# Kestrel® Ballistics

## USER GUIDE
## 2700

## ⚠ CAUTION

**Your Kestrel Ballistics Weather Meter is designed to provide accurate measurement of current conditions only. Depending on your location and environment, conditions may change rapidly.**

*Rapid temperature changes (i.e., moving your meter from indoors to outdoors) may cause inaccurate readings of temperature. Before relying on Kestrel Weather Meter readings, be sure to use care to either a) force air flow over the sensors by waving or slinging your meter through the air; or b) wait until your unit has equilibrated to its new environment.*

**To maximize the accuracy and reliability of your readings:**
- *Ensure that your Kestrel Meter is in good repair.*
- *Take readings frequently and carefully according to the guidelines above.*
- *Allow your meter's readings to stabilize after significant changes in temperature (i.e., changing location from indoors to outdoors).*

*Use extra care and good judgment when referring to your Kestrel Ballistics Weather Meter to make any decisions regarding safety, health or property protection.*

## ⚠ CAUTION

CR2032 batteries contain lithium, a toxic substance. Ingestion may cause serious injury or death. Keep battery out of the reach of children. If swallowed, immediately seek medical help. Have doctor phone 24-hour hotline at (202) 625-3333, call collect if necessary. Dispose of batteries properly and according to local regulations. Do not puncture or burn batteries. If the battery compartment does not close securely, stop using the product and keep it away from children.

⚠ **WARNING:** This product and/or its included or branded accessories can expose you to chemicals, including lead, lead compounds and phthalate DEHP, which are known to the State of California to cause cancer and lead and lead compounds, bisphenol A (BPA), and phthalate DnHP, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to **www.P65Warnings.ca.gov.**

## CONTENTS

This User Guide contains only the information you need to get started using your Kestrel meter. For FAQ's, chat and e-mail support, visit **www.kestrelballistics.com.**

**CONTACT US AT**
**(800) 784-4221 Toll Free North America**
**(610) 447-1555**
**Email: support@kestrelballistics.com**
**Facebook: fb.com/KestrelMeters**
**Twitter: @KestrelWeather**

The table below shows all Measurement screens available, listed with their corresponding screen icon and "Hint" abbreviation.

| Measurement | Icon | Units of Measure |
|---|---|---|
| Elevation | **E** | MILs \| TMOA \| SMOA \| Clicks \| in \| cm |
| Windage | **W** | MILs \| TMOA \| SMOA \| Clicks \| in \| cm |
| Target Range | ◎ | y \| m |
| Temperature | ░ | ˚F \| ˚C |
| Direction of Fire | ◎⊘ | deg |
| Wind Speed | ⇦ | mph \| m/s \| km/h |
| Wind Direction | ↑ | clock |
| Inclination Angle | ◎∠ | deg |

FRONT

BACK

REPLACEABLE IMPELLER

TEMPERATURE THERMISTOR

*Kestrel* *Ballistics*

2700

RANGE SCROLLING BUTTONS

POWER/TARGET SETUP BUTTON

PRESSURE SENSOR

SERIAL NUMBER

Nielsen-Kellerman
www.KestrelBallistics.com
Covered by US Patent
Designed & Built in the USA
FCC ID: OOO13
IC: 5123A+13

Target Setup
Edit Range
x2 Wind Capture

CR2032
Battery

Assembled in USA

BATTERY DOOR: CR2032 LITHIUM COIN CELL
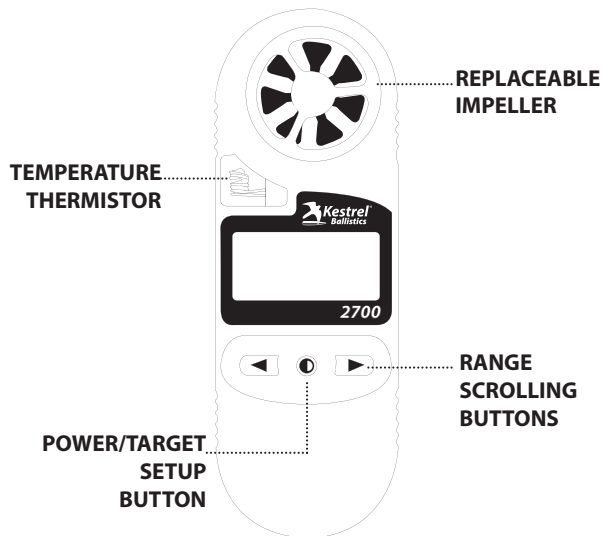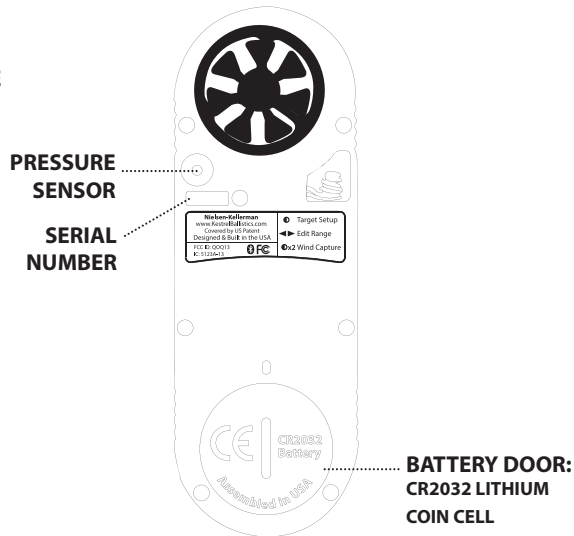
### 1. Turn the 2700 On:

Press the center button to turn your Kestrel 2700 on. Pressing and holding the center button will turn it off.

*Note: To conserve battery, the Kestrel will also power off after 45 minutes of inactivity.*



### 2. Calibrate the Compass:

» Hold the Kestrel vertical.
» Press the center button.
» Carefully spin the Kestrel at about 8 seconds per rotation while the screen counts down from 30 to 0. (Either direction works.)

*Trouble shooting: If the calibration fails and returns to the CAL CPS screen, simply press the center button and repeat.*
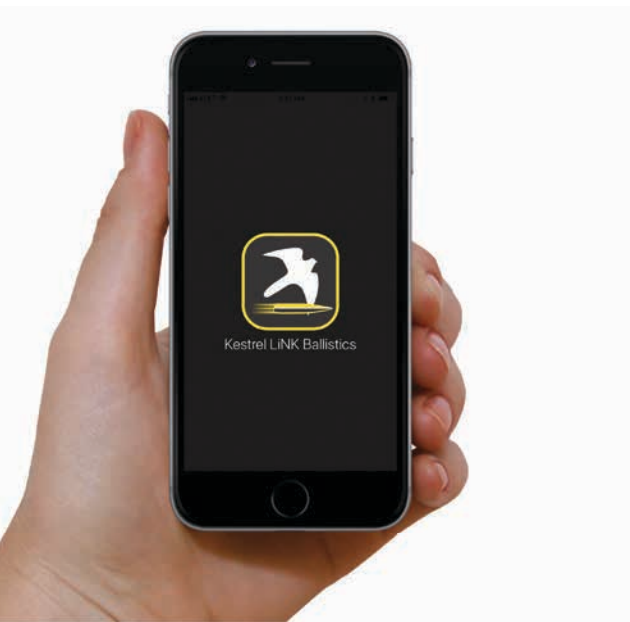


*When calibrated, the display will change to show the solutions screen.*
*Note: Every time the battery is replaced the compass in the 2700 will need to be recalibrated and the screen will display "CAL CPS".*

**3. Download the Kestrel LiNK Ballistics app:**



*Note: Make sure to choose LiNK Ballistics, not LiNK Weather, when selecting the app.*

**4. Connect your 2700 to your phone or tablet:**

With your Kestrel turned on, open the app and connect to your 2700.

*Trouble shooting: Make sure Bluetooth is turned on in your mobile device. Do not try to connect the Kestrel using the Bluetooth menu in your mobile device, use the "Connect Device" option in the app instead.*
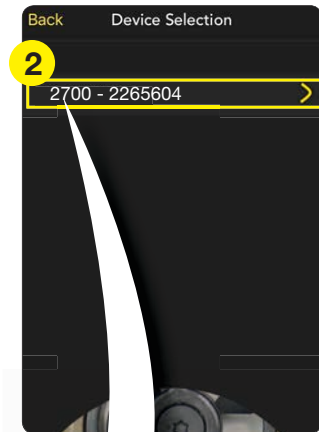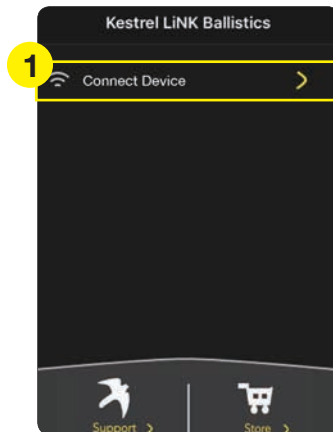
**5. Create your gun profile:**
Select gun profile management. Select + (IOS) or ⋮(Android) to
add a new profile.



*iOS*                    *Android*

## 6. Enter your gun information:

Name your gun profile and enter required data. If you are unsure what information to enter in a field or where to find it, tap the name next to the field for additional guidance and refer to the following page. When done hit the "Save" button (iOS) ; tap the three dots in the upper right corner (Android).
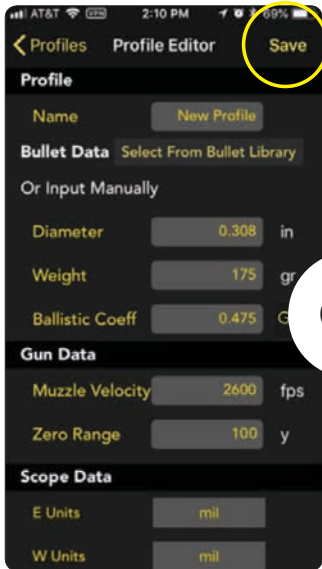


*iOS*

**OR**

*Android*

# Gun Profile Builder Tips



Try to pick a profile name you can differentiate from other gun/caliber combinations.

Picking your bullet from the Bullet Library will auto-populate the Diameter, Weight and Ballistic Coefficient fields for your bullet.
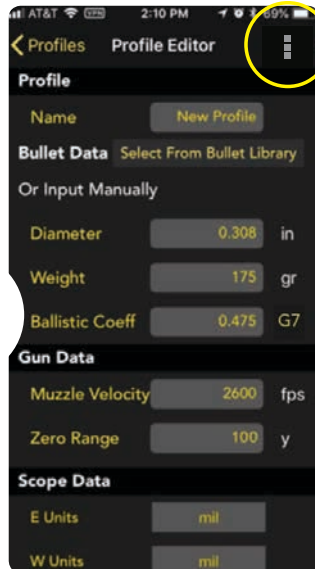
Be careful when entering bullet diameter as many common caliber names do not equal the actual measurement of the bullet diameter. The bullet library lists the actual bullet diameter next to the commonly used caliber names.

Bullet Weight will be printed by the manufacturer on the box.

The G1/G7 BCs in the Bullet Library are lab-tested and more accurate than most manufacturer data. For most long range bullets, a G7 BC produces more accurate solutions than a G1 BC. If your source for BCs does not indicate G1 or G7, assume G1.

If you don't have access to a chronograph, enter the Muzzle Velocity from the ammo manufacturer or reloading guide and then use the MV Calibration tool in the app. (See MV Calibration in Additional Tools)

We recommend using a distance of approximately 100 yards/ 100 meters to avoid zero shift due to environmental changes. Confirm your exact zero range with a laser or measuring tape.

Make sure the Elevation & Windage Unit settings match the turrets and reticle in your scope. (MIL = MRAD/Milliradians, TMOA = True MOA (Most common), SMOA = Shooters MOA, or exactly 1" at 100 yards)

**7. Send your gun profile to the 2700:**
Select the desired profile, then tap "Send Profile" to transfer the profile to your Kestrel 2700.



*iOS*          *Android*

*Note: You can build and store multiple profiles in the app, but the 2700 can only hold one profile at a time. A profile is any unique combination of gun and bullet. To change profiles, simply transfer a new profile to the 2700.*

## 8. Confirm Profile Transfer:

To confirm your gun profile has transferred correctly to your 2700, check the "Current Profile:" line in the app and make sure the name of your new gun profile is shown.



*iOS*
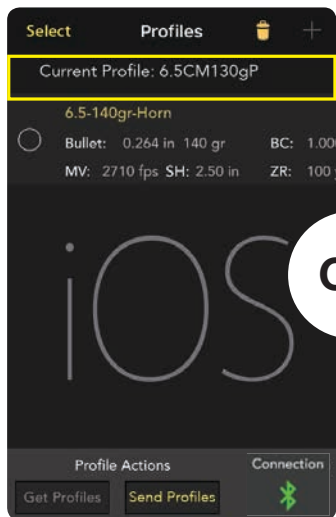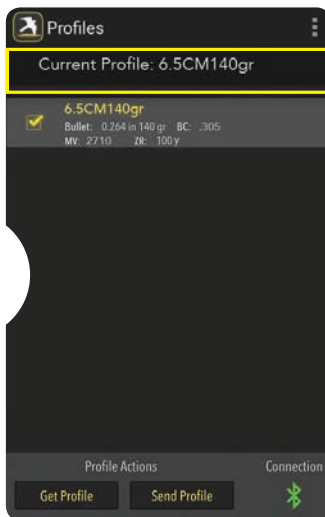
*Android*

***Load and go!*** *You can put away your phone now and head to the range. The 2700 works completely independently once your profile has been transferred.*

# At the Range

## *Target Setup*

Target setup is a three step routine to capture all the details of your shot environment.

**1** **Update Temperature:**
Press the center button once to begin step one – temperature capture. To ensure an accurate temperature reading, air must be flowing over the blue temperature sensor. Confirm the thermometer is showing on the screen, then simply spin or swing the Kestrel by the lanyard. Spin for 5 to 10 seconds, then press the center button to record the temperature and move to the next step.

**2** **Update Direction of Fire:**
Confirm the compass and target icons are showing on the screen. Holding the 2700 vertical, point the back of the Kestrel at the target. Press the center button again to confirm the direction of fire and move to the next step.

**3** **Update Wind Speed & Wind Direction:**
Confirm the wind icon is showing on the screen.
Holding the 2700 vertical, point the back of the
Kestrel into the wind for at least 10 seconds
to capture wind direction and average wind
speed. Wind capture "snapshots" a moving 5
second average of wind speed and direction.
Once representative wind values are shown on
the screen, press the center button to capture
the wind and end the target setup routine.

*Note: To update wind speed and direction without performing the
other Target Setup steps double-tap the center button from the
solution screen. Press any button to capture the wind and return to
the solution screen–updated for the wind reading.*

## *Target Range*

**4** **Set Target Range:**
Press and hold the left or right buttons to scroll
target range. The solution will update automatically
when you stop scrolling the range.

*Note: You can press the left or right button once to
check your current range. You can also adjust target
range without repeating the Target Setup Routine
when your target is in the same direction and wind
and temperature have not changed significantly.*

## *Shoot!*

**5** **Take Your Shot:**
The numbers and arrows on the solution screen show you how much, and in which direction, to shift your point of aim. The "E", or Elevation line, shows you the up/down correction and the "W", or Windage line shows the left/right correction.

*Note: It can be easy to forget whether to hold on the left or right side of your reticle. Remember, you always want to shift your muzzle toward the direction the wind is coming from.*



**Wind Direction**
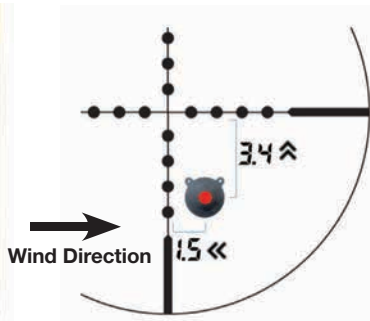
If your 2700 indicates 3.4 Up and 1.5 Left, aim your rifle 3.4 up from your target and 1.5 to the left of your target. Depending on your scope, you will change your point of aim by holding visually in your reticle or dialing using your scope's turrets (or a combination of the two). Make sure the E & W units set in the 2700 match your scope's turrets and reticle.

# Additional Tools:

**Muzzle Velocity Calibration:**
If the solution provided by the Kestrel does not put you on target, first try repeating the Target Setup Routine and confirming your range. If you're still hitting high or low, the Muzzle Velocity Calibration tool will adjust your muzzle velocity to provide on target solutions.

Connect your 2700 to the app, then follow the steps in the Muzzle Velocity Calibration tool. When the calibration routine is complete, the profile saved in your 2700 will be updated with the new muzzle velocity.
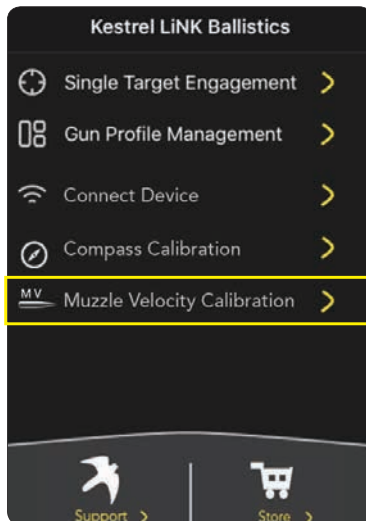
**Changing units of measure:**

To change the units for target range, temperature or wind speed, follow the "At the Range" steps to navigate to the screen for the units you wish to change. Press the center and right buttons at the same time to step through the available units. To change elevation or windage units, create a new gun profile in the app and send it to the 2700.

*Note: Wind Speed measurements can be displayed in mph, m/s and km/h. Mph and m/s are indicated by icons. If no Wind Speed unit icon is shown, km/h is being used.*

*Note: Your Kestrel ships set to MILs. To change to MOA, see Gun Profile Builder Tips on pg. 10.*



**Inclination Angle Correction:**

The Kestrel 2700 can also correct for high angle shots. To turn Inclination Angle on, connect to the app and toggle the Inclination Angle setting from Off to On. With this setting turned on, the last step in the Target Setup routine will allow you to manually enter a shot angle by pressing the left or right buttons.

## COMING SOON!

**Wind Vane Mode:**

As an added feature, your Kestrel 2700 can be used with the Kestrel Basic Series Vane Mount (sold separately) as a real-time wind speed and direction station for the Kestrel LiNK Ballistics App:

1  Connect your Kestrel to the Kestrel LiNK App.
2  Place your Kestrel in the Kestrel Basic Series Vane Mount (PN# 0782-K123) on a tripod in an open location exposed to the same winds affecting your shot. The Bluetooth range of the Kestrel is about 100 feet – reduced by trees or obstructions.
3  Select the Single Target Screen in the app.
4  Toggle "Wind Vane Mode" to "ON" to command the Kestrel to start streaming real-time wind speed and direction data. Your solution will update in real time based upon changing winds.
5  While in Wind Vane Mode, the Kestrel will display the current wind readings and flash the wind icon to indicate it is connected and streaming.
6  To exit Wind Vane Mode:
   • Toggle "Wind Vane Mode" to "Off" in the app;
   • Navigate to any other screen in the app; or
   • Press any button on the Kestrel.
   Both the Kestrel and the App will display the last solution calculated. You will need to return to the single target screen in the app and toggle the Wind Vane Mode indicator back to On to restart wind streaming.
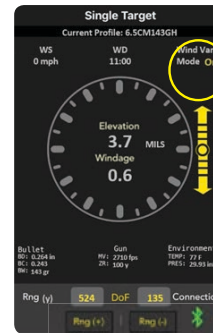
**Vane Mount**
*Sold Separately*

## REPLACING THE BATTERY

When your display disappears, you need to change the battery.

Use a US nickel or similar coin to twist open the battery compartment.

Replace battery with a new, clean CR2032 coin-cell battery, with positive side (+) facing up.

CR2032 batteries are available in most stores that sell batteries.

*⌑ When replacing the battery door, be sure to keep the black rubber o-ring seated in the groove on the case back.*
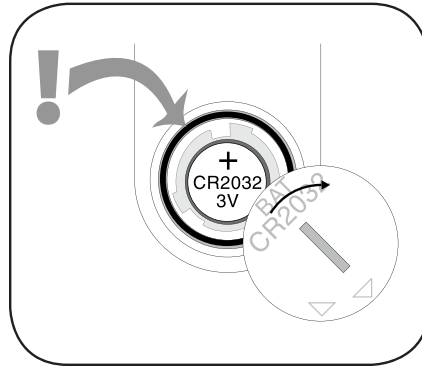
## SENSOR CALIBRATION

**Impeller**

The Kestrel impeller calibration drift is less than 1% after 100 hours of use at 16 MPH | 7 m/s. Drift increases with higher-speed use. For most users, the impeller will provide accurate wind speed/air flow readings for years if not physically damaged. However, if your application requires extremely high precision or if you perform frequent high-speed readings, we recommend you replace your impeller at one-year intervals. Every replacement impeller is supplied with a certificate of conformity and restores your Kestrel's calibration upon installation.

**Temperature Sensor**

The Kestrel temperature sensor exhibits virtually zero drift over time and generally does not require recalibration for accurate performance during the life of the product. If a calibration check is desired, please contact Kestrel for options and pricing.

**Pressure Sensor**

The Kestrel pressure sensor drift may be up to 1 mbar over 12 months. which for practical purposes means it will not require recalibration for the life of the product.  If a calibration check is desired, please contact Kestrel for options and pricing.

## TROUBLESHOOTING CHECK LIST

- Use quality ammo with a consistent muzzle velocity. To ensure you're using an accurate Ballistic Coefficient value, check that the bullet (projectile) you'd like to use is in the bullet library. (Hornady ELD-M, Hornady ELD-X and Federal Gold Medal Match are examples of commonly available cartridges with bullets listed in the bullet library.)

- While using the muzzle velocity from an ammo box or reloading manual is an OK place to start, it's best to confirm your muzzle velocity with a chronograph. If you don't have a chronograph, or if the Elevation solution from the Kestrel still doesn't match your up-down point of aim, do an MV calibration. (For best results with the 2700, calibrate MV when there is little to no wind).

- Check that the distance to the target you have entered is accurate. Use a laser rangefinder or GPS if possible.

- Return your scope turrets to zero before dialing a new solution to avoid adding a new solution on top of a previous solution.

- Adjust the parallax knob on your scope until the reticle and target are both in focus together. This will avoid a shift in aim if your eye is not perfectly in line with the scope.

- Check the "Current Profile" line in the app to ensure that the correct gun profile is entered into the 2700.

- Make sure that the values and units set in the gun profile match your gun, ammunition and target. (For example, check that G1/G7, MILs/MOA, yards/meters settings are all set correctly.)

- Confirm the rifle and scope are accurately zeroed at the distance entered in the 2700 so that the grouping is centered on the intersection of your crosshairs with no Elevation or Windage dialed on your scope. (For example, don't zero 2 inches high at 100 yards.)

- Check that your rifle's scope rings and action screws are tightened to the manufacturers specs. To ensure your scope is mounted vertically, line up the vertical line in your reticle with a plumb bob.

# WARRANTY CERTIFICATE

Your Kestrel Weather/Environmental Meter is warrantied to be free of defects in materials and workmanship for a period of FIVE YEARS from the date of its first consumer purchase. NK will repair or replace any defective meter or part when notified within the warranty period, and will return the meter via domestic ground shipping or NK's choice of method of international shipping at no charge. The following are excluded from warranty coverage:  damage due to improper use or neglect (including corrosion); damage caused by severe or excessive impact, damage caused by failed or leaking batteries, crushing or mechanical harm; modifications or attempted repairs by someone other than an authorized NK repair agent; impeller failure not caused by a manufacturing defect; normal usage wear and failed batteries. Measurement accuracy is warranted to be within the specifications on the supplied Certificate of Conformity including specified drift since date of manufacture. If no warranty registration or proof of purchase is provided, the warranty period will be measured from the meter's date of manufacture.

**Except for the warranties set forth herein, NK disclaims all other warranties, expressed, implied or statutory, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by applicable law are limited to the term of this warranty.  In no event shall NK be liable for any incidental, special or consequential damages, including, but not limited to, loss of business, loss of profits, loss of data or use, whether in an action in contract or tort or based on a warranty, arising out of or in connection with the use or recalibration, performance of an NK product, even if NK has been advised of the possibility of such damages. You agree that repair, and (upon availability) replacement, as applicable, is your sole and exclusive remedy with respect to any breach of the NK Limited Warranty set forth herein.**

**All product liability and warranty options are governed exclusively by the laws of the Commonwealth of Pennsylvania.**

FIVE-YEAR
5
LIMITED WARRANTY

**Kestrel® Ballistics Meters are designed and built in the USA**