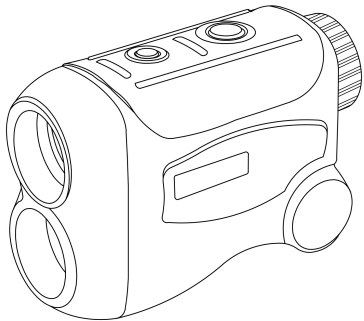


# CARSON®

RF-650

## **LITEWAVE™** 650 Yard Rangefinder

**INSTRUCTIONS FOR USE**



↓ PDF : [www.carson.com/RF650](http://www.carson.com/RF650)

English / Français / Español / Deutsch / 日本語

Congratulations on selecting your new Carson® RF-650 LightWave™ rangefinder! With reasonable care, your rangefinder will provide you with years of enjoyment. In order to achieve optimum performance, please read the instructions carefully on the proper use and care of your rangefinder.

## SPECIFICATIONS

**Range:** 5-650 yards

**Accuracy:** +/- 1 yard

**Magnification:** 6x

**Objective Diameter:** 24mm

**Optical Coatings:** Fully Multi-Coated

**Angle of View:** 6.5°

**Field of View:** 341 ft. at 1000 yards

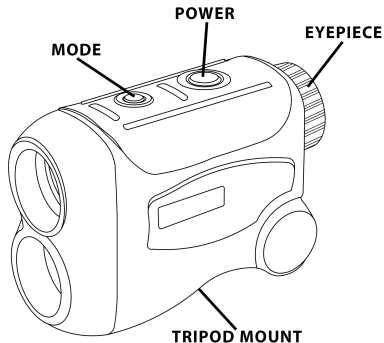
**Exit Pupil:** 4mm

**Eye Relief:** 12mm

**Battery:** CR2 3-Volt Lithium (included)

Built-In Tripod Mount

Includes pouch and carry strap.



## **INTRODUCTION**


The Carson® RF-650 LiteWave™ rangefinder emits a laser beam that is invisible and safe to the eyes. The LiteWave™ then calculates distances by measuring the time it takes for the laser to travel from the rangefinder to the target and then back again.

## **ACCURACY**

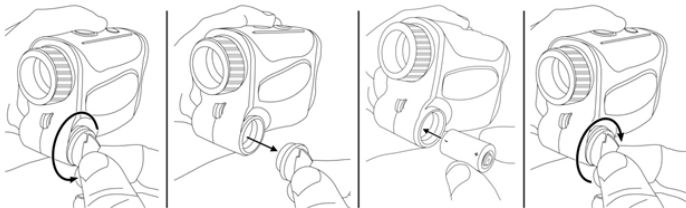
The LiteWave™ rangefinder is accurate to within +/- 1 yard in most cases. The effective operating range is from a minimum of 5 yards to a maximum range of 650 yards (3.5 meters to 600 meters). Please note that the maximum operating range may vary due to the reflective properties of the viewing subject, the size of the viewing subject and the environmental conditions at the time of use. Highly reflective shiny surfaces allow for longer ranges than dull, less reflective surfaces. Larger subjects are easier to measure than small ones. Bright light conditions adversely affect the maximum range of the item. The angle to the viewing subject may also affect the range. Viewing objects at a steep angle will limit the operating range.

## INSERTING THE BATTERY

Item is packed with battery inserted in battery compartment\*. To replace battery, flip tab on battery door up and twist counter clockwise to remove. Remove exhausted battery and insert fresh CR2 3-Volt Lithium battery into the compartment negative side first and replace battery door.

A low battery icon will appear at the top of the viewing screen when it is time to replace the battery. 

Please remove battery during extended periods of disuse.

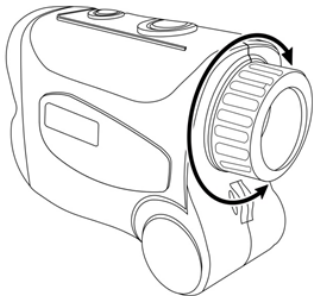


\*Please note a paper tab was placed in the battery compartment during shipping to avoid battery drain. Please remove and discard this tab prior to using the item.

## USING YOUR RANGEFINDER

### ***FOCUSING***

While looking through the eyepiece, turn the eyepiece clockwise or counter-clockwise until the viewing subject is in focus.



## ***UNITS OF MEASURE***

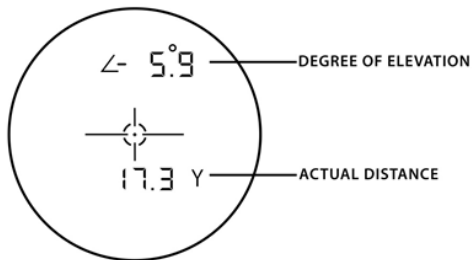
The LiteWave™ can be used to measure distances in either Yards or Meters. To change the unit of measure, first power on the unit and then press and hold both the MODE and POWER buttons simultaneously for three seconds. You will see the reticle display toggle between “Y” and “M”.

## ***USAGE MODES***

The LiteWave™ rangefinder operates in three different modes. Mode 1 measures straight line distance and degree of elevation. Mode 2 measures straight line (actual) distance, degree of elevation, horizontal distance and the vertical distance between the horizontal and actual distances. Mode 3 displays all the measurements from Mode 2, however, in this mode the item will continuously scan these distances as you move the reticle around and view different subjects. The LiteWave™ will default to Mode 1 when the item is first powered on. Press the MODE button once to access Mode 2 or twice to access Mode 3.

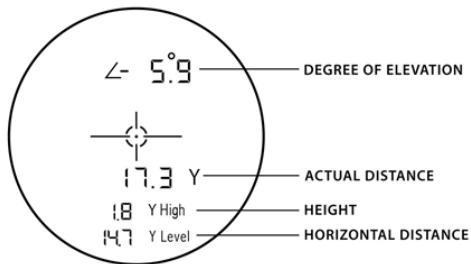
## **MODE 1: MEASURING ACTUAL DISTANCE AND DEGREE OF ELEVATION**

While looking through the eyepiece, press the POWER button to activate the LCD reticle display. Focus on your viewing subject. Place the crosshairs in the center of the reticle on your target object and press the POWER button again. The LCD will display both the degree of elevation from  $+90^{\circ}$  to  $-90^{\circ}$  and the straight line (actual) distance to the target object. To obtain a new reading or target another object simply aim and press the POWER button again and a new reading will be displayed. The results will be displayed for 20 seconds before the LCD automatically shuts off.



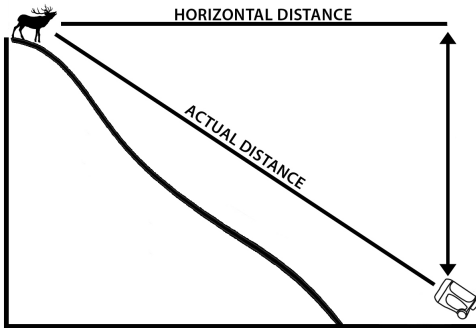
## ***MODE 2: MEASURING ACTUAL DISTANCE, DEGREE OF ELEVATION, HORIZONTAL DISTANCE AND VERTICAL HEIGHT***

After powering on the unit, press the MODE button once to access Mode 2. This mode displays the same information as Mode 1 but also displays the horizontal distance and vertical height.



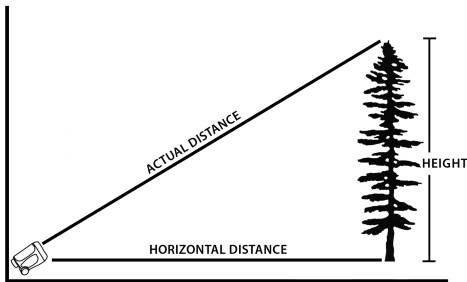


When viewing at steep inclines or declines, the actual distance to your subject is always longer than the horizontal distance. The horizontal distance takes into account the fact that your target might be at a different elevation than you are. Mode 2 displays both the actual and horizontal distances.

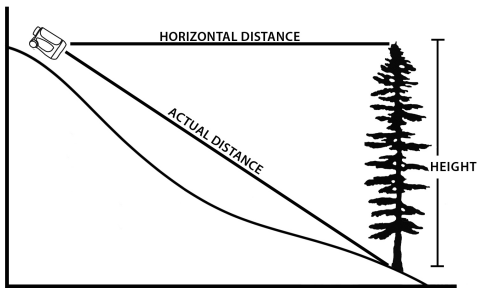


The LiteWave™ can also measure the height of the object you are viewing. This can be accomplished several different ways depending on your elevation relative to the object you are viewing.

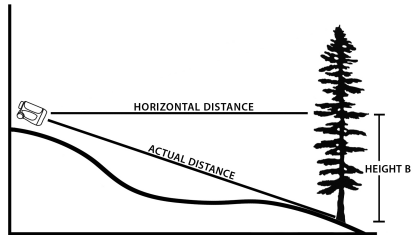
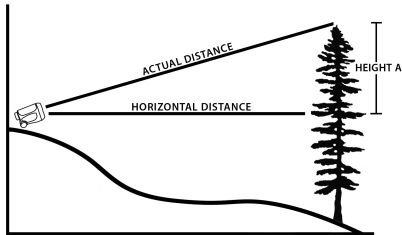
If you are standing level to the base of the object you are viewing, simply point the rangefinder to the top of the object and press the POWER button to obtain a measurement. The Height will appear next to the word "High" in the LCD display.



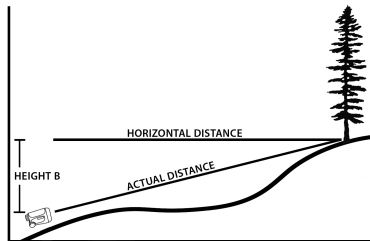
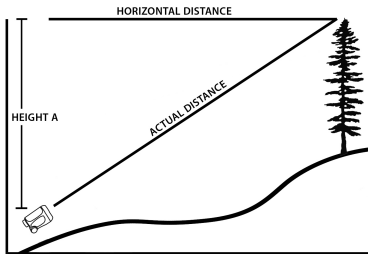
If you are standing level with the top of the object you are viewing, point the rangefinder to the base of the object and obtain a measurement. The Height will appear next to the word "High" in the LCD display.



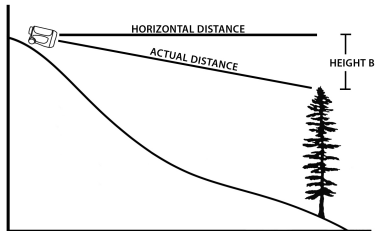
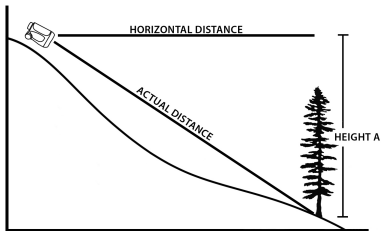
If you are standing at an elevation that is in between the top and bottom of the viewing subject first point the rangefinder to the top of the object and obtain a measurement (Height A). Then point the rangefinder to the base of the object and obtain a measurement (Height B). Then add those two numbers together to get the Height ( $A + B = \text{Height}$ ).



If you are standing at a level that is below the base of the object you are viewing, first point the rangefinder to the top of the object and obtain a measurement (Height A). Then point the rangefinder to the base of the object and obtain a measurement (Height B). Then subtract Height B from Height A to get the Height ( $A - B = \text{Height}$ ).



If you are standing at a level that is above the top of the object you are viewing, first point the rangefinder to the base of the object and obtain a measurement (Height A). Then point the rangefinder to the top of the object and obtain a measurement (Height B). Then subtract Height B from Height A to get the Height ( $A - B = \text{Height}$ ).



### ***MODE 3: CONTINUOUS MEASURING OF ACTUAL DISTANCE, DEGREE OF ELEVATION, HORIZONTAL DISTANCE AND VERTICAL HEIGHT***

After powering on the unit, press the MODE button twice to access Mode 3. This mode displays all the same information as shown in Mode 2, however, the measurements will continuously update as you move the reticle around and target different objects.

### ***TRIPOD MOUNT***

The LiteWave™ rangefinder features a tripod mount located on the bottom of the unit to easily attach the item to any standard tripod for more stable use.

### ***CLEANING***

Cleaning must be done safely and carefully to avoid scratching the lenses and permanently damaging your range finder. Safe cleaning can be accomplished by following the procedure below:

1. Blow away any dust or debris on the lens (or use a soft lens brush).
2. To remove dirt, grease or fingerprints, clean with a soft cotton cloth, rubbing in a circular motion. Use of a coarse cloth or unnecessary rubbing may scratch the lens surface and eventually cause permanent damage.

3. For a more thorough cleaning, photographic type lens cleaning fluid may be used. Always apply the fluid to the cleaning cloth, never directly on the lens.
4. **IMPORTANT:** Never attempt to clean your rangefinder internally or try to take them apart.

### ***INSTRUCTIONS FOR CARE***

Do not drop or violently jar your rangefinder.

Place rangefinder in protective pouch (included) when not in use.

Do not expose to excessive moisture.

Do not leave in the sun or near a heat source for extended periods of time.

Store in a cool, dry place when not in use.

Remove battery during extended periods of disuse.

### ***WARNING***

**VIEWING THE SUN CAN CAUSE PERMANENT EYE DAMAGE. DO NOT VIEW THE SUN WITH THIS RANGE FINDER OR EVEN WITH THE NAKED EYE.**



## **WARRANTY**

This Carson product is warranted to be free from defects in material and workmanship for a period of two years from date of purchase. During this period Carson will, at its option and without charge, either repair any part or assembly of parts found to be defective in material or workmanship, or replace this Carson product with a Carson product of comparable value and condition, subject to the limitations and exclusions noted herein.

This warranty extends to the original purchaser only and is not assignable or transferable. It shall not apply to any product that has been subject to misuse, abuse, negligence or accident, or to any defects or damage directly or indirectly caused by the use of unauthorized replacement parts and/or service performed by unauthorized personnel.

This warranty gives you specific legal rights, and you may also have other rights which could vary from state to state. Some states do not allow limitations on the life of an implied warranty and/or do not allow excluding or limiting incidental or consequential damages. If so, the above limitations or exclusions may not apply to you.

## WARRANTY PROCEDURE

**Provide proof of purchase.** A receipt or other dated proof of purchase must be included with merchandise being returned for a warranty claim to be processed.

**Call or write for authorization.** Before returning any product for a warranty claim, a Return Authorization (RA) number must be obtained. No merchandise will be accepted without an RA, and failure to obtain an RA will prevent or delay processing of the warranty claim. To obtain an RA call 631-963-5000, or write to Carson Warranty Service, 2070 Fifth Ave, Ronkonkoma NY 11779 with a description of the problem. Include your name, address and telephone number.

**Package the return carefully.** Shippers will not reimburse for damages due to insufficient packaging, even if the merchandise is insured. Print the RA number prominently on the top of the package.

**Prepay shipping.** Insure the package. Send it to Carson Warranty Service, 2070 Fifth Ave., Ronkonoma NY 11779. Merchandise must be shipped prepaid. Carson will not accept merchandise C.O.D.

## FCC NOTE

This device has been tested and complies with the limits for a Class B digital device, Part 15 of the FCC Rules and to EU EMC directive. Two conditions must be met for operation to take place:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

These conditions are designed to provide reasonable protection against harmful interference in a residential setting. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, the user should correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.



## **FDA SAFETY**

Class 1 laser product in accordance with IEC 60825-1:2007. Complies with 21 CFR 1040.10 and 1040.11 for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

*Caution:* There are no user controls, adjustments or procedures. Performance of procedures other than those specified herein may result in access to invisible laser light.

**Carson Optical  
2070 5th Avenue  
Ronkonkoma, NY 11779**

