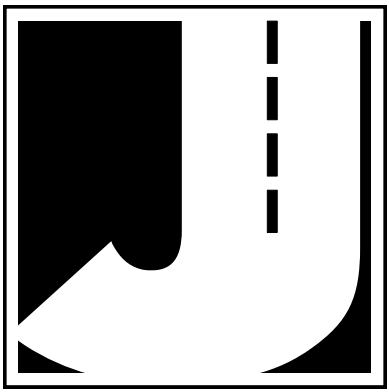
Law Enforcement II Radar

User's Manual

JAMAR Technologies, Inc.



LIMITED WARRANTY

JAMAR Technologies, Inc. warrants the Law Enforcement II Radar against defects in material and workmanship for a period of one (1) year limited warranty on parts and one (1) year limited warranty on labor from the date of purchase.

JAMAR Technologies, Inc. warrants each new instrument manufactured by the company to be free from defective material and workmanship and agrees to remedy any such defect. At its option, it may furnish a new part in exchange for any part of any instrument of its manufacture which, under normal installation, use and service discloses such defect. The instrument must be returned to our factory or authorized service agent intact, for examination, with all transportation charges prepaid.

This warranty does not extend to any products which have been subject to misuse, neglect, accident, vandalism or incorrect wiring not our own. This warranty does not extend to damage caused by improper installation in disregard of the instructions furnished by us. This warranty does not extend to products which have been repaired or altered outside our factory or authorized service agent. There is a 90 day warranty on the rechargeable battery of the Law Enforcement II Radar.

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This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale or use of our products.

JAMAR Technologies, Inc. reserves the right to make improvements on the product and/or specifications at any time without notice.

Questions concerning this warranty or any JAMAR Technologies, Inc. product should be directed by mail or telephone to:

JAMAR Technologies, Inc.
1500 Industry Road, Suite C
Hatfield, PA 19440
215-361-2244

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If you have any questions about the Law Enforcement II Radar that you cannot find answers for in this manual, there are several ways to get additional information.

On the Hardware Support section of our web site at:

www.jamartech.com

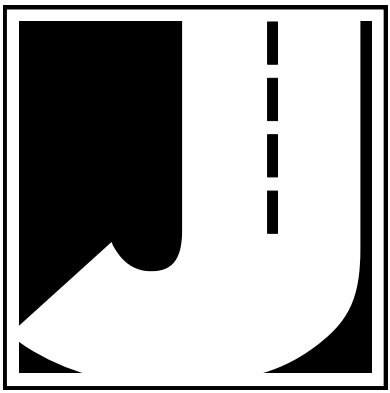
Contact us by e-mail at:

sales@jamartech.com

Contact us by phone at:

215-361-2244

Monday - Friday 8:00 AM to 5:00 PM Eastern time



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Quick Setup Guide for the Law Enforcement II Radar

1. Install the STARnext software for use with the Law Enforcement II Radar, following the instructions that came with the software.

2. Check the battery voltage of the battery to be used for your study. If the charge is sufficient (13.4 or higher), connect the battery to the Law Enforcement II Radar.

3. Install the Radar in the field, following the directions in Chapter 1.

For the best results, the Law Enforcement II Radar should be installed:

- Six to ten feet back from the road.
- At least six feet above the ground.
- At a 45 degree angle to the flow of traffic.
- Where the far side lane is no greater than 50 feet away.
- Where traffic is free flowing.

The unit should not be installed:

- At an intersection.
- Near where vehicles are likely to park.
- In a position that causes the radar head to be at an extreme angle.
- Near where pedestrians are likely to be crossing.
- Where the Radar's "view" is obstructed.

4. Use the STARnext software to setup the Law Enforcement II Radar as described in Chapter 2. Use the LiveView feature of the software to check that data is being recorded properly.

5. Leave the Law Enforcement II Radar to record data for the time period you would like. A fully charged battery will record data for up to 8 days.

6. Download the data using the STARnext software.

7. Use the STARnext software to view your data and produce reports.

Chapter 1

Introduction

What is the Law Enforcement II Radar?

The Law Enforcement II Radar is an automatic vehicle data collector distributed by JAMAR Technologies, Inc. It is designed for ease of use, but contains many options and features to provide comprehensive speed complaint management. This device is a non-invasive data collector that uses radar to gather highly accurate vehicle data, which means there is no need to install anything in the road.

With the Law Enforcement II Radar, you can gather data that includes vehicle speed, length, gap and volume. At any convenient time, you can transfer the data from the Law Enforcement II Radar to your computer for processing.

The Law Enforcement II Radar contains 16 MB of memory, allowing you to record up to 500,000 vehicles.

How is the Law Enforcement II Radar Powered?

The Law Enforcement II Radar is powered by a 12 Volt rechargeable battery. The standard battery used with the device is a 12V 12A lithium battery. In general, a fully charged battery (13.4 volts or higher) will record data for 14 days before needing to be recharged. The battery voltage can be seen when the unit is connected to the STARnext Software.

Note that when the Law Enforcement II Radar is first shipped to you the battery is disconnected and will need to be connected before first use. We recommend that you check the voltage level of the battery when it is first connected. A fully charged battery should register at 13.4 or higher. If your battery is lower than this, we recommend that you charge it before the first use.

Also note that the Law Enforcement II Radar will be in running mode whenever the battery is connected. We recommend that you disconnect the battery whenever the Law Enforcement II Radar is not in the field collecting data.

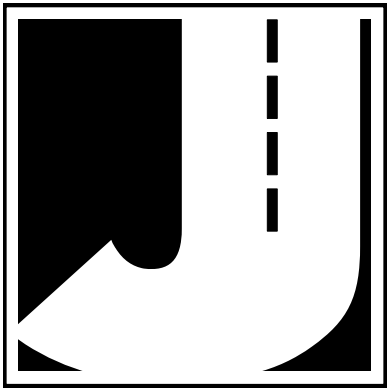
Keeping your battery properly charged is very important. The rechargeable battery will begin to decay and become less effective if it is allowed to fall below 11.0 volts. To avoid having to replace your battery prematurely, keep it consistently charged. A well-maintained battery will last for years without having to be replaced. Refer to Chapter 5 *Battery Care* for more information on battery maintenance.

Before You Begin

Before you attempt to collect important data with the Law Enforcement II Radar we strongly recommend that you familiarize yourself with both the operation of the Law Enforcement II Radar, and the software that is used with it, by reading all the documentation that came with the equipment.

Whenever possible, we recommend that you perform a test study if you are new to the Law Enforcement II Radar. This will help you become comfortable with the operation of the equipment and how the data is both collected and analyzed. This should make things easier for you when you have to do your first real study.

Few things are more frustrating than trying to figure out new equipment, or resolve problems, when working on a tight deadline or with critical data. The more familiar you are with the equipment before having to use it for important studies, the better off you will be.



Chapter 2

Site Installation

Installation

Before going to the site to install the Law Enforcement II Radar, check that you have the following items from the installation kit:

Pole mounting bracket

Three locks with keys

Chain

Clamp Kit

You will also need a standard flat-head screwdriver or 5/16 inch nut driver (not included with kit) to tighten the mounting clamp.

Check that your laptop is fully charged, has the latest version of the STARnext software installed, and that the date and time on the laptop are correct. You will synchronize the Law Enforcement II Radar's time and date to that of the laptop during setup.

Selecting a Site

When choosing a location to install the Law Enforcement II Radar, keep in mind that it will need to be mounted to a pole (typically a utility pole) or tree, so the site will need to have one of these available for use.

For the best results, the Law Enforcement II Radar should be installed:

- At a 45 degree angle to the flow of traffic.
- Six to ten feet back from the road.
- At least six feet above the ground.
- Where the far side lane is no greater than 50 feet away.
- Where traffic is free flowing.

The unit should not be installed:

- At an intersection.
- Near where vehicles are likely to park.
- In a position that causes the radar head to be at an extreme angle.
- Near where pedestrians are likely to be crossing.
- Where the Radar's "view" is obstructed.

Mounting the Law Enforcement II Radar

Once a site has been selected, the Law Enforcement II Radar can be easily mounted using the installation kit.

Step #1 - Thread the SnapLock clamp bands through the openings on the pole bracket.

Step #2 - For the most accurate results, the bracket should be installed so the Law Enforcement II Radar is facing traffic on a 45 degree angle.

IMPORTANT: The area of the Law Enforcement II Radar that you are aiming toward the road on a 45 degree angle is the crosshairs on the front of the Radar head, as shown in the picture here.

Once you have determined the 45 degree angle for the bracket, wrap the bands around the pole and place the bracket.

Step #3 - Snap down the screws on the clamp bands and tighten the clamp with a flat-head screwdriver or 5/16 inch nut driver.

Step #4 - Insert the pegs on the back of the Law Enforcement II Radar's mounting bracket into the large holes of the pole mounting bracket and slide the Law Enforcement II Radar down to secure it in place. Note that it is the front of the Law Enforcement II Radar that you are aiming toward the road at a 45 degree angle.

Step #5 - Lock the unit into the mounting bracket using the hole at the bottom of the bracket. Once the Law Enforcement II Radar has been setup using the STARnext software (refer to the next chapter), close and lock the lid. If you wish to add further security to the installation, the chain that was provided with the recorder can be used. We recommend wrapping the chain around the pole above the unit, then feeding the chain down through the open in the bracket and locking it into place using the lower lock hole of the radar's case.

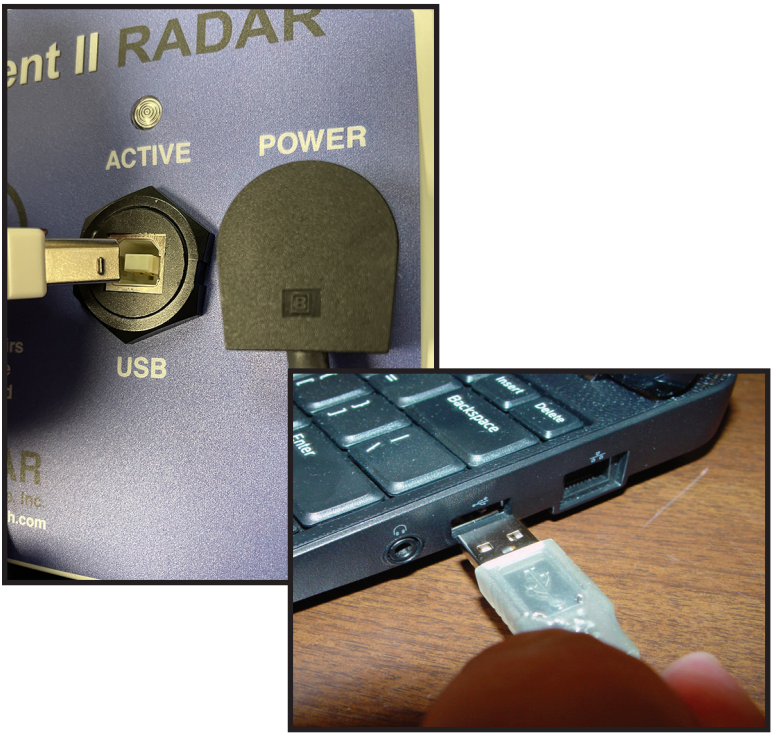
Step #6 - Depending on how high you mount the LE II Radar, you may need to tilt the unit so it is facing down into the traffic lane. This is done by adjusting the bracket on the back of the Radar. Loosen the top bolt on the bracket (there is one on each side) using the provided hex head allen wrench. Once loosened, the unit can be tilted down. The allen wrench can then be used to retighten the bracket.

Chapter 3

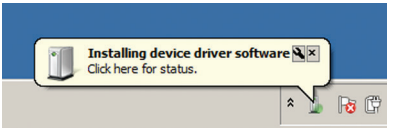
Programming the Radar Head

Connecting to the Law Enforcement II Radar – USB

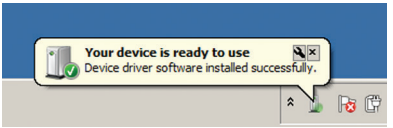
Once you have the Law Enforcement II Radar installed, it needs to be programmed to record the data you want. To do this, open the case of the Law Enforcement II Radar and connect your computer to the USB port of the Law Enforcement II Radar Head unit.



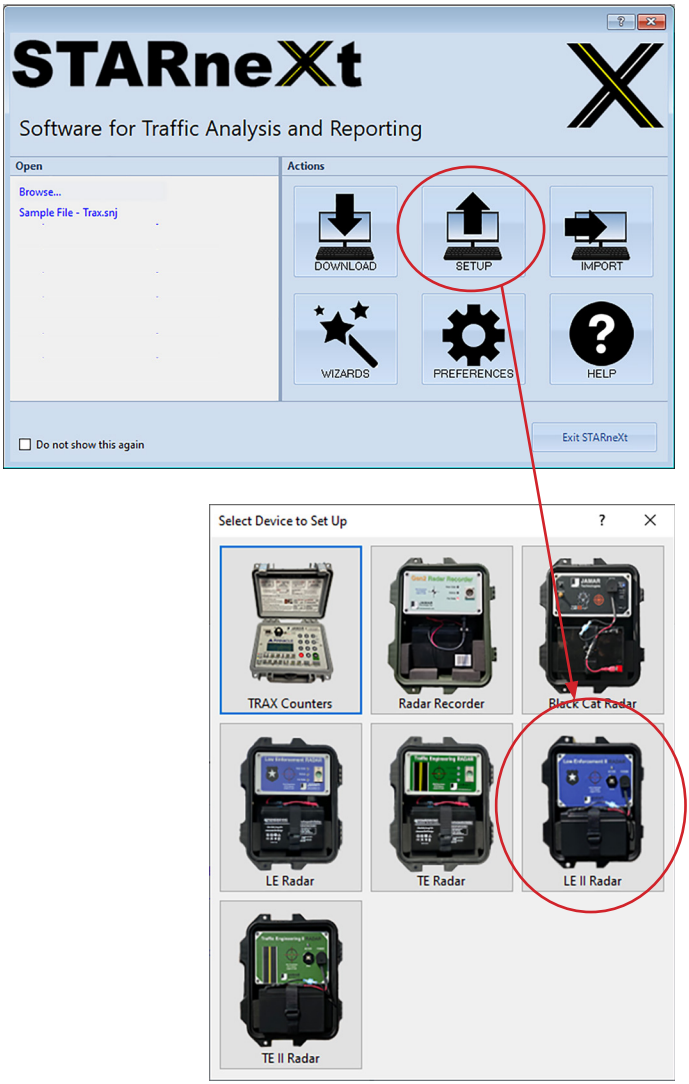
When you plug in the USB cable for the first time you should see a pop-up message along your Windows taskbar like the one shown to the right.



Windows will take a minute or two to find the proper driver and install it. This process is done when you see the message shown to the right.

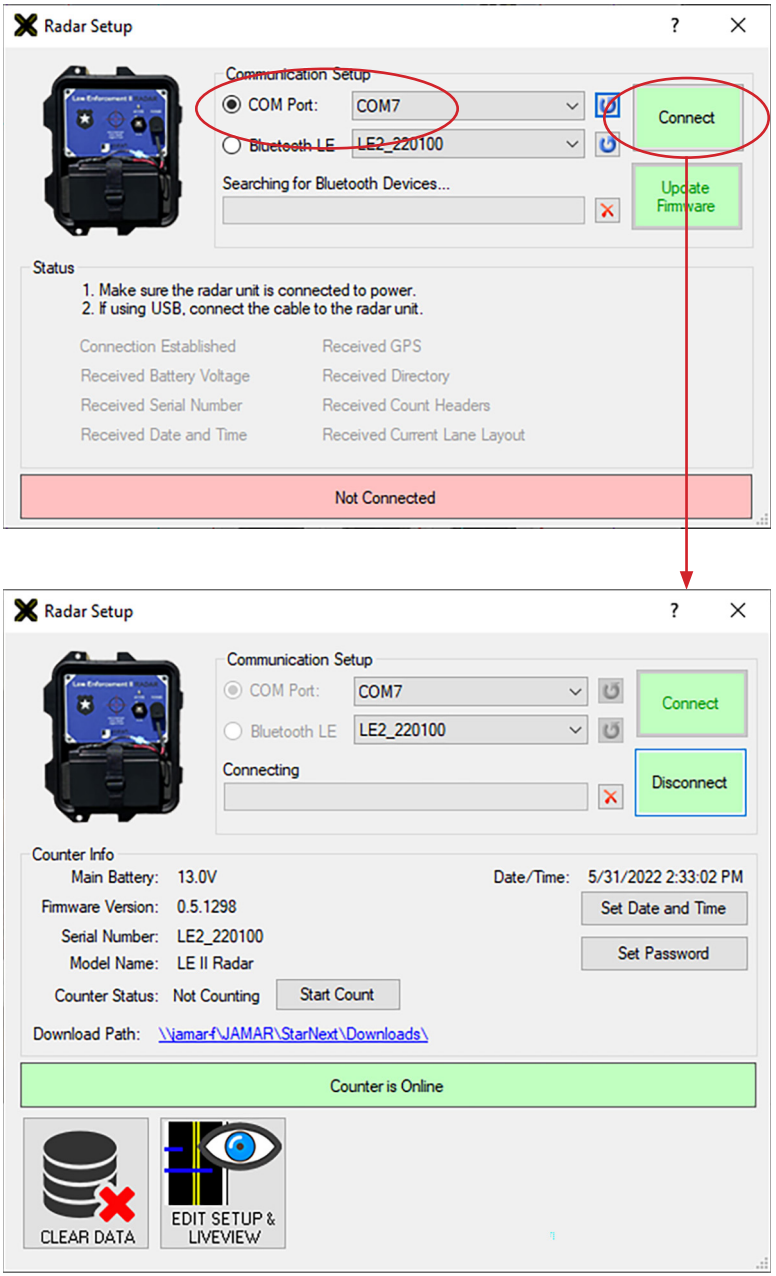


Start the STARnext software on your computer and select **Setup** from the Actions section of the Quick Start screen. You'll then see a screen showing the different devices for setup. Select **LE II Radar** at the bottom left.



On the Setup screen, make sure the radio button for Com Port is selected and that the correct COM port number has been selected from the drop down box. Once this is set, click the Connect button.

STARnext will attempt to connect to the Law Enforcement II Radar and, if successful, show the current status of the unit.



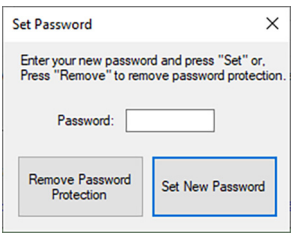
Once connected, the middle of the screen will show the Counter Info, which includes:

• **Main Battery** – the current voltage of the external battery. A fully charged battery should be around 13V or higher.
• **Firmware Version** – The current version of the firmware revision found in the unit. You can check for updates to the firmware at www.jamartech.com
• **Serial Number** – The serial number that has been programmed into the unit. This will be included with the data that is downloaded from the unit.
• **Model Name** – The model name of this Radar unit, LE II Radar
• **Counter Status** – This will be listed as either 'Counting' or 'Not Counting. If the unit is counting, you will see a button option 'Stop Count'. If the unit is not counting, you will see a button option 'Start Count'. Note that the unit will automatically start a count if power is disconnected and reconnected.

• **Date/Time** – this is the date & time current programmed in the unit. You will be shown a warning that the date and time are not correct if they are not within a minute of the computer's date and time. This will be automatically corrected the next time you upload settings to the unit.

The *Set Date and Time* button can be used to synchronize the LE II with your computer's clock.

• **Set Password** – this button can be used to either set a password for the LE II's wireless Bluetooth connection, or remove it. Note that this password only applies when connecting via Bluetooth, not USB.



To set a password, enter the password you would like in the Password text box, then click the *Set New Password* button.

To remove a password, click the *Remove Password Protection* button and the password will be removed.

The buttons along the bottom of the screen are used to access other features of the setup which are discussed later in this chapter.

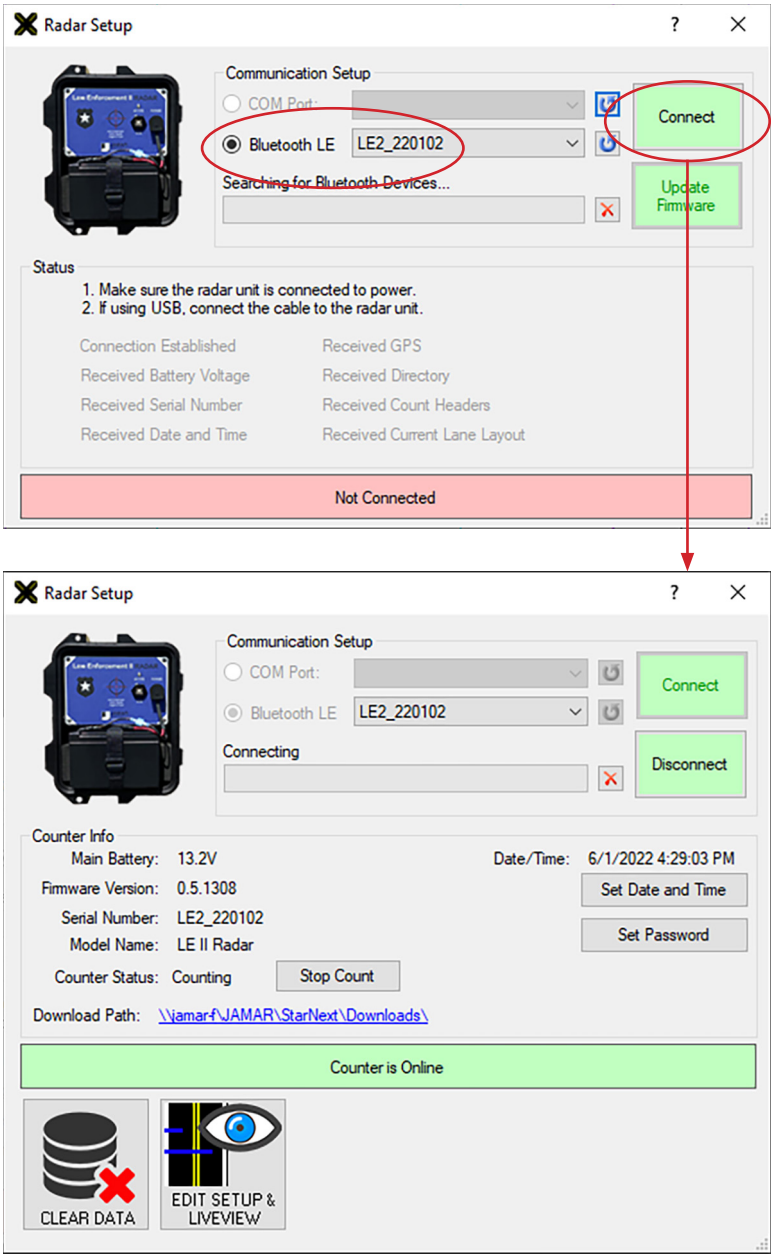
Connecting to the Law Enforcement II Radar – Wireless Bluetooth

Law Enforcement II Radars have wireless Low Energy Bluetooth capability which allows you to connect without a hard wire USB connection.

The STARnext software will automatically search for, and display, any units it find powered on within its range. Note that there is no need to go though the 'Pairing' process as was common with units that used a Classic Bluetooth connection.

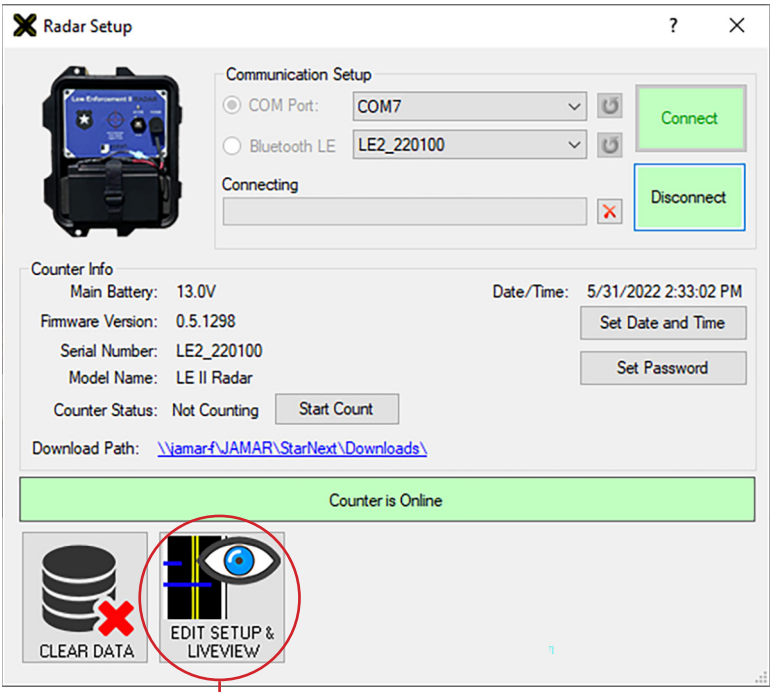
On the Setup screen, make sure the radio button for Bluetooth LE is selected and that the correct COM port number has been selected from the drop down box. Once this is set, click the Connect button.

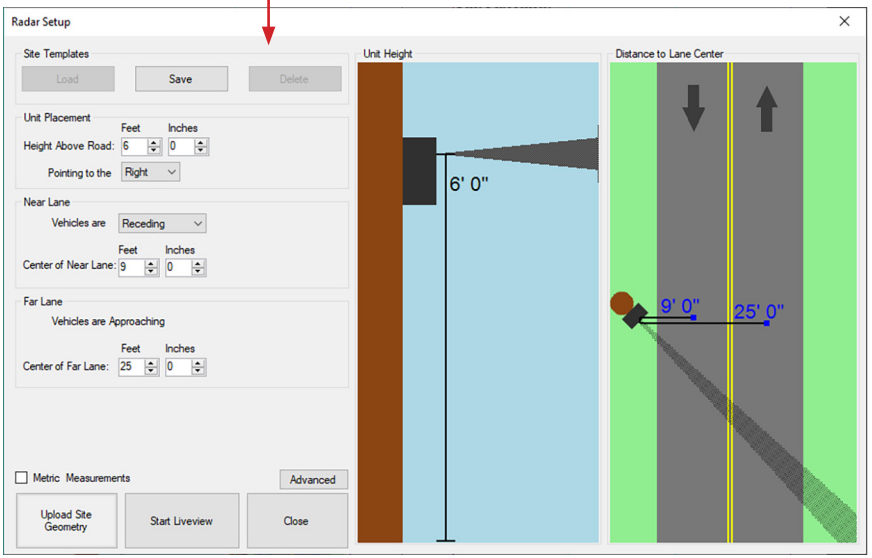
Once connected, the middle of the screen will show the Counter Info, which are described on page 3-5.


Radar Setup
Communication Setup
COM Port:
Bluetooth LE
LE2_220102
Searching for Bluetooth Devices...
Connect
Update Firmware
Status
1. Make sure the radar unit is connected to power.
2. If using USB, connect the cable to the radar unit.
Connection Established
Received GPS
Received Battery Voltage
Received Directory
Received Serial Number
Received Count Headers
Received Date and Time
Received Current Lane Layout
Not Connected
Radar Setup
Communication Setup
COM Port:
Bluetooth LE
LE2_220102
Connecting
Connect
Disconnect
Counter Info
Main Battery: 13.2V
Date/Time: 6/1/2022 4:29:03 PM
Firmware Version: 0.5.1308
Set Date and Time
Serial Number: LE2_220102
Model Name: LE II Radar
Set Password
Counter Status: Counting
Stop Count
Download Path: \\jamar-f\JAMAR\StarNext\Downloads\
Counter is Online
CLEAR DATA
EDIT SETUP & LIVEVIEW

Setting Up a Study

To setup a study, click the *Edit Setup & LiveView* button on the Radar Setup screen.





The **Site Templates** fields can be used to save location details of where the data is being collect. Click the *Load* button to open a previously saved template, or click the *Save* button to save the current settings as a new template.

The **Unit Placement** fields can be used to enter the details of how the radar is installed. These include the height of the radar from the road and whether it is pointing to the left or the right.

The **Near Lane** fields can be used to enter the details of the lane closest to the Radar. These include whether the vehicles are approaching or receding from the radar and the distance to the center of the near lane.

The **Near Lane** fields can be used to enter the distance to the center of the far lane.

The **Metric Measurements** check box allows you to switch the unit of measurement from feet and inches to decimal meters.

The **Advanced** button provides additional fields for entering information on how the radar is installed. These include the average width of both the near and far lanes as well as the angle of the radar head.

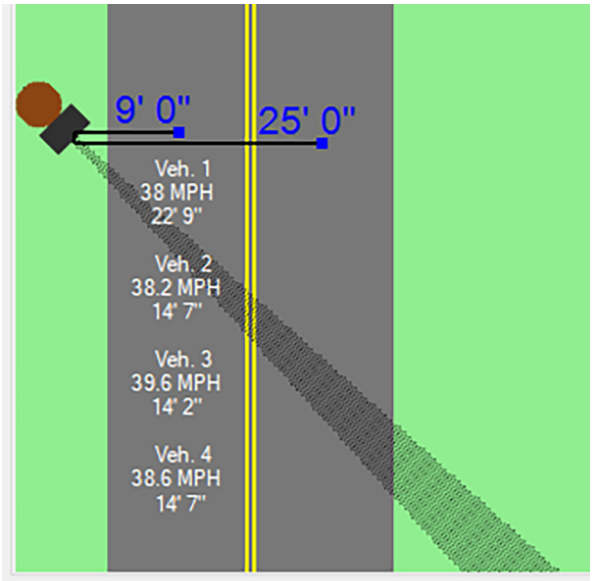
Once you have the settings you want, click the *Upload Site Geometry* button.

If the upload is successful, you'll see the confirmation message.

LiveView

After settings have been uploaded into the Radar, the LiveView section of the setup screen allows you to view and verify the accuracy of the data you are currently collecting, compared to what you are actually seeing on the road.

The LiveView screen will display the data in real time, as it is recorded, including vehicle length and speed.



IMPORTANT: We highly recommend that you use the LiveView to verify that the Law Enforcement II Radar is correctly recording vehicles before you leave the site. If the LiveView is not showing vehicles as they pass, the recorder is not getting good data. Double check all setup settings and refer to the Troubleshooting chapter for more items to check.

Clear Data

The *Clear Data* button will delete all data from the memory of the Law Enforcement II Radar, but will not affect other settings.

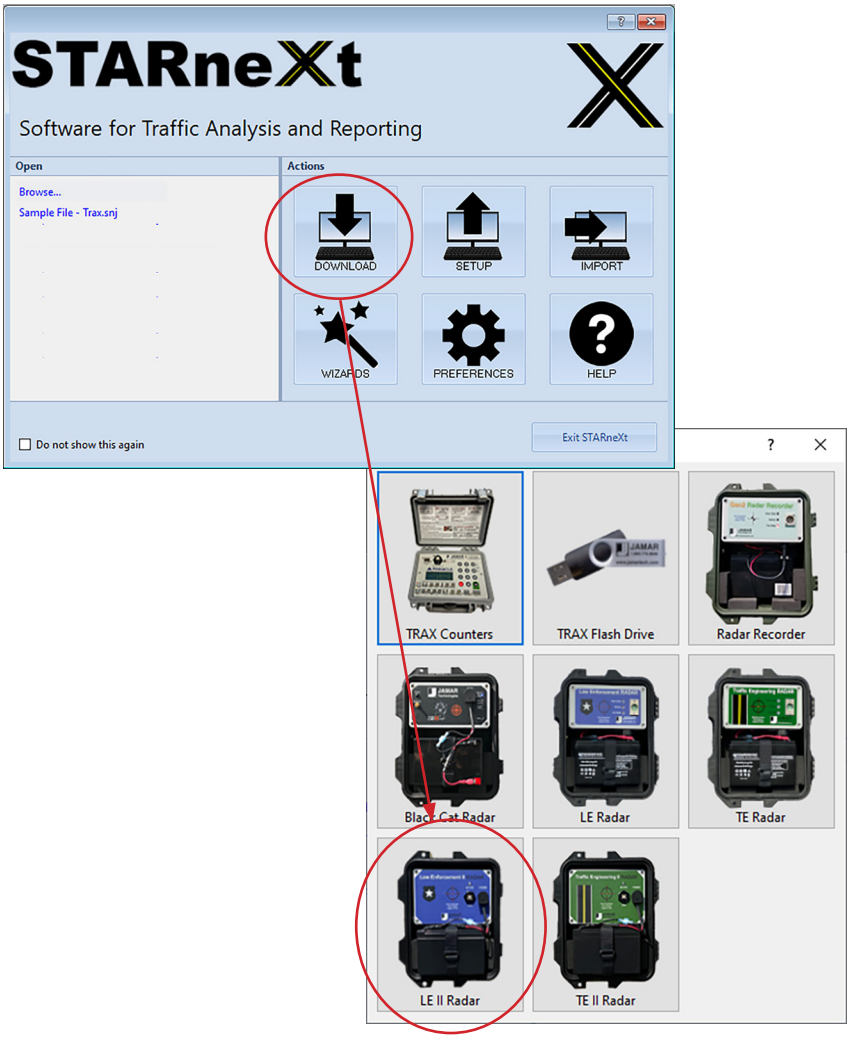
Chapter 4

Downloading Data

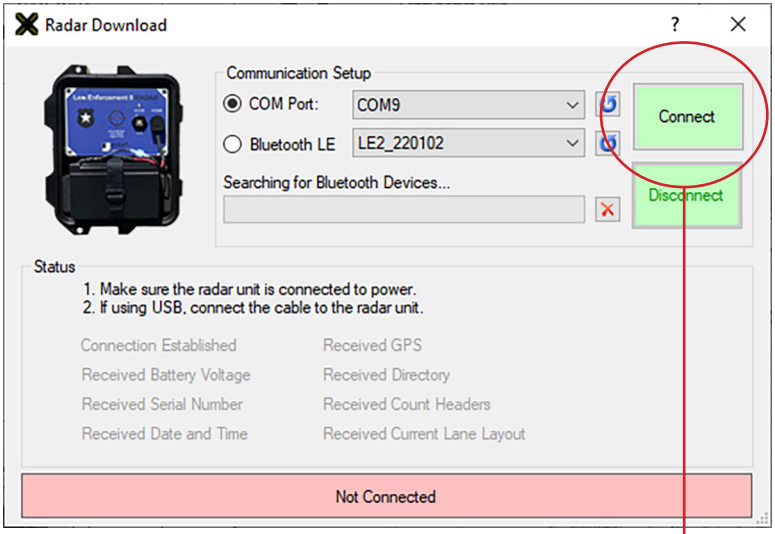
Downloading Data

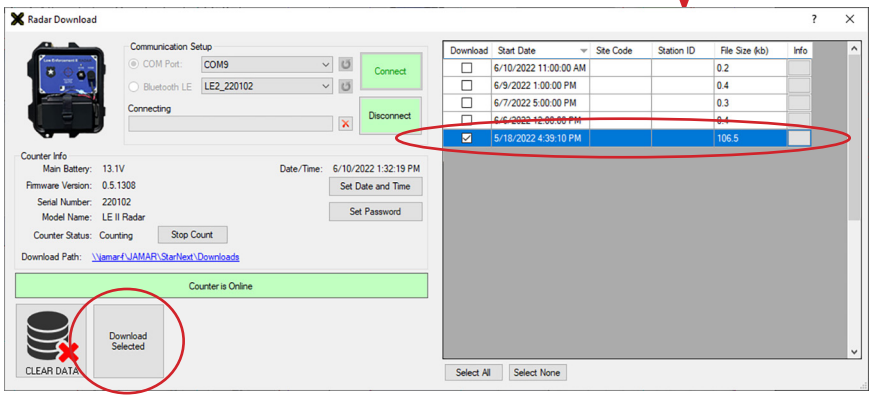
Once the data collection is complete, you can retrieve the data from the Radar Recorder using your computer and the STARnext software. To do this you will need to connect the Radar to the STARnext software, using one of the methods found in Chapter 3 of this manual.

However, instead of selecting Setup, as referenced in Chapter 3, you will now select **Download**. After selecting Download, select LE II Radar.



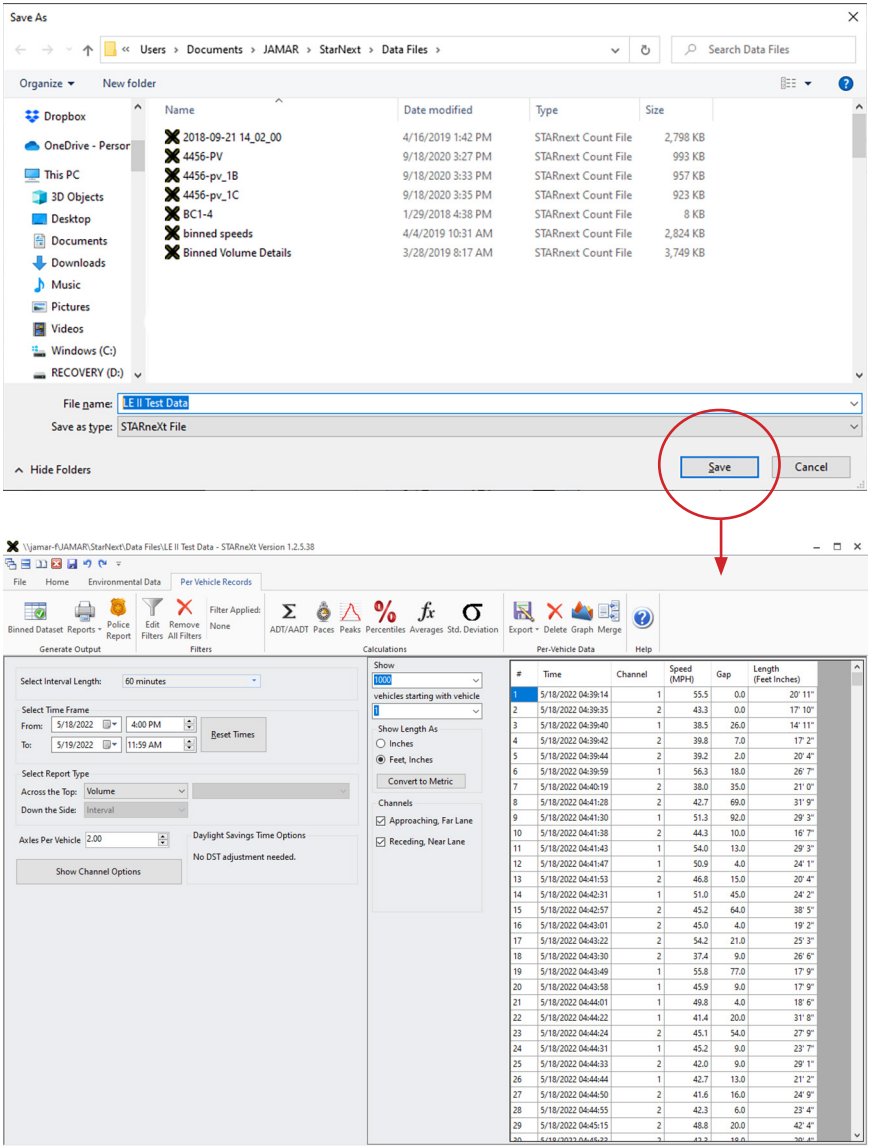
Click the *Connect* button and STARnext will then attempt to connect to the LE II Radar. If the connection is successful, once the download is complete you'll see the list of files available to download from the LE II.





Select the file(s) you would like to download then click the *Download Selected* button.

Once the download is completed, you will be prompted to assign a file name to your file. Click *Save* once this is done and your data will appear.



From this point, refer to the STARnext manual for information on how to process the files and produce reports.

Chapter 5

Battery Care

Maintaining Your Battery

The following information regarding battery care is furnished to assist you in the use and maintenance of rechargeable batteries. Battery life is dependent on the user's preventative maintenance procedures. Establish regular routines for all of your batteries regardless of their usage.

Charging a battery is very important for obvious reasons. Your Law Enforcement II Radar depends on a fully charged battery to operate efficiently and to produce reliable and correct data. Batteries should not be allowed to sit in a discharged state for any length of time. Once the battery discharges below 11.0 volts, damage to the cells has already begun. Symptoms of a damaged battery are:

1. The battery will not charge to its full capacity of 13.4 volts or higher.
2. The battery will only hold a charge for a short time under load conditions.
3. The battery will discharge faster than normal during storage under no load.

With this in mind, recharge the battery to its highest potential (normally from 13.4 volts and up) once it has fallen between 11.2 and 11.5 volts. The battery can be charged using the NOCO Genius 2 Battery Charger that came with the unit.

Battery Charging

Monitor your battery voltage by checking the *Law Enforcement II Radar Setup* screen of the STARnext software. We recommend that the battery be recharged to its highest charge level (usually 13.2 volts and above) once it discharges to between 11.2 & 11.5 volts. A good battery may charge as high as 13.6 volts or better. A defective battery may not charge any higher than 13.0 volts after a

reasonable charge time. Charge time will vary with the level of the battery voltage. Usually, a battery of 11.2 volts can be charged to its highest potential in 12 hours or less.

To charge the battery, first remove it from the Law Enforcement II Radar. Plug the NOCO Genius 2 Battery Charger (shown below) into an outlet, then connect it to the terminals of the battery.

Note that the NOCO Genius charger can charge several types of batteries, including both 6V and 12V batteries. If the charger is set to 6V, press and hold the ***Mode*** *button until the battery lights are flashing. Then press the Mode button until 12V Lithium is selected.*

********CAUTION********

Never plug a charger into a battery unless you are absolutely sure of the voltage output and polarity.

The charger has four (4) Charge LEDs - 25%, 50%, 75% and 100%. These Charge LEDs indicate the connected battery's state-of-charge as shown in the chart below.

Understanding Charge LEDs.

LED	Explanation
25% Red LED	The 25% Charge LED will slowly pulse "on" and "off", when the battery is less than 25% fully charged. When the battery is 25% charged, the red Charge LED will be solid.
50% Red LED	The 50% Charge LED will slowly pulse "on" and "off", when the battery is less than 50% fully charged. When the battery is 50% charged, the red Charge LED will be solid.
75% Orange LED	The 75% Charge LED will slowly pulse "on" and "off", when the battery is less than 75% fully charged. When the battery is 75% charged, the orange Charge LED will be solid.
100% Green LED	Pulsing Green LED - Bulk charge complete, optimizing battery for extended life. Solid Green LED - When the battery is 100% charged, the Charge LED will be solid green.
Maintenance Green LED	After the battery is fully charged, the charger will continue monitoring the battery, and provide ongoing maintenance and optimization. The 100% Charge LED will pulse "on" and "off" slowly during these cycles. The charger can be left connected to the battery indefinitely.

Understanding Error LEDs

Error Conditions will be indicated by the following LEDs.

LED		Reason/Solution
⏻	Solid	Charger is in Standby mode or Battery voltage is too low for charger to detect.
V	Solid	Battery voltage is too high for the selected charge mode. Check the battery and charge mode.
	Solid	Possible battery short / Battery will not hold a charge. Have battery checked by a professional.
	Solid	Reverse polarity. Reverse the battery connections.
V	Flashing	Charger internal temperature too high / Charger will resume function once the Charger internal temperature drops. Charger ambient temperature too cold / Charger will resume function once the Charger ambient temperature rises.

After a battery has been charged, allow it to sit for several hours then check the voltage to determine if the battery kept its charge. Some reduction in voltage is acceptable. However, if the battery falls below 13.0 volts, recharge it for a longer period of time. If this does not improve the charge, the battery is most likely defective and should be replaced.

Monitor your battery voltages frequently, charging when necessary, and you will extend the life of your battery.

Additional Notes

• **Do not** expose the battery to moisture or rain.
• **Do not** drop, hit or abuse the battery — it may break and expose the contents, which are highly corrosive.
• **Do not** short circuit battery terminals. Some batteries are protected with self-resetting fuses, but short circuits may still cause severe damage to the battery.
• It is normal for a battery to become warm to the touch during charging.
• It is normal for a battery to "self discharge" during prolonged storage. Always fully charge a battery prior to storage. While in storage, periodically check the batteries with a voltmeter to ensure they have not discharged below a level that may cause permanent damage.
• Always store in a cool, dry location.
• Keep batteries away from fire and do not incinerate — they may explode.
• Under no circumstances should you attempt to open the battery case.
• Always observe polarity when connecting your battery to any electronic/electrical device. If your device is not protected for improper battery hookup, you may cause severe damage to the electronic circuitry. The positive terminal may be indicated by a plus (+) sign or red mark. The negative terminal may be indicated by a minus (-) sign or black mark.
• The effectiveness of the solar panel can be reduced if it is dirty or scratched up. For best results, try to keep the panel clean.

Chapter 6

Troubleshooting

Troubleshooting

The following are some frequently asked questions related to the Law Enforcement II Radar. The possible answers that are stated with them are not necessarily the only answer, but should be checked first. If you cannot find the answer to your question, do not hesitate to contact us. Contact information is listed on page iii of this manual.

When using LiveView, no vehicles are displayed as they pass the site. What's wrong?

There may be a problem with either how the Law Enforcement II Radar was installed or one of the settings that was entered during set up.

First, make sure that you are aiming the correct area of the Law Enforcement II Radar toward the road. You should be aiming the crosshairs printed on the radar head, as shown in the picture here, at a 45 degree angle toward the road you want to record.

Second, check to see if there is anything between the Law Enforcement II Radar and the Road that may be obstructing the 'view' of the recorder.

Third, double checking the distance values entered during the installation and setup of the Law Enforcement II Radar.

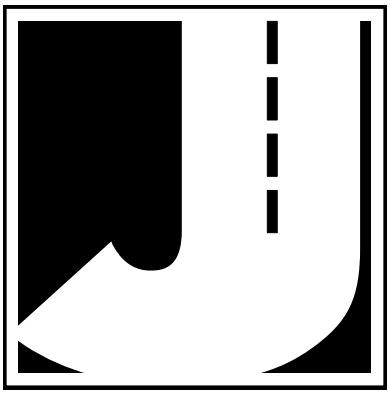
I want to clear the memory of the Law Enforcement II Radar. Can I do that? Yes, you can clear the memory of the Law Enforcement II Radar. To do this, follow the same steps described on page 3-10.

Additional support information can be found on our web site at www.jamartech.com. If you are unable to find a solution to your problem, contact us using the information on page iv of this manual.

Appendix

Specifications

Sensor: Microwave 24.2 GHz, power output 32 mW
Speed Range: 8-120 Mph
Radar Range: Up to 100 Feet
Setup Range: Up to 80 Feet
Size: 11.5" x 13" x 7"
Weight (Battery Installed): 12 lbs.
Power: Rechargeable 12V lithium battery
Approx. Accuracy: Near Lane >98%; Far Lane > 96%
Battery Charge Life: 14 Days
Operating Temperature: Minus 40° F (-40°C) to 158° F (70°C)
Data Interface (Hard Wire): USB Port
Date Interface (Wireless): Bluetooth Low Energy
Memory: 16 MB Internal Memory. (Will record up to 500,000 vehicles)
Units: Speed - MPH or KPH; Length - Feet or Meters
Output: Binary file capable of being read by STARnext software

We are pleased that you have chosen the Law Enforcement II Radar for your traffic data collection needs. We have strived to develop a unit that is easy to use and has the options that our customers require. The Law Enforcement II Radar has undergone extensive testing to verify the accuracy of its operations, and each unit is tested before it leaves our facility. However, just like other complex electronic devices, problems can occur. We always suggested that users verify the continuing accuracy of any device they use.

Should you detect any problems with any of our products, please notify JAMAR Technologies immediately and discontinue use of the unit until we have verified its operation.