

# Foretrex® 601/701 Ballistic Edition

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## Owner's Manual

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## Introduction

### WARNING

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

## Device Overview



①	Battery cover D-ring
②	Micro-USB port (under battery cover)

## Installing the Batteries

You can use alkaline, NiMH, or lithium AAA batteries. Use NiMH or lithium batteries for best results.

- 1 Loosen the fabric strap that covers the battery door.
- 2 Turn the D-ring counter-clockwise, and pull up to open the battery door.
- 3 Insert two AAA batteries, observing polarity.



**NOTE:** You should verify the gasket and battery compartment are free of debris.

- 4 Close the battery door, and turn the D-ring clockwise.

## Long-Term Storage

When you do not plan to use the device for several months, remove the batteries. Stored data is not lost when batteries are removed.

## Attaching the Wrist Strap

- 1 Insert the strap behind the pin ① at the top of the device.



- 2 Pull the strap length through to the end.
- 3 Insert the strap behind the pin ② at the bottom of the device.
- 4 If necessary, attach the strap extender to the wrist strap.

## Keys



① POWER	Hold to turn the device on and off, enter night vision mode, and enter watch mode. Select to turn the backlight on and off.
② PAGE GOTO	Select to scroll through the main pages in sequence. Select to go back to the previous view from a menu or option. Hold to navigate to a waypoint.
③ ENTER MARK	Select to open the menu for the page. Hold to mark a waypoint.
④ ^ v	Select to scroll through menus and pages. Select to zoom out or zoom in on the map page.

## Turning On the Device


Hold **POWER**.

The first time you turn on the device, you will select the device language.

## Acquiring Satellite Signals

Before you can use GPS navigation features, you must acquire satellite signals.

When you turn on your navigation device, the GPS receiver must collect satellite data and establish the current location. The time required to acquire satellite signals varies based on several factors, including how far you are from the location where you last used your navigation device, whether you have a clear view of the sky, and how long it has been since you last used your navigation device. The first time you turn on your navigation device, it may take several minutes to acquire satellite signals.

- 1 Turn on the device.
- 2 Wait while the device locates satellites.  
It may take 30 to 60 seconds to acquire satellite signals.  indicates GPS is located.
- 3 If necessary, go to an open area, away from tall buildings and trees.

## Using the Backlight

- 1 Select **POWER**.  
The backlight turns on for 30 seconds.
- 2 Select **POWER** to turn off the backlight.

## Main Pages

You can select **PAGE** to scroll through the main pages. You can select **ENTER** to open the settings menu for each page. You can select **v** or **^** to scroll through menus and pages and zoom in and out.

**Map page:** The map page shows your position and heading on the map ([Map Page, page 2](#)).

As you travel, the position icon moves and leaves a track log (trail). Waypoint names and symbols appear on the map. The device automatically rotates the map as you move so that waypoints always appear above your position.

**Compass page:** The compass page guides you to your destination by displaying a compass and bearing pointer. When navigating, the compass page displays the name of the location, the distance to the final destination, the speed of

travel, and a direction arrow in the compass ring. You can follow the arrow to navigate.

**Elevation page:** The elevation page shows your elevation.

**Trip computer:** The trip computer displays your current speed, average speed, maximum speed, trip odometer, and other helpful statistics.

**Menu page:** The menu contains settings for waypoints, tracks, and routes, as well as other setup options.







The menu page also displays the current time and date at the top of the screen.

**Applied Ballistics® page:** This feature offers customized aiming solutions for long-range shooting (*Applied Ballistics*, page 2).

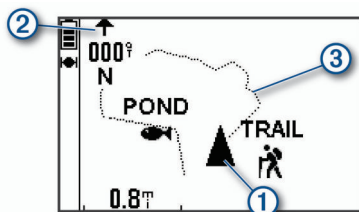
**NOTE:** This feature is available only on the Foretrex 701 device.

## Status Icons

Status icons appear on the main pages. A flashing icon means the device is searching for a signal. A solid icon means the signal was found or the sensor is connected.

	GPS status
	Battery level
	Heart rate monitor status
	Speed and cadence sensor status
	tempe™ sensor status
	Bluetooth® technology status

## Map Page



①	Displays your position on the map.
②	Displays the direction you are heading.
③	Displays your track log.

## About the Compass

The electronic compass is similar to a magnetic compass when you are stationary or walking. If you maintain a higher speed, such as traveling in an automobile, the compass uses GPS signals to determine your direction.

**NOTE:** When navigating, you should hold the compass level to ensure maximum accuracy.

## Applied Ballistics

**NOTE:** This feature is available only on the Foretrex 701 device.

The Applied Ballistics feature offers customized aiming solutions for long-range shooting based on your rifle characteristics, bullet caliber, and various environmental conditions. You can enter parameters including wind, temperature, humidity, range, and firing direction.

This feature provides the information you need to fire long-range projectiles, including elevation holdover, windage, velocity, and time of flight. It also includes custom drag models for your bullet type. Go to [appliedballisticsllc.com](http://appliedballisticsllc.com) for more details about this feature.

## Quickly Editing Shooting Conditions

You can edit the range, direction of fire, and wind information.

1 From the Applied Ballistics page, select **ENTER** > **QUICK EDIT**.

**TIP:** You can select  $\vee$  or  $\wedge$  to edit each value, and select **ENTER** to move to the next field.

2 Look directly into the wind to accurately set the **DOF** and wind direction.

3 Set the **DOF** to your actual direction of fire (either manually or by using the compass).

4 Set the wind direction to **DIR 12:00**.

5 Select **PAGE** to save your settings.

## Using the Countdown Timer

Before you can start the countdown timer, you must enable the timer page (*Device Settings*, page 6), and set timer preferences (*Timer Settings*, page 6).

1 From the timer page, select **ENTER** to start the countdown timer.

**NOTE:** You can select  $\vee$  or  $\wedge$  to change the time interval.

2 Select **ENTER** to stop the countdown timer.

**NOTE:** When the time reaches 00:00, you can select **ENTER** to use the timer as a stopwatch and start counting up.

3 If necessary, select  $\wedge$  to reset the countdown timer to the original time interval.

## VIRB® Remote

The VIRB remote function allows you to control your VIRB action camera using your device. Go to [www.garmin.com/VIRB](http://www.garmin.com/VIRB) to purchase a VIRB action camera.

## Controlling a VIRB Action Camera

Before you can use the VIRB remote function, you must enable the remote setting on your VIRB camera. See the *VIRB Series Owner's Manual* for more information.

1 Turn on your VIRB camera.

2 From the menu page on your Foretrex device, select **CONNECT** > **VIRB REMOTE PAGE** > **ON** to enable the remote control page.

3 Select **PAGE** to scroll to the remote control page.

4 Wait while the device connects to your VIRB camera.

5 Select an option:

- To take a photo, select **TAKE PHOTO**.

- To record video, select **START RECORDING**.

The video counter appears on the Foretrex screen.

- To stop recording video, select **STOP RECORDING**.

# Waypoints, Routes, and Tracks

## Waypoints

Waypoints are locations you record and store in the device. Waypoints can mark where you are, where you are going, or where you have been. You can add details about the location, such as name, elevation, and depth.

You can add a .gpx file that contains waypoints by transferring the file to the GPX folder (*Transferring Files to Your Device*, page 8).

## Creating a Waypoint

You can save your current location as a waypoint.

1 Hold **MARK**.

2 If necessary, select  $\vee$  or  $\wedge$  to change the symbol, elevation, latitude, or longitude.

3 Select **OK?**.

## Navigating to a Waypoint

- 1 Hold **GOTO**.
- 2 Select a waypoint.

### Stopping Navigation

From the map or compass page, select **ENTER > STOP NAVIGATION**.

## Measuring the Distance Between Two Waypoints

You can measure the distance between two locations.

- 1 From the map page, select **ENTER > MEASURE DISTANCE**.
- 2 Select **FROM:**, and select a starting waypoint.
- 3 Select **TO:**, and select an ending waypoint.
- 4 Select **ESTIMATED SPEED:**.
- 5 Select **ENTER** to select a digit.
- 6 Select  $\vee$  or  $\wedge$  to edit the speed.
- 7 Select **OK?**.

The total distance between the two waypoints and the estimated travel time appear.

## Editing a Waypoint

- 1 From the menu page, select **WAYPOINTS > LIST ALL**.
- 2 Select a waypoint.
- 3 Select  $\vee$  or  $\wedge$  to scroll through the symbol, elevation, latitude, and longitude.
- 4 Select **ENTER** to edit the symbol, elevation, latitude, or longitude.
- 5 Select an option:
  - To change the symbol, select the waypoint symbol from the list.
  - To change the elevation, latitude, or longitude, follow the on-screen instructions.

## Projecting a Waypoint

You can create a new waypoint by projecting the distance and bearing from an existing waypoint to a new location.

- 1 From the menu page, select **WAYPOINTS > LIST ALL**.
- 2 Select a waypoint.
- 3 Select **OPTIONS > PROJECT**.
- 4 Enter the distance.
- 5 Enter the bearing.
- 6 Select **OK?**.

## Deleting a Waypoint

- 1 From the menu page, select **WAYPOINTS > LIST ALL**.
- 2 Select a waypoint.
- 3 Select **DELETE > YES**.

## Deleting All Waypoints

From the menu page, select **SETUP > RESET > DELETE ALL WAYPOINTS > YES**.

## Viewing Celestial Data and Almanacs

You can view daily almanac information for the sun and moon, and hunting and fishing.

- 1 From the menu page, select **WAYPOINTS > LIST ALL**.
- 2 Select a waypoint.
- 3 Select **OPTIONS**.
- 4 Select an option:
  - To view the predicted best dates and times for hunting and fishing at your current location, select **HUNT/FISH**.
  - To view the sunrise, sunset, moonrise, moonset, and moon phase for a specific date, select **SUN/MOON**.

- 5 If necessary, select **ENTER** to view a different day.

## Viewing the Nearest Waypoints

You can view a list of the waypoints that are closest to your current location.

From the menu page, select **WAYPOINTS > NEAREST**.

## Routes

A route is a sequence of waypoints or locations that leads you to your final destination.

### Creating and Navigating a Route

- 1 From the menu page, select **ROUTES > CREATE NEW**.
- 2 Select **ENTER** to view the list of saved waypoints.
- 3 Select a waypoint to add to the route.
- 4 Repeat steps 2 and 3 until the route is complete.
- 5 Select **FOLLOW**.
- 6 Select a starting point for navigation.

Navigation information appears.

### Viewing Saved Routes

- 1 From the menu page, select **ROUTES > LIST ALL**.
- 2 Select a route.

### Deleting All Routes

From the menu page, select **ROUTES > DELETE ALL > YES**.

## Tracks

A track is a recording of your path. The track log contains information about points along the recorded path, including time, location, and elevation for each point.

### Recording a Track

The device records a track log automatically while you are moving. You can save tracks and navigate to them at another time.

- 1 From the menu page, select **TRACKS > SAVE TRACK**.
- 2 Select  $\vee$  or  $\wedge$  to set a beginning point.
- 3 Select **ENTER**.
- 4 Select  $\vee$  or  $\wedge$  to set an ending point.
- 5 Select **ENTER**.
- 6 If necessary, select **ENTER** to edit the track name.

### Navigating a Saved Track

- 1 From the menu page, select **TRACKS > LIST SAVED**.
- 2 Select a track.
- 3 Select **NAVIGATE**.

### Using the Pan and TracBack® Feature

While navigating, you can use the TracBack feature to navigate back to the beginning of your activity. This can be helpful when finding your way back to camp or the trail head.

- 1 From the menu page, select **TRACKS > PAN & TRACBACK**.
- 2 To pan the track log, select  $\vee$  or  $\wedge$ .
- 3 Select **ENTER** to view additional options.
- 4 Select an option:
  - To begin navigating the current track, select **GO**.
  - To mark a waypoint, select **MARK**.
  - To zoom in and out, select **ZOOM**, and select  $\vee$  or  $\wedge$ .
  - To navigate back to the beginning of your activity, select **TRACBACK**.



## Viewing Track Details

- 1 From the menu page, select **TRACKS > LIST SAVED**.
- 2 Select a track.
- 3 Select an option:
  - To view the track on the map, select **SHOW MAP**.
  - To view an elevation plot of the track, select **ELEVATION**.

## Editing the Name of a Track

- 1 From the menu page, select **TRACKS > LIST SAVED**.
- 2 Select a track.
- 3 Select **RENAME**.

## Clearing the Active Track

From the menu page, select **TRACKS > CLEAR TRACK > YES**.

## Deleting a Track

- 1 From the menu page, select **TRACKS > LIST SAVED**.
- 2 Select a track.
- 3 Select **DELETE > YES**.

## Deleting All Tracks

From the menu page, select **TRACKS > DELETE ALL SAVED > YES**.

# Customizing Your Device

## Adjusting the Backlight Timeout

You can decrease the backlight timeout to maximize the battery life.

- 1 From the menu page, select **SETUP > DISPLAY > LIGHT TIMEOUT**.
- 2 Select  $\vee$  or  $\wedge$  to adjust the length of time before the backlight turns off.

## Map Options

From the map page, select **ENTER**.

**PAN TRACK LOG:** Allows you to use  $\vee$  or  $\wedge$  to pan the track log and view additional options (*Using the Pan and TracBack® Feature*, page 3).

**CLEAR TRACK LOG:** Deletes the recorded track log.

**MEASURE DISTANCE:** Allows you to measure the distance between two waypoints (*Measuring the Distance Between Two Waypoints*, page 3).

**MAP DETAIL:** Sets map preferences (*Map Detail Settings*, page 4).

**HIDE STATUS INFO:** Allows you to hide and show the status icons on the map page, such as battery level and GPS status.

## Map Detail Settings

From the map page, select **ENTER > MAP DETAIL**.

**MAP ORIENTATION:** Adjusts how the map is shown on the page. The NORTH UP option shows north at the top of the page. The TRACK UP option shows your current direction of travel toward the top of the page.

**ACTIVE TRACK:** Shows or hides the active track on the map.

**WAYPOINTS:** Shows or hides waypoints on the map.

## Compass Options

From the compass page, select **ENTER**.

**CALIBRATE COMPASS:** Calibrates the electronic compass (*Calibrating the Compass*, page 4).

**CHANGE FIELDS:** Allows you to customize the data fields on the compass page (*Customizing the Data Fields*, page 4).

## Calibrating the Compass

The device has a 3-axis electronic compass. You should calibrate the compass after moving long distances, experiencing temperature changes, or changing the batteries.

- 1 From the compass page, select **ENTER > CALIBRATE COMPASS > START**.
- 2 Follow the on-screen instructions.

## Customizing the Data Fields

You can customize the data fields displayed on the compass, trip computer, and Applied Ballistics pages.

**TIP:** You may need to change data fields to view connected sensor data, such as readings from a heart rate monitor or temperature sensor.

- 1 Select a page with data fields.
- 2 Select **ENTER > CHANGE FIELDS**.
- 3 Select the data field to replace.
- 4 Select the new data field.

## Elevation Options

From the elevation page, select **ENTER**.

**PLOT OVER TIME:** Allows you to view elevation changes over a period of time.

**PLOT OVER DIST:** Allows you to view elevation changes over a distance.

**ZOOM ELEVATION:** Sets the elevation scale.

**VIEW POINTS:** Enables data points on the elevation page.

## Calibrating the Barometric Altimeter

You can manually calibrate the barometric altimeter if you know the correct elevation or the correct barometric pressure.

- 1 Go to a location where the elevation or barometric pressure is known.
- 2 From the menu page, select **SETUP > ALTIMETER > CALIBRATE ALTIMETER**.
- 3 Follow the on-screen instructions.

## Trip Computer Options

From the trip computer page, select **ENTER**.

**CHANGE FIELDS:** Allows you to customize the data fields on the trip computer page (*Customizing the Data Fields*, page 4).

**RESET TRIP DATA:** Resets the trip and elevation data (*Resetting the Trip Computer*, page 4).

## Resetting the Trip Computer

For accurate information, you can reset the trip and elevation information before beginning a trip.

From the menu page, select **SETUP > RESET > RESET TRIP DATA > YES**.

## Applied Ballistics Options

**NOTE:** This feature is available only on the Foretrex 701 device.

From the Applied Ballistics page, select **ENTER**.

**QUICK EDIT:** Allows you to quickly edit the range, direction of fire, and wind information (*Quickly Editing Shooting Conditions*, page 2).

**RANGE CARD:** Allows you to view elevation and windage for various ranges based on user input parameters. You can change fields (*Customizing the Range Card Fields*, page 5), edit the range increment (*Editing the Range*



*Increment, page 5*), and set the base range (*Setting the Base Range, page 5*).

**TARGET CARD:** Allows you to view range, elevation, and windage for ten targets based on user input parameters. You can edit the target name and values (*Editing the Target Card, page 5*).

**ENVIRONMENT:** Allows you to customize atmospheric conditions for your current environment. You can enter custom values, use the pressure value from the internal sensor in the device, or use the temperature value from a connected temp sensor.

**TARGET:** Allows you to customize long-range shooting conditions for your current target. You can change the selected target and customize conditions for up to ten targets (*Changing the Target, page 5*).

**PROFILE:** Allows you to customize gun properties (*Editing Gun Properties, page 5*), bullet properties (*Editing Bullet Properties, page 5*), and output units of measure for your current profile. You can change the selected profile (*Selecting a Different Profile, page 5*) and add additional profiles (*Adding a Profile, page 5*).

**CHANGE FIELDS:** Allows you to customize the data fields on the Applied Ballistics page (*Customizing the Data Fields, page 4*).

**SETUP:** Allows you to select the input units of measure for the Applied Ballistics page.

### Customizing the Range Card Fields

- 1 From the Applied Ballistics page, select **ENTER > RANGE CARD > ENTER > CHANGE FIELDS**.
- 2 Select  $\vee$  or  $\wedge$  to scroll through the available fields.
- 3 Select **ENTER** to save your selection and move to the next field.
- 4 Select **PAGE** to save your changes.

### Editing the Range Increment

- 1 From the Applied Ballistics page, select **ENTER > RANGE CARD > ENTER > RANGE INCREMENT**.
- 2 Follow the on-screen instructions.

### Setting the Base Range

- 1 From the Applied Ballistics page, select **ENTER > RANGE CARD > ENTER > BASE RANGE**.
- 2 Follow the on-screen instructions.

### Editing the Target Card

- 1 From the Applied Ballistics page, select **ENTER > TARGET CARD**.
- 2 Select **ENTER > QUICK EDIT**.
- 3 Select  $\vee$  or  $\wedge$ , and select **ENTER** to edit a target.
- 4 Select **ENTER** to edit information about the target.

### Changing the Target

- 1 From the Applied Ballistics page, select **ENTER > TARGET > TARGET > CHANGE TARGET**.
- 2 Select a target.  
The long-range shooting conditions for the selected target appear.

### Editing the Name of a Target

From the Applied Ballistics page, select **ENTER > TARGET > TARGET > EDIT NAME**.

### Selecting a Different Profile

- 1 From the Applied Ballistics page, select **ENTER > PROFILE**.
- 2 Select your current profile.  
A list of profiles appears.

- 3 Select a profile.

- 4 Select **CHANGE PROFILE**.

The gun and bullet properties for the selected profile appear.

### Adding a Profile

You can add a .pro file that contains profile information by transferring the file to the AB folder on the device (*Transferring Files to Your Device, page 8*).

- 1 From the Applied Ballistics page, select **ENTER > PROFILE**.
- 2 Select your current profile.  
A list of profiles appears.
- 3 Select **+ PROFILE**.
- 4 Select an option:
  - To customize the bullet properties, select **BULLET PROPERTIES** (*Editing Bullet Properties, page 5*).
  - To customize the gun properties, select **GUN PROPERTIES** (*Editing Gun Properties, page 5*).

### Editing Bullet Properties

- 1 From the Applied Ballistics page, select **ENTER > PROFILE > BULLET PROPERTIES**.
- 2 Select an option:
  - To automatically enter bullet properties from the Applied Ballistics bullet database, select **BULLET DATABASE**, and select the bullet caliber, manufacturer, bullet, and drag curve.  
**NOTE:** You can select the caliber of your bullet to search a list of bullets within that caliber. Not all bullet names match the actual bullet caliber. For example, a 300 Win Mag is a .308 caliber bullet.
  - To manually enter bullet properties if your bullet is not in the bullet database, select  $\vee$  or  $\wedge$  to scroll through each field, and select **ENTER** to edit the values.  
**NOTE:** You can find this information on your bullet manufacturer's website.

### Editing Gun Properties

- 1 From the Applied Ballistics page, select **ENTER > PROFILE > GUN PROPERTIES**.
- 2 Select  $\vee$  or  $\wedge$  to scroll through each field, and select **ENTER** to edit the values.
- 3 Select an option:
  - To calibrate the muzzle velocity, select **CALIBRATE MUZZLE VELOCITY**, enter the range and true drop, and select **USE**.  
**NOTE:** Garmin® recommends you calibrate the muzzle velocity prior to the drop scale factor. Calibrating the muzzle velocity provides a more accurate solution in the supersonic range for your specific firearm.
  - To calibrate the drop scale factor, select **CALIBRATE DSF**, enter the range and true drop, and select **USE**.  
**NOTE:** Calibrating the drop scale factor provides a more accurate solution at or beyond the transonic range for your specific firearm.
- 4 Select **VIEW DSF TABLE** to review the drop scale factor table based on Mach speeds and calibrated drop scale factor values.
- 5 Select **MV-TEMP TABLE** to review muzzle velocity adjustments based on the ambient temperature.

### Clearing the Drop Scale Factor Table

The drop scale factor table is populated after you calibrate the drop scale factor. If necessary, you can reset the table values to zero.

From the Applied Ballistics page, select **ENTER > PROFILE > GUN PROPERTIES > VIEW DSF TABLE > ENTER > CLEAR DSF TABLE**.

### Editing the Muzzle Velocity and Temperature Table

- 1 From the Applied Ballistics page, select **ENTER > PROFILE > GUN PROPERTIES > MV-TEMP TABLE > ENTER > EDIT**.
- 2 Select  $\nabla$  or  $\blacktriangle$  to scroll through each field.
- 3 Select **ENTER** to edit the values.

### Clearing the Muzzle Velocity and Temperature Table

The muzzle velocity and temperature table is populated after you calibrate the muzzle velocity. If necessary, you can reset the table values to zero.

From the Applied Ballistics page, select **ENTER > PROFILE > GUN PROPERTIES > MV-TEMP TABLE > ENTER > CLEAR MV-TEMP**.

### Deleting a Profile

- 1 From the Applied Ballistics page, select **ENTER > PROFILE**.
- 2 Select your current profile.  
A list of profiles appears.
- 3 Select a profile.
- 4 Select **DELETE PROFILE**.

## Menu Page Options

**WAYPOINTS:** Allows you to create a new waypoint, list all waypoints, or view the nearest waypoint to your location.

**TRACKS:** Allows you to manage your saved tracks.

**ROUTES:** Allows you to create a new route, list all routes, and delete all routes.

**SETUP:** Allows you to customize the device (*Device Settings, page 6*).

**CONNECT:** Allows you to connect to compatible Garmin devices and ANT+® sensors (*Optional Fitness Accessories, page 7*).

**PHONE:** Allows you to pair a smartphone with your device (*Pairing a Smartphone with Your Device, page 7*).

**GPS:** Displays the satellite signal strength or the satellite sky view (*Viewing Satellites, page 8*).

**JUMPMASTER:** Allows you to select the jump type (*Jumpmaster, page 7*).

### Device Settings

From the menu page, select **SETUP**.

**APPLIED BALLISTICS:** Allows you to customize the atmospheric conditions for your environment, shooting conditions for your target, gun and bullet properties for your profile, output units of measure for your profile, and input units of measure for the Applied Ballistics page (*Applied Ballistics Options, page 4*).

**NOTE:** This feature is available only on the Foretrex 701 device.

**TIME:** Sets the device to display time in a 12-hour, 24-hour, or military format, and sets the time zone for the device. The **AUTOMATIC** option allows the device to set the time zone automatically based on your GPS position.

**TIMER:** Enables the timer page and allows you to set timer preferences (*Timer Settings, page 6*).

**DISPLAY:** Adjusts the backlight timeout and display contrast.

**UNITS:** Sets the position format, map datum, and units of measure used on the device.

**HEADING:** Sets the compass display setting and north reference, and allows you to manually calibrate the compass (*Calibrating the Compass, page 4*). The **AUTO** option allows

the device to automatically calibrate the compass. The **OFF** option turns off the compass.

**SYSTEM:** Sets system preferences (*System Settings, page 6*).

**TRACKS:** Sets track preferences (*Tracks Settings, page 6*).

**ROUTES:** Sets the transition from one point on the route to the next. The **DISTANCE** option routes you to the next point on the route when you are within a specified distance of your current point.

**MAP:** Sets map preferences (*Map Settings, page 7*).

**ALTIMETER:** Enables auto calibration, and allows you to manually calibrate the altimeter (*Calibrating the Barometric Altimeter, page 4*).

**RESET:** Allows you to reset trip data (*Resetting the Trip Computer, page 4*), delete all waypoints (*Deleting All Waypoints, page 3*), and restore the device to factory default settings (*Restoring All Default Settings, page 9*).

**ABOUT FORETREX:** Allows you to view device information, such as the unit ID, software version, regulatory information, and license agreement (*Viewing Device Information, page 8*).

### Timer Settings

From the menu page, select **SETUP > TIMER**.

**SHOW TIMER PAGE?:** Enables the timer page.

**COUNT DOWN FROM::** Sets the time increment for the countdown timer. You can use the **COUNT UP** option to use the timer as a stopwatch.

**WHEN EXPIRED::** Sets the timer to stop, count up, or repeat when the time expires.

**EXPIRED TONE::** Sets the audible alert that sounds when the time expires.

**INTERVAL TONE::** Sets the audible alert that sounds when the interval time expires.

### System Settings

From the menu page, select **SETUP > SYSTEM**.

**GPS MODE:** Sets the satellite system to GPS, GPS + GLONASS, GPS + GALILEO, ULTRATRAC, or DEMO (GPS off). The **ULTRATRAC** option records track points and sensor data less frequently.

**WAAS:** Enables the system to use Wide Area Augmentation System/European Geostationary Navigation Overlay Service (WAAS/EGNOS) data.

**BEEPER:** Sets the beeper to sound for key tones and messages or messages only.

**BATTERY:** Allows you to change the type of AAA battery you are using.

**LANGUAGE:** Sets the text language on the device.

**SPANNER:** Allows you to use the device USB port with most NMEA® 0183-compliant mapping programs by creating a virtual serial port.

**OWNER INFO:** Allows you to enter owner information, such as your name, and set it to appear when the device turns on.

### Tracks Settings

From the menu page, select **SETUP > TRACKS**.

**RECORDING:** Enables track recording.

**RECORD INTERVAL:** Sets the track log recording method and rate. You can use the **DISTANCE** option to enter the distance between recorded track points. You can use the **TIME** option to enter the time between recorded track points. You can use the **AUTO** option to automatically record track points based on the selected resolution level.

**RESOLUTION:** Sets how often track points are recorded. A higher resolution records points more frequently and creates a more detailed track, but fills the track log faster.

**WRAP WHEN FULL:** Indicates whether track points are overwritten when the device memory is full.

#### Map Settings

From the menu page, select **SETUP > MAP**.

**MAP ORIENTATION:** Adjusts how the map is shown on the page. The **NORTH UP** option shows north at the top of the page. The **TRACK UP** option shows your current direction of travel toward the top of the page.

**AUTO ZOOM:** Automatically sets the zoom level for optimal use of your map. When this setting is turned off, you must zoom in or out manually.

**GO TO LINE:** Sets the behavior of the pointer that appears on the map. **BEARING** points in the direction of your destination. **COURSE** shows your relationship to the course line leading to the destination.

#### Jumpmaster

##### **WARNING**

The jumpmaster feature is for use by experienced skydivers only. The jumpmaster feature should not be used as a primary skydiving altimeter. Failure to input the appropriate jump related information can lead to serious personal injury or death.

The jumpmaster feature follows military guidelines for calculating the high altitude release point (HARP). The device detects automatically when you have jumped to begin navigating toward the desired impact point (DIP) using the barometer and electronic compass.

#### Jump Types

The jumpmaster feature allows you to set the jump type to one of three types: **HAHO**, **HALO**, or **Static**. The jump type selected determines what additional setup information is required. For all jump types, drop altitudes and opening altitudes are measured in feet above ground level (AGL).

**HAHO:** High Altitude High Opening. The jumpmaster jumps from a very high altitude and opens the parachute at a high altitude. You must set a DIP and a drop altitude of at least 1,000 feet. The drop altitude is assumed to be the same as the opening altitude. Common values for a drop altitude range from 12,000 to 24,000 feet AGL.

**HALO:** High Altitude Low Opening. The jumpmaster jumps from a very high altitude and opens the parachute at a low altitude. The required information is the same as the **HAHO** jump type, plus an opening altitude. The opening altitude must not be greater than the drop altitude. Common values for an opening altitude range from 2,000 to 6,000 feet AGL.

**STATIC:** The wind speed and direction are assumed to be constant for the duration of the jump. The drop altitude must be at least 1,000 feet.

## Connected Features

Connected features are available for your Foretrex device when you connect the device to a compatible smartphone using Bluetooth wireless technology. Some features require you to install the Garmin Connect™ Mobile app on the connected smartphone. Go to [www.garmin.com/apps](http://www.garmin.com/apps) for more information.

**Phone notifications:** Displays phone notifications and messages on your Foretrex device.

**Software Updates:** Allows you to update your device software.

## Pairing a Smartphone with Your Device

To use the connected features of the Foretrex device, it must be paired directly through the Garmin Connect Mobile app, instead of from the Bluetooth settings on your smartphone.

- 1 Bring your compatible smartphone within 10 m (33 ft.) of your device.
- 2 From the menu page on your device, select **PHONE > PAIR PHONE**.
- 3 From the app store on your smartphone, install and open the Garmin Connect Mobile app.
- 4 Follow the instructions in the app to complete the pairing process.

## Optional Fitness Accessories

You can use optional fitness accessories including a heart rate monitor or a cadence sensor with your device. These accessories use ANT+ wireless technology to send data to the device.

Before you can use the fitness accessory with your device, you must install the accessory according to the instructions included with the accessory.

### Pairing Your ANT+ Sensors

Before you can pair, you must put on the heart rate monitor or install the sensor.

Pairing is the connecting of ANT+ wireless sensors, for example, connecting a heart rate monitor with your device.

- 1 Bring the device within 3 m (10 ft.) of the sensor.

**NOTE:** Stay 10 m (30 ft.) away from other ANT+ sensors while pairing.

- 2 From the menu page, select **CONNECT**.
- 3 Select your sensor.
- 4 Select **SEARCH FOR NEW**.

When the sensor is paired with your device, the sensor status changes from **SEARCHING** to **CONNECTED**.

### Tips for Pairing ANT+ Accessories with Your Garmin Device

- Verify that the ANT+ accessory is compatible with your Garmin device.
- Before you pair the ANT+ accessory with your Garmin device, move 10 m (32.9 ft.) away from other ANT+ accessories.
- Bring the Garmin device within range 3 m (10 ft.) of the ANT+ accessory.
- After you pair the first time, your Garmin device automatically recognizes the ANT+ accessory each time it is activated. This process occurs automatically when you turn on the Garmin device and only takes a few seconds when the accessories are activated and functioning correctly.
- When paired, your Garmin device receives data from only your accessory, and you can go near other accessories.

### tempe

The tempe is an ANT+ wireless temperature sensor. You can attach the sensor to a secure strap or loop where it is exposed to ambient air, and therefore, provides a consistent source of accurate temperature data. You must pair the tempe with your device to display temperature data from the tempe.

### Displaying tempe Data

When displaying tempe data for the first time, you should complete these tasks to customize the device and data fields.

- 1 Pair your temperature sensor (*Pairing Your ANT+ Sensors, page 7*).
- 2 Customize data fields to display the temperature data (*Customizing the Data Fields, page 4*).

## Device Information

### Specifications

Battery type	Two 1.5 V AAA batteries (alkaline, NiMH, or lithium)
Battery life	48 hr.
Water rating	IEC 60529 IPX7*
Operating temperature range	From -20° to 70°C (from -4° to 158°F)
Wireless frequencies/protocols	ANT+ 2.4 GHz @ 3 dBm nominal Bluetooth 2.4 GHz @ 3 dBm nominal

\*The device withstands incidental exposure to water of up to 1 m for up to 30 min. For more information, go to [www.garmin.com/waterrating](http://www.garmin.com/waterrating).

### Viewing Device Information

You can view the unit ID, software information, and regulatory information.

- 1 From the menu page, select **SETUP > ABOUT FORETREX**.
- 2 Select **✓**.

### Viewing Satellites

The satellite page shows your current location, satellite locations, and signal strength. For more information about GPS, go to [www.garmin.com/aboutGPS](http://www.garmin.com/aboutGPS).

- 1 From the menu page, select **GPS**.

The bars represent the strength of each satellite signal received (the number of satellites appears below each bar). White bars indicate the device is collecting data. Solid bars indicate the device has acquired satellite signals.

- 2 Select **ENTER** to switch to sky view.

The location of the satellites from which you are receiving signals appears.

### Device Care

#### NOTICE

Before you attempt to replace the battery, carefully read the instructions in the owner's manual.

Avoid extreme shock and harsh treatment, because it can degrade the life of the product.

Thoroughly rinse the device with fresh water after exposure to chlorine, salt water, sunscreen, cosmetics, alcohol, or other harsh chemicals. Prolonged exposure to these substances can damage the case.

Do not use a sharp object to clean the device.

Avoid chemical cleaners, solvents, and insect repellents that can damage plastic components and finishes.

Always wipe the device dry after cleaning or use, and store it in a cool, dry place.

Do not store the device where prolonged exposure to extreme temperatures can occur, because it can cause permanent damage.

### Cleaning the Device

- 1 Wipe the device using a cloth dampened with a mild detergent solution.
- 2 Wipe it dry.

After cleaning, allow the device to dry completely.

**TIP:** For more information, go to [www.garmin.com/fitandcare](http://www.garmin.com/fitandcare).

### Data Management

**NOTE:** The device is not compatible with Windows® 95, 98, Me, Windows NT®, and Mac® OS 10.3 and earlier.

#### Connecting the Device to Your Computer

You can use the Foretrex device as a USB mass storage device by connecting it to your computer with a USB cable.

- 1 Turn the D-ring counter-clockwise, and pull up to open the rear cover.
- 2 Plug the small end of the USB cable into the USB port on the device.
- 3 Plug the large end of the USB cable into a computer USB port.
- 4 Select **YES** to enter mass storage mode.

Your device appears as a removable drive in **My Computer** on Windows computers and as a mounted volume on Mac computers.

#### Transferring Files to Your Device

- 1 Connect the device to your computer.

On Windows computers, the device appears as a removable drive or a portable device. On Mac computers, the device appears as a mounted volume.

**NOTE:** Some computers with multiple network drives may not display device drives properly. See your operating system documentation to learn how to map the drive.

- 2 On your computer, open the file browser.
- 3 Select a file.
- 4 Select **Edit > Copy**.
- 5 Open the portable device, drive, or volume for the device.
- 6 Browse to a folder.
- 7 Select **Edit > Paste**.

The file appears in the list of files in the device memory.

#### Deleting Files

#### NOTICE

If you do not know the purpose of a file, do not delete it. Your device memory contains important system files that should not be deleted.

- 1 Open the **Garmin** drive or volume.
- 2 If necessary, open a folder or volume.
- 3 Select a file.
- 4 Press the **Delete** key on your keyboard.

**NOTE:** If you are using an Apple® computer, you must empty the Trash folder to completely remove the files.

#### Disconnecting the USB Cable

If your device is connected to your computer as a removable drive or volume, you must safely disconnect your device from your computer to avoid data loss. If your device is connected to your Windows computer as a portable device, it is not necessary to safely disconnect the device.

- 1 Complete an action:
  - For Windows computers, select the **Safely Remove Hardware** icon in the system tray, and select your device.
  - For Apple computers, select the device, and select **File > Eject**.
- 2 Disconnect the cable from your computer.



## Receiving Data Wirelessly

Before you can receive data wirelessly, you must be within 3 m (10 ft.) of a compatible Garmin device.

Your device can receive waypoints and routes when connected with a compatible Garmin device.

From the menu page, select **CONNECT > RECEIVE WIRELESSLY**.

When a compatible Garmin device is found, the status changes from **CONNECTING** to **RECEIVING DATA**. When data is received, the status changes to **TRANSFER COMPLETE**.

## Sending a Route Wirelessly

Before you can send a route wirelessly, you must be within 3 m (10 ft.) of a compatible Garmin device.

- 1 From the menu page, select **ROUTES > LIST ALL**.
- 2 Select a route.
- 3 Select **SEND**.

## Sending a Waypoint Wirelessly

Before you can send a waypoint wirelessly, you must be within 3 m (10 ft.) of a compatible Garmin device.

- 1 From the menu page, select **WAYPOINTS > LIST ALL**.
- 2 Select a waypoint.
- 3 Select **OPTIONS > SEND**.

# Troubleshooting

## Product Updates

On your computer, install Garmin Express™ ([www.garmin.com/express](http://www.garmin.com/express)). On your smartphone, install the Garmin Connect Mobile app.

This provides easy access to these services for Garmin devices:

- Software updates
- Data uploads to Garmin Connect
- Product registration

## Setting Up Garmin Express

- 1 Connect the device to your computer using a USB cable.
- 2 Go to [www.garmin.com/express](http://www.garmin.com/express).
- 3 Follow the on-screen instructions.

## Improving GPS Satellite Reception

- Frequently sync the device to your Garmin Connect account:
  - Connect your device to a computer using the USB cable and the Garmin Express application.
  - Sync your device to the Garmin Connect Mobile app using your Bluetooth enabled smartphone.

While connected to your Garmin Connect account, the device downloads several days of satellite data, allowing it to quickly locate satellite signals.

- Take your device outside to an open area away from tall buildings and trees.
- Remain stationary for a few minutes.

## Maximizing Battery Life

You can do several things to extend the life of the batteries.

- Use premium batteries.
- Reduce the backlight timeout (*Device Settings*, page 6).
- Turn off the beeper (*System Settings*, page 6).
- Turn off the compass when not in use (*Device Settings*, page 6).

## My device is in the wrong language

You can change the device language selection if you have accidentally selected the wrong language on the device.

- 1 From the menu page, select **✓** three times.
- 2 Select **ENTER**.
- 3 Select **✓** five times.
- 4 Select **ENTER**.
- 5 Select **✓** four times.
- 6 Select **ENTER**.
- 7 Select your language.

## Resetting the Device

You can reset the device if it stops responding. This does not erase any of your data or settings.

Hold **POWER** for 10 seconds.

## Restoring All Default Settings

You can reset all settings back to their factory default values.

From the menu page, select **SETUP > RESET > RESTORE DEFAULTS > YES**.

# Appendix

## Data Fields

**AMB PRESS:** The uncalibrated ambient pressure.

**AVG ASCENT:** The average vertical distance of ascent since the last reset.

**AVG DESCNT:** The average vertical distance of descent since the last reset.

**BAROMETER:** The calibrated current pressure.

**BEARING:** The direction from your current location to a destination. You must be navigating for this data to appear.

**CADENCE:** Cycling. The number of revolutions of the crank arm. Your device must be connected to a cadence accessory for this data to appear.

**COURSE:** The direction from your starting location to a destination. Course can be viewed as a planned or set route. You must be navigating for this data to appear.

**ELEVATION:** The altitude of your current location above or below sea level.

**FINAL DEST:** The last point on the route or course.

**FINAL DIST:** The remaining distance to the final destination. You must be navigating for this data to appear.

**FINAL ETA:** The estimated time of day when you will reach the final destination (adjusted to the local time of the destination). You must be navigating for this data to appear.

**FINAL ETE:** The estimated time remaining until you reach the final destination. You must be navigating for this data to appear.

**GLIDE RATIO:** The ratio of horizontal distance traveled to the change in vertical distance.

**GR DEST:** The glide ratio required to descend from your current position to the destination elevation. You must be navigating for this data to appear.

**HEADING:** The direction you are moving.

**HEART RATE:** Your heart rate in beats per minute (bpm). Your device must be connected to a compatible heart rate monitor.

**MAX ASCENT:** The maximum rate of ascent in feet per minute or meters per minute since the last reset.

**MAX DESCNT:** The maximum rate of descent in meters per minute or feet per minute since the last reset.

**MAX ELEVTN:** The highest elevation reached since the last reset.

**MAX SPEED:** The highest speed reached since the last reset.

**MAX TEMP:** The maximum temperature recorded in the last 24 hours from a compatible temperature sensor.

**MIN ELEVTN:** The lowest elevation reached since the last reset.

**MIN TEMP:** The minimum temperature recorded in the last 24 hours from a compatible temperature sensor.

**MOV'N AVG:** The average speed while moving for the current activity.

**MOV'N TIME:** The total time moving for the current activity.

**NEXT DEST:** The next point on the route. You must be navigating for this data to appear.

**NEXT DIST:** The remaining distance to the next waypoint on the route. You must be navigating for this data to appear.

**NEXT ETA:** The estimated time of day when you will reach the next waypoint on the route (adjusted to the local time of the waypoint). You must be navigating for this data to appear.

**NEXT ETE:** The estimated time remaining until you reach the next waypoint on your route. You must be navigating for this data to appear.

**ODOMETER:** A running tally of the distance traveled for all trips. This total does not clear when resetting the trip data.

**OFF COURSE:** The distance to the left or right by which you have strayed from the original path of travel. You must be navigating for this data to appear.

**OVER'L SPD:** The average speed for the current activity, including both moving and stopped speeds.

**SPEED:** The current rate of travel.

**STOP TIME:** A running tally of the time spent not moving since the last reset.

**SUNRISE:** The time of sunrise based on your GPS position.

**SUNSET:** The time of sunset based on your GPS position.

**TEMPERATURE:** The temperature of the air. Your body temperature affects the temperature sensor. Your device must be connected to a temperature sensor for this data to appear.

**TIME:** The time of day based on your current location and time settings (format, time zone, daylight saving time).

**TO COURSE:** The direction in which you must move to get back on the route. You must be navigating for this data to appear.

**TOTAL TIME:** A running tally of the total time spent moving and not moving since the last reset.

**TOT ASCENT:** The total elevation distance ascended during the activity or since the last reset.

**TOT DESCNT:** The total elevation distance descended during the activity or since the last reset.

**TRIP ODOM:** A running tally of the distance traveled since the last reset.

**TURN:** The angle of difference (in degrees) between the bearing to your destination and your current course. L means turn left. R means turn right. You must be navigating for this data to appear.

**VERT SPEED:** The rate of ascent or descent over time.

**VMG:** The speed at which you are making progress into the wind.

**VSPD DEST:** The rate of ascent or descent to a predetermined altitude. You must be navigating for this data to appear.

## Applied Ballistics Glossary of Terms

**NOTE:** The Applied Ballistics feature is available only on the Foretrex 701 device.

### Shooting Solution Fields

**DOF:** The direction of fire, with north at 0 degrees and east at 90 degrees. Input field.

**TIP:** You can use the compass to set this value by pointing the top of the device toward the direction of fire. The current compass value appears in the DOF field. You can select ENTER to use this value. You can manually enter a value by selecting  $\vee$  or  $\wedge$ .

**NOTE:** The DOF is used only for calculating the Coriolis effect. If you are shooting at a target less than 1,000 yards away, this input field is optional.

**ELEVATION:** The vertical portion of the aiming solution, displayed in milliradians (mil) or minute of angle (MOA).

**RNG:** The distance to the target, displayed in yards or meters. Input field.

**W 1/2:** The wind speed 1, wind speed 2, and wind direction. For example, if the wind direction is DIR 9:00, the wind is blowing left to right as viewed by the shooter. Input field.

**NOTE:** The wind speed 2 field is optional. Using both wind speed 1 and wind speed 2 is not an effective way to account for different wind speeds at different distances between you and the target. Using these fields is a way to bracket (isolate) the wind values and calculate minimum and maximum windage values for the solution.

**WINDAGE 1:** The horizontal portion of the aiming solution based on the wind speed 1 and wind direction, displayed in milliradians (mil) or minute of angle (MOA).

**WINDAGE 2:** The horizontal portion of the aiming solution based on the wind speed 2 and wind direction, displayed in milliradians (mil) or minute of angle (MOA).

### Additional Output Fields

**AERO JUMP:** The amount of the elevation solution attributed to aerodynamic jump. Aerodynamic jump is the vertical deflection of the bullet due to a crosswind. If there is no crosswind component or wind value, this value is zero.

**COS INCL:** The cosine of the inclination angle to the target.

**DROP:** The total drop the bullet experiences along its flight path, displayed in inches.

**H COR EFFECT:** The horizontal Coriolis effect. The horizontal Coriolis effect is the amount of the windage solution attributed to the Coriolis effect. This is always calculated by the device, although the impact may be minimal if you are not shooting at extended range.

**LEAD:** The horizontal correction needed to hit a target moving left or right at a given speed.

**TIP:** When you enter the speed of your target, the device factors the necessary windage required into the total windage value on the Applied Ballistics page.

**MAX ORD:** The maximum ordinance. The maximum ordinance is the maximum height above the axis of the barrel that a bullet will reach along its flight path.

**MAX ORD RNG:** The range at which the bullet will reach its maximum ordinance.

**REM ENERGY:** The remaining energy of the bullet at target impact, displayed in foot-pounds of force (ft. lbf) or joules (J).

**SPIN DRIFT:** The amount of the windage solution attributed to the spin drift (gyroscopic drift). For example, in the northern hemisphere, a bullet shot out of a right-hand twist barrel will always deflect slightly to the right as it travels.

**TOF:** The time of flight, which indicates the time required for a bullet to reach its target at a given range.

**V COR EFFECT:** The vertical Coriolis effect. The vertical Coriolis effect is the amount of the elevation solution attributed to the Coriolis effect. This is always calculated by the device, although the impact may be minimal if you are not shooting at extended range.



**VEL MACH:** The estimated velocity of the bullet when it impacts the target, displayed as a factor of mach speed.

**VELOCITY:** The estimated velocity of the bullet when it impacts the target.

#### **Environment Fields**

**AMB/STN PRESSURE:** The ambient (station) pressure. Ambient pressure is not adjusted to represent sea level (barometric) pressure. Ambient pressure is required for the ballistics shooting solution. Input field.

**TIP:** You can manually enter this value, or you can select the USE CURRENT PRESSURE option to use the pressure value from the internal sensor in the device.

**HUMIDITY:** The percentage of moisture in the air. Input field.

**LATITUDE:** The horizontal location on the Earth's surface. Negative values are below the equator. Positive values are above the equator. This value is used to calculate the vertical and horizontal Coriolis drift. Input field.

**TIP:** You can select the USE CURRENT POSITION option to use the GPS coordinates from your device.

**NOTE:** The LATITUDE is used only for calculating the Coriolis effect. If you are shooting at a target less than 1,000 yards away, this input field is optional.

**TEMPERATURE:** The temperature at your current location. Input field.

**TIP:** You can manually enter the temperature reading from a connected tempe sensor or other temperature source. This field does not automatically update when connected to a tempe sensor.

**WIND DIRECTION:** The direction from which the wind is coming. For example, a DIR 9:00 wind blows from your left to your right. Input field.

**WIND SPEED 1:** The wind speed used in the shooting solution. Input field.

**WIND SPEED 2:** An optional, additional wind speed used in the shooting solution. Input field.

**TIP:** You can use two wind speeds to calculate a windage solution that contains a high and low value. The actual windage to apply for the shot should fall in this range.

#### **Target Fields**

**DIRECTION OF FIRE:** The direction of fire, with north at 0 degrees and east at 90 degrees. Input field.

**NOTE:** The DIRECTION OF FIRE is used only for calculating the Coriolis effect. If you are shooting at a target less than 1,000 yards away, this input field is optional.

**INCLINATION:** The angle of inclination of the shot. A negative value indicates a downhill shot. A positive values indicates an uphill shot. The shooting solution multiplies the vertical portion of the solution by the cosine of the inclination angle to calculate the adjusted solution for an uphill or downhill shot. Input field.

**RANGE:** The distance to the target, displayed in yards or meters. Input field.

**SPEED:** The speed of a moving target, displayed in miles per hour (mph) or kilometers per hour (km/h). A negative value indicates a target moving left. A positive value indicates a target moving right. Input field.

#### **Profile Fields, Bullet Properties**

**BALLISTIC COEFFICIENT:** The manufacturer's ballistic coefficient for your bullet. Input field.

**TIP:** When you use one of the Applied Ballistics custom drag curves, the ballistic coefficient will display a value of 1.000.

**BULLET DIAMETER:** The bullet diameter measured in inches. Input field.

**NOTE:** The diameter of the bullet may vary from the common name of the round. For example, a 300 Win Mag is actually .308 inches in diameter.

**BULLET LENGTH:** The length of the bullet measured in inches. Input field.

**BULLET WEIGHT:** The bullet weight measured in grains. Input field.

**DRAG CURVE:** The Applied Ballistics custom drag curve, or the G1 or G7 standard projectile models. Input field.

**NOTE:** Most long range rifle bullets are closer to the G7 standard.

#### **Profile Fields, Gun Properties**

**HORIZONTAL SIGHT SCALE FACTOR:** A linear multiplier that accounts for horizontal scaling. Not all rifle scopes track perfectly, so the ballistics solution requires a correction to scale according to a particular rifle scope. For example, if a turret is moved 10 mil but the impact is 9 mil, the sight scale is 0.9. Input field.

**MUZZLE VELOCITY:** The speed of the bullet as it leaves the muzzle. Input field.

**NOTE:** This field is required for accurate calculations by the shooting solution. If you calibrate the muzzle velocity, this field may be updated automatically for a more accurate firing solution.

**OUTPUT UNITS:** The output units of measure. A milliradian (mil) is 3.438 inches at 100 yards. A minute of angle (MOA) is 1.047 inches at 100 yards.

**SIGHT HEIGHT:** The distance from the center axis of the rifle barrel to the center axis of the scope. Input field.

**TIP:** You can easily determine this value by measuring from the top of the bolt to the center of the windage turret, and adding half of the diameter of the bolt.

**TWIST RATE:** The distance it takes for the rifling of your barrel to make one full rotation. Rifle twist is often provided by the gun or barrel manufacturer. Input field.

**VERTICAL SIGHT SCALE FACTOR:** A linear multiplier that accounts for vertical scaling. Not all rifle scopes track perfectly, so the ballistics solution requires a correction to scale according to a particular rifle scope. For example, if a turret is moved 10 mil but the impact is 9 mil, the sight scale is 0.9. Input field.

**ZERO HEIGHT:** An optional modification to impact elevation at zero range. This is often used when adding a suppressor or using a subsonic load. For example, if you add a suppressor and your bullet impacts the target 1 inch higher than expected, your ZERO HEIGHT is 1 inch. You must set this to zero when you remove the suppressor. Input field.

**ZERO OFFSET:** An optional modification to impact windage at zero range. This is often used when adding a suppressor or using a subsonic load. For example, if you add a suppressor and your bullet impacts the target 1 inch to the left of the expected impact, your ZERO OFFSET is -1 inch. You must set this to zero when you remove the suppressor. Input field.

**ZERO RANGE:** The range at which the rifle was zeroed. Input field.

#### **Profile Fields, Gun Properties, Calibrate Muzzle Velocity**

**ENTER RANGE:** The distance from the muzzle to the target. Input field.

**TIP:** You should enter a value as close as possible to the range suggested in the shooting solution. This is the range where the bullet slows to Mach 1.2 and begins to enter the transonic range.

**ENTER TRUE DROP:** The actual distance the bullet falls while in flight to the target, displayed in milliradians (mil) or minute of angle (MOA). Input field.

***Profile Fields, Gun Properties, Calibrate Drop Scale Factor***

**ENTER RANGE:** The range from which you are shooting. Input field.

**TIP:** This range should be within 90% of the recommended range suggested in the shooting solution. Values that are less than 80% of the recommended range will not provide a valid adjustment.

**ENTER TRUE DROP:** The actual distance the bullet falls when fired at a specific range, displayed in milliradians (mil) or minute of angle (MOA). Input field.

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