



# UltraLyte LR B

## User's Manual

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### **Patents:**

This product is covered by pending patent applications and/or one or more of the following issued patents:

5,359,404  
5,521,696  
5,617,199  
5,715,045

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## Powering ON the UltraLyte LR B

To power ON the UltraLyte LR B:

1. Press the **TRIGGER**. Briefly, the screen display should look like Figure 9 below, and then the display will change to the Speed Measurement Screen.

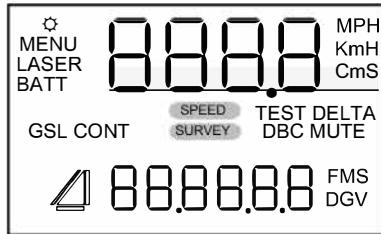


Figure 9. LCD Display Segments

## Powering OFF the UltraLyte LR B

To power OFF the UltraLyte LR B:

1. Press and hold the **POWER OFF button** for approximately 2.5 seconds.



To help save its batteries, the UltraLyte LR B has a factory-defined power OFF interval. The instrument will automatically power OFF if there is no activity for a period of 15 minutes. Instrument activity includes any button presses or serial communication.

## Section #2 – Speed Measurements

When you power ON the UltraLyte LR B, the screen display should look similar to Figure 15.

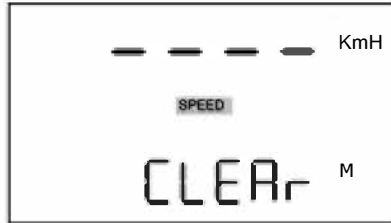


Figure 15. Initial Speed Measurement Screen

- The "SPEED" indicator means that the instrument is in Speed Mode and is prepared to take a speed & range measurement.
- Dashes indicate where the speed measurement will appear.
- "MPH" means the speed will be measured in miles per hour. ("KmH" means kilometers per hour).
- The word "CLEAR" appears at the bottom of the screen, and will be overwritten by the distance to the target vehicle when a speed measurement is completed.
- "F" means the distance will be measured in feet. ("M" indicates meters.)

## Taking a Sample Measurement

Refer to the instructions below to take a sample speed measurement.

1. Ensure that the UltraLyte LR B is powered ON and that the Speed Mode is active.
2. Use the sighting scope to aim the instrument to a convenient target — an interior wall will do.
3. To fire the laser:
  - Press and hold the **TRIGGER**. The laser will fire after a short delay (about one-half of a second).
  - or-
  - Press the **TRIGGER** twice. The 1<sup>st</sup> press turns on the in-scope red aiming dot. The 2<sup>nd</sup> press takes the measurement.
4. Continue to press the **TRIGGER** and keep the instrument sighted on the target:
  - A low-pitched growl means that the instrument is attempting to lock onto the target.
  - A low-pitched beep means that a measurement error occurred. An error code will be displayed.

- A high-pitched beep means that a speed was captured. As long as you hold the **TRIGGER**, the instrument will continue to take speed measurements. The measured speed will be displayed on the LCD screen and will be projected on the scope, just below the aiming dot.

After you release the **TRIGGER** the instrument will display the most recent speed reading and the distance at which it was captured or an error code. When the most recent speed reading is displayed, the display screen will look similar to Figure 16.



KmH

The target's Speed.

M

Distance from the midpoint of the instrument to the target.

Figure 16. Sample Speed Measurement - Wall

## Measuring a Moving Vehicle

Refer to the instructions below to use the UltraLyte LR B to measure the speed of a moving vehicle.

1. Ensure that the UltraLyte LR B is powered ON and that the Speed Mode is active.
2. Use the sighting scope to aim the instrument at the target vehicle's license plate area and press the **TRIGGER**.
3. Continue to press the **TRIGGER** and keep the instrument sighted on the target
  - A low-pitched growl means that the instrument is attempting to lock onto the target.
  - A low-pitched beep means that a measurement error occurred. An error code will be displayed.
  - A high-pitched beep means that a speed was captured. As long as you hold the **TRIGGER**, the instrument will continue to take speed measurements. The measured speed will be displayed on the LCD screen and will be projected on the scope, just below the aiming dot.

While the instrument is attempting to lock onto the target, as long as the **TRIGGER** is kept pressed, it will retry the speed measurement.

- Depending upon its configuration, the instrument will try up to 10 times or more. Information is accumulated until it gets a good measurement or generates an error code.
- Consequently, it is very important that the aiming point on the target remain constant for the entire measurement time. If you move the instrument off the aiming point, it will generate an error code instead of capturing a speed reading.

After you release the **TRIGGER** the instrument will display the most recent speed reading and the distance at which it was captured or an error code. When the most recent speed reading is displayed, the display screen will look similar to Figure 17.



48 KmH  
25 M

Figure 17. Sample Speed Measurement - Departing Vehicle

- The speed displays as a negative number if the target was going away from you when it was measured.
- The speed displays as a positive number if the target was approaching you when it was measured.

## Section #4 – Instrument Tests

There are five tests that allow you to verify the UltraLyte LR B's mechanics. These tests include:

- Display Integrity Test
- Scope Alignment Test
- Reference Frequency Test
- Fixed Distance Test
- Delta Distance Test



Your UltraLyte LR B may not include the Reference Frequency Test or the Delta Distance Test. These two tests are factory-defined options that are set when the instrument is shipped.

### Display Integrity Test

The Display Integrity Test allows you to verify that all display segments are operating. LTI suggests that you do this test periodically. Refer to the instructions and Figure 23 below to test the display integrity.

1. Ensure that the UltraLyte LR B is powered ON.
2. Press the **TEST OPTIONS** button. The display should look like Figure 23.

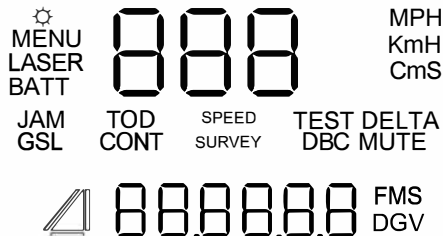


Figure 23. Display Integrity Test

3. Compare the instrument's display to the figure above. If any segment fails to display, contact Laser Technology, Inc. to arrange for repair. See the inside front cover for LTI contact information.



You may also test the display integrity at power ON, by holding the **TRIGGER**



## Scope Alignment

The scope alignment is set at the factory when the instrument is shipped. A heavy blow is the only reason that the scope might ever go out of alignment. This sections includes the Scope Alignment Test and the Scope Alignment Procedure. LTI suggests that you do this test periodically. The Scope Alignment Procedure will only be necessary if the Scope Alignment Test shows that the scope is out of alignment.

### Scope Alignment Test

This test uses sound to indicate when the scope is on-target. Refer to the instructions below to do the Scope Alignment Test.

1. Select a target. Choose a prominent target with well-defined horizontal and vertical edges. The target's reflective qualities and distance should be such that you can clearly hear a change in pitch of the test tone as you pan the instrument over the edges of the target. A telephone pole is an excellent choice. Make sure there is nothing behind the target that the instrument might detect, so you know without a doubt that any change in pitch is due strictly to the target.
2. Ensure that the UltraLyte LR B is powered ON.
3. Press the **TEST OPTIONS** button two times to activate the Test Tone display screen. It should look like Figure 24.

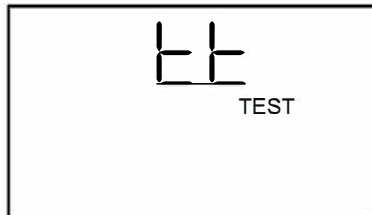


Figure 24. Test Tone Display Screen

4. Scan the target. Press and hold the TRIGGER while panning the instrument across the target. The tone changes pitch when the instrument acquires the target. The highest pitch - the on-target tone - should occur when the scope's red aiming dot is centered on the target. Scan the target both horizontally and vertically.
  - If the frequency drops off at equal distances from the center of the aiming dot, the instrument needs no adjustment.
  - Otherwise, continue with the Alignment Procedure.



- When checking vertical alignment to a close target, be aware of the offset between the center of the scope and the center of the transmit lens, which is 2 inches.
- If you need assistance, contact Laser Technology, Inc. See the inside front cover for LTI contact information.

## Instrument Confidence Checks

There are several ways to verify the measurement accuracy of a Lidar instrument. LTI has designed the Fixed Distance Test and the Delta Distance Test. LTI suggests that you do one of these tests each time the instrument is taken on duty.



Your UltraLyte LR B may not include the Delta Distance Test. It is a factory-defined option that is set when the instrument is shipped.

These tests verify the accuracy of the two key elements of Lidar speed measurement:

- Precise time measurements
- Ability to make mathematical calculations

When setting up an area for these tests, LTI recommends:

- Permanently installing the test area in a convenient location. The test area must establish a permanent, known distance between a shooting mark and a target (Fixed Distance Test) or between a shooting mark and two targets (Delta Distance Test).
- Using a metal tape to measure the distance; this will ensure that the measurement is accurate.

Other considerations:

- The shooting mark is where the operator stands to do the test, and can be an "X" painted on the pavement.
- A target can be any flat, permanent structure—a sign or wall, for example—painted with a bull's eye or other aiming point.
- The shooting mark and the target(s) must form a straight line.
- The distance specified is horizontal distance. Horizontal distance is measured along a straight, level path from the shooting mark to the center of the aiming point.
- The manner in which you stand and hold the instrument both affect the test measurements. For exact readings, carefully hold the instrument so it is directly over the middle of the X.

## Fixed Distance Test

The Fixed Distance Test requires one target.

**If your UltraLyte measures Kilometers per Hour and meters**, LTI recommends that the target should be 60 meters from the shooting mark.

If there is not enough space available, that specific distance is not crucial. However, the distance between the target and the shooting mark must be a multiple of 1 meter; not a fraction of a meter.

## Meters

For absolute accuracy, the instrument should be directly over the shooting mark.

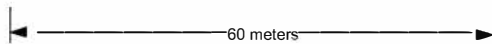


Figure 27. Fixed Distance Test

Refer to the instructions below and Figure 27 above to do the Fixed Distance Test.

1. Stand on the shooting mark.
2. Ensure the UltraLyte LR B is powered ON and that the Speed Mode is active.
3. Aim at the target.
4. Press the **TRIGGER**.
5. Check the display. The speed reading should be zero. A reading of zero verifies the timing accuracy of the instrument and is identical in nature to an accurate velocity reading of a vehicle moving at any speed.
  - KmH results: The displayed distance should read from 59.8 to 60.2 meters if your fixed distance was 60 meters.