

# External Rangefinder User Manual



Dear users,

Before starting to operate the product, please read this manual carefully to ensure that you use it correctly and obtain accurate measurement results, while ensuring the safety of the equipment and extending the service life of the equipment.



Class 1 Laser Product

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# 1. Attention

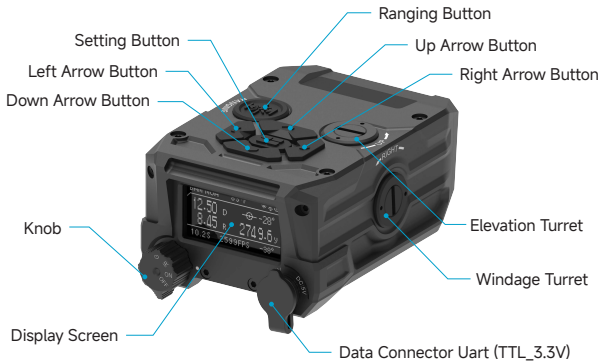
- The laser safety classifications of the ranging laser of this product is Class 1, and the indicating laser is Class 3R. Please do not look directly at the laser!
- Do not keep the target within 5m to avoid damaging the instrument!
- Do not disassemble the corresponding parts of the product, non-standard operation will cause damage to the product and will invalidate the warranty!
- Keep the optical glass surface (laser, screen) clean!
- Do not measure the distance through glass or other translucent materials, prevent larger ranging errors!
- Extreme weather conditions such as rain, snow, fog, haze, and dust will affect the ranging performance!
- If you do not use the product for a long time, please remove the battery!







## 2. Product Overview

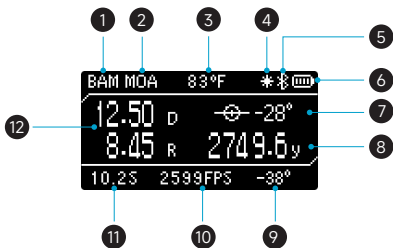
External Rangefinder is a high-performance ranging product, developed based on the 905nm laser and 1535nm erbium glass laser independently developed by our company. It is classified as a Class 1 laser product (laser pointers fall under Class 3R classification).

The main functions include: single-point ranging, continuous ranging, laser indication, temperature, humidity, and pressure measurement, OLED display, battery indicator, Bluetooth transmission, APP interconnection, interconnection with Kestrel anemometer, and external communication serial port. Mainly used for outdoor use by hunters and surveyors, it is small in size, lightweight, and can be quickly disassembled.

# 3. Know the Product



Ranging Button		<ul style="list-style-type: none"> <li>• Takes Range</li> <li>• Hold for 2 seconds to continuous ranging</li> <li>• Back to the ranging page from the Settings menu</li> </ul>
Setting Button		<ul style="list-style-type: none"> <li>• Opens the Settings Menu</li> <li>• Enter or exit edit mode</li> <li>• Confirm the Settings on the Settings Menu</li> </ul>
UP Arrow Button		<ul style="list-style-type: none"> <li>• Navigates Up in Menu Structure</li> <li>• Increases Manually Inputted Values</li> </ul>
Down Arrow Button		<ul style="list-style-type: none"> <li>• Navigates Down in Menu Structure</li> <li>• Decreases Manually Inputted Values</li> </ul>
Left Arrow Button		<ul style="list-style-type: none"> <li>• Navigates Back in Menu Structure</li> <li>• Navigates Left when Manually Inputting Values</li> </ul>
Right Arrow Button		<ul style="list-style-type: none"> <li>• Navigates Deeper into the Menu Options</li> <li>• Navigates Right when Manually Inputting Values</li> <li>• Press 3 times in quick succession to enter the wind speed setting page.</li> </ul>



1	Range Mode
2	The Unit of Calculation Result
3	Ambient temperature
4	Indicating Laser State
5	Bluetooth Status
6	Remaining Battery Power
7	Roll Angle
8	Target Distance
9	Pitch Angle
10	The remaining velocity after hitting the target
11	Bullet Flight Time
12	Calculation Result

## 4. Technical Data

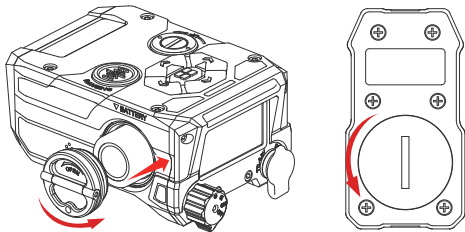
SN	Project	02K	04K
1	Laser Type	905nm	1535nm
2	Range Building	5~2000 m	10~4000 m
3	Continuous Range freq.	1~5Hz	3Hz
4	Divergence	~2x5mrad	~0.6mrad
5	Eye Safety	Class 1 (indicating laser belongs to Class 3R)	
6	Accuracy	±1m	
7	Detection	≥ 98%	
8	Adjustable Range	±1.5°	
9	Indication Distance	800m(Night)	
10	Angle range	±90° (±1.5° )	
11	Temperature range	-40~+60°C (±1°C )	
12	Humidity range	0~100% (±5%)	
13	Pressure range	500~1050hPa (±2.4hPa)	
14	Power Supply	DC 5V	
15	Battery type	CR123×1/16340×1	

16	Battery Endurance	5000 times
17	Display Size	1.3" OLED
18	Weight	250g (Battery included)
19	Dimensions	77x54x48mm(L×W×H)
20	IP Rating	IP67
21	Connector	UART(TTL_3.3V)to USB
22	Wireless Transmission	Bluetooth 5.0
23	Other	Mobile APP interconnection

# 5. Preparation before Use

## 5.1 Changing the Battery

Turn the handle in the direction of the arrow on the battery cover to open the battery compartment. One battery is installed in series. The positive electrode faces in, otherwise no power. The product comes standard with 1 CR123 battery, compatible with 16340 rechargeable battery.

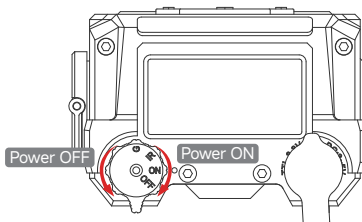


To replace the Bluetooth remote battery, use a flat tool to insert the slot, and turn the battery cover counterclockwise, then put in one new CR2032 battery, The negative electrode faces in, and turn the battery cover clockwise.

The device can only use battery with a positive protruding terminal. Flat-top batteries will prevent the device from powering on. When it prompts that the battery is low, please replace the battery soon.

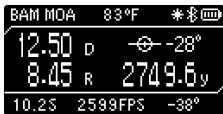
## 5.2 Power ON/OFF

Turn the knob clockwise, until the "ON" on the knob is against the white circle mark on the rear cover, the rangefinder will power on.



The screen will display the Home page of SRM mode or BAM mode, based on the mode selection when the last shutdown selected.

Turn the knob anticlockwise, when the "OFF" on the knob is against the



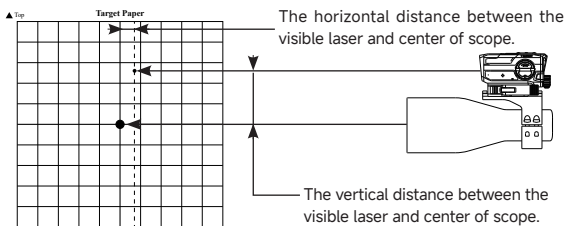
the white circle mark on the rear cover, the rangefinder will power off.

If there is no operation for a long time, the rangefinder will auto off. See the details of auto off on page 18.

## 5.3 Zeroing

To ensure the accuracy of ranging, the rangefinder must be zeroed parallel to the scope. Before zeroing, the scope must be properly mounted and zeroed.

- ① Stick the target paper at a distance of 50-100 yards in front of the rangefinder. Align the reticle of the scope to the cross center of the target paper.
- ② Turn the knob clockwise, when the “G” on the knob is against the white circle mark on the back shroud, the green laser will light on.
- ③ Use the matched tool to adjust the Elevation and Windage Turrets to align the position of the visible laser.
- ④ Adjust the position of the visible laser so that it is on the line to the right of the center of the target paper, the same vertical distance from the center of the target paper and the distance from the rangefinder light to the reticle of the scope.



\*Note: The vertical offset between the visible laser and its mounting plane is 22.6mm, and the horizontal offset is 13.85mm.

## 5.4 Connect with Bluetooth Remote

Before the first time to connect Bluetooth remote with rangefinder, Please make sure the bluetooth remote is equipped with battery,The rangefinder is powered on,The distance between them is not more than 10 yards.

- ① Open the "Bluetooth Set" menu, and toggle the Bluetooth switch to ON, then select "Search" to scan for available devices.
- ② Press the "Ranging Button" of bluetooth remote,the red LED will blink,and the bluetooth remote will search the rangefinder.



Blinking red  
Not connected



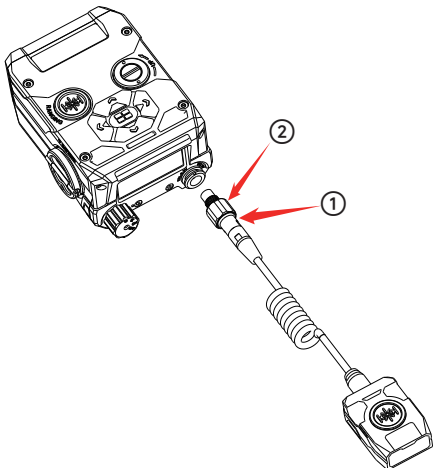
Blinking green  
Connected with device

- ③ On the Search page of rangefinder, select the SN of bluetooth remote that needs to be connected, and press the "Setting Button" of rangefinder to start the connection. Once the connect succeed, the green LED of bluetooth remote will blink 5 times, then standby.
- ④ The bluetooth remote will connect with rangefinder automatically when it powered on next time, you can delete the devices in "View" menu.

## 5.5 Connect with Tail Switch

The tail switch includes a ranging button with the same function as the button on the rangefinder. It requires no separate power supply and is more convenient to use.

- ① Pinch position ① , align the tail switch plug with the rangefinder serial port, rotate and gently push inward until the plug locks into place.
- ② Turn the nut at position ② clockwise and tighten it securely.

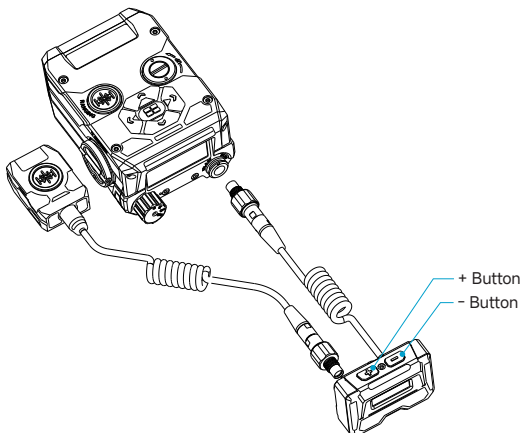


## 5.6 Connect with Extended Display

The external display can expand the display content of the rangefinder. The brightness of the External Display can be increased or decreased using the "+" and "-" buttons.

After connecting the external display, the rangefinder screen is off by default. Press and hold both the "+" and "-" buttons for 1 seconds to turn on the rangefinder screen.

The connection method of the external display is basically the same as the installation of the tail switch. For details, see Page 12.



## 5.7 Connect with Wind Meter

### 5.7.1 Preparatory Work

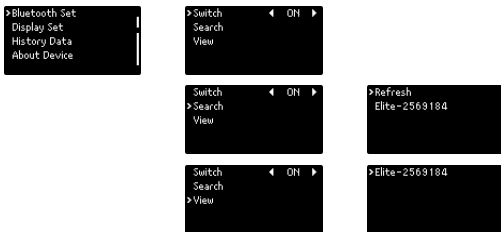


- ① Press the start button to starting the kestrel.
- ② Press the mode button to enter Settings.
- ③ Move the cursor to select bluetooth settings and press enter.

\*During the connection, the kestrel must stay on interface P2.

## 5.7.2 Connect with Kestrel

Turn on the rangefinder, long press "Setting Button" to enter the settings menu, select the "Bluetooth Set" menu, and toggle the bluetooth switch to "ON", then select "Search" to scan for wind meter.



When find a kestrel, move the cursor to select and press "Setting Button" to connect. select "View" to view the connected devices. move the cursor to connected device and press "Setting Button" again to delete it.

# 6. Directions for Use

## 6.1 Main Function

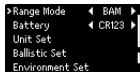
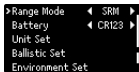
- 1) Ranging: Measuring the straight-line distance to the target.
- 2) Ballistics: Measuring the distance and providing ballistic correction.
- 3) Green & IR Laser Pointer.

## 6.2 Setting Menu

Press and hold the "Setting Button" for 2 seconds to enter the settings interface.

### 6.2.1 Range Mode

The rangefinder includes two modes. SRM used to measure the straight-line distance to the target. BAM used to measure the target distance while also provide the revised results.



When the cursor highlights "Range Mode", press the Setting Button and use the Left/Right Arrow Buttons toggle between SRM mode and BAM mode .

## 6.2.2 Battery

You can select the actual battery type in use to avoid damaging the rechargeable battery and rendering it unchargeable.



## 6.2.3 Unit Set

Through the 'Unit Set' function, you can quickly switch between metric and imperial units with a single click, or customize the unit settings for each individual item as needed.



## 6.2.4 Ballistic Set

The "Ballistic Set" function enables configuration of ballistic computation parameters.

Use "Ballistic Unit" to switch the display unit of the ballistic calculation results, and the units include MOA, mrad, mil, Click.

You can enable or disable the "Spin Drift" functions. Once disabled,

the spin drift of bullt will not be involved in the ballistic calculation process.



Under "Zeroing Weather", you can turn On/Off the weather zeroing function. The zeroing reference data comes from "Environment Set" and can be manually edited when Off - values become view-only when On.

Under the "Ballistic Profiles" menu, there are 10 preset commonly used rifle-ammunition combinations, and after selecting one, you can view or edit the corresponding parameters, or rename the title of this combination.

All the data can also be modified and downloaded through a mobile app.

## 6.2.5 Environment Set

Under the "Environment Set" menu, you can select the source of environmental information. When Manual is selected, you can manually set the temperature, pressure, and humidity values, which will be saved permanently. When obtaining information via the device's built-in sensors, you can only view the relevant data.



At the same time, the wind speed and direction need to be set. When the Kestrel is selected as the source, relevant information will be automatically obtained from the Kestrel, but the wind direction needs to be manually entered. No matter which source is chosen, the pitch angle and roll angle can only be viewed and cannot be modified.

On the home page of "BAM" mode, press the right arrow button 3 times to quickly enter the wind speed setting page. After completing the settings, press the left arrow button to return to the home page.

## 6.2.6 Bluetooth Set

The "Switch" function can be used to turn Bluetooth on or off.

Select "search" to searching and connect to new devices.

Select "View" to view or delete the connected devices.

When the "Device limit reached.Remove a device first!" prompt appears, it means the number of Bluetooth-connected devices has reached the upper limit. Please delete the already connected devices first, and then connect a new device.



## 6.2.7 Display Set

In the "Display Set" menu, the screen brightness, auto-rotate, system sleep time and automatic shutdown time can be modified.



## 6.2.8 History Data

The "History Data" function can query the latest 10 historical data records.



## 6.2.9 About Device

Under the "About Device" menu, you can view the SN information and software version information of the device. And reset the device to factory state. After factory defaults, all parameters will return to the default values.



# 7. Installing / Using IR Searcher app

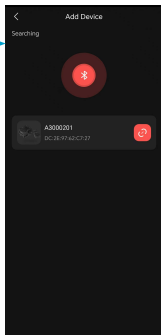
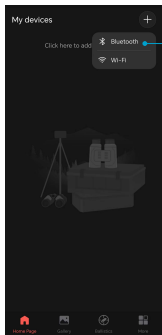
## 7.1 Download IR Searcher app

Download IR Searcher app in Apple Store for IOS user, or scan the QR code below to download and install for Android user.

\*The specific functions of the APP are subject to the APP manual. This manual is for reference only.

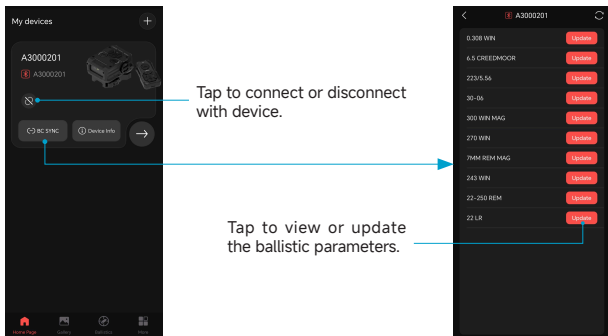


## 7.2 Turn Bluetooth On and Pair

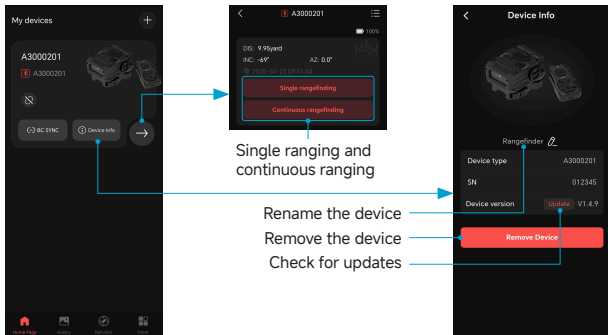


Once installed, launch the app and you will see the home screen. Make sure bluetooth on and tap the "+" sign then tap "Bluetooth" to search your device, tap the "+" sign to connect with device.

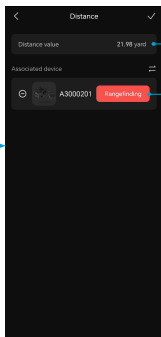
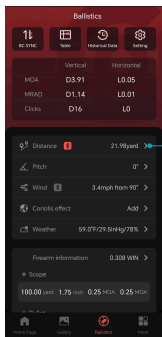
## 7.3 Device Information



## 7.4 Ranging and Update



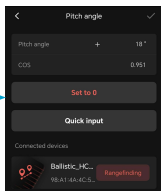
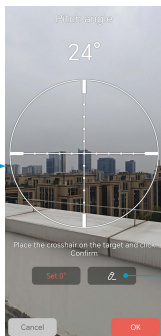
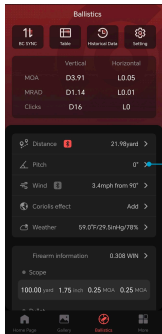
## 7.5 Ballistics Menu



- **Distance**

Input the distance data.

Press rangefinding button to get the distance.

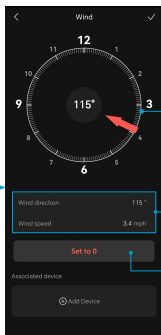
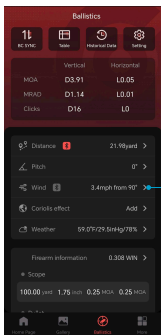


- **Pitch angle**

Aiming the target and tap "OK" to get pitch angle.

You can also input the data or tap "set 0°" to reset angle quickly.

\*Both the Distance and Pitch angle can be acquired automatically by press the ranging button on the devices.

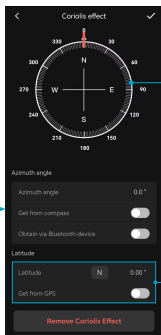
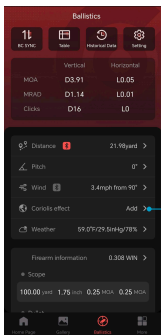


- **Wind**

Drag the arrow to set the wind direction.

Input the wind direction and wind speed data.

Tap "set to 0" to clear all the speed information.

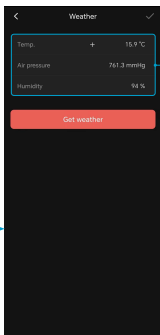
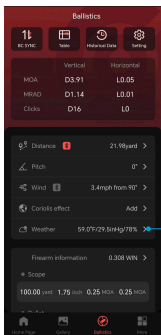


Drag the compass or manual input to set the azimuth angle.

You can also get the angle from your phone compass or bluetooth device.

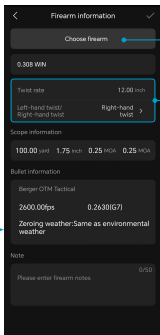
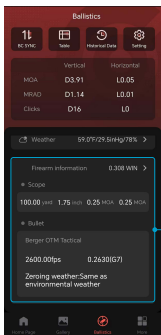
Manual input latitude or automatically obtained by GPS.

Tap "Remove Coriolis Effect" to ignore the influence of Coriolis effect on the calculation result.



- **Weather**

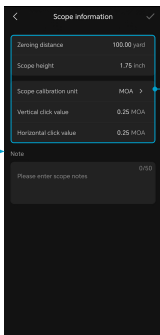
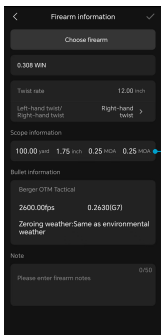
Manual input the weather information or get form phone automatic.



- **Firearm information**

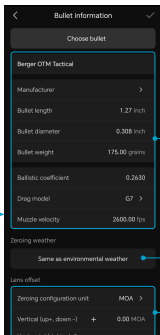
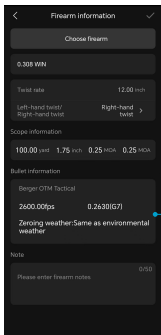
Choose, add and delete the item of firearms.

Edit the twist rate and direction of firearm.



• **Scope information**

Setting the scope zeroing distance and scope click value.

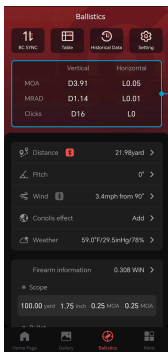


• **Bullet information**

Edit the bullet information.

Choose zeroing weather.

Edit the lens offset.



After ballistic calculate, the shoot adjustment parameter display here:

Column "Vertical", "D" means down, "U" means up.  
Column "Horizontal", "L" means left, "R" means right.  
Click value is set in Scope information.

## 8. Inventory

SN	Name	Qty
1	External Rangefinder	1
2	Bluetooth Remote Control (02K) Tail Switch (04K) External Display (Sold Separately)	1
3	Target Paper	1
4	Protective cover	1
5	Lens wiping cloth (12 × 12cm)	1
6	User Manual	1

