

User Guide For Android and iPhone

Applied Ballistics<sup>®</sup> Quantum<sup>™</sup> Application 3.4



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

AB Quantum<sup>™</sup> 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.

1.0 Introduction
2.0 Features
3.0 <b>Operational overview</b>
3.1 Applied Ballistics Quantum Sync <sup>™</sup> 5
з.2 App Overview5
з.з Navigation5
4.0 <b>Shoot Interface</b>
4.1 Viewer Management
4.1.1 HUD
4.1.2 Range Card
4.1.3 Target Card 8
4.1.4 Target Card with WEZ
4.1.5 Grouped Sectors
4.1.6 <b>Reticle</b>
4.1.7 <b>Graphs</b>
4.1.8 Chronograph Graphs
4.1.9 Advanced Graphing
4.1.10 Support
4.2 Controller Management
4.2.1 Environment Controller
4.2.2 <b>Reticle Controller</b>
4.2.3 Target Controller 17
4.2.4 Ballistic Calibration

# Table of contents

4.2.5 MV Calibration Controller	
4.2.6 CDF Calibration Controller	18
4.2.7 DSF Calibration Controller	19
4.2.8 SpeedTracker	19
4.2.8 Weapon Employment Zone	20
5.0 Profiles	22
5.1 Profile Edit	23
5.2 Sharing a Profile via QR Code	25
5.3 Syncing Profiles with Devices	26
5.4 Syncing Profiles to Cloud Server	26
6.0 Devices	27
6.1 Garmin Devices	28
<sub>6.2</sub> Kestrel 5700/5700x LiNK Devices	28
6.3 Speedtracker	29
6.4 Calypso AB Mini	29
7.0 Troubleshooting	
8.0 Settings	31
8.1 Subscriptions and Licensing	
9.0 <b>Definitions</b>	
Retermining Cick+ Coole Footen	

# 1.0 Introduction

The Applied Ballistics® Quantum<sup>™</sup> 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. For video tutorials <u>click here</u>.





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## 2.0 Features

The following table lists the features of the Applied Ballistics (AB) Quantum<sup>™</sup> 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**

		Applied Ballistics bullet libra
AB Quantum™ User Interface	Take control of ballistic data and find solutions with ease using	G1 and G7 models
	the new layout designed with one-handed operation in mind.	Applied Ballistics custom dra
New Bluetooth® Device Manager	Find and connect AB Bluetooth® devices quickly and sync data between devices using AB Quantum Connect™.	Aero dynamic jump correction Coriolis effect correction Sight scale factor
	User gun profiles are automatically unloaded to an encrypted	Spin drift correction
AB Quantum Sync™	server to allow easy access for other devices and backup,	
	providing peace of mind and security.	Sight-in conditions
		Muzzle velocity calibration
Customizable Range	The new expandable and customizable range and target card	Target card
Card and Target	modes allow users to select what data to see for each Range or	Range card
Card Modes	just seconds.	Twist rate
		Zero height
	The AB Reticle library is hosted online and updates in AB	Zero offset
New Reticle Library	Quantum <sup>™</sup> automatically, providing users with up-to-date	Drop scale factor calibration
	solution drawing for their favorite rifle scopes.	CDF Calibration
		Advanced Graphing
Improved Truing	Easy to access ballistic truing features without leaving solution	Sectors
Interface	screens.	Target Card Column Editor
		Range Card Column Editor
Chronograph Integration	Connect Bluetootn®-enabled chronographs - such as the Optex Systems SpeedTracker™ - directly to the app and save the velocity data to rifle profiles.	WEZ

	Ultralight	Elite	AB Professional
	875 yds	15 seconds ToF	15 seconds ToF
	5	Unlimited	Unlimited
	x	x	
	Profiles in ballistics	арр	
ſIJ	×	×	×
	×	×	×
g models		×	×
n		×	×
		×	×
		×	×
		×	×
	Utility features		
	×	×	×
	×	×	×
	×	×	×
	×	×	×
		×	×
		×	×
		×	×
		×	×
		×	×
			×
			×
			×
			×
			×

License levels

Profiles in ballistics app

Max range

**Pro Free Trial** 

# 3.0 Operational Overview

The AB Quantum<sup>™</sup> 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<sup>™</sup>, 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<sup>™</sup> 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.
<b>Shoot</b> (Section 4.0)	The user can access the Firing Solution Calculator and its outputs, including the HUD, WEZ, 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)

Devices (Section 6.0)

Settings (Section 8.0)

#### 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.

You can easily scan QR codes to instantly import both individual profiles and entire Grouped Sectors directly into your app with the import button.





The user can add or delete gun profiles, edit parameters for those gun profiles and then share & sync gun profiles.

- The Devices tab allows the user to connect to and manage ABenabled devices.
- This is where the user can manage the app's Units, Firing Settings, General Settings, and view current Library status and operations.

# 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.
1       2       3            • AR10           * 4- Pro          4       Elevation           Windage 1          1.57            Windage 1          Lead        Windage 2           Windage 2          2.27            1.46	<ol> <li>Currently selected profile</li> <li>Device connection status</li> <li>Solution source</li> <li>Solution details</li> </ol>



- **5** Firing solution Warning Indicators: Inclination, **Temperature and Pressure 7** Range edit **8** Show solution 9 Show reticle drawing Access controllers **1** Edit parameter 12 Get data from internet (B) Get data from device 🔞 Get data from phone **1** Density Altitude
- (WEZ) Weapon Employment Zone (WEZ)

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.



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.



Expand to see additional info about 3 1 0.57 the firing solution **2** Elevation solution 3 1.46 Windage solutions 3 (8) **4** Lead for moving target **5** Stability Gradient **6** Time of Flight <u>^(1</u>) Velocity WEZ 8 Hit Probability (1)9 Aerodynamic Jump 1.21 Horizontal and Vertical Coriolis 0.00 MOA -0.10 MOA 10 Maximum Ordinate (Max Ord) and 446.95 Y 1 Max Ord Range





#### 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 (Y)	Elev. (SMOA)	Wind 1 (SMOA)	Wind 2 (SMOA)	Lead (SMOA)
100	0.00 D 🗧	0.00 R	0.00 R	0.00 L <b>4</b>
200	1.66 U	0.06 L	0.06 L	0.00 L
300	4.05 U	0.12 L	0.12 L	0.00 L
400	6.68 U	0.17 L	0.17 L	0.00 L
500	9.45 U	0.23 L	0.23 L	0.00 L
600	12.31 U	0.28 L	0.28 L	0.00 L
	7 Exp	and table 💊	· 9	<u>ه</u>
Ra	nge Card		Reticle	. (8)

- Range to target
   Elevation solution
   Windage solutions
   Lead for moving target
   Scroll to view additional ranges
   Scroll left/right to see additional solution data
  - D Expand the Viewer
  - 8 Export the range card
- **9** Range Card Settings

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.





		Rangecard Set
ł		Edit Rangeca
		Edit Columns
		Close
	1	Show/Hide Co
	2	Rearrange Col

	🖭 Long I	Barrel	*	1-
	Range (Y)	PHit	Max Ord. (IN)	<b>мо</b> (
	100		0.55	1
	200	100%	1.73	1
	300		5.39	1(
	400		11.14	2
	500		19.42	2
	600		30.75	3
	700		45.79	3
	800	98%	65.34	4
	900	192%	90.30	5
	1000	181%	121.75	5
	1100		160.81	6
	1200	57%	208.67	6
	1300		266.47	7
	1400		335.28	8
		Co	ollapse table	^
	© Shoot	<b>Profiles</b>	⊞	
1	Ro	ws ł	nighli	gh
E	Sci	roll I	eft/rig	gh

All Rights Reserved Copyright 2006-2025 Applied Ballistics®





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lumn	



1		Column Editor Elevation	2	
	$\checkmark$	Dialed Elevation	=	
	$\checkmark$	Windage 1	=	
	$\checkmark$	Windage 2	=	
	$\checkmark$	Lead	=	
	$\checkmark$	Time of Flight	=	
	$\checkmark$	Energy	=	
	$\checkmark$	Velocity	=	
	$\checkmark$	Mach	=	
	$\checkmark$	P-Hit	=	
	$\checkmark$	Max Ord	=	
	$\checkmark$	Max O. Rng	=	
		Trace	=	
		Done		
	001	Profiles	sernings	

 $\odot$ 

#### 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 or by lasering a target with a paired range finder. 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.

	338 EnABELR     * イー Pro					
		Range (Y)	Elev. (MRAD)	Wind 1 (MRAD)	Wind 2 (MRAD)	Lea (MR/
	А	100	0.03 U	0.02 L	0.03 L	0.09
	в	200	0.12 U	0.05 L	0.07 L	0.09
	С	300	0.50 U	0.08 L	0.12 L	0.09
4	D	400 1	0.97 U	0.12 L	0.17 L	0.10
	E	500	1.49 U	0.15 L	0.22 L	0.10
	``	🗸 Expand (	6 Sta	age 2	<mark>57</mark> 命 ①	)2 +
	Target Card <b>3</b> Reticle					
	TARGET (TARGET D)					~

- Edit target range value
- **2** Add a target to the list
- **3** Show reticle for the target card
- 4 Selected Target
  - Target Card Settings, send/receive
- 5 Target cards with compatible devices.
- 6 Sector Selector



1	Column Editor Elevation	2
$\checkmark$	Dialed Elevation	=
$\checkmark$	Windage 1	=
$\checkmark$	Windage 2	=
$\checkmark$	Lead	=
$\checkmark$	Time of Flight	=
$\checkmark$	Energy	=
$\checkmark$	Velocity	=
$\checkmark$	Mach	=
$\checkmark$	P-Hit	$\equiv$
$\checkmark$	Max Ord	=
$\checkmark$	Max O. Rng	$\equiv$
$\checkmark$	Тгасе	
	Done	
SILUUI	Promes Devices	Serings

Show/Hide Column
 Rearrange Column

Tapping on a target line on the Target card will turn that line blue indicating you are adjusting inputs for that target only. To deselect a target simply click on it again. Targets can have individual Environment, Target, and WEZ Data.

		Range (Y)	М
	A	100	2
	в	200	2
	с	300	2
2	D	400	2
	E	500	2
	F	600	2
			Expan

#### 4.1.4 Target Card with WEZ

The target card is compatible with the WEZ feature. With WEZ you can have individualized target sizes, different confidence values for each target, or the same for all targets. To learn more please review our video guide <u>here.</u>

Tgt       Rng       pHi         1       100       300         2       200       100         3       300       300         4       400       100         5       500       300         6       600       960         Target Card			
1       100       100         2       200       100         3       300       100         4       400       100         5       500       100         6       600       060         Target Card         WEZ	Tgt	Rng Y	рHi
2       200       100         3       300       100         4       400       100         5       500       100         6       600       060         Target Card         WEZ	1	100	
3       300       100         4       400       100         5       500       303         6       600       303         Target Card         WEZ	2	200	100
4       400       100         5       500       333         6       600       96         Target Card         WEZ	3	300	
5 500 000 6 600 060 Target Card WEZ	4	400	100
F FON OFF	5	500	
Target Card WEZ	۶	EUU	96.0
WEZ		Target C	ard -
	w	'EZ	







#### 4.1.5 Grouped Sectors

Create Sectors, each with multiple Stages and Target Cards, offering the ideal solution for competitors and match directors.

0 0 0 5 Manage Sectors S the state (1)2025 Nightforce ELR Sectors: 20 Targets: 47 2025 PRS Midwest Reg ⊘ 団 Sectors: 10 Targets: 27 ⊘ 団 GAP Grind GA Precision Sectors: 22 Targets: 47 ⊘ 団 K&M Precision Rifle Sectors: 20 Targets: 48 4 計 ①3 Ungrouped Default ⊘ 団 Home range Club range ⊘ 団 New Sector New Group Cancel

 Edit the Sector's Name Delete Grouped Sector **B** Share Sectors Rearrange Sector's Order Create Sectors, each with multiple Stages and Target Cards, offering the ideal solution for competitors and match directors.

You have the ability to create Target Cards that you can recall when needed using the Sectors feature. These can be Grouped, with multiple target cards in one group. Or ungrouped with individual target cards. Grouped target cards allows you to build out multiple stages, shooting facilities, and more. These can then be shared via QR code that you can print out at checkin, or email, or share to other users.



- **1** Edit the Stage
- **2** Edit the name
- **3** Delete the Stage
- **4** Sort Stages
- **5** Share Stages

		- Dro	
I	Manage Sectors	4	6
	← Dust Devil Duel		↓ ₾
	Default	2,	<del>ش</del> ک
1	Stage 1	0	₪
	Stage 2	0	団
	Stage 3	0	団
	Stage 4	0	団
	Stage 5	0	Ū
	Stage 6	0	₪
	Stage 7	0	団
	New Sector		
	Cancel		
	Pionies	Devices	Serings

Download, import, and easily share target cards and entire stages with other AB Quantum users.



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#### 4.1.5 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.





The retical view also features pinch to zoom in and out o hone in on specific areas as needed.

Similarly, the solutions from the Target Card table are drawn on the reticle when on the Target Card View.



And the Range Card displays those solutions as well.





Target Card data is overlaid on the reticle output di splay.

**2** Tap to expand the reticle view

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

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

#### 4.1.6 Graphs

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



The Custom option (Pro level only) 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.

To change the current Drop units change Gun Parameter Units in the settings page.

•	User	Gun
755.57	IN —	
655.57	IN ——	
555.57	IN ——	
455.57	IN ——	
355.57		
255.57		Drop
155.57	IN -	Drift
55.57	IN —	
	0	Velocity
		Elevatio
		Windag
Tem	per	Target
	75	Time of
	((·)	Energy
Wind 5	d Sp	Mach
_		Spin Dr
		Horizor
(	<u>ه</u>	
Sh	ioot	Vertica



* A- Internal (AB-E)		
2		
/	3,000	
n	IN) 🗸	
е		
ead	5ure	
Flight	inhg	
	peed 2 MPH	
ift	+	
tal Coriolis	~	
Coriolis	<b>کې:</b> ttings	

Choose which
 parameter to graph against the range
 Graph will
 automatically update once selected

#### 4.1.7 Chronograph Graphs

Velocity Profile: The app saves chronograph data to individual rifle profiles, creating a comprehensive velocity profile for each load.



Muzzle Velocity Graph
 Muzzle Velocity details
 Live Muzzle Velocity

This muzzle velocity graph feature in AB Quantum<sup>™</sup> provides shooters with a visual representation of their ammunition's performance, helping them make informed decisions about load development and ballistic calculations for improved long-range accuracy.

The current version of the app (3.3.0) only supports the Speedtracker Mach 4+ Chronograph. In order for data in the graph to populate, the velocities must be captured live for the track inside the gun profile.

The Chrono option on the Graph page only appears for gun profiles that have saved string data in that profile. If you have Speedtracker Mach 4+ data in the app, but are on a different profile from the one it was captured under this option will not be available.



#### 4.1.7 Advanced Graphing

The Custom option allows you to compare different profiles. To do this open the Graphs controller then select each profile. They will be given a unique color indicator that matches with the graphs output.





The Advanced Custom Graph option allows you to compare profiles and 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.





#### 4.1.8 Support

The AB Quantum<sup>™</sup> 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.



- Pro	🗉 User Gun	* 1- PRO
Windage 1 <b>0.16</b>	Elevation	Windage 1
MRAD Windage 2	0.39	O.OO <
	Lead	Windage 2
ty	O.OO >	O.OO <
	∠ 100% Pr Ra	robability nge
) +	- 50	ч ч ос
VEL 2.13 MACH ^	0.71 TOF 1606 JEN 174	46 FPS VEL 1.56 MACH 🔨
WEZ	Contr	rollers
~	Environment	>
Pressure	Target	>
Pressure 29.92 inhg	Target	>
Pressure 29.92 inhg Density Alt.	Target WEZ	>
Pressure 29.92 inhg (a) Density Alt. 6 FT	Target WEZ Graphs	> > >
Pressure 29.92 inhg Crime Density Alt. 6 FT	Target WEZ Graphs Ballistic Calibration	> > > > >
Pressure 29.92 inhg (a) (b) Density Alt. (b) FT	Target WEZ Graphs Ballistic Calibration Reticle	> > > > > >
Pressure 29.92 inhg (rightarrow Consistent) Densite Alt. 6 FT (rightarrow Consistent) Bevices Settings	Target WEZ Graphs Ballistic Calibration Reticle	> > > ncel

#### 4.2.1 Environment Controller

The Environment Controller allows the user to edit parameters like temperature, humidity, pressure, Density Altitude and Latitude.



Units for the environmental parameters are changed on the Settings page. The buttons under the values allow the user to obtain that value from a variety of sources.

The Wifi Icon pulls from the nearest internet resource. Like a local weather station.

The Device Icon pulls from an actively connected device. These will only appear if the device that is paired shares that data with the AB Quantum app and/or the device has the sensors to capture that data.

The Phone Icon pulls from the device the app is installed on, when that device has a sensor capable of sharing that data. Many modern phones have a pressure sensor you can utilize.

The Tool Icon ( will open a tool function built into the app. Like the Density Altitude tool or the Moving Target Tool.

The Density Altitude(DA) Tool can be accessed by tapping on the icon which will bring up the Density Altitude Tool. From here you can input the Density Altitude number you wish to generate firing solutions, range cards, or target cards based off of. When using this tool, getting the temperature correct for the DA Solutions you are trying to generate is important. Inputting a number in here, and then pushing apply will set the DA to the number you have selected. Otherwise the app will automatically calculate the current DA based on the atmospheric inputs at the time automatically for you.

Note: Density Altitude is not your current elevation. Density Altitude is a measure of Air Density represented as an Altitude. These numbers can be positive or negative and may not reflect closely to your current elevation.





om Density Altitude	
59 °F	
Humidity	
0 %	
nsity Altitude	
781 FT +	
.25 inhg	
Apply	
Cancel	

#### 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). When live streaming from a device, the devices icon will turn blue.



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 **B** Reset timer **4** Start/stop the timer Target Speed is computed once 6 the timer is stopped Apply the calculated speed to the 6 target



Leverage the Relative Wind Tool to dynamically visualize projectile direction of flight and real-time aerodynamic interaction with local wind vectors. AB Quantum settings allows users to switch your wind reference between North (Compass) and Direction of Fire (Clock) reference options.

- 1 Direction of Fire **2** Wind Direction
- **3** Capture Using Phone Compass
- **4** Capture From Device



The stream wind button will appear when you are connected to a compatible weather meter. The Stream Wind button allows for live continuous wind input from a weather meter. As the wind changes the inputs will also change on AB Quantum<sup>™</sup>. Wind Speed 1 determines Aerodynamic Jump (Aerodynamic Jump can be turned on/off in the settings).



#### 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.



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.



Dialed elevation is applied to the range values

Manually enter or increment/ decrement the dialed elevation

#### 4.2.4 Ballistic Calibration

The ballistic calibration tool features 3 options. Muzzle Velocity (MV) Calibration, Custom Drag Function (CDF), & Drop Scale Factor (DSF). You can switch between the 3 using the Calibration Type Toggle

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

#### 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

Doppler Chrono MV	Bullet from AB Library	Tall target tested	What to use
No			MV Cal
	Νο		DSF Cal
		No	DSF Cal
Yes	Yes	No	DSF Cal
Yes	No	Yes	DSF Cal
Yes	Yes	Yes	CDF

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.





#### 4.2.5 MV Calibration Controller

BALLISTIC CALIBRATION	
Calibration Type	MV CDF DSF
Enter a range between 1260 and	1386 and the drop.
Range	Drop
- <b>750</b> Y + -	8.20 MRAD +
Current MV	Calculated MV
2900 FPS	2680 FPS
Apply MV	
Image: ShootImage: Profiles	* 🔅 Devices Settings

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 CDF Calibration Controller



The CDF Calibration can be completed at any range further than the current zero range. It is important to note, the further the range, the more accurate this calibration will be.

When completed select "Apply CDF".

To disable a CDF, go to the specific rifle profile and in the Bullet Data section set the CDF back to 1.0. ①

Bullet Data	^			
AB Bullet Library Browse the library and select a bullet				
Model 🔘 G7				
Diameter	Weight			
0.308 IN	168.0 GR			
Ballistic Coefficient	Custom Drag Factor			
1.000 G7	1.000			



N			~
	MV	CDF	DSF
e zero i	range ar Dr	nd the di op	rop.
- (	6.99	MRAD	) +
C	alculat	ed CDF	:
-10	69786	24.00	D
CDF			
	<b>*</b> Devices	<b>{</b> Set	<b>کی</b> tings

#### 4.2.7 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.



![](_page_18_Picture_5.jpeg)

#### 4.2.8 SpeedTracker

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

![](_page_18_Figure_8.jpeg)

#### 4.2.9 Weapon Employment Zone

Weapon Employment Zone or WEZ leverages simulations to analyze how various environment, skill, equipment, and other related factors impact the first round probability of hitting a target. To learn more about WEZ in fine detail please read <u>Accuracy and Precision for Long Range Shooting</u> or watch our instructional video here.

For Custom values, if you are ever unsure of a possible value please reference the High, Medium, & Low confidence numbers for examples.

![](_page_19_Picture_3.jpeg)

# Range MV Wind Speed **Drag Factor Rifle Precision**

0	
WEZ	
Confidence parameters	
Confidence	Rang
Custom >	5
Wind Speed	Drag Un
2 MPH	1
Temperature	Pressu
1.00 °F	0.00 ii
Azimuth	Inclinat
<b>5</b> °	1
Shoot Profiles	0

![](_page_19_Picture_8.jpeg)

 $\bigcirc$ 

Range is your ability to measure or estimate range in whole numbers. If using a device such as a range finder, please consult the manual of that device for its accuracy.

This is your Muzzle Velocity SD measured by a Chronograph.

This is your ability to guess or measure wind speed.

This is the BC SD of your current bullet.

This is the overall precision of your rifle, example 1.5 MOA. This input will follow the current scope settings of the profile.

The remaining of the inputs are the accuracy of your ability to estimate or the accuracy of the device you are currently measuring them with. For example most electronic compasses are only accurate to 10-15 degrees. For other accuracy numbers please consult the device manual you are using to measure them.

			~	
ge		M۷	/	
Y		20	FPS	
ncert.	. F	Rifle Pre	cision	ı
%		0.8 м	IRAD	
ure		Humid	dity	
inhg		2	%	
tion		Latitu	ıde	
		0		
	*	٤	22	
	7 Devices	ې Sett	نځ ings	

WEZ features 4 output graph styles. Shot Simulation, Horizontal Uncertainty, Vertical Uncertainty, & Probability of Hit.

Output graph is chosen through the WEZ Controller.

1. Shot Simulation	This graph outputs a 1000 round shot simulation and displays the dispersion of those shots over the target image of the users choice.
2. Horizontal Uncertainty	Displays the amount of horizontal dispersion for each variable with a corresponding numerical value on the left side for the bars. The weight of that variable is displayed with a line graph and a percentage on the right side.
3. Vertical Uncertainty	Displays the amount of vertical dispersion for each variable with a corresponding numerical value on the left side for the bars. The weight of that variable is displayed with a line graph and a percentage on the right side.
3. Probability of Hit	Displays the probability of hit over distance. This graph range is set by the range value input on the Target Card Settings.

# Solution Reticle WEZ Range 1700 Y Target Type

3

1

![](_page_20_Figure_5.jpeg)

2

![](_page_20_Picture_8.jpeg)

![](_page_20_Figure_9.jpeg)

 $\bigcirc$ 

4

![](_page_20_Figure_11.jpeg)

# 5.0 Profiles

The Profiles list is accessible from the main navigation bar.

![](_page_21_Figure_2.jpeg)

At the top of the screen, the user can view whether a device is connected, the status of the connection to AB Quantum Sync<sup>™</sup>, 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.

![](_page_21_Picture_4.jpeg)

**1** Device connection status **2** Sync to cloud **3** Create new profile **4** Sync status of profile **5** Select profiles **6** Current active profile Tap to expand/collapse additional info 8 Manage profile(s) Choose sort order for the 9 profile list If the BC is highlighted in **(**) yellow or red, the bullet has low stability. ① Send profile to device Receive profile from device\*

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.

Prof	iles		
Active	2	6	G
300	) Norma	a 🕲	
Bull BC: MV: Zero Sigh Twis	et: Berge 1.000 CE 2900 F 5 Range: 5t Rate: 7	r Target )M PS 100 Y t: 3.81 20.32 (	Hybrid CM CM-R
See	less ^		
Inacti	ve	Edi	t
Q	Search pr	Exp	ort
		Dup	olicat
Use	er Gun	Del	ete
Bull	<b>et:</b> Custo	m Bulle	et - 0.7
BC:	0.475 G	1	
MV:	2658 F	PS	
See	more ~		
-			

\*NOTE: The capability to receive profiles from that specific device is not universally supported across all connected devices.

![](_page_21_Picture_10.jpeg)

<ul> <li>Send</li> <li>C Receive</li> <li>- 0.782 CM - 215.0 GR</li> </ul>	
	Edit this profile
0	Export the profile through QR code
	Create a copy of the current profile
	4 Delete the current profile
e	Set the current profile as the active one
B2 CM - 175.0 GR	Send profiles to your connected device
	Receive profiles from your connected device

#### 5.1 Profile Edit

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

#### ← Edit Profile <u>ل</u> ୍ୱତ୍ରି **Bullet Data** ~ **AB Bullet Library** 4, Tap to scan QR code from another 5 Model Applied Ballistics app 🔿 G1 🔘 G7 **2** App settings Weight Diameter 0.308 IN 168.0 GR **3** Edit gun profile name **Ballistic Coefficient Custom Drag Factor 4** Tap to access the AB bullet library $(\mathbf{7})$ 1.000 G7 1.000 **5** Select bullet drag model 6 Edit bullet parameters Auto Length 1.33 IN (6) Custom Drag Factor

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. For more information on PDMs and CDMs click here

#### To use the bullet library:

1	Start by creating a
2	Select AB Bullet Li
3	Next select your d
4	Then select your c Many ammo comp
5	Next select your d
6	Finally select if you 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.

![](_page_22_Picture_8.jpeg)

new profile or editing a current profile.

ibrary.

lesired Caliber.

desired Bullet Manufacturer (Note: This is for bullets, not cartridges. panies source bullets from other companies).

lesired Bullet from the list.

u wish to use G1, G7, or CDM. (An Elite License is Required to access

**1** Edit gun parameters

- **2** Choose barrel twist direction
- Bullet stability factor

<u>•</u>

Below that is the Scope section.

![](_page_23_Picture_1.jpeg)

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.

We have a list of reticles currently in the app here: <u>AB Quantum Reticle List</u>

![](_page_23_Picture_7.jpeg)

MV-Temp Table	^
Temperature O °F	Velocity 1 O FPS X
+ Add new ter	mperature/velocity 2
Drop Scale Facto	r Table 🛛 🔨
МАСН	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
Clea	ar DSF

### 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.

![](_page_24_Picture_3.jpeg)

**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.

When the MV Temp Table is turned on, the MV block in Gun Data will be grayed out. The data is still there, but the MV has shifted to the temp table input. To access it again turn off the MV Temp Table.

![](_page_24_Picture_7.jpeg)

Scar	ו Profi	le	
3:31		all LTE	
Profiles		* 🗘	+
Active	© Send	C Rece	ive
User Gun 🔕			•
Grim Control C	Close	CS-O GR	
C	ancel		

#### **5.3 Syncing Profiles with Devices**

To transfer profiles to a compatible AB Ecosystem device, the device needs to be paired to AB Quantum<sup>™</sup> - 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.

Profiles	(1)	* C; 2	+
Active	ି Send	CG Red	ceive
300 Norma 🧕			03
<b>Bullet</b> : Berger Targ <b>BC</b> : 1.000 CDM <b>MV</b> : 2900 FPS	get Hybrid - 0.782	CM - 215.0 GR	
See more ~		Ø	:
Inactive		⑦ Def	ault
<b>Q</b> Search profiles	5 <b>4</b>		
User Gun 🕲			$\bigcirc$
<b>Bullet</b> : Custom Bu BC: 0.475 G1 MV: 2658 FPS	ıllet - 0.782 CM -	175.0 GR	
<u>See more ~</u>		★ Ø	:
6mm 🕲			0
<b>Bullet:</b> Custom Bu <b>BC:</b> 1.000 G7	ullet - 0.617 CM - 1	05.0 GR	
Shoot Profiles	4-	<b>R</b> Devices Se	کې ettings

- **1** Send profile to device
- **2** Receive profiles from device

Profiles that are synced will be

- green. Profiles not synced will be yellow.
- **3** Select the gun profiles to sync

![](_page_25_Picture_9.jpeg)

![](_page_25_Picture_10.jpeg)

### 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<sup>™</sup>. 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.

Profiles		
Active	G	Ser

For sending a profile, a dialog box will appear that will ask "Send & Overwrite or Send & Append". When the sync completes, the dialog will automatically close.

2

1

For receiving a profile, a dialog box will appear that will ask "Download & Overwrite or Download & Append". When the sync completes, the dialog will automatically close.

![](_page_25_Picture_19.jpeg)

Sync status is indicated at the top of the Profiles page with the cloud icon. 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		
🖭 300 Norma	* 4- 1	Pro	
Elevation 3.70 MRAD		Vindage 1 .19 >	
Lead O.OO MRAD		Vindage 2 37 MRAD	
	100% Probability		
-	Range 656 Y	+	
0.80 TOF 2771 J	EN 2069 FPS VEL	1.87 MACH ^	
Solution	Reticle	WEZ	
ENVIRONMEN	Т	~	
Temperature	Humidity	Pressure	
50 °F	90 %	29.65 inhg	
(*)	P		
Latitude		Density Alt.	
<b>10</b> °		-142 FT	
Shoot Profiles		* 🐯 vices Settings	<ol> <li>Access Devices menu</li> </ol>

![](_page_26_Picture_3.jpeg)

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

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

Users can find a list of currently compatible devices here: <u>Product</u> <u>Connectivity List</u>

![](_page_26_Picture_8.jpeg)

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

#### 6.1. Pairing Garmin Devices

Compatible Garmin Devices require pairing to the Garmin Connect app before they will appear in the available devices list. Visit our instructional playlist on YouTube for more videos on Garmin Connectivity. <u>**Click here**</u>

![](_page_27_Picture_2.jpeg)

Apple: <u>Click here</u> Android: <u>Click here</u>

![](_page_27_Picture_4.jpeg)

If you are having issues connecting your Garmin Montana device, use the Garmin Explore application. 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.

Devices
✤ No Device
Available
GProAB5868
<b>Device type</b> : Rangefinder <b>Connection Strength</b> : -43dBm <b>Last License</b> : Pro
<u>See more ~</u>
K10KGEN2-00065
<b>Device type</b> : Rangefinder <b>Connection Strength</b> : -48dBm
<b>А-</b> WDOT-0806FE
<b>Device type</b> : Wind Meter <b>Connection Strength</b> : -91dBm
<u>See more ~</u>
Shoot Profiles

## 6.2. Pairing Kestrel 5700/5700x LiNK Devices

![](_page_27_Picture_9.jpeg)

![](_page_27_Picture_10.jpeg)

To pair a Kestrel the Kestrel must be PC/Mobile mode, with the PIN function "off". Firmware 1.53 or newer and an Applied Ballistics Kestrel 5700 or newer variant. How To Pair A Kestrel Video Guide: <u>Click here</u>

![](_page_27_Picture_13.jpeg)

![](_page_27_Picture_14.jpeg)

#### **Integrated Devices**

- Astra Optix
- Bear Creek Arsenal
- Calypso Instruments
- Envision Technology
- FN
- Garmin
- Henrich
- Kestrel
- Leica
- Optex Outdoor
- Pixels On Target
- Sig Sauer
- Tangoinnos
- Wilcox
- Vector Optics
- 3E

#### 6.3. Calypso AB Mini

AB Quantum is compatible with the Calypso AB line of Wind Meters. When paired to a compatible Calypso AB Mini, the user can feed live wind from the device to AB Quantum. Furthermore the user can update the firmware of the Calypso AB Mini and pair the Calypso AB Mini to compatible Range Finders. Allowing users to fully manage their Calypso AB Mini devices from inside AB Quantum. Pairing a Range Finder to the Calypso AB Mini does not allow the Calypso AB Mini to provide a Range to AB Quantum. It allows the Calypso AB Mini to provide wind to the Range Finder and will no longer provide Wind to AB Quantum while the Calypso AB Mini is active with the Range Finder.

← ≁ Device Settings		Device Settings
* WDOT-0806FE		
General Settings 1		
 Device Tune	 Wind Meter	Clear paired LRF
Battery	100%	Current Device Firmware version
Firmware 4	001.022	Takes you to the official Calypso website
Firmware Date	Apr 4 2025	
Pair LRF 2 *	>	
Clear 3		Pair LRF
		GProAB5868
Visit Calypso Stor	e <b>5</b>	K10KGEN2-000651
		Cancel

#### 6.4. SpeedTracker

The app also supports audible feedback from the Shottracker 4+. The velocity of each captured shot is read out loud from the app. Allowing the user to know that the bullets velocity was captured and what that velocity was.

When paired to a compatible chronograph the app can then store shot strings live fired from the chronograph into the profile. The user has the option while connected live to the chronograph to use the velocity of the previous shot, or the average velocity of all shots captured during that string.

manual page 11).

	SPEED	TRACKER
St	ring	
	Zero col	d test
	La	ast shot
	11	1 <b>21</b> FPS
(		Use
	Dete	ctions: 14
	Ø	
	Shoot	Profiles

![](_page_28_Picture_11.jpeg)

The data can also be displayed via a graph (see the graphing section of the

![](_page_28_Picture_13.jpeg)

0}

# 7.0 Troubleshooting

#### How to download reticles

To update the reticle library use the following steps:

- 1. On the settings page set "Keep Screen On" to on.
- 2. Return to the Welcome Screen.
- 3. Make sure the phone is on WIFI.

4. Allow the phone to sit on WIFI for 3 - 5 min for the reticle library to download.

#### Sig Sauer Device Modes

Sig devices with AB in them that are compatible with AB Quantum must be in either AB-Elite or AB-X mode to pair to AB Quantum. No other modes on those devices will pair with the AB Quantum App.

#### **Kestrel Device Modes**

To pair a Kestrel to the app it must be a compatible Kestrel 5700 model, the Pin function must be OFF, the Kestrel Firmware must be 1.53 or newer, and the Kestrel must be in PC/Mobile Bluetooth Mode. For 5700X models the Bluetooth should be set to MAX power.

#### How to reboot a Kestrel

Pressing the power button on a Kestrel puts it into low power mode, but does not turn it off. To reboot a Kestrel press and hold the power button while removing the battery. Continue to hold the power button for 20 - 30 seconds. Then place the battery back into the Kestrel.

#### **Understanding Factors Affecting Your Zero**

If your firing solution does not read zero at your zero range this can be due to a number of different reasons:

![](_page_29_Picture_15.jpeg)

Factors such as wind, muzzle velocity variations, ballistic calibrations, and target data can all influence the elevation component of a firing solution..

#### **Multiple Device Connection**

Only one device can pair to AB Quantum at a time. The currently Active device will be in the "Active Device" slot on the devices page. It is not currently possible to run multiple, ie a Range Finder and Kestrel or variant there of, devices in the app at the same time.

![](_page_29_Picture_20.jpeg)

 Aerodynamic Jump will shift the zero at the zero range. This can be turned on/off in the settings.
 Wind Variables like a head wind, tail wind, and more can affect the bullet at the zero range..
 MV-Temp Table can affect the bullet at its zero range when turned on.
 Zero Atmospheric Data in the gun profile can

4. Zero Atmospheric Data in the gun profile can affect the bullet at its zero range.

5. Zero Height and Zero Offset will have an affect on the trajectory at the zero range.

6. Zero set at 100 yards when operating in Meters or Vice Versa.

7. Target Inclination (uphill or downhill angles input on the Target Controller) will affect the solution at the zero range.

# 8.0 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.

![](_page_30_Picture_2.jpeg)

#### **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 +/-).

Settings	
Unit Settings	
Wind Reference	NORT
Range Units	YARD
Muzzle Velocity	FPS
Gun Parameters	IN
Hold Precision	PRECI
Hold Indicator	ARROWS
Table Hold Indicator	U/D L
Bullet Weight	GRAIN
Temperature	°F
Pressure	INHO
	×

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

Next is general sett on or off:

Show Welcome Screen

Keep Screen On

**Touch Feedback** 

![](_page_30_Picture_14.jpeg)

![](_page_30_Figure_15.jpeg)

Settings		
Fire Control Settings		
Aerodynamic Jump	ON	OFF
Spin Drift	ON	OFF
Coriolis	ON	OFF
General Settings		
Show Welcome Screen	YES	NO
Keep Screen On	YES	NO
Touch Feedback	YES	NO
Cloud Sync	Sig	n Out 📏
Delete A	Account	
Share Usage Data		Opt In 义

Next is general settings, where the user can toggle the following parameters

Turning this off determines if the app starts on the Home Screen (On) or the HUD (Off).

When on, the phone's screen will stay on when the app is open.

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.

#### **Cloud Sync** Sign Out > **Delete Account** Share Usage Data Opt Out > **Application Information User Manual** View > Version: 319900 **Bullet Library** Last Update: 2025-04-09 **Reticle Library** Last Update: 2025-04-10 Version: 3.3.3 App Build Build: 143 $(\times)$

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.

![](_page_31_Picture_5.jpeg)

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

Elite/Pro License

Elite/Pro **Subscription** 

#### Grandfathering

![](_page_31_Picture_10.jpeg)

### 8.1 Subscriptions and Licensing

![](_page_31_Picture_12.jpeg)

This is obtained by pairing a AB device to the app with the appropriate level license. 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.

This will unlock the appropriate license level features of the app and is purchased on a monthly or annual basis and will not reset every 30 days.

Users who previously purchased the 1.0 or 2.0 version of our app before should see Elite License automatically unlocked.

# 9.0 Definitions

**Muzzle Velocity** 

Aarodunamic lump	At is the vertical deflection caused by a horizontal crosswind	
	Aj is the vertical deflection caused by a nonzontal crosswind.	Pressure
Azimuth/DOF	The compass direction the bullet will travel when it leaves the barrel.	Sectors
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.	Spin Drift
Energy	The impact energy the bullet will have at the target.	SG (Stability)
Elevation	This is the total vertical adjustment that is combined primary & secondary effects (Gravity Drop, Coriolis Drop, Aerodynamic lump) adjusted for the zero-range needed to impact the target.	Temperature
	jump, adjusted for the zero range needed to impact the target.	Time of Flight
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.	Trace
Humidity	The Relative Humidity in % at the user's location.	
Inclination	The vertical angle to the target in degrees. + for up and – for down.	velocity
Lead	This is the amount of correction needed to a target in motion.	Vertical Coriolis
Latitude	This is how far the user is from the equator in degrees.	Wind Speed
Mach	The bullets speed relative to the Speed of Sound and is temperature dependent.	Wind Direction
Maximum Ordinate (Max Ord) & Max Ord Range	Maximum Ordinate (Max Ord) is the he highest point over line of sight a projectile reaches during its flight. Max Ord Range is the horizontal distance to that peak.	Windage

The Absolute or Station Pressure at the user's location.

Create Sectors, each with multiple Stages and Target Cards.

Spin Drift aka Gyroscopic Drift is the aerodynamic effect from the fact that the bullet is spinning.

The Gyroscopic Stability of the bullet is the calculated stability using a number of factors and is Optimal when above 1.5.

This is the ambient air temperature at the user's location.

The time the bullet will be in the air until it impacts the target.

The optimum height above the target to watch to see bullet trace.

The impact velocity of the round not to be confused with Muzzle Velocity.

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.

The current velocity of the wind at the user's location.

The current wind angle relative to the direction the bullet is traveling.

This is the total horizontal adjustment that is combined primary & secondary effects (Wind Drift, Coriolis Drift, Spin Drift) needed to impact the target. i

# 10.0 **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. Video on how to do the Tall Target Test.

#### 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:

![](_page_33_Picture_6.jpeg)

#### 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:

- **2.** Next, calculate Expected POI Shift:
- **3.** Finally, calculate Correction Factor: CF = 32.04 Inches ÷ 29.8 Inches CF = 1.075

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.

	Range Units	Adjustment Units	Constant
	Yards	MOA	0.01047
	Yards	MILS	0.03599
	Meters	MOA	0.01145
	Meters	MILS	0.03936

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

Expected POI Shift = Dialed x Range x Constant

Expected POI Shift =  $30 \text{ MOA} \times 102 \text{ yards} \times 0.01047 = 32.04 \text{ inches}.$ 

CF = Expected POI Shift ÷ Actual POI Shift

**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