



G7 BR2



G7 BR2 Ballistic Rangefinder
Owners Manual

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Foreword

Dear Customer,

Gseven is a Gunwerks brand, whose sole purpose is to change the long range shooting game. To create and build products for the first shot.

Your new ballistic rangefinder offers features and functionality that have never been offered in a hunting rangefinder before. In addition to exceptional ranging capability, the G7 BR2 offers real time ballistic calculations based on your specific Ballistic Coefficient (BC) and Muzzle Velocity (MV). Measurements for air pressure, temperature and inclination are collected, and then utilized in our sophisticated calculations to generate a precise ballistic solution out to 1,400 yards.

The correction can be applied with MOA output and a standard elevation turret, or with a ballistic turret and the Shoot To Range output setting. The G7 BR2 also offers the correct wind hold compensation using our patented windage technology to complete the most precise ballistic solution available in the industry.

We wish you success and perfection in your shooting. To take advantage of the ballistic capabilities, make sure you review this manual in its entirety.



Aaron Davidson
President, Gunwerks, LLC.

Precautions

Avoid staring directly at the laser beam for prolonged periods.

The G7 BR2 is designed to meet FDA eye safety requirements and is classified as eye-safe to Class 1 limits, which means that virtually no hazard is associated with directly viewing the laser output under normal conditions. As with any laser device, however, reasonable precautions should be taken in its operation. It is recommended that you avoid staring into the transmit aperture while firing the laser. The use of optical instruments with this product may increase eye hazard.

Never attempt to view the sun through the scope.

Looking at sun through the scope may permanently damage your eyes.

Never point the unit directly at the sun.

Exposing the lens system to direct sunlight, even for a brief period, may permanently damage the internal components.

Avoid direct sun exposure on the eyepiece.

Exposing the eyepiece to direct sunlight can damage the internal display.

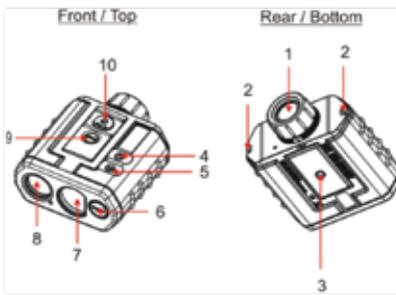
Do not expose the instrument to extreme temperatures.

G7 BR2 components are rated for an operating temperature range of 32° to 122° F and a storage temperature range of -4° to 158° F.

Section 1 - Introducing the G7 BR2

Congratulations on the purchase of your G7 BR2, the first rangefinder to feature a real time ballistic calculation that accepts your specific bullet Ballistic Coefficient (BC) and Muzzle Velocity (MV) as inputs to build a custom ballistic profile, and then calculate a real time ballistic solution based on measured environmental and sighting conditions.

- Range Only Mode for shooters that need range only information. Presented as horizontal distance and includes basic range with up/down hill angle to target correction. Ranges to 1,400 yards.
- Ballistic calculations are powered by the advanced G7 ballistic engine. The precise algorithms are configured to allow ultra fast, real time calculations as Shoot To Range or MOA Compensation.
- Shoot To range compensates the line of sight range for variations in air density and inclination angle. The output is specific to the programmed BC and MV. Shoot To range is configured to work with BDC turrets.
- Minute of Angle (MOA) Correction calculates and outputs the ballistic correction in MOA units. Most rifle scope turrets are calibrated in MOA units.
- MOA wind correction values are calculated and easily accessed to display the correction for different wind values.
- Onboard sensors measure incline angle, barometric pressure, and temperature. These sensors provide the data to the G7 ballistic engine to calculate the Shoot To Range or MOA Correction.
- Programmable for up to five different cartridge combos. Specific inputs include: Ballistic Coefficient, Muzzle Velocity, and Sight Height. Altitude, and Temperature are also provided when programming for a BDC turret.
- Very simple intuitive display offers selectable reticles and four intensity settings for varying light conditions. The Backlit LCD display is visible in bright light and low light conditions.
- The rugged housing is weatherproof and features a Gore-Tex® membrane. The tripod mounting stud is 1/4"-20 on the bottom of the housing.
- The eyepiece features an adjustable focus with a click adjustable twist-up eye cup.



1. Adjustable Eyepiece
2. Attachment Point
(For neck trap and eyepiece cover)
3. 1/4"-20 Mounting Point
4. Selection  button
5. Selection  button
6. Battery Compartment Cover
7. Receive Lens
8. Transmit Lens
9.  button
10.  button

Unpacking the G7 BR2

When you unpack your new G7 BR2, check to make sure that you received everything that you ordered, and that it all arrived undamaged.

- G7 BR2
- Eyepiece cover
- User's Manual on CD
- Carrying case
- Neck strap

Understanding How the G7 BR2 Works

Measurements of all sensors are recorded every time the  button is pressed and released. In addition to the rangefinding circuitry, the G7 BR2 Ballistic Range-finder samples air pressure, temperature, and inclination angle.

Ballistic Compensation

The G7 BR2 Rangefinder combines best in class ranging capability with an advanced ballistic computer to measure the range to target and calculate a complete ballistic solution. The G7 BR2 was designed to be very simple to use, offering a one-button press to both measure and calculate your ballistic solution. Once the unit has been programmed, and the Main Display is shown, press and hold the Fire button until a range measurement is displayed. When configured in BDC mode, the Line Of Sight distance will be displayed for approximately two seconds, and then the compensated range is displayed. A small C to the left of the distance indicator will distinguish a compensated distance from a line of sight distance. Use the compensated distance in conjunction with a Ballistic Turret. If you have configured the device to calculate and display your ballistic solution in Minutes of Angle (MOA), the MOA correction is displayed with MOA indicated in the top right section of the Upper Display.

The calculated wind correction is easily accessed and displayed in 5 or 10 mph increments. After ranging and receiving a ballistic solution, pressing either the  or  button will display the calculated wind hold in MOA for the ballistic solution. While in the Wind Correction Menu, pressing either of the selection buttons increments the wind value up or down from 5 to 50 mph, and displays the corresponding wind correction. To apply this correction, just dial or hold the correct value in the rifle scope.

LCD Display

A liquid crystal display (LCD) is mounted within the optical system and when activated, displays a reticle for targeting, yards, and the display indicators. Inherent in the manufacturing process are small black spots that appear in the optical system. These are a natural characteristic of the LCD and cannot be fully eliminated in the manufacturing process. These small black spots do not affect the distancing performance of the unit.

Laser Range Sensor

The laser range sensor emits invisible, eye safe, infrared energy pulses. The G7 BR2 determines distance by measuring the time it takes for each pulse to travel from the rangefinder to the target, and back. The laser indicator () is displayed whenever the laser is being transmitted. The laser may be active for a maximum of 5 seconds. Once the target is acquired or the laser has timed out, you can release the  button.

TruTargeting

The G7 BR2 automatically provides the best accuracy and acquisition distance to a given target. Maximum measurement distance varies with target quality and environmental conditions. For Range Only measurements, the maximum measurement distance is approximately 2,000 yards. For range measurements with ballistic calculations, the maximum measurement distance is approximately 1,400 yards.

When selecting a target, you should consider the following:

- Color: The brighter the color, the longer the range.
- Finish: Shiny finishes provide longer range than dull finishes.
- Angle: Shooting perpendicular to a target provides better range than shooting to a target at a sharp angle.
- Lighting Conditions: Overcast skies will increase the unit's maximum range, and sunny skies will decrease the unit's maximum range.

Altimeter

Your Ballistic Rangefinder is instrumented with a barometric pressure sensor that is mounted inside the housing. A Gore-Tex® membrane allows accurate sampling of barometric pressure while maintaining a weatherproof seal. This device measures relative pressure uncorrected to sea level, this is station pressure. A simple calculation converts the station pressure reading to an equivalent altitude for standard conditions. Both the station pressure reading and equivalent altitude are available under the Measured Values Menu.

Temperature Sensor

The temperature sensor is located at the front of the unit under the rubber armor. The front of the temperature sensor is exposed to ambient conditions, but the device housing temperature can affect the accuracy of the reading. There will be a slight response time delay as the unit reaches ambient temperature.

Inclination Sensor

The inclination sensor is located inside the housing of the G7 BR2 rangefinder. When the rangefinder is aimed at an object, and the range is obtained by depressing the Fire button, the inclination angle to the target is determined.

Digital Processor

The G7 BR2 includes LTI's proprietary ASIC chip (Application-Specific Integrated Circuit). The ASIC chip combined with high-speed CPU processing allows the G7 BR2 to deliver accurate and fast measurements.

Eyepiece

The eyepiece is located at the back of the G7 BR2, and includes a 7X magnification scope.

In-scope LCD

- The In-scope LCD displays menu items, option indicators, error codes, and measurement results. Figure #2 shows the in scope LCD with all display segments lit. Each time the instrument is powered ON, all display segments are lit for just a couple of seconds.
- If it appears that not all display indicators are working properly, please contact Gunwerks Customer Service for assistance.
- The G7 BR2 has multiple options for the display of the cross hair (page 24). Figure #3 shows the factory default cross hair. In this example, the BR2 is ready to take a Range Only measurement.

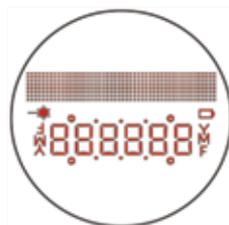


Figure #2

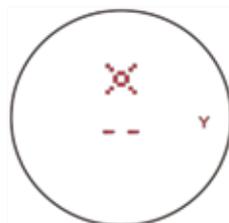
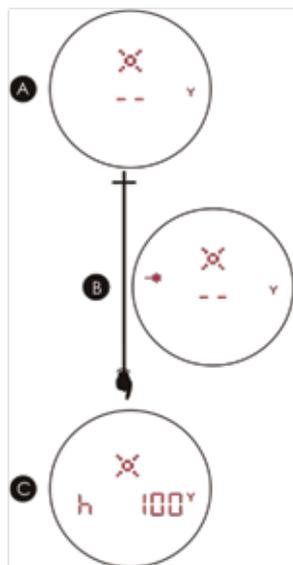


Figure #3

Section 2 - Quick Start

1. Install the battery (page 9).
2. Press  to power ON the G7 BR2.
3. Select a target such as a tree or a building. For this example, the target should be approximately 100 yards.
4. Look through the eyepiece (see Figure #4) and use the crosshair to aim to the target. The in-scope LCD should look similar to Figure #5A.
5. Press-and-hold . The LASER status indicator is displayed while the laser is active (Figure #5B). The laser will remain active for a maximum of 5 seconds while acquiring data about the target.
 - o If the target is not acquired, release  and repeat this step.
6. Release  once the distance is displayed (Figure #5C). In this example the “h” that precedes the 100 yards indicates horizontal distance and Range Only Mode. The measurement will be displayed for 8 seconds or until you press a button.
 - o Press  or  to scroll through the Measured Value Menu and see the results acquired for each function.
 - o Hor Dist = horizontal distance yards)
 - o Aprx Alt = approximate altitude (feet)
 - o inHg = barometric pressure
 - o Temp = temperature (°F)
 - o Incline = inclination (degrees)
 - o LOS Dist = line of sight distance (yards)
 - o Repeat steps #3-#6 above to take another measurement.



Section 3 - Basic Operations

Battery

The G7 BR2 Rangefinder is powered by a 3 Volt Lithium battery commonly referred to as CR123A or also referred to as CR123.

1. Remove the Battery Compartment Cover by lifting up the Hinged Tab and turning counter clockwise,
2. Insert the battery negative end (-) first.
3. Re-insert the Battery Compartment Cover and use the Hinged Tab to turn clockwise.
4. Press down on the Hinged Tab to secure.

Low Battery Warning

The G7 BR2 monitors the incoming battery voltage. Figure #7 shows the location of the battery status indicator. It is located on the right side of the LCD, just above the yards indicator.

- When the voltage drops below 2.6V, the battery status indicator is displayed.
 - o You should replace the battery as soon as possible.
 - o Although the unit operates at this level, it is recommended that you install a new battery before the setup or update of a ballistics profile. Data may be lost if the system shuts down before this process is complete.
- When the voltage drops below 2.4V, system operation is locked and then shuts down.
 - o You must replace the battery to return to normal system operation.

 If the system shuts down during the process of setting up or updating a ballistic profile, entered data will be lost and will have to be re-entered.

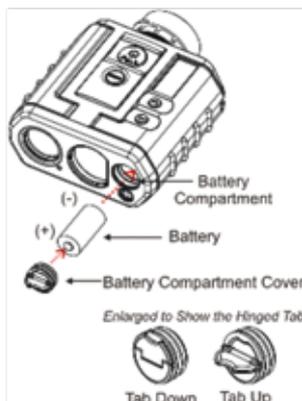


Figure #6

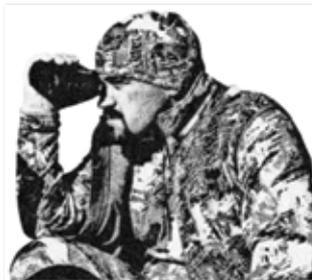


Figure #7

Buttons

The G7 BR2 has a 4-button keypad located on the top panel of the instrument. The buttons provide easy access to the instrument functions, programming and operating commands.

This manual refers to the buttons while the laser is oriented as shown in Figure #8.



System Set up Menu (and sub menus)	Selects the displayed menu option.
Measurement Mode	Initiates measurement.
	While viewing measurement results, returns to the Measurement Screen. You must press the button a second time to initiate a new measurement.
Sleep Mode	Wakes up instrument.
Edit Mode	When a Ballistic Profile Description is displayed: Starts the Edit Mode.
	When editing a character or number: advances to the next character or number.



System Set up Menu (and sub menus)	Exits Set up Menu and returns to Measurement Mode. For sub menus, returns to previous menu.
Measurement Mode	Short Press: Increments to the next target type (page 16).
	Press and hold for 3 seconds: Displays the System Setup Menu (page 22).
	Measured Values Menu or Wind Compensation Menu: Toggles to the other menu.
Sleep Mode	Wakes up instrument.
Edit Mode	Exits the Profile Edit Mode.



System Set up Menu (and sub menus)	Scrolls to the previous menu option.
Measurement Mode	Enters the Wind Compensation Menu after calculating a ballistic solution.
	Measured Values Menu or Wind Compensation Menu: scrolls to the previous option.
Sleep Mode	Wakes up instrument.
Edit Mode	Scrolls to the next character or number. The auto-accelerating editor scrolls faster the longer the button is pressed.



System Set up Menu (and sub menus)	Scrolls to next menu option.
Measurement Mode	Measured Values Menu or Wind Compensation Menu: scrolls to the next option.
	Enters the Wind Compensation Menu after calculating a ballistic solution.
Sleep Mode	Wakes up instrument.
Edit Mode	Scrolls to the previous character or number. The auto-accelerating editor scrolls faster the longer the button is pressed.

Powering OFF the G7 BR2

To conserve battery power, if no button presses are detected after a specified length of time, the G7 BR2 will enter Sleep Mode and then turn itself OFF:

Sleep Mode: 8 seconds
Shut Down: 45 seconds

Note: These times are after the last button press or major instrument operation such as storing ballistic profile data.

Display Indicators

Figure #9 shows the LCD in-scope display. The G7 BR2's internal software is organized into options. Each option represents a specific measurement or setup function and has a corresponding display indicator. Refer to Figure #9 and the table below for information about each indicator.

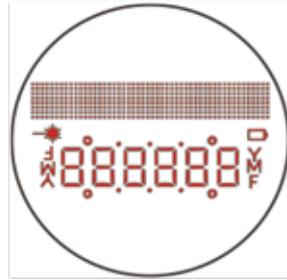
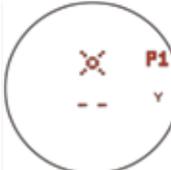


Figure #9

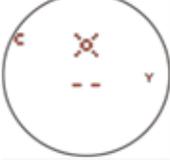
	Upper Display	Displays menu items and messages.
	Battery Voltage	Low battery warning (page 11).
	Measurement Units	Y: Yards M: Meters (not active in the G7 BR2) F: Feet or Fahrenheit
	Lower Display	Displays messages and measurement results.
	n/a	Although part of the display, not active in the G7 BR2
	Laser	The instrument's laser is firing.

Measurement Modes

<p>Range Only Measurement</p>	 <p>The image shows a circular scope view with a red crosshair in the center. Below the crosshair are two horizontal dashes representing a range indicator. To the right of the dashes is a small 'y' symbol.</p>	<p>The crosshair and yard indicator are displayed and - appears in the Lower Display.</p> <ul style="list-style-type: none"> · See page 26 for information about taking a range only measurement. <p>Data measurements and calculated values are displayed in the Measured Values Menu.</p>
<p>Measurement with Ballistic Profile</p>	 <p>The image shows a circular scope view with a red crosshair in the center. Below the crosshair are two horizontal dashes representing a range indicator. To the right of the dashes is a small 'y' symbol. In the upper right quadrant of the scope, the text 'P1' is displayed in red.</p>	<p>The G7 BR2 allows you to store 5 different cartridge combinations. The ballistic profile indicator appears in the far right of the Upper Display. In this example, P1 represents Profile 1.</p> <ul style="list-style-type: none"> · See page 28 for information about setting up a ballistic profile. · See page 31 for information about taking a measurement with a ballistic profile

Target Selection Menu

The G7 BR2 allows you to select or eliminate targets and to take the most accurate measurements possible in various field conditions. When the measurement screen (Range Only or Ballistic Profile) is displayed, press the  button to increment through the Target Selection Menu.

<p>Standard</p>		<p>Standard, single shot strongest target mode.</p>
<p>Continuous</p>		<p>The “c” display indicator appears in the left edge of the Upper Display. The unit logs found in the area of the crosshair while the  button is pressed. The results are updated in the lower display as each target is acquired.</p>
<p>Nearest</p>		<p>Allows for easy acquisition of small targets without inadvertently getting background targets that have stronger signal strength. The “N” display indicator appears in the left edge of the Upper Display. The unit logs all targets found in the area of the crosshair while the  button is held down. Brackets surround the cross hair briefly to indicate multiple targets acquired. Of the targets acquired, the distance to the nearest target appears in the lower display.</p>
<p>Farthest</p>		<p>Allows objects such as brush or tree branches to be ignored so that only background targets are acquired. The “F” display indicator appears in the left edge of the Upper Display. The unit logs all targets found in the area of the crosshair while the  button is held down. Brackets surround the cross hair briefly to indicate multiple targets acquired. Of the targets acquired, the distance to the farthest target appears in the lower display.</p>

Error Codes

Error conditions can occur in a measurement or in the system hardware. To make sure that you never get an erroneous measurement, the G7 BR2 monitors both system hardware and measurements. The temperature and pressure sensors will display null values if an error is encountered or values are out of range.



Error codes appear in the main display and are in the form of “E xx”, where “xx” is an error code number. Figure #10 shows an example error code, E 32. The “Clear?” message that appears in the Upper Display is prompting you to press the  button to restore default settings.

Error Codes	Explanation
E 31	Checksum error for factory-fixed parameter.
E 32	Checksum error for user stored data. Restore default settings to clear this error (see above).
E 33	Unit failed self test during power ON sequence.
E 34	Unit failed the built-in PLL test.
E 35	Processor failed to show current measurement complete within the timeout limit.
E 36	Tilt sensor reading is outside maximum workable range.
E 37 E 38 E 39	Calibration error. Contact Gunwerks Customer Service for assistance.

- If you encounter an error code, allow the unit to completely power OFF. Then press the  button to power ON the unit and repeat the intended measurement or action.
- If the error persists, contact Gunwerks Customer Service for assistance.

Eyepiece

The adjustable eyepiece is designed for comfort and to block extraneous light. To extend the eyepiece, turn the eyepiece counter-clockwise while pulling up. To return the eyepiece to its original position, turn the eyepiece clockwise and push down.

To match your personal preference, the eyepiece may be located in any position from fully up to fully down. If wearing eyeglasses or sunglasses, you will find that the fully down position brings the eyepiece lens closer to your eye and gives you a full field of view.



Eyepiece Cover:

The eyepiece cover protects the internal components from sunlight exposure. The eyepiece cover should be in place whenever the G7 BR2 is not in use.

To attach the eyepiece cover:

Feed the thin cord under the metal bar and flare the loop open.

Pull the eyepiece cover through the loop and cinch tight.

Focus Adjustment Ring

The focus adjustment ring (see Figure #11) allows you to focus the LCD in-scope display relative to the target for your eye. During assembly, optimum focus is set to infinity. To adjust the LCD focus, turn the focus adjustment ring to suit your personal preference.

Power ON or wake up the G7 BR2 and then aim at a distant object. Adjust the Focus Adjustment Ring until the crosshair is at its optimum focus or sharpness. For future reference, note the position of the scale on the Focus Adjustment Ring.

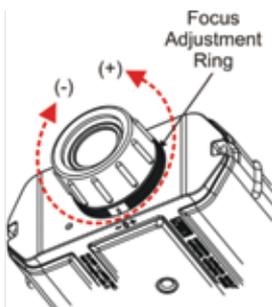


Figure #11

Firmware Revision Number

The firmware revision number provides manufacturing information about your G7 BR2. To display the firmware revision number:

1. Start with the G7 BR2 powered OFF, press the  button.
2. Look through the eyepiece and press  to display the firmware revision number. The display should look similar to Figure #12.
3. Press the  button or  button to clear this display.

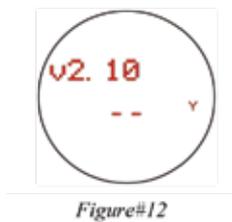


 Figure #12 uses firmware revision 2.10 for the purpose of an example. Your G7 BR2 may include a different firmware revision number.

Measuring Point

The measuring point of the BR2 is located at the center point of the instrument, the $\frac{1}{4}$ -20 thread.

Neck Strap

1. Find the two Attachment Points located on the rear panel of the BR2.
2. Insert the end of one of the connector straps into one side of the eyelet opening and feed it through to the other side.
3. Feed the strap up from the bottom of the buckle, then over the center of the buckle and back down through the other side.
4. Pull the strap to take up any slack and tighten the strap to simply have a loop that is fed through the eyelet.
5. Repeat steps 2-4 to attach the other connector strap to the other side of the G7 BR2.
6. Attach one end of the neckstrap into the side release buckle of one of the connector straps.
7. Attach the other end of the neckstrap to the side release buckle of the other connector strap.

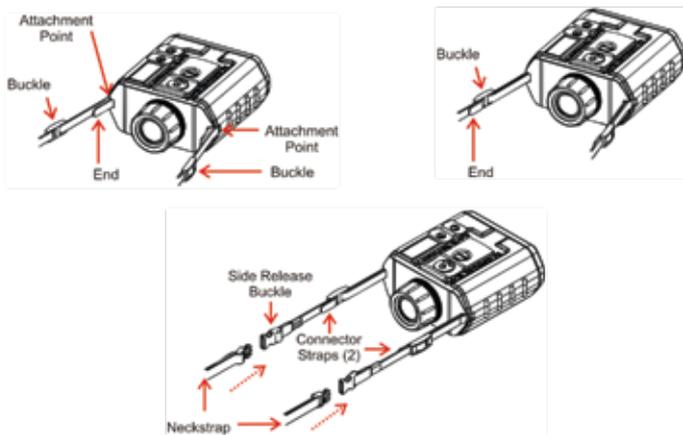


Figure #13



- Make sure the strap is straight when attaching it to the G7 BR2. This will help you avoid uncomfortable twists in the strap that will rub your neck.
- Before use, check to make sure the neckstrap is secure. Failure to do so may result in the BR2 hitting the ground or other object.
- The neckstrap may also be attached to the carrying case.

Restore Default Settings

It is possible to restore the G7 BR2's default settings. Restoring the default settings affects the system setup options. The table below lists the parameters and the associated default setting.

Parameter	Default Value
Measurement Mode	Range Only
Target Type	Standard
Back Light	Level 2
Cross Hair	
Profile Descriptions	Profile 1 Profile 5
Drop Units	MOA
Drag Standard	G1
Ballistic Coefficient	0
Muzzle Velocity	0
Sight Height	1.5
Turret Temperature	60
Turret Altitude	0
Zero Range	100

To restore the default settings, the unit must be powered **OFF**:

1. Press the  button.
2. Press the  button. The firmware revision number will be displayed.
3. Press the  button. ^ Clear? will appear in the Upper Display.
4. Press the  button if you want to restore the default settings.

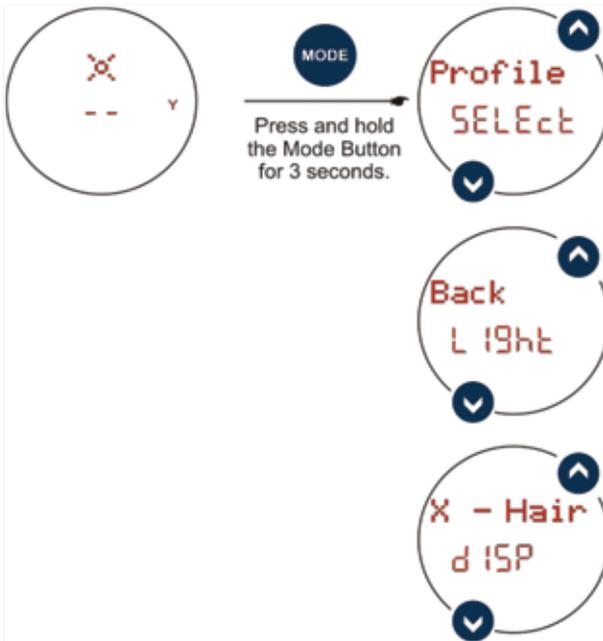


 Press the  button if you want to cancel the operation.

Section 4 - System Setup Menu

Figure #15 shows an overview of the System Setup Menu which can be accessed from the Measurement Mode. Each option is described separately in the following sections.

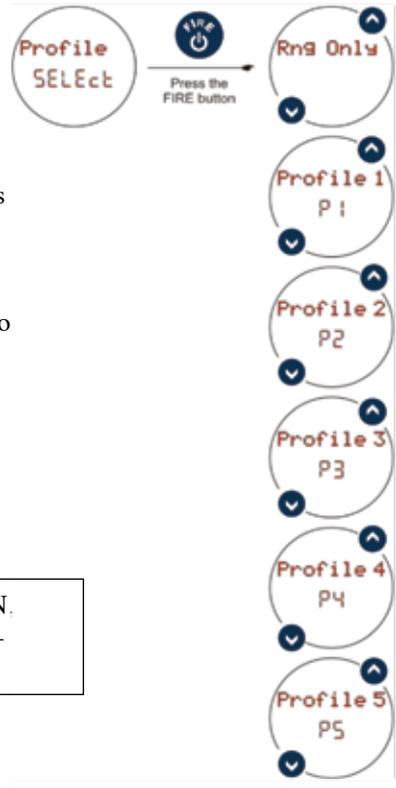
1. From the Measurement Mode, press and hold the  button for 3 seconds. “Profile” will appear in the Upper Display and “SELEct” will appear in the Lower Display.
2. Press  or  to display the previous or next option.
 - Press the  button to return to the Measurement Mode.
3. Press  to select an option.
 - Press the  button to return to the Measurement Mode.



Ballistic Profile Menu

The G7 BR2 allows you to define five custom ballistic profiles. The Ballistic Profile Menu allows you to select Range Only measurements or to select, review or edit a ballistic profile.

1. From the Measurement Mode, press and hold the  button for 3 seconds. “Profile” will appear in the Upper Display and “SELEct” will appear in the Lower Display.
2. Press  to display the current profile selection.
3. Press  or  to display the previous or next option.
4. Press  to select a Profile.
 - Press  or  to review the settings associated with the profile.
 - See page 27 for information about editing a ballistic profile.
 - When finished press the  button to return to the Profile Selection Menu. You must press  button again to return to the System Setup Menu. Pressing the  again will return to the Measurement Mode.

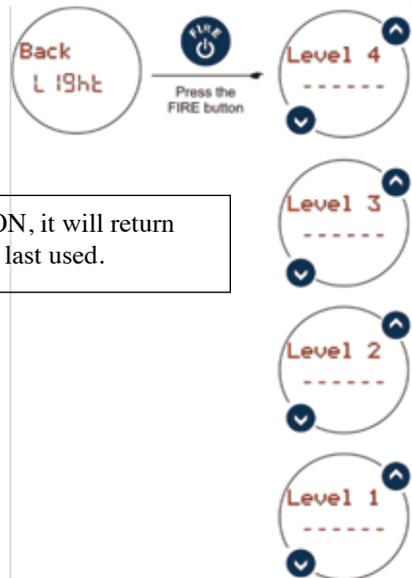


 Each time the G7 BR2 is powered ON, it will return to the same profile selection that was last used.

Backlight Menu

The G7 BR2 has a backlit LCD display with an adjustable intensity to match viewing and ambient light conditions. The Back Light Menu has 4 levels of intensity or brightness.

1. From the Measurement Mode, press and hold the  button for 3 seconds. “Profile” will appear in the Upper Display and “SELEct” will appear in the Lower Display.
2. Press  or  to display the Backlight Menu as shown in the figure below.
3. Press  to display the current Backlight setting.
4. Press  or  to increase or decrease the value Backlight setting.
5. When finished, press the  button to save the Backlight setting and return to the System Setup Menu. You must press the  button again to return to the Measurement Mode.

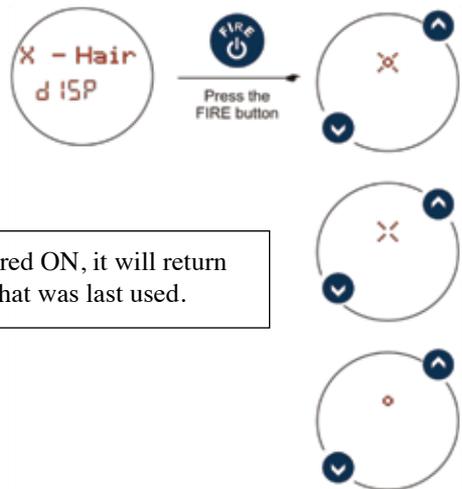


 Each time the G7 BR2 is powered ON, it will return to the same backlight level that was last used.

Cross Hair Display Menu

To fit your application, the G7 BR2 offers three options for displaying the cross hair.

1. From the Measurement Mode, press and hold the  button for 3 seconds. “Profile” will appear in the Upper Display and “SELEct” will appear in the Lower Display.
2. Press  or  to display the Cross Hair Display Menu.
3. Press  to display the current cross hair selection.
4. Press  or  to display another cross hair option.
5. When finished, press the  button to save the Cross Hair selection and return to the System Setup Menu. You must press the  button again to return to the Measurement Mode.



Each time the G7 BR2 is powered ON, it will return to the same cross hair display that was last used.

Section 5 – Taking a Range Only Measurement

During Range Only Mode ballistic calculations are not applied, and the unit can acquire most targets up to 2,000 yards. Measurement results are presented as horizontal distance and include basic range with up/down hill angle to target correction. Range only is the default measurement mode. When you power ON the G7 BR2, the last used measurement profile will be active. For information about applying a ballistic profile to measurements see Section #7 (page 31).

The basic steps for taking a Range Only measurement:

1. Look through the eyepiece and use the cross hair to aim to the target.

2. Press and hold the  button. The Laser status indicator  is displayed while the laser is active. The laser remains active for a maximum of 5 seconds while acquiring data about the target.

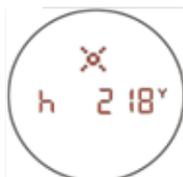
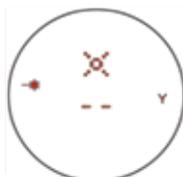
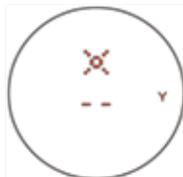
- If the target is not acquired in the 5-second period, release the  button and repeat this step.

3. Once the measurement is displayed, release the  button. The measurement will remain displayed until you press any button or until the unit goes into Sleep Mode.

- The 'h' character in the Lower Display indicates that the horizontal distance result is displayed.

4. Press either the  button or  button to view the Measured Values Menu. See example on next page.

- To take another measurement, press the  button exit the Measured Values Menu and return to the Measurement Mode. Press the  button a second time to fire the laser.
- Until the laser is fired, you may press either the  button or  button to return to the Measured Values Menu.



Measurement Results Menu in the Range Only Mode

Example Measured Values Menu (Range Only Measurement):

A circular display with a white background and a thin black border. The text 'Hor Dist' is at the top, and '2 18'' is below it, both in a red, monospace-style font.	Horizontal Distance
A circular display with a white background and a thin black border. The text 'Apprx Alt' is at the top, and '5577,' is below it, both in a red, monospace-style font.	Approximate Altitude
A circular display with a white background and a thin black border. The text 'inHg' is at the top, and '24.6' is below it, both in a red, monospace-style font.	Barometric Pressure
A circular display with a white background and a thin black border. The text 'Temp' is at the top, and '56°F' is below it, both in a red, monospace-style font.	Temperature
A circular display with a white background and a thin black border. The text 'Incline' is at the top, and '20°' is below it, both in a red, monospace-style font.	Inclination
A circular display with a white background and a thin black border. The text 'LOS Dist' is at the top, and '2 19'' is below it, both in a red, monospace-style font.	Line of Sight Distance

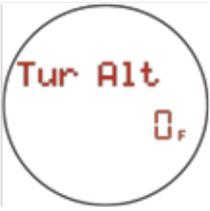
Section 6 – Setting up a Ballistic Profile

The BR2 allows you to define and store five ballistic profiles.

1. In the Profile Select Menu, select the ballistic profile that you want to review or edit (page 23).
2. Press  or  to display the previous or next option.
3. Press the  button to select an item that you want to change.
 - Edit the value
 - or -
 - Press  or  to display the previous or next option.
 - Press the  button to save the selection and return to the Profile Select Menu.
 - Press  button again to calculate and store the ballistic profile. Pls Wait is displayed during this process, which will take approximately 14 seconds.
 - o You will have to press the  button one more time to return to the Measurement Mode.

	<p>Description:</p> <ul style="list-style-type: none"> • Press the  button to enter a descriptive label or name for the ballistic profile, cartridge caliber or load description. Maximum of 8 characters. • See page 36 for information about the Edit Mode.
	<p>Drop Units:</p> <ul style="list-style-type: none"> • Bullet Drop Compensator (BDC): Corrects the LOS Range to your Ballistic Profile and field conditions for a “Shoot To” Range. The Shoot To Range is for use with a calibrated Ballistic turret. Just dial or hold the appropriate calibration. • Minutes of Angle (MOA): Standard units of angular correction for field adjustable height and windage turrets. Returns the MOA correction for the ballistic solution to hold or dial on a standard MOA reticle or turret. Just dial or hold the appropriate calibration. • Inches: Correction for sight in only turrets. User estimates dimension at target.

	<p>Drag Standard:</p> <ul style="list-style-type: none"> • G1: The industry standard. • G7: Most modern long range bullets fit this model. • Use the G1 model, unless you have an accurate Ballistic Coefficient based on the G7 standard. • G1 and G7 are not interchangeable.
	<p>Ballistic Coefficient (BC):</p> <ul style="list-style-type: none"> • All bullet manufacturers list a BC for their bullets. This number describes the bullet's efficiency in overcoming air resistance. A higher number is better. Usually the number is less than one (for example, Berger 7mm 168 VLD G1 is 0.617). Be sure to use the Ballistic Coefficient appropriate to the selected Drag Standard (G1 or G7). • If you are using a Ballistic turret, use the BC from that profile. • See page 35 for information about the Edit Mode.
	<p>Muzzle Velocity (MV):</p> <ul style="list-style-type: none"> • The MV is the speed the bullet leaves the barrel (unit is feet per second) and automatically corrects for a measured chronograph distance of 15 feet. • If you are unable to measure your MV, go to www.gseven.com and use the trajectory validation feature to calculate your actual MV based on shooting results. If you are using a Ballistic Turret, use the MV from that profile. • See page 35 for information about the Edit Mode.
	<p>Sight Height:</p> <ul style="list-style-type: none"> • The distance from the center line of the barrel to the centerline of the scope (unit is inches). It is easy to measure. Add half the diameter of the scope to half the diameter of the action to the distance between the scope and action. Or place a ruler on the side of your rifle and estimate. • See page 35 for information about the Edit Mode.

Only if Drop Unit = BDC		<p>Turret Temperature:</p> <ul style="list-style-type: none"> • The temperature the Ballistic turret was configured for. • Unit is degrees Fahrenheit. • See page 36 for information about the Edit Mode.
		<p>Turret Altitude:</p> <ul style="list-style-type: none"> • The Altitude the Ballistic turret was configured for. • Unit is feet. • See page 36 for information about the Edit Mode.
		<p>The Zero Range:</p> <ul style="list-style-type: none"> • The range at which your calibration for drop compensation is referenced. Usually, considering the point blank range of your cartridge, 200 yards is a common and useful zero range. Your MOA elevation adjustment, Ballistic Turret, or Ballistic Reticle should reflect and reference your zero range. For example, with your rifle sighted in at 200 yards to hit right on the bulls eye, your ballistic turret or MOA turret should be adjusted to reflect 2 (for 200 yards) or 0, respectively. • See page 36 for information about the Edit Mode.

Notes:

- Be certain to double check all entries. The program does not check values, so invalid entries do not generate an error message.
- Highly accurate scope and ballistics data are supplied when you purchase a complete rifle system from Gunwerks.
- Use the Ballistics Calculator at www.gseven.com to determine your ballistics data.
- If you are tuning and developing your own loads and rifle setup, the better you can resolve your BC, MV, etc., the better the performance you will get from your laser.
- If BC and MV values are set to 0, the unit will auto clear the user-entered profile name and usually reset to the factory default (example Profile 1).

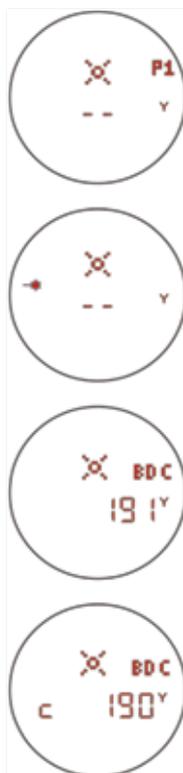
Section 7 – Taking a Ballistic Profile Measurement

Setup the ballistics profile to match the cartridge combination (page 23). The basic steps for taking a Ballistic measurement are the same as taking a Range Only measurement (page 26). For range measurements with ballistic calculations, the maximum measurement distance is approximately 1,400 yards. Measurement results vary, depending upon the Drop Units selection associated with the ballistic profile.

After completing a measurement, the calculated wind correction is easily accessed. After ranging and receiving a ballistic solution, pressing either the  or  will display the calculated wind hold in MOA for the ballistic solution.

Drop Units = BDC

1. Look through the eyepiece and use the cross hair to aim to the target. In this example P1 indicates that Ballistic Profile 1 is active and will be applied to the measurement.
2. Press and hold the  button. The Laser status indicator  is displayed while the laser is active. The laser remains active for a maximum of 5 seconds while acquiring data about the target.
 - If the target is not acquired in the 5-second period, release the  button and repeat this step.
3. Once the measurement is displayed, release the  button. The Line of Sight distance will be displayed for just a few seconds and then the display will be updated. 'c' will appear in the Lower Display to indicate the compensated distance or Shoot To Distance.
4. Press the  or  button to display the Wind Correction Menu (page 35). To apply this correction, just dial or hold the correct value in the rifle scope.
 - Press the  button to toggle between the Measured Values Menu and the Wind Correction Menu.
 - Press the  button to the Measured Values Menu. If the  or  button are pressed before the next measurement, the last Wind Correction Value and Measured Value will appear.



Measurement Results Menu in the BDC Mode

Example Measured Values Menu (Ballistic Profile Measurement)

	BDC Distance/Shoot To Distance
	Approximate Altitude
	Barometric Pressure
	Temperature
	Inclination
	Line of Sight Distance

Drop Units = MOA

In this example, the figures to the right show Profile 1 with Drop Units of MOA. The process of taking the measurement is the same as BDC Mode.

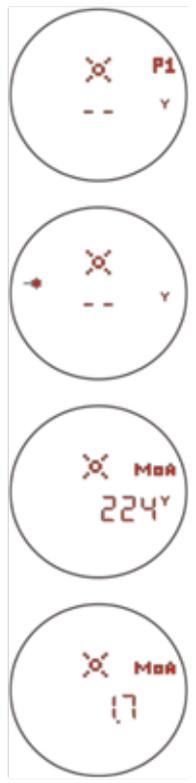
The first value displayed represents the Line of Sight Distance. In this example, 224 yards. The next value displayed is the MOA correction value for bullet drop, 1.7 MOA in this example.

The Measured Value Menu includes:

- MOA Drop
- Approximate Altitude
- Barometric Pressure
- Temperature
- Inclination
- Line of Sight Distance

Press the  or  button to display the Wind Correction Menu (page 35). To apply this correction, just dial or hold the correct value in the rifle scope.

- Press the  button to toggle between the Measured Values Menu and the Wind Correction Menu.
- Press the  button to the Measured Values Menu. If the  or  button are pressed before the next measurement, the last Wind Correction Value and Measured Value will appear.



Drop Units = Inches

In this example, the figures to the right show Profile 1 with Drop Units of Inches. The process of taking the measurement is the same as BDC or MOA mode.

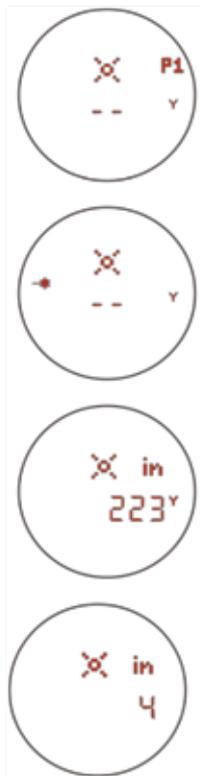
The first value displayed represents the Line of Sight Distance. In this example 223 yards. The next value displayed is the Inches correction value, 4 inches in this example.

The Measured Value Menu includes:

- IN. Drop
- Approximate Altitude
- Barometric Pressure
- Temperature
- Inclination
- Line of Sight Distance

Press the  or  button to display the Wind Correction Menu (page 35). To apply this correction, just hold off the correct value in the rifle scope.

- Press the  button to toggle between
- the Measured Values Menu and the Wind Correction Menu.
- Press the  button to the Measured Values Menu. If the  or  button are pressed before the next measurement, the last Wind Correction Value and Measured Value will appear.



Wind Correction Menu

Entering the Wind Correction Menu is accomplished by pressing the  or  buttons after a measurement sequence has been accomplished in BDC, MOA or Inches Mode. While in the Wind Correction Menu, pressing either  or  increments the wind value up or down from 5 to 50 miles per hour, and displays the corresponding wind correction. Select the wind correction that best approximates the right angle component to your shot direction.

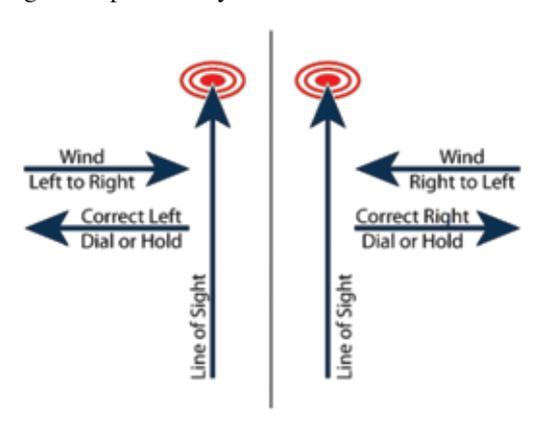


Figure #25

To apply this correction, just dial or hold the correct value in the rifle scope.

- If Drop Units = BDC or MOA, the correction value is in MOA.
- If Drop Units = Inches, the correction values in inches.
- Press the  button to toggle between the Measured Values Menu and the Wind Correction Menu.

Section 8 – Edit Mode

The G7 BR2 has an editor that can be used to manually enter values for the various instrument setup values. The instrument does not check or validate entered values so it is recommended that you verify values before exiting the Ballistic Profile Menu.

Editable options include:

- Profile Description
- Ballistic Coefficient
- Muzzle Velocity
- Sight Height
- Turret Temperature
- Turret Altitude
- Zero Range

 Restoring factory defaults will clear the stored values.
The table on page 39 may be used to record profile data.

Lower Display

When all of indicators are lit, the Lower Display looks like Figure #26.



Numeric Values: 

Figure #27

To edit a numeric value:

1. Press the  button. One of the digits will be flashing.
2. Press  or  to increase or decrease the value of the digit until desired value is displayed.
3. Press the  button to edit the next digit.
4. Repeat steps #2 and 3 until correct value is displayed.
5. Press the  button to exit the Edit Mode.

Upper Display

Of the editable options listed on the previous page, only the Profile Description is edited using the Upper Display. When all of indicators are lit, the Upper Display looks like the figure to the right. The Profile Description is limited to 8 characters.

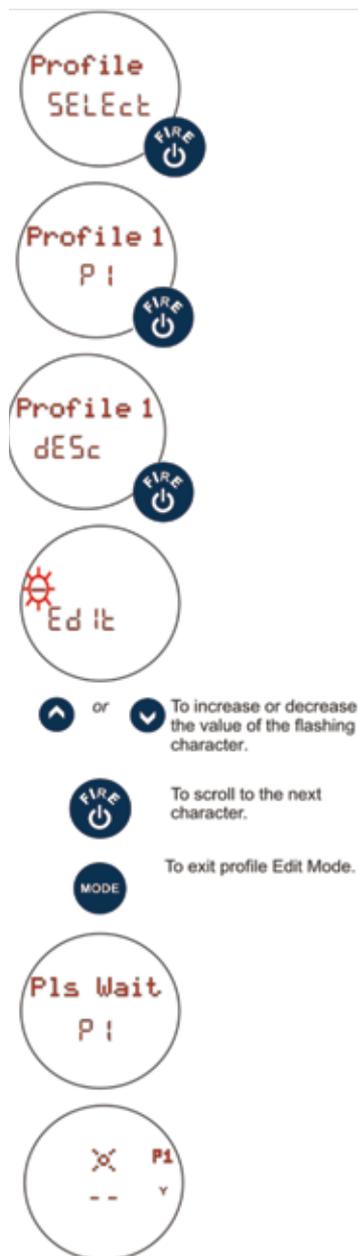


You may select from ASCII characters that include upper case letters (A-Z), lower case letters (a-z), numbers (0-9), and special characters:

!	“	#	\$	%
&	‘	()	*
+	,	-	.	/
:	;	<	=	>
?	[\]	^
_	`	{		}
~	blank space			

Editing a Ballistic Profile Description

1. Display the System Setup Menu. Profile Select will be displayed.
2. Press the  button to display the Ballistic Profile Menu.
3. Press  or  to scroll to the profile you wish to edit. In this example, we will edit Profile 1.
4. Press the  button to select the profile you wish to edit. The factory default Profile 1 will appear in the Upper Display and dESc in the Lower Display.
5. Press the  button to start the Edit Mode. The left most character of the Upper Display will be flashing.
6. Press  or  to increase or decrease the value of the flashing character.
 - The auto-accelerating editor scrolls faster the longer the button is pressed.
 - If you need to make a correction, press the  button repeatedly to return to the character that you want to correct.
7. Press the  button to scroll to the next character in the description. Maximum = 8 characters.
8. Press the  button to exit the Edit Mode. The message Pls Wait appears in the Upper Display while the instrument calculates intermediate tables for the selected profile.
 - More than 1 profile may be setup before exiting the Edit Mode.
9. Do not press any buttons until the “Pls Wait” message is cleared and the Measurement Screen is displayed showing the updated profile number. P1 in this example.



	Profile Number				
	1	2	3	4	5
Description					
Drop Units					
Drag Standard					
Ballistic Coefficient					
Muzzle Velocity					
Sight Height					
Turret Temperature					
Turret Altitude					
Zero Range					

Section 9 - Care & Maintenance

The battery is the only user-replaceable part in the G7 BR2. Do not remove any screws. To do so will effect or void the G7/Gunwerks Limited Warranty.

Temperature Range

- Operating temperature range: 32° to 122° F.
- Storage temperature range: -4° to 158° F

Protecting from Moisture and Dust

The G7 BR2 is sealed to provide protection from normally expected field conditions. It is protected from dust and rain, but will not withstand submersion.



If water leakage is suspected:

1. Power OFF the G7 BR2.
2. Remove the battery.
3. Air dry the G7 BR2 at room temperature with the battery compartment open.

Protecting from Shock

The G7 BR2 is a precision instrument and should be handled with care. It will withstand a reasonable drop shock. If the unit suffers from a severe drop shock, power on the unit and attempt a measurement. Please contact G7 Customer Service if you need assistance.

Transporting

When transporting the G7 BR2, the unit should be secured in the provided carrying case. The provided neck strap can be used when carrying the G7 BR2 in the field. The eyepiece cover should be in place whenever the G7 BR2 is not in use.

Cleaning

Clean the G7 BR2 after each use, before returning it to its carrying case. Check all of the following items:

- Excess moisture. Towel off excess moisture, and air dry the instrument at room temperature with the battery removed and the battery compartment open.
- Exterior dirt. Wipe exterior surfaces clean to prevent grit buildup in the carrying case. Isopropanol may be used to remove dirt and fingerprints from the exterior.
- Transmit and Receive Lenses. Use the provided lens cloth to wipe the lenses. Failure to keep the lenses clean may damage them.

Storing

If you won't be using the G7 BR2 again soon, remove the battery before storing the instrument.

Section 10 - Specifications

All specifications are subject to change without notice. Please refer to Gunwerks website for current specifications. If you are not able to locate the information on the website or if you do not have internet access, please contact Gunwerks via phone or fax. Refer to the inside front cover for Gunwerks contact information.

Measurement System

- Measurement Range: 0 - 2,500 yards
 - Functional Range: 2,000 yards
 - Reflective Range: 2,500 yards
- Maximum Compensated Range: 1,400 yards
- Accuracy:
 - Range: ± 1 yard
 - Tilt: ± 1 degree
 - Temperature: $\pm 2^\circ$ F
 - Pressure: ± 0.5 InHg
- Measuring System: 905 nm, infrared pulse laser
- Display System: Black mask, dot matrix LCD with in-scope projection.
- Target System: In-scope projection of aiming reticle

Ballistics Calculation Limits:

- Maximum Tilt Angle for Computed Ballistics: ± 90 Deg.
- Maximum Temperature for Computed Ballistics: 122° F
- Minimum Temperature for Computed Ballistics: 32° F
- Maximum Pressure for Computed Ballistics: 36 InHg
- Minimum Pressure for Computed Ballistics: 4 InHg

Optical System

- Field of View: 340 feet at 1,000 yards
- Type: Monocular, thru-the-lens view, coincident with laser output beam
- Magnification: 7X

Miscellaneous

- Operating Temperature: 32° to 122° F
- Storage Temperature: -4° to 158° F
- Power Source: CR 123
- Battery Life:
 - Intensive use and brightness: 4-5 hours
 - Average use: 8-10 hours
- Dimensions: 5.2 L x 4.5 W x 2.1 H in
(13.2 L x 11.4 W x 5.3 H cm)
- Weight (with battery): 0.90 lbs (0.40 kg)
- Structure: Glass filled polycarbonate composite
- Targeting Modes: Standard, Near, Far, Continuous
- Environmental: Waterproof /dustproof IP55

Laser

- Class: FDA Class 1 (CFR 21)
- Wavelength: 905 nm

Section 11 - Troubleshooting

Problem	Remedy
The unit does not power ON or the LCD does not illuminate.	Press the  button. Check the display and if necessary, replace the battery.
The target cannot be acquired.	Make sure the unit is powered ON. Make sure that nothing is obstructing the transmit lens or the receive lens. Make sure the unit is held steady while pressing the  button. Make sure that you press-and hold  as long as the laser is active (5 second maximum).
The G7 BR2 does not have an OFF button.	To conserve battery power, if no button presses are detected after a specified length of time, the G7 BR2 will enter Sleep Mode and then power itself OFF: <ul style="list-style-type: none"> • Sleep Mode: 8 seconds • Shut down: 45 seconds • Note: These times are after the last button press or major instrument operation.
Incorrect measurements.	Review Ballistic Profile inputs. If problem persists, contact Gunwerks for assistance. See inside front cover for Gunwerks contact information.
E37 (or similar value) appears in the Main Display.	Contact Gunwerks for service. See inside front cover for Gunwerks contact information.

Section 12 – Warranty

The G7 BR2 is covered by the one-year G7/Gunwerks Limited Warranty.

G7 offers a bulletproof product warranty. All of the G7 products are built to very rugged performance standards, and checked and rechecked before they are shipped.

If a G7 product should fail during normal use, please contact G7 Customer Service. Feel free to call or write with any questions you may have about our products.

To register your G7 BR2, please visit the G7 web site: <http://www.gseven.com/customer-service/warranty>



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