labradarLX

USER MANUAL

Referring to Firmware version 1.0

MADE IN NORTH AMERICA

Developed by INFINITION

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labradarLX

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1. GENERAL INFORMATION

Labradar LX utilizes the latest technological advances in Doppler Radar to obtain the velocity of your projectile. Your unit contains a transmitter and a receiver with sophisticated software that processes the Doppler signal to immediately provide you with the velocity of your projectile.

Go to **www.labradar.com** to get the latest and most current version of the User Manual as new functionalities are constantly developed and improvements are made to the device for a better user experience.

1.1 SAFETY WARNING AND GUIDELINES

⚠ READ BEFORE USE

- **Carefully read all of the instructions provided and save them for later use. Read all warnings and instructions marked on the Labradar LX.**
- **Be sure to know and follow the safety guidelines, rules, precautions and any other instructions and information has described in this manual or it may result in damages, injuries or death.**

1.1.1 GENERAL SAFETY INSTRUCTIONS

1. Do not place the Labradar LX on an unstable stand or surface as it may fall resulting in serious damage.
2. The Labradar LX is operated using the internal battery, it is possible to charge the battery by plugging the USB port in an appropriate USB power source.
3. Do not allow any objects to rest on the USB cord or place the Labradar LX where the USB connection will be subjected to stress.
4. Do NOT plug in, turn on or attempt to operate an obviously damaged unit.
5. Do not alter, open, puncture or modify the device.
6. No operator serviceable parts inside the Labradar LX unit, therefore, you should always refer servicing to a recognized service center by qualified staff.

This device contains an internal LiPO battery.
Disposal of the product is subject to local authorities.

1.1.2 ANTENNA AND FREQUENCIES

Based on limits specified by the Federal Communication Commission (FCC) on Radio Frequency (RF) emissions in a general population environment, continued exposure to radiation should be avoided within 0.2 meter in front of the radar. Radiation levels outside this region fall within regulations of 1 mW/cm2 and are not considered safety hazards.

⚠ IMPORTANT instructions regarding the antenna

1. When setting up the antenna, special care should be taken to avoid situations where the antenna radiates towards individuals.
2. The antenna should be positioned such that bystanders are located behind the antenna.
3. Always turn the antenna transmitter off during periods of inactivity.
4. Direct visual contact with the front of the Labradar LX when transmitting should be avoided at all times.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of conformity (EU)
Hereby, Infinition declares that this product is in compliance with the RED products directive from the European Union 2014/53/EU. The full text is available on request at www.mylabradar.com

Declaration of conformity (UK)
Hereby, Infinition declares that this product is in compliance with the relevant statutory requirements. The full text is available on request at www.mylabradar.com

ISED Canada compliance
This device contains licence-exempt transmitter(s)/ receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

STATEMENT OF COMPLIANCE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to 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.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license-exempt RSS standard(s).
Operation is subject to the following two conditions:

1. This device may not cause harmful interference;
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

1.1.3 SAFETY RULES WHEN HANDLING WEAPON

1. Always keep the weapon pointed in a safe direction, and keep your finger off the trigger, until you are ready to shoot.
2. Firearms should be unloaded and securely stored when not in use.
3. Be sure of your target and backstop before you shoot.
4. Wear shooting glasses and ear protection when you shoot.
5. Don't shoot at a hard surface or at water.
6. Avoid alcoholic beverages or drugs when shooting or handling a weapon.
7. Always be alert, avoid distraction and stay aware of your surroundings when handling a weapon.
8. The launching of any projectile involves risk of injury/death to persons and damage to property. You are responsible for any such actions and their consequences.
9. Always place Labradar LX in a safe position to avoid damage to the unit.
10. Never manipulate the Labradar LX while handling a weapon as it could distract you and cause accident.

NOTE: All these important safety rules must be followed by persons handling any weapon to avoid property damages, injuries or death.

1.1.4 DEVICE HANDLING PRECAUTIONS

- Handle with care to avoid damage.
- Do not drop.
- Do not expose to flames, explosions or high temperatures.
- Do not immerse in water or other liquids.
- Do not expose to chemicals or other hazards.

NOTE: This device is designed to maintain waterproofing during light rain in an upright position only. The underside of the device should not be exposed to rain.

The antennas are protected by a plastic radome. Special attention should be paid when handling the radar to avoid damaging the radome as it could result in performance degradation. Do not add any other material on the radome surface as it may affect the radar performance. (Example: stickers, labels, paint, etc.)

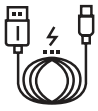
1.1.5 TRIGGER INPUT CONNECTOR

Connector type: Stereo 1/8" audio jack with specific pinout. Do not connect any headphones or non Labradar LX accessory to the audio jack as it is a proprietary accessory port. Failure to do so may result in damaging electronic equipment connected to it or the Labradar LX and void your warranty.

1.1.6 OPERATING TEMPERATURE AND BATTERY CONSIDERATION

The type of internal rechargeable battery use in the Labradar LX is a LiPo battery (Lithium-ion Polymer Battery) which is globally extremely safe and has a great lifespan. Some precautions should still be taken to avoid battery-related accidents and ensure its lifespan:

- Device should always be operated between -10 to +40 °C (14 to 104 °F) for safety reasons and best results.
- Never store at temperatures above 50 °C (122 °F) and never expose to flames at it may result in serious damages, injuries or death.



- Charge the internal battery before first use using the USB-C cable provided.
- Never leave your device charging unattended so that you can react if something unusual happens during charge.
- When using the USB port, be sure to not put stress on the connection.
- To charge, always use an adequate power source meeting the device's specifications.
- Do not leave the device fully discharged for long periods.

1.1.7 MAINTENANCE AND STORAGE

The Labradar LX radar requires very little maintenance. Attention should however be paid to a few points:

- Keep the connectors clean from dirt and moisture to avoid corrosion and bad connections.
- When not using the USB port and trigger input connector, keep the cover in place to protect them.
- Now and then wipe the radar enclosure with a soft and damp cloth.
- Always store at room temperature. Don't leave the device for a long period of time in very cold or very hot places.

Warning: No operator serviceable parts inside the radar unit. Please refer servicing to service qualified personnel at an Authorized Labradar service center.

Unauthorized repair or modification may permanently damage your equipment and void your product warranty and void your authority to operate this device under part 15 regulations.

1.2 RANGE

The Labradar LX is a consumer level device that was designed for amateur use only. The performance of the units has been optimized to offer the most accurate results, but it is possible that some reading may not be accurate, hence it is the responsibility of the user to determine whether or not the readings are good or not to their satisfaction. Infinition and its subsidiaries will not be responsible for inaccurate readings.

In order to achieve the best accuracy possible, the user must use the product correctly and take care of some details:

- Make sure that the Labradar LX is aligned correctly with the target.
- Make sure that the position of the gun relative to the Labradar LX is correct.
- Use a firing range that has no obstacles or obtrusions close to or in the line of fire. (Clear line of sight)
- Make sure that the parameters entered in the Labradar LX configuration match you installation.

Due to microwaves signals nature, range performance of the Labradar LX can differ depending on the environmental conditions:

- Temperature;
- Humidity;
- Particles in the air;
- Signal reflection on the ground, trees, wall and any other surface in the line of fire.
- Frequency channel used for transmission;
- Electrical Interference in the area;
- Etc.

In addition, the projectile's characteristics will also affect the range performance of the Labradar LX, such as:

- Projectile's diameter;
- Projectile's tail design;
- Projectile's shape;
- Projectile's position while travelling in the air;
- Subparticles (ie. Sabot, wads);
- Etc.

Thus, it is a known fact that range performance can vary, even for the same bullet calibers depending on the manufacturer of the bullet, the model of the bullet, the firearm used to fire the bullet, the tail shape of the bullet, etc.

Infinition and its subsidiaries cannot explicitly guarantee a range performance and thus will not be responsible for range performance variations.

1.3 SPECIFICATIONS

Description	Specification
Power Requirement	5V USB 2.0A (Recommended)
Battery Type	LiPo (Lithium-ion Polymer)
Battery Capacity	3800 mAh
Frequency range of operation	61.220 to 61.440 GHz
Nominal Transmitting Power	19 dBm EIRP
Antenna Gain	Tx : 11dB Rx : Variable
Transmitter Stability	50ppm
Beamwidth	15 deg x 30deg (Tx)
Dimension	62mm x 70mm x 78 mm
Mounting Hole Thread	¼-20 standard tripod
Velocity Range	65 to 5000 fps
Memory Type/Capacity	Internal
Minimum Time Between Shots	3s – subject to firmware updates improvements
Accuracy	0.1% under optimal conditions
Operating Temperature	-10 to +40 °C (14 to 104 °F)
Charging temperature	0 to +45 deg Celsius
Storage temperature	-20 to -50 °C (-4 to 122 °F)
Environmental conditions	Indoor, outdoor

2. DEVICE

2.1 USER INTERFACE

2.1.1 KEYPAD AND PORTS

The Labradar LX is equipped with an array of buttons to provide different functions:

1. Power ON/OFF
2. Scroll Up
3. Scroll Down
4. Enter/Navigate results
5. Settings
6. Delete Series/Shot
7. Arm / Disarm
8. USB C Port
9. External Trigger input

2.1.2 DISPLAY AND NAVIGATION BETWEEN VIEWS

- **HEADER**
  On-screen top header content definition.

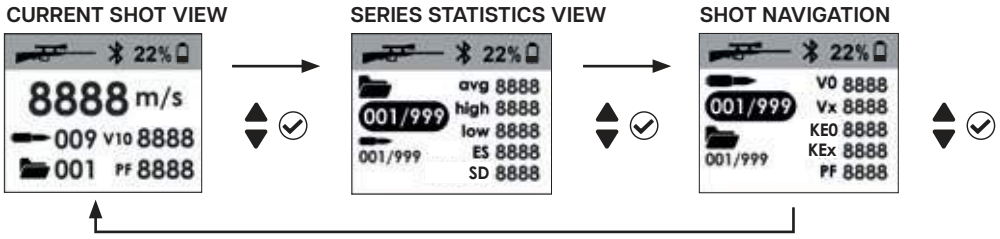
1	**MODE**	Indicates set velocity range for measurements (Weapons type as a reference). [Refer to SETTINGS MENU for more information]
2	**BLUETOOTH INDICATOR**	Indicates when a Bluetooth connection is active. When there is no Bluetooth connection active, the icon is not displayed.
3	**BATTERY INDICATOR**	Indicates the battery level. If the battery level gets too low, the system will shut down automatically.

- **NAVIGATE BETWEEN VIEWS and SELECT/DELETE SERIES or SHOTS**

Press Enter on the Keypad to switch to different Views.

Use Up/Down arrows on the keypad to set the active Series or Shot (highlighted in black on screen) then press Enter to validate choices.

Active series or shot (highlighted in black on screen) can be deleted by pressing Delete button on Keypad then press Enter to validate. NOTE: To Delete all Series and Shots at once, go to SETTINGS → ERASE ALL DATA then press Enter to validate.



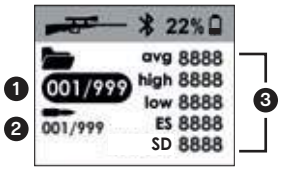
- **CURRENT SHOT VIEW**
  Display current shot information.

NAVIGATE SHOTS	▲▼
DELETE CURRENT SHOTS	
SWITCH VIEW	

1	**SHOT VELOCITY**	Current shot Result with set Velocity Unit.
2	**SHOT NUMBER**	Current Shot Number.
3	**SERIES NUMBER**	Current Series Number.
4	**VELOCITY AT DISTANCE (VX)**	Velocity measured at the set distance (Vx = Velocity at x Distance)
5	**POWER FACTOR (PF)**	Power factor (PF) calculated from Projectile Weight and V0 velocity (V0 = Velocity at the muzzle exit).

- **SERIES STATISTICS VIEW**
  Shows the selected Series statistics information.

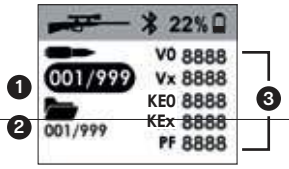
NAVIGATE SERIES
DELETE CURRENT SERIES
SWITCH VIEW



1	**SERIES NUMBER**	Currently selected Series. (Navigate)
2	**NUMBER OF SHOTS**	Total Number of shots in the current series.
3	**SERIES STATISTICS**	· **Average (avg)**: Average Velocity of all shots in the current Series. · **Highest (high)**: Highest Velocity of the current Series. · **Lowest (low)**: Lowest Velocity of the current Series. · **Extreme Spread (ES)**: Extreme Spread is the lowest velocity subtracted from the highest velocity of the current series. · **Standard deviation (SD)**: Standard Deviation is a number used to tell how measurements for a group are spread out from the average or expected value. A low standard deviation means that most of the numbers are very close to the average. A high standard deviation means that the numbers are spread out.

- **SHOT NAVIGATION VIEW**
  Shows single Shots detailed information.

NAVIGATE SHOTS
DELETE CURRENT SHOTS
SWITCH VIEW

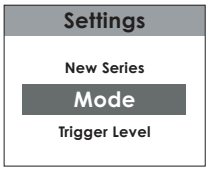


1	**SHOT NUMBER**	Currently selected Shot.
2	**SERIES NUMBER**	Currently selected Series.
3	**SHOT INFORMATION**	**V0**: Velocity at the muzzle exit. **Vx**: Velocity measured at the set distance (Vx = Velocity at x Distance) **KE0**: Energy at V0 (Calculated from projectile weight and velocity at the muzzle's exit) **KEx**: Energy at Vx (Calculated from projectile weight and velocity at the set Distance) **PF**: Power factor calculated from Projectile Weight and V0 (Calculated using Velocity at the muzzle's exit) [Calculated at V0]

2.1.3 SETTINGS MENU DESCRIPTION

Press ⚙ Settings button to go to Settings Menu (Press again to Exit).
Use Up/Down arrows on the keypad to navigate then press Enter to confirm the choice.
The following options are available:

ENTER / EXIT SETTINGS ⚙
NAVIGATE SETTINGS

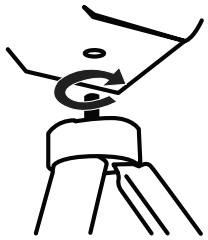


Menu and settings are subject to change with firmware updates and the latest version of this manual should be downloaded online. Go to **www.labradar.com** for the most current updated version.

MENU SELECTION	DESCRIPTION
NEW SERIES	Create a new series.
MODE (Velocity Range)	Set the velocity range for measurements by the Labradar LX. Each velocity range is specified to weapons type as a reference: ·  Rifle (1600 fps to 4500 fps) ·  Handgun (600 fps to 1600 fps) ·  Archery (66 fps to 600 fps)
TRIGGER LEVEL	Set the sensitivity of the system to detect the trigger event: · Min (Most sensitive, anything quiet) · Med (Default) · Max (not sensitive, requires loud blast)
TX CHANNEL	Set the operating frequency of the radar. Alternate between Channel 1 and Channel 2 for contiguous units. · Therefore, if two or more Labradar LX are place to proximity one from another and seems create interferences, one should be set to Tx Channel 1, the second to Tx Channel 2, the third to Tx Channel 1 again and so on.
VX DISTANCE	Set the distance for the desired Velocity measurement after V0. Example: 10yds: the system will provide a V10 which is the velocity of the projectile 10 yards after the muzzle exit.
PROJ. WEIGHT (Projectile Weight)	Set the projectile's weight. This value is used in some calculations (Power Factor, Kinetic Energy). This value does not affect velocity measurements.
VEL. UNITS (Velocity Units)	Set the velocity unit: · m/s (meters per second) · fps (feet per second)
DIST. UNITS (Distance Units)	Set the distance unit: · m (meters) · ft (feet) · Yd (Yards)
WEIGHT UNITS	Set the weight Unit: · Grams · Grains
DATE	Set the system Date
TIME	Set the system Time.
SCREENSAVER	Set the number of seconds of inactivity before the display backlight fade. Shorter time extend the life of the internal battery. The display backlight will automatically go to full brightness after each successful shot reading or at the press of a button. Set to 0 to disable the screensaver.
ERASE ALL DATA	Allows to erase all Data saved in the device. This will erase: · All Series · All shots This operation is irreversible. Tip: Individual Series or Shots can be deleted, refer to section 2.3.2 Shots and Series Management - Deleting Shots and Series, for more information.
FACTORY RESET	Return the Labradar LX configuration to the initial factory values. ⚠ **NOTE:** This function WILL erase ALL internal data (Shots and Series)
ABOUT	Display available device information.

2.2 RECOMMENDED SETUP

- **MOUNTING THE RADAR ON THE TRIPOD**



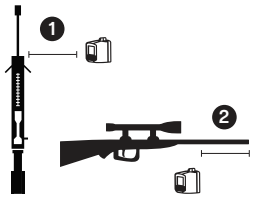
At the base of the radar there is a ¼-20 Standard mounting screw to mount the Labradar on standard tripod and mount.

Whether mounted on a tripod or on a support attached to the weapon, the radar must always be placed parallel to the weapon, antenna oriented in target's direction and the screen rear facing.

NOTE: The Labradar LX should be able to capture shots even when alignment with the target is not perfect, as long as it is pointing in the right direction.

WARNING: Place the Labradar LX in a position where it will not be impacted by ejecting cartridge cases, muzzle debris/blast or other items.

- **RIFLE GUIDELINES**

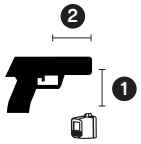


Position the radar behind the Muzzle exit, so it does not get blasted directly by the rifle.

For optimal results and precision, The distance between the barrel and the Labradar LX should be between 0.1m to 0.5m (4" to 20") ❶ , same for the distance between the Muzzle exit and the radar ❷ . Out of this range, measurements can still be shown but the precision on the measurement will ultimately be affected

For quiet rifles, a shorter distance is recommended for proper shot detection.

- **HANDGUN GUIDELINES**

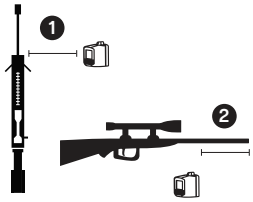


Position the radar behind the Muzzle exit, same as in rifle mode.

For optimal results and precision, The distance between the barrel and the Labradar LX should be between 0.1m to 0.5m (4" to 20") ❶ , same for the distance between the Muzzle exit and the radar ❷ . Out of this range, measurements can still be shown but the precision on the measurement will ultimately be affected

For quiet rifles, a shorter distance is recommended for proper shot detection.

- **AIR RIFLE GUIDELINES**



Position the radar behind the Muzzle exit.

For optimal results and precision, The distance between the barrel and the Labradar LX should be between 0.1m to 0.5m (4" to 20") ❶ , same for the distance between the Muzzle exit and the radar ❷ . Out of this range, measurements can still be shown but the precision on the measurement will ultimately be affected

Set the trigger level to the lowest value when the noise from the shot fired is really quiet. **Some Air rifle will require to get closer than 20" in order to detect the shot properly.**

GENERAL CONSIDERATIONS :

- Mounting the device on a rifle is possible, but care should be taken to ensure that the radar will never cause instability or cause the firearm to be dangerous. It is customer responsibility to understand how to properly install and use the device when mounted in a safe manner at all time.
- Mounting has been tested with rifles up to 7.62mm , care should be taken to make sure the device does not get exposed to too much acceleration as damage may occur. Mounting the device on a firearm caliber larger than 7.62mm is not covered by the warranty.
- Shock absorbing mounting devices may be used alongside with proper damping of the vibrations such that the device gets exposed to less vibrations and provide the best results possible.
- For larger calibers, it is the customer responsibility to evaluate the proper mounting method.
- Vibrations, shock or blast may affect velocity measurement capabilities or precision of the measurement. Thus, device performance may degrade accordingly. Specifically when mounted on a firearm. It is the customer's responsibility to account for these variables.
- The precision of the measurement is subject to environmental conditions such as, but not limited to:
  - Shape of the projectile
  - Trajectory of the projectile
  - Signal reflections or scattering in the environment.
  - Rain, snow, fog or other atmospheric conditions.
  - Blast
- To guarantee the best results, the device is to be mounted on a tripod isolated from the direct vibrations of the firearm body.

2.3 HOW TO USE THE RADAR

2.3.1 TURN RADAR ON/OFF

Press ⏻ Power button on the Keypad to turn ON the device.

Press ⏻ Power button again to turn OFF. Press Enter to confirm.

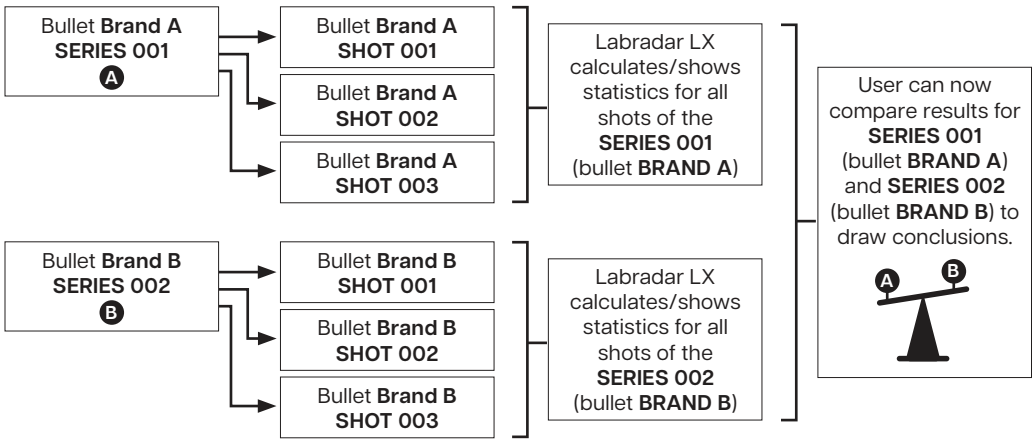
2.3.2 SHOTS AND SERIES MANAGEMENT

- **MANAGING YOUR DATA**

  NOTE: Proper data management is necessary to obtain meaningful statistics.
  To do so, you have to understand and consider the following:

  - The results are recorded as Shots which are contained in a Series.
  - The Series acts as a group which you can obtain the statistics for all the Shots in that Series.

Example: If for a specific type of weapon, you wish to compare two different Brands of bullets (**A** and **B**), you should regroup the Shots from the same bullet Brand (**A**) in one Series (**001**), and the Shots for the second Bullet Brand (**B**) in another Series (**002**) like this:



- **DELETING SHOTS AND SERIES**

  - **Delete current Shot** in the CURRENT SHOT VIEW: Press Delete button on the keypad while in the CURRENT SHOT VIEW to delete current Shot then press Enter to confirm.

  - **Delete individual Shot** in the SHOT NAVIGATION VIEW:
    Press Enter in the CURRENT SHOT VIEW to go to the SERIES STATISTICS VIEW – With the Up/Down button, find the Series in which the desired Shot is located then press Enter to go to the SHOT NAVIGATION VIEW – Finally, with the Up/Down button, find the Shot you wish to delete and press Delete button then Enter to confirm.

  - **Delete individual Series** in the SERIES STATISTICS VIEW: Press Enter in the CURRENT SHOT VIEW to go to the SERIES STATISTICS VIEW – With the Up/Down button on keypad, find the Series you wish to delete then press Delete button then Enter to confirm.
    NOTE: All the Shots in a Series will be erased at once when the Selected Series is erased.

  - **Delete All Series AND Shots**: Go to SETTINGS – Erase All Data – Then press Enter to validate. This action will erase ALL Series and Shots records in the device at once.

    IMPORTANT: ALL ERASING ACTIONS ARE IRREVERSIBLE!

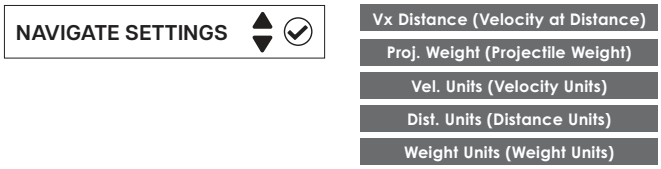
2.3.3 SETTING UP THE DEVICE FOR MEASUREMENTS

A Select the right mode of operation

Go to SETTINGS – Mode – Choose the setting that match the most your weapon type/ Velocity Range among the following (Refer to section 2.1.3 for more information on the items):

B Set the measurement parameters

Go to SETTINGS and enter the following parameters to correspond with your setup (Refer to section 2.1.3 for more information on the items):

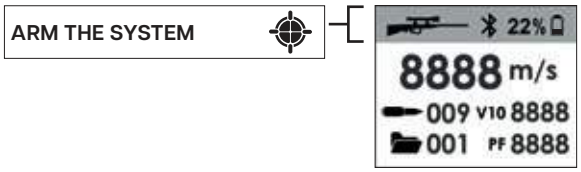


C Create a New Series

Create a new Series: Go to SETTINGS – New Series - then press Enter
This will automatically set the new created Series as the Current Series and all the next Shots will be recorded in this Series.

2.3.4 MEASURING VELOCITIES

- **ARMING THE SYSTEM**



Solid orange:
Armed, waiting for shot detection
Flashing orange:
Shot detected:
- - - - - : Valid signal detected, calculating solution, valid result will be displayed;
- "No valid track found" message (temporary), check parameters or Shooting set up

With the device turned ON, Press the Arming button once to arm.
The header will turn orange to indicate the system is Armed.
The device is now transmitting and waiting for an appropriate shot to be detected.

1. Shot detection: Each time a shot detection occurs, the orange header will flash once to show something has been detected.

2. Valid shot measurement: After each shot detection, the device automatically evaluates if the shot is valid or not.

   If the shot is valid, the shot number will increment by one in the current Series and the velocity will be displayed and recorded.

   The invalid shots will be discarded and not be recorded.

   Each valid shot increases the shot number by one in the current Series until the user create/select a new Series.

3. Statistics live update: For each valid shot, the device calculates and shows statistics according to the measurements set by the user.

   Only the last valid shot will be shown in the CURRENT SHOT VIEW. The previous shots and their statistics can be viewed by selecting the desired shot in the SHOT NAVIGATION VIEW.

   Series Statistics will automatically update with each valid shot recorded in the current Series and can be viewed in the SERIES STATISTICS VIEW.

- **DISARMING THE SYSTEM**

  The system will stay in the armed mode until the Arming button is press again or the device is turned OFF. Access the Settings will also disarm the system.
  The header will turn grey again to indicate the system is disarmed.

> **Tip:** It is possible to use the Mobile app provided by Labradar to control the device. On your mobile device go to the App Store, download and install the App. Follow the instructions of operation provided.

2.3.5 MULTIPLE RADARS AT THE SAME SITE

- **TRANSMITTER CHANNEL CONSIDERATION (Tx Channel)**

  If multiple devices are in close proximity to each other, each device should be set to a different Transmitter Channel from the adjacent ones to avoid interferences.

  To do so: **For each alternate Device**, Go to SETTINGS – Tx Channel – Choose 1 for the first device, 2 for the second, 1 for the next one, etc. Press Enter to validate the choice each time.

  Exemple: If there is four Labradar LX in a row you should set the Tx Channel for each unit as shown below:

First Device	Second Device	Third Device	Fourth Device
			
Tx Channel **SET TO → 1**	Tx Channel **SET TO → 2**	Tx Channel **SET TO → 1**	Tx Channel **SET TO → 2**

2.3.6 WHAT TO DO IF THE RADAR CANNOT READ MY PROJECTILE

Before trying again, check the following:

- System should be Armed (Orange bar on top)
- Confirm trigger detection (Orange bar flashes)
- Check the position and alignment of the radar unit
- Confirm the Mode (Velocity range) is appropriate for the projectile velocity. (Rifle, Handgun, Archery)
- Confirm that a projectile went through the Labradar LX beam area.
- Check your weapon to insure it operated properly and is safe to fire again.
- In the event the unit is powered off or the battery is depleted, the shot data is stored in the device and no data will be lost.

2.4 MEMORY

The Labradar LX has internal memory allowing it to store data and operate without external storage.
It can record up to 999 series of 250 shots. The number of series/shots that can be recorded may vary and is subject to future firmware updates.

Tip: Data can be exported as needed by following the procedure described in the section 2.6.2

2.5 INTERNAL BATTERY LIFE AND CONSIDERATION

The device operates with a high-performance internal rechargeable battery to ensure optimal charging and longevity during use. No external batteries are required, simply recharge as needed using the USB cable provided (See section 2.6.1 to know how to charge the device).

Battery charge time varies with usage and environmental conditions. Here some aspects that may affect battery life:

- **OPERATING TEMPERATURE**

  The device can operate in a wide range of temperature but some functions can be affected to a certain level by ambient temperature:

  Effect of cold weather: Exposure to cold can reduce the life of the internal battery and increases charging time. Charging the battery is only possible above 0 degree Celsius. (32F)

  High temperature:
  Warning message / operation limited
  System shutdown.

- **SYSTEM ARMED VS DISARMED**
  - Device Armed: Higher power consumption, battery life is approximately 5 hours.
  - Device Disarmed: Lower power consumption, battery life is approximately 8-10 hours.

- **SCREENSAVER CONSIDERATION**

  The display backlight fade after a specified number of seconds set by the user.
  Go to SETTINGS – Screensaver - Set the number of seconds (000 to disable) – Press Enter to validate.

  A brighter backlight means greater battery consumption. Therefore, reduce the time before the backlight fades will extend the life of the internal battery.

- **USING AN EXTERNAL USB POWER SOURCE WHEN OPERATING THE RADAR**
  The Labradar LX can be use while connected to an external power source using the USB-C cable provided to charge and/or extend the life of the internal battery.

Tip: Do not forget to turn OFF the device when not in use to preserve the battery life.

2.6 USB PORT

The Labradar LX is equipped with an USB port of type USB-C to use with the cable provided to:

- Charge the device
- Data Exportation
- Firmware Update

2.6.1 CHARGE THE DEVICE

To charge the Labradar LX, simply connect the USB-C part of the supplied cable in the appropriate port under the device and then plug the USB end into a compatible power source. The radar will begin charging immediately and will only stop charging if the battery is fully charged or if power input is interrupted.

If the device does not charge, be sure to check the following:

- Battery charge (%): At 100%, the device stops charging.
- Physical connection: Make sure both ends of the cable are correctly inserted into the ports and the ports and connectors are not damaged.
- Power Source: The power source to which the device is connected is functional and corresponds to the specifications of the Labradar LX. (+5V standard USB 1A to 2A). Do not use power supplies that can provide more than 5 volts.

The device can be used while charging, but this may slow down the charging speed.

NOTE: Particular attention should always be paid to the cable and connector when charging to avoid the risk of damaging or deforming the USB port.

2.6.2 DATA EXPORTATION

Data exportation can be achieved by using one of the following methods:

Connecting the Labradar LX to a PC using the provided USB cable, browse the Data drive and copy the CSV files and directories to your PC.

OR

Using the mobile app, connect to your Labradar LX using Bluetooth and export the results using the existing command.

Tip: CSV files can be opened using Microsoft Excel or other similar software.

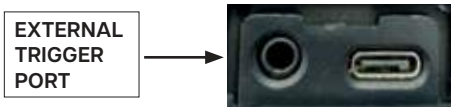
2.6.3 FIRMWARE UPDATE

To ensure the best possible operation of the device and to reduce the risk of errors linked to firmware, it is important to perform the appropriate updates when a new version of the Labradar LX firmware is available. To update the Labradar LX, follow these steps:

1. On a PC, download the latest Firmware at www.labradar.com
2. Turn ON the Labradar LX and Connect the unit to the PC with the provided USB cable.
3. Use the PC to copy the Firmware in the Update directory of the Labradar LX.
4. Restart once the Labradar LX and wait for the update to complete.
   The unit will restart again by itself once the update complete.

Get the latest firmware update at **www.labradar.com** and follow the most up to date information on how to proceed.

2.7 EXTERNAL TRIGGER PORT



It is possible to use the external trigger port with existing trigger devices.

External triggers can be used under certain circumstances to detect the muzzle exit event for the Labradar LX when appropriate. Please refer to available trigger devices from Labradar for more information. Use of non-Labradar triggers will void the warranty.

3. MOBILE APP

Labradar LX has a mobile application that connects to your Labradar LX using Bluetooth. To connect your Android or iOS device, download the latest firmware from the website www.labradar.com or from one of the available application providers and install the app for your mobile device. Follow instruction on screen to connect and operate your Labradar LX.

The mobile app can be used to do the following:

- Operate the radar
- Access Series and Shots measurements
- Export your Data
- And more...

Labradar LX Mobile application is available on www.labradar.com and following application providers (others providers may be added over time):

App Store Android Market

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Unit does not power on	· Batteries Depleted · Power switched off	· Make sure the unit is charged. · Press the power button to turn ON the unit.
Shot not recording	· System not aligned properly · System not armed · Trigger event not detected · Inadequate settings	· Make sure the Antenna is oriented in direction of the shot and there is no obstacle. · Make sure the system is armed (Orange header). · Make sure that the system detects the firing event: The orange header should flash when a shot is fired. If it does not, try to reduce the Trigger level in the Labradar LX Menu. · Make sure you selected the appropriate Mode in the Labradar LX Menu.
"No valid track found!"	· Inadequate settings · Bad alignment	· Make sure you selected the appropriate Mode in the Labradar LX Menu. · Align and position the Labradar Lx with the firearm properly, refer to the appropriate section in the User Manual.
Unit trigger without shot	· Noisy environment · High sensibility	Increase the Trigger level in the Labradar LX Menu.
Reading other shooter velocity	· Distance between shooters	Increase the distance between you and the other shooters, try to maintain at least 3 feet between the next firearm and your Labradar LX
Orange bar flashing, nothing happens	· Trigger event detected, no valid signal detected	· Make sure to use the proper firing mode (Rifle, Handgun, Archery) · Make sure the projectile is travelling in front of the Labradar LX straight at the target · Confirm the radar alignment at the target. · Use single projectile bullets. · Use .177 or larger projectiles. · Use only 1 Labradar LX at a time and if 2 devices are in use at the same time, make sure they are on different Tx channels, with at least 6 inches between the 2 devices.
Battery not charging	· Temperature of the battery is too high or too low · Power source is defective · USB cable is defective	· The battery will charge only between 0 to 45 deg Celsius. (32 to 113 F) · Check the power source (USB +5V) for proper function · Check for damage to the USB cable, try a different USB cable.
Screen is too dim in direct sunlight	· Screensaver is active	· Disable the screen Saver function in the Settings menu. (Set to 000s) * The device will draw more power and be less power efficient when the screen saver is disabled.
Battery life is shorter than usual	· Low temperature	Low temperatures will affect the battery performance, below 10 degree C the battery life on a charge will decrease progressively by up to 50% at 0 degree Celsius and below.
Message of high temperature	· High temperature of operation	On the detection of high temperature of operation, the device will limit the functionalities of the device and advise the user. It may not be possible to record new shots. If the temperature gets too high, the device will eventually shut down by itself. It is advised to stop using the device under these conditions and allow it to cool properly, moving away from sun load is recommended
Message of maximum no of shots or series	· Internal memory is full	Export your data or follow on-screen instructions to erase the internal memory.

WARRANTY

Arts, Sciences et Technologies Infinition Inc. warrants all Labradar LX products to be free of defects in material and workmanship. This warranty will remain in effect for a period of one year from the date of purchase.

INFINITION, INC., warrants that Labradar LX is manufactured to be free from defects in material and workmanship for a period of one (1) year from date of purchase by the original purchaser for non commercial use. Any other use of this product voids the warranty. INFINITION, INC. at its option, will repair or replace without charge, or refund the purchase price of any product which fails during the warranty period by reason of defect in material or workmanship found upon examination by INFINITION, INC. This warranty does not cover any failures caused by abuse, mishandling, failure to the follow the operating instructions, alteration(s) or accident. Damaged caused by bullet impacts, gunfire debris or ejecting materials are not covered by warranty. To make a claim under this warranty, the original purchaser must contact Infinition Inc. by phone or email. The unit should be properly packaged with the shipping charges prepaid. All claims must be made within thirty (30) days after the product failure. All claims must be accompanied by proof of date of purchase. Prior to returning any item call or email for a Return Authorization Number. Items returned without the authorization number will be rejected and returned to sender. Infinition will not be responsible for any lost shipments or other liabilities.

IN NO EVENT SHALL INFINITION BE LIABLE IN A CLAIM FOR BREACH OF WARRANTY FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES (AND COUNTRIES AND PROVINCES) DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

DEVICE SUPPORT AND REPAIR REQUEST:
Go to **www.labradar.com** and follow the latest instructions for device support and repair.

Software license Agreement

BY USING THIS DEVICE, YOU AGREE TO BE BOUND BY THE FOLLOWING TERMS AND CONDITIONS OF THE SOFTWARE LICENSE AGREEMENT PLEASE READ THIS AGREEMENT CAREFULLY.

Arts, Sciences et Technologies Infinition Inc. grant you a limited license to use the software embedded in this device (“the software”) in binary executable form in the normal operation o the product. Title, ownership rights and intellectual property rights in and to the software remain in Infinition and or it’s third party providers.

You acknowledge that the software is the property of Infinition and or its third-party providers and is protected under the United States of America copyright laws and international copyright treaties. You further acknowledge that the structure, organization, and code of the Software, for which source code is not provided, are valuable trade secrets of Infinition and/or its third-party providers and that the Software in source code form remains a valuable trade secret of Infinition and/or its third-party providers. You agree not to decompile, disassemble, modify, reverse assemble, reverse engineer, or reduce to human readable form the Software or any part thereof or create any derivative works based on the Software. You agree not to export or re-export the Software to any country in violation of the export control laws of the United States of America or the export control laws of any other applicable country.

THE RMA CAN BE REQUESTED BY CONTACTING THE FOLLOWING:

Canadian customers should return to:

Infinition Inc.
2965 rue des Prairies,
Trois-Rivieres (QC) Canada
G8V1W4
service@myLabradar.com
819-693-6787

All others:

info@myLabradar.com
316-866-2525

CONSULT WITH PROPER GOVERNMENT AUTHORITIES BEFORE EXPORTING or IMPORTING THIS ITEM.

labradarLX

For Technical assistance, please contact:

Canadian customers:

Infinition Inc.
2965 rue des Prairies,
Trois-Rivieres (QC) Canada
G8V1W4
service@myLabradar.com
819-693-6787

All others:
info@myLabradar.com
316-866-2525

www.mylabradar.com