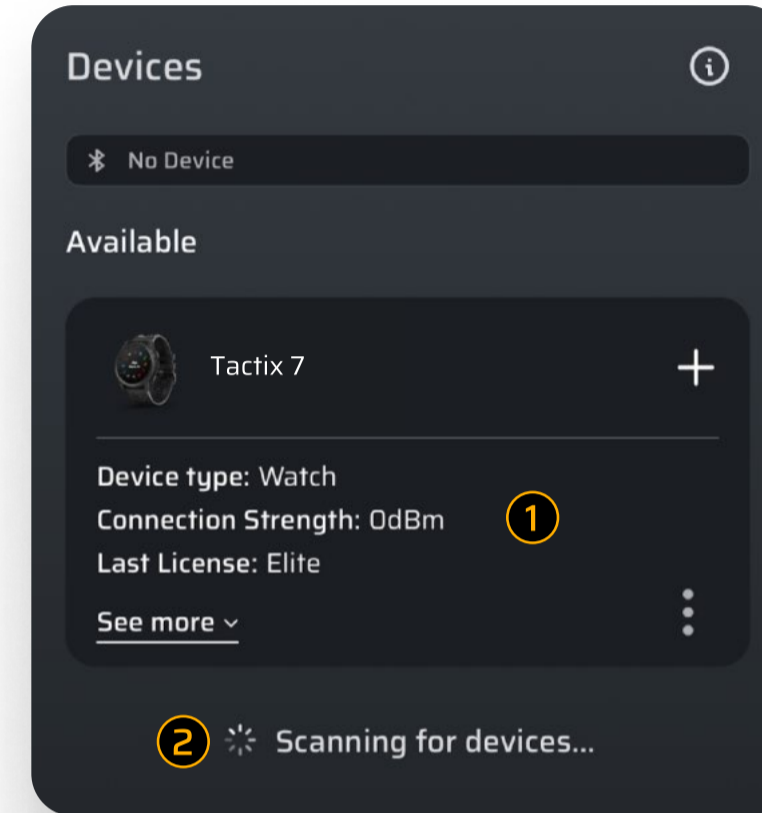
6.0 Devices

To pair a compatible device, select Devices from the Home Screen, Navigation Menu, or by tapping on the Bluetooth Icon from the Shoot Interface.
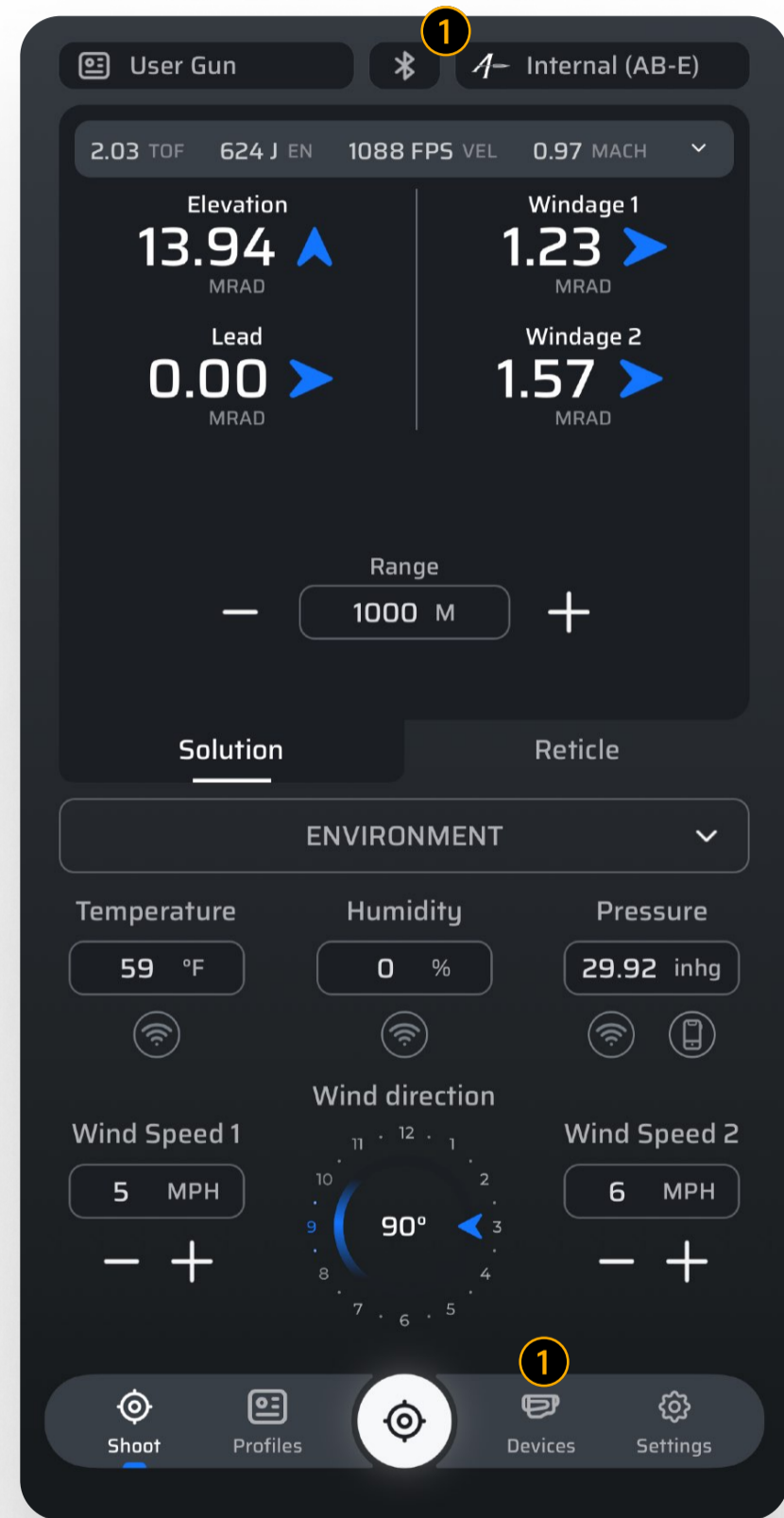

① Access Devices menu

The application will automatically scan for compatible devices and show them onscreen as "Available."

The application will automatically scan for compatible devices and show them onscreen as "Available."

① Available devices

② App automatically begins scanning for available devices

By clicking on the menu option for any device you can Edit or Remove them if you desire. Click on an "Available" device to make it an "Active" device.
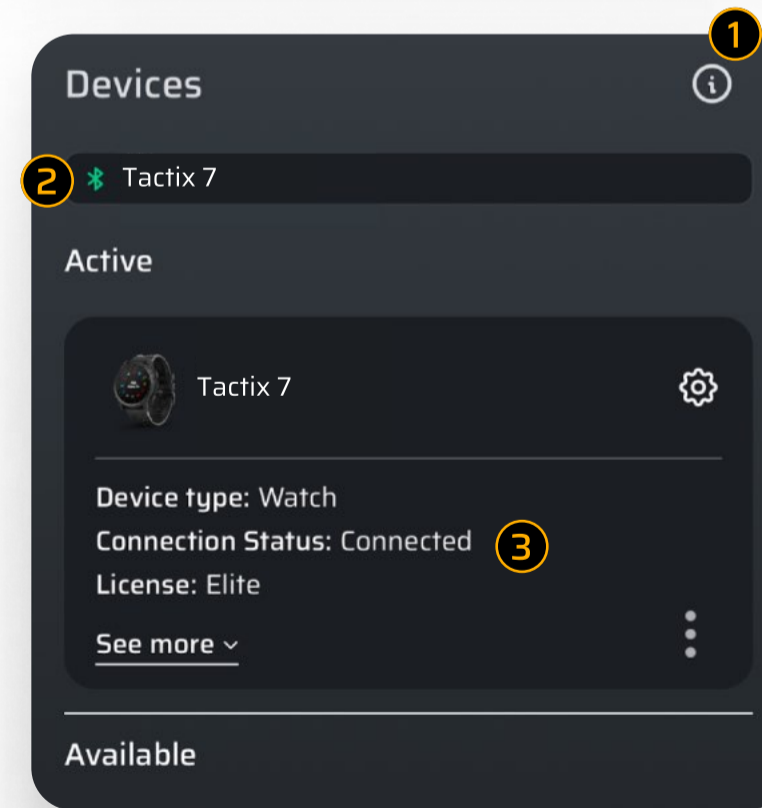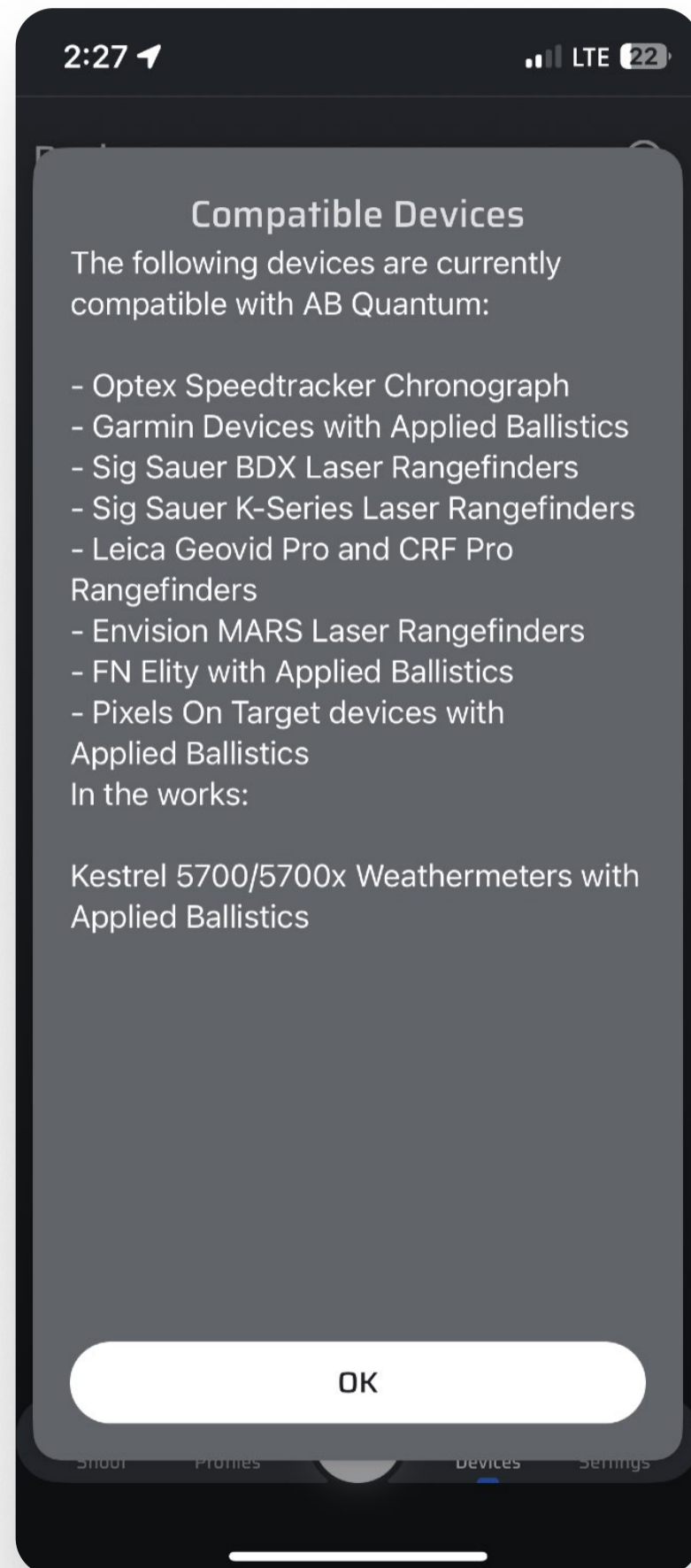

① Brings up a list of compatible devices

② Name and status shown

③ Device connection status

Once active, the app can send data to and receive data from that device.

The user can also find a list of compatible devices by clicking the information icon in the top right of the pairing menu. More devices will be added as they become available.

Compatible Devices

The following devices are currently compatible with AB Quantum:

- Optex Speedtracker Chronograph
- Garmin Devices with Applied Ballistics
- Sig Sauer BDX Laser Rangefinders
- Sig Sauer K-Series Laser Rangefinders
- Leica Geovid Pro and CRF Pro Rangefinders
- Envision MARS Laser Rangefinders
- FN Elity with Applied Ballistics
- Pixels On Target devices with Applied Ballistics
In the works:

Kestrel 5700/5700x Weathermeters with Applied Ballistics

OK

7.0 Settings

The settings page is accessible from the Home Screen, Navigation Menu, or from the gear when Creating/Editing a Profile. Welcome Screen on/off will determine if the app starts on the Home Screen or on the HUD.
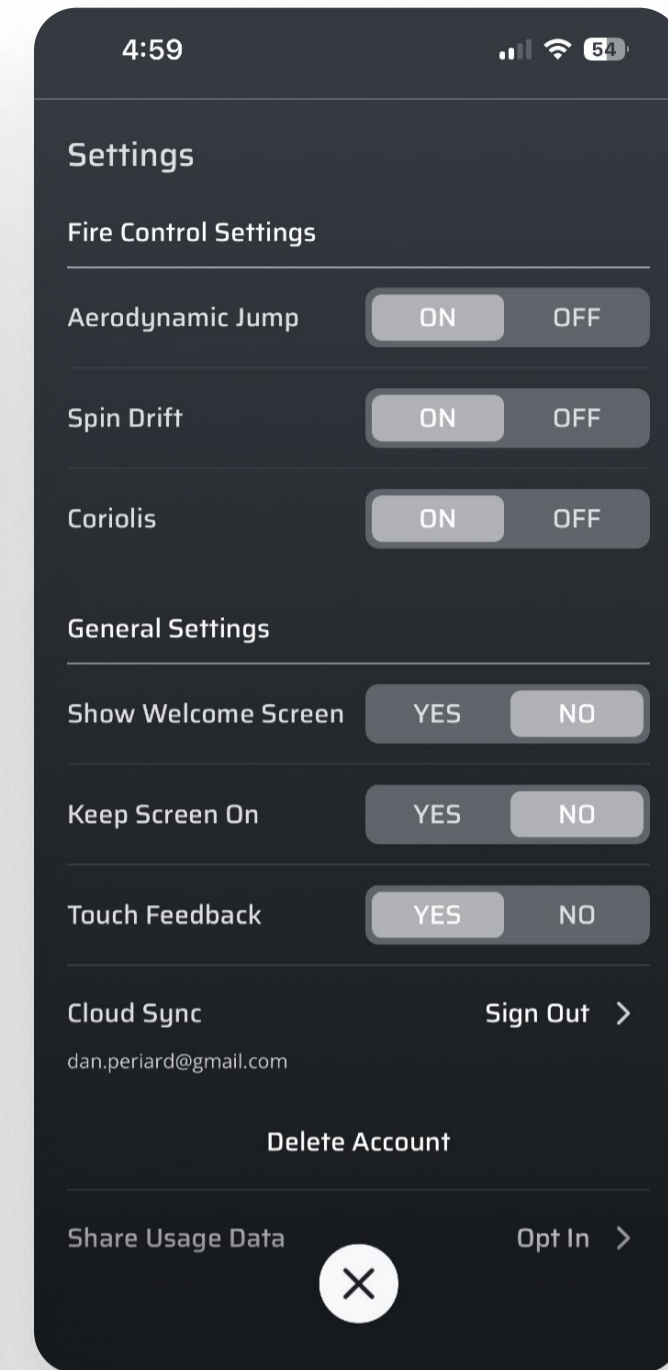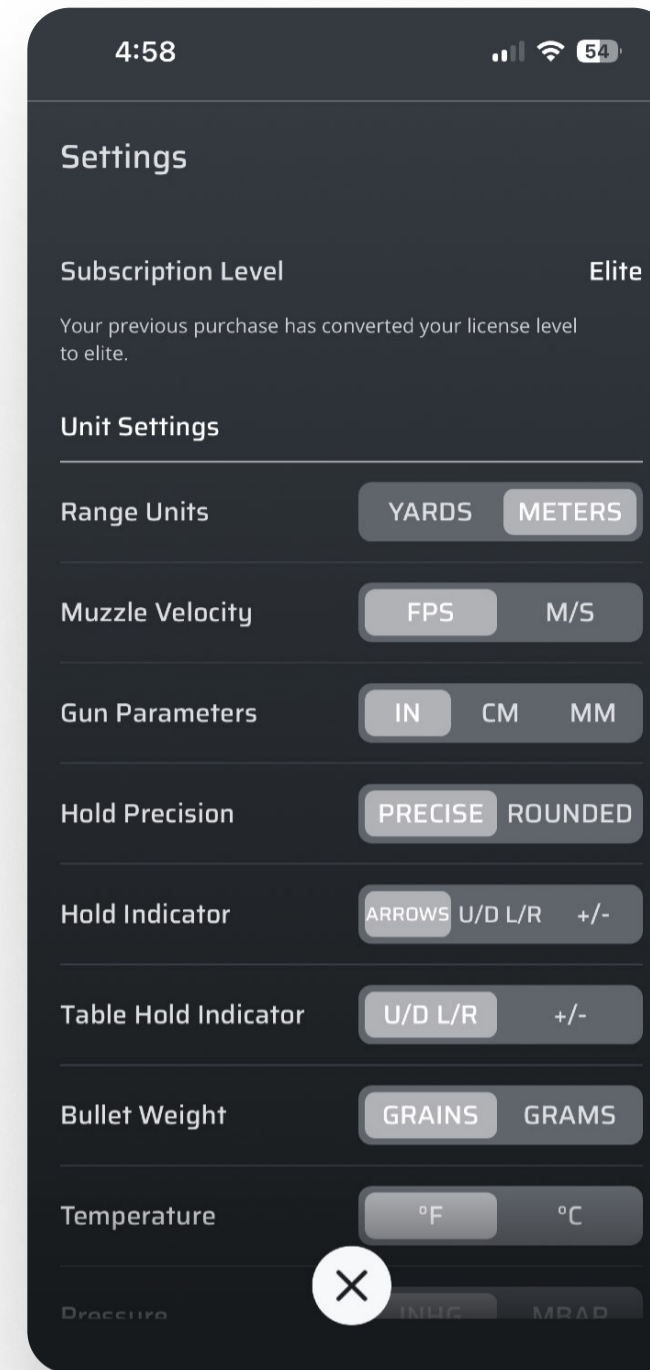

App Settings

From here you can adjust the units and input/output settings to your liking.

NOTE: These adjustments will not affect the settings of connected devices. This can cause a mismatch between the device and the app so the user must ensure the device is operating in the same setting units as the app separately.

At the top of the screen is the current subscription level of the app. The next section gives the user access to changing settings like units for range, muzzle velocity, gun parameters, bullet weight, temperature and pressure. It also provides the user with options to toggle display parameters, like number of decimals, how directions on holds should be presented to the user (arrows, Up/Down/Left/Right or +/-).

The next section is for firing settings. These settings control whether Aerodynamic Jump, Spin Drift, & Coriolis are on or off.

Next is general settings, where the user can toggle the following parameters on or off:

Show Welcome Screen — Turning this off determines if the app starts on the Home Screen (On) or the HUD (Off).
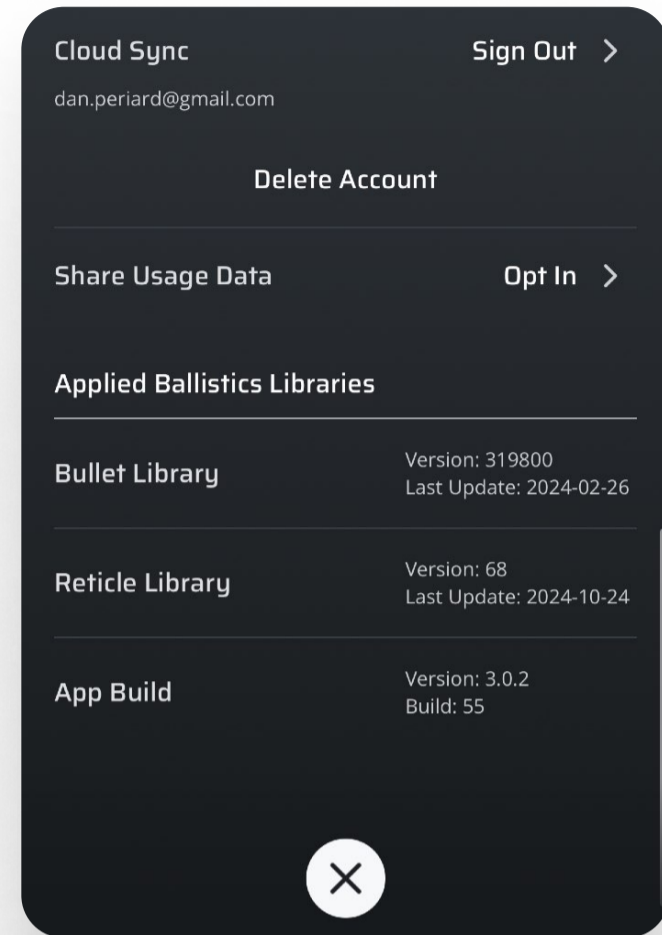
Keep Screen On — When on, the phone's screen will stay on when the app is open.

Touch Feedback — When on, the phone provides haptic feedback as the user interacts with the app.

Below that is controls for Cloud Sync, providing the user to sign out or delete the current account if desired.

The user also has the option to anonymously share usage data, which is used to help find issues, make improvements, and the data is not shared outside Applied Ballistics.

At the bottom of the Settings screen is information about the current version of the app, bullet library and reticle library.

7.1 Subscriptions and Licensing

Licensing and Subscriptions are two different items. The current license or subscription level can be found on the top of the settings page.

Elite License
This is obtained by pairing an AB Elite device to the app. The device must be re-paired to the app every 30 days or the license will expire. If a device is removed from the app, the Elite License reverts to Ultralite.

Elite Subscription
This will unlock all the Elite features of the app and is purchased on a monthly or annual basis and will not reset every 30 days.

Grandfathering
Users who previously purchased the 1.0 or 2.0 version of our app before should see this automatically unlocked.
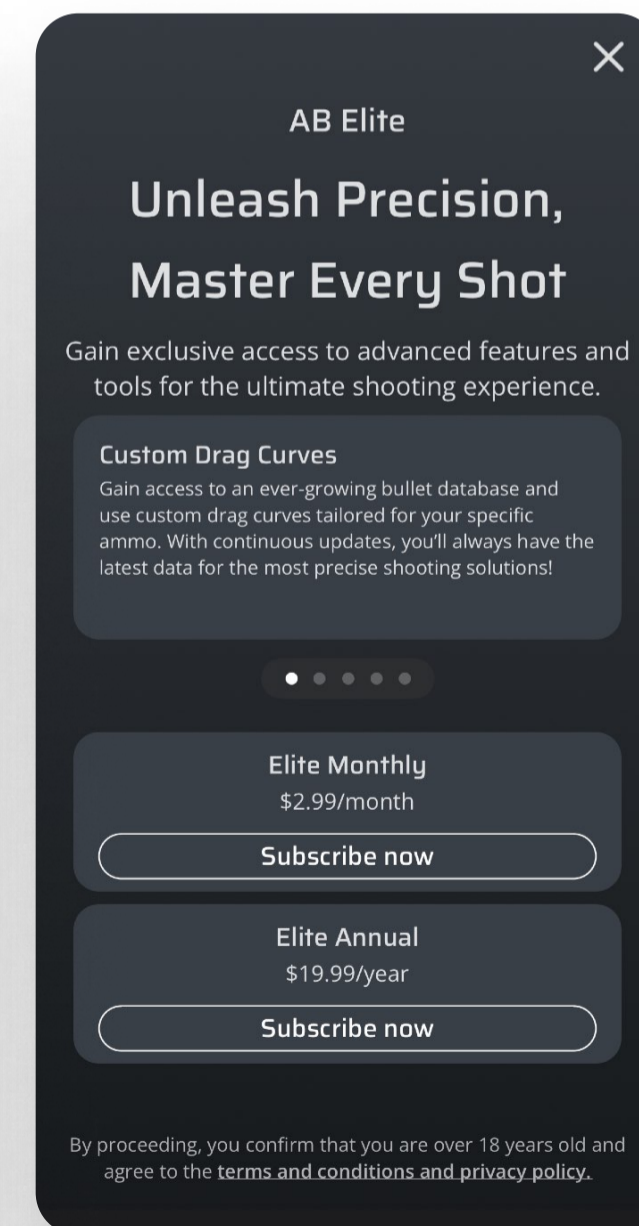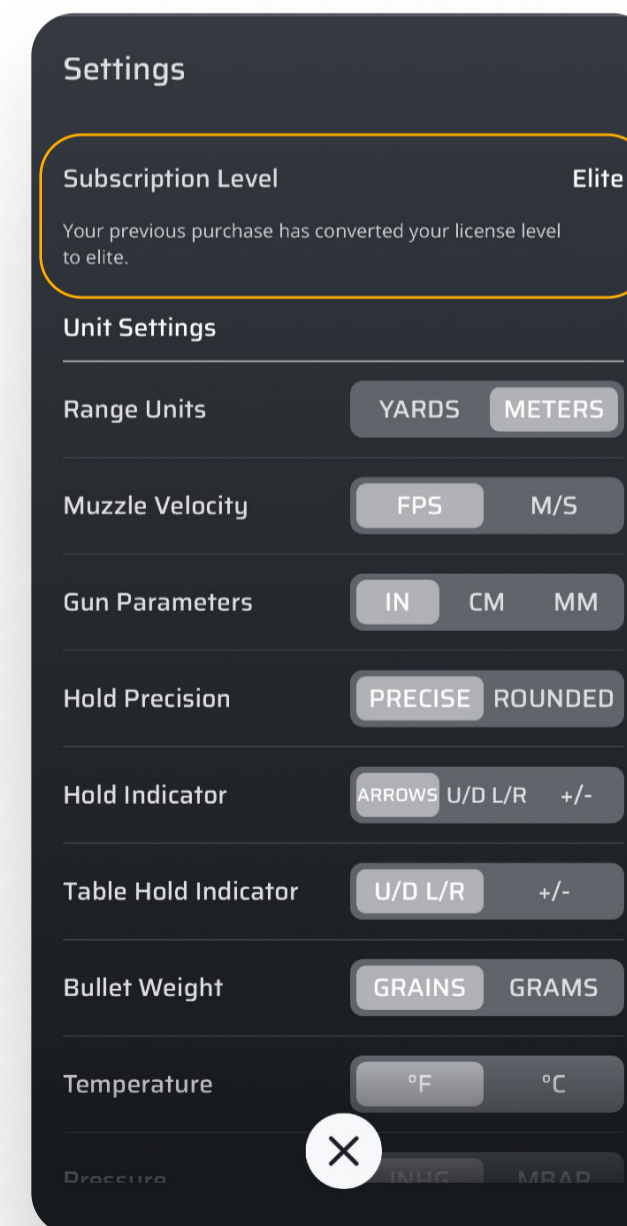
8.0 Definitions

Default units, if applicable, are shown in (parentheses).

Important Input Definitions

Elevation	This is the total vertical adjustment that is combined primary & secondary effects (Gravity Drop, Coriolis Drop, Aerodynamic Jump) adjusted for the zero-range needed to impact the target.
Drop	Not to be confused with elevation, this is the true drop of the bullet uncorrected for zero range the bullet has experienced since it left the barrel.
Windage	This is the total horizontal adjustment that is combined primary & secondary effects (Wind Drift, Coriolis Drift, Spin Drift) needed to impact the target.
Vertical Coriolis	This is an effect that arises from the fact that the earth is spinning plus the direction your bullet is flying. V Cor is dependent on both the user's latitude and direction of fire.
Aerodynamic Jump	AJ is the vertical deflection caused by a horizontal crosswind.
Horizontal Coriolis	This is an aerodynamic effect that arrives from the fact that the earth is spinning. H Cor is dependent only on your latitude.
Spin Drift	Spin Drift aka Gyroscopic Drift is the aerodynamic effect from the fact that the bullet is spinning.
Temperature	This is the ambient air temperature at the user's location.
Pressure	The Absolute or Station Pressure at the user's location.
Humidity	The Relative Humidity in % at the user's location.
Wind Speed	The current velocity of the wind at the user's location.
Wind Direction	The current wind angle relative to the direction the bullet is traveling.
Latitude	This is how far the user is from the equator in degrees.
Azimuth/DOF	The compass direction the bullet will travel when it leaves the barrel.
Inclination	The vertical angle to the target in degrees. + for up and – for down.
Time of Flight	The time the bullet will be in the air until it impacts the target.
Energy	The impact energy the bullet will have at the target.
Mach	The bullets speed relative to the Speed of Sound and is temperature dependent.
Muzzle Velocity	This is the Velocity of the bullet at the Muzzle.
Velocity	The impact velocity of the round not to be confused with Muzzle Velocity.
Lead	This is the amount of correction needed to a target in motion.
SG (Stability)	The Gyroscopic Stability of the bullet is the calculated stability using a number of factors and is Optimal when above 1.5.

# 9.0 Determining Sight Scale Factor (Tall Target Testing)

The intent of this section is to assist in calculating a Sight Scale Factor (SSF) based on shooting the tall target test at 100 yards. The point is to see if your scope is really giving you what you're dialing for adjustment. If not, the correction factor is applied to raw ballistic calculations to make up for the error in scope adjustment.

Procedure:

1	Set up a tall target at 100 yards with a vertical line (confirmed with plumb bob or level).
2	Place an aim point near the bottom of the vertical line and shoot a group to confirm zero.
3	Dial up (or hold) at least 30 MOA (or 10 MILS) of elevation and shoot another group.
4	Measure the distance between shot groups with a tape measure.
5	Use the formula below to calculate your scopes Correction Factor (CF).
6	Apply the Correction Factor to any raw ballistic solution to account for scope tracking error.

Calculate Correction Factor Based on Range and POI Shift according to the following formula:

First step is to select a constant based on measurement units:
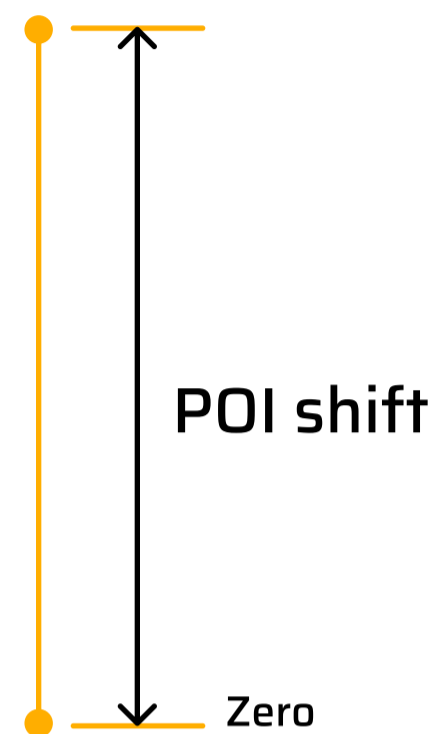
Range Units	Adjustment Units	Constant
Yards	MOA	0.01047
Yards	MILS	0.03599
Meters	MOA	0.01145
Meters	MILS	0.03936

Example

Suppose the range to target is 102 yards. You dial 30 MOA and get a POI shift of 29.8 inches. The formula will apply as follows:

1. Since you're dealing with yards and MOA, select the Constant of 0.01047.

2. Next, calculate Expected POI Shift:
Expected POI Shift = Dialed x Range x Constant

Expected POI Shift = 30 MOA x 102 yards x 0.01047 = 32.04 inches.

3. Finally, calculate Correction Factor:
CF = Expected POI Shift ÷ Actual POI Shift
CF = 32.04 Inches ÷ 29.8 Inches
CF = 1.075

4. Apply this correction factor to any raw ballistic prediction. So if the ballistics program calls for 30 MOA elevation for some shot, dial:
30 MOA x 1.075 = 32.25 MOA to actually get 30 MOA

The procedure is the same for any combination of units and range, just plug in your numbers and apply the proper Constant, calculate Expected POI Shift, and finally the Correction Factor.