

LWU-LiveWire Unlimited User's Guide

Lightning GPS

23 March 2009

[A Guide for the New User]

This document provides a detailed explanation of the functions and features of the LWU Vehicle Tracking device from Lightning GPS



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introduction

Thank you for purchasing the LWU battery-operated GPS tracking device!

As we print this manual (second edition, 23 March 2009), the LWU remains the most technologically advanced hard wired GPS tracking device on the market, providing location updates every 10 seconds if the speed exceeds 10mph.

The truly LIVE tracking methods employed by the LWU enable it to perform under a wide variety of applications, excelling in freight shipments to airport luggage. The applications for the LWU are limited only by the human imagination.

Options for the LWU GPS tracking unit include the adaptability that comes with the optional set up of 4 input and 4 output options. The inputs and outputs are operational. The inputs and outputs require a standard 12v relay, available from any auto part store. It is recommended that you run the wiring directly from the battery. It is also recommended to acquire the assistance of a certified mechanic to ensure that the wiring is connected correctly.

Not surprisingly, the LWU has garnered rave product reviews in the press. GPS Magazine calls it "The most accurate, easy to use GPS Tracker available." It's a testament to our staff and their dedication to design and build nothing less than



the best product of its kind on the market, without exception.

At Lightning GPS, we go to extremes to deliver a world-class product, and are equally dedicated delivering of a comparably world-class customer service experience. For this reason, LIVE support is embedded directly into our tracking system. If you encounter difficulties, have additional questions, or simply want to say "job well done", we're always delighted to hear from you!

Given proper care, your LWU GPS Tracking device will provide reliable service for years to come.

Thank you for choosing the LWU. We appreciate your business!

The LWU: Installation

Installation of your LWU LIVE vehicle tracking device is as easy as it gets - just follow these three easy steps:

1. Plug the two antenna cables and wiring harness into the transceiver unit, and then place the antenna (with the white text facing UP) on your dash at the base of the windshield. Run the cables along the side of the dash at the door hinge, and place the transceiver box under your dash. For best results, consider using a zip-tie to secure the transceiver to ensure it doesn't fall from beneath the dash.
2. On the wiring harness, connect the:
RED wire to a constant 12-volt power line.
BLACK wire to the frame ground.
BROWN wire to a 12-volt accessory power source.
(one which only has power when the ignition is on)
It's that simple!
3. That's it! The device is installed. For a more covert installation, you may place the antenna under the dash, all the way up near the base of the windshield, secretly out of sight. Our antennae can see through foam, glass, and fiberglass, but it cannot see through metal. For this reason, it is important that it be placed with no metal or wiring between it and the sky.

The four outputs allow for you to have the remote controlled access to Lock and UnLock the Doors, Honk Horn, and similar aspects that permit ease in control of the vehicles that have LWU.

The four inputs allow for your LWU to send information back to the server. These services can be set up so you can fully utilize your new LWU

Pin	Harness Wire Color	Description
1	Black	GND
2	Yellow	Relay 2 output (-)
3	Green	Relay 3 output (-)
4	Orange	Relay 4 output (-)
5	Blue	Switch 3 Input (-)
6		Not Used
7		Not Used
8	Red	+8 to +16 Volt input (constant)
9	Red(bundle)	Backup Battery input (12V lead-acid type)
10	Black	GND
11	White	Switch 2 Input (-)
12	Gray	Speaker output (+)
13	Red/White	Switch 4 Input (-)
14	Blue(bundle)	Microphone Input (+)
15	Brown	Ignition Input (+)
16	White/Brown	Relay 1 output (-)
17	Black	Speaker/Mic signal GND
18	Green/Yellow	Switch 1 Input (-)
19	Purple	LED Output (20mA max)
20		A/D Input (0 - 16v)

Live Tracking with the LWU

In order to access the live tracking features of the LWU, simply load your web browser on your PC (or Apple) and go to LightningGPS.com. If you do not already have login credentials, contact our support team.

With the login ID and password assigned to you by LightningGPS registration, go to

by clicking the COLOR button to the right of each field, respectively.

When you've finished making your changes to the flag color, text color, flag text or vehicle marker, simply click the SAVE button.

The phone driver feature is available with paid access to the SKYPE network, allowing you to phone the driver through your PC. Other options listed are applicable to the LWU, such as locking and unlocking doors, enabling and disabling the starter, honking the horn, and remote starting the vehicle - these are available only with hard-wired devices which must be physically wired under the dash of the vehicle to perform these functions. This makes your LWU a highly practical and efficient tool.



Figure 9.0 – The Vehicle Control Window.

The Control Panel

On the left side of the map screen you will find a Control Panel, providing tabs for Authorization, Map Control, Vehicles, Reports, Alert System, Search, Directions and Routing, Address Markers, Live Support, and Historical Playback. Clicking on any of these tabs will provide access to each group of functions.

This control panel is the key to all functions and features of the web-based tracking system.

Through it the system provides access to reports, alerts, live support, 90-day historical playback and an unending array of other features – with more new features constantly being added!

The Map Control Tab

You may select the "Map Control" tab from the control panel to the left, and the map control panel will open, providing controls to zoom, pan, and set map rendering options.

The LWU system relies on Microsoft Virtual Earth Maps to provide mapping of the coverage area. In larger metro areas, high-resolution aerial images (also known as Bird's Eye images) are available; in more rural areas, even Hybrid view may not provide the same level of detail as larger metro areas.

If you live in a rural area, you may find it more useful to select "Map View" in lieu of Hybrid or Bird's Eye view.

When fully zoomed, the maps provide detailed street-level information, enabling you to see the precise location from which your LWU GPS tracking device is transmitting. When zoomed out completely, you have a complete view of the world.

If you have only one device, the “Center Map” checkbox will automatically center the map on that unit. If you have multiple devices, “Center Map” will position the center of the *group* of devices at the center of the browser. If you select a single vehicle (under the *vehicles* tab), the “Center Map” checkbox will tell the system to center on the selected vehicle.

“Optimize Zoom” will zoom as closely as possible while still keeping the device or group of devices on the viewable map at once.

“Show Traffic” will show traffic flow and congestion levels over major interstates and highways. Measured areas will be highlighted in green for normal traffic flow. Areas experiencing moderate slow-downs in traffic flow will be highlighted in yellow, and areas with major traffic snarls will be highlighted in red. Areas highlighted in black indicate complete blockages and traffic at an absolute standstill.

By default, your login will show ALL the devices associated with your account – up to a maximum of 512 units on screen at once.

In viewing all vehicles, you manually control the area of the map you wish to view by using the



Figure 10.0 – The Map Control Tab.

zoom and pan features to move the map within the view port.

Clicking the Map View button will show a simple view of the map. Satellite will show satellite imagery. Hybrid combines the most useful features of both Map and Satellite views, superimposing street lines and names over the top of the Satellite imagery.

The oblique setting (N, S, E or W) allows you to select between four different angles to view Birds’ Eye imagery for a better indication of surrounding terrain.

In order to select an individual vehicle, you may select the “Vehicles” tab from the control panel, and select a specific vehicle from the dropdown list.

Tracking Options

Selecting a single vehicle from the dropdown list on the VEHICLES tab enables you to turn all other markers off, enabling quick isolation of the target from among a large fleet of vehicles.

This feature is often used in conjunction with the “center map” checkbox on the *map control* to “follow” a vehicle wherever it goes. Individual vehicle selection is also used to specify which specific vehicle to replay under the *historical playback* control.

Specifying a single vehicle to track has implications under a number of different controls. Check each section of the manual for the impact of individual vehicle selection on each function.

Reports

As this manual is being written, 20 different report options currently exist for your 90-day history. More reports are being added regularly.

There are two types of reports – **online** reports which appear onscreen, and **offline** (Excel) reports which are emailed to the address you specify. Some reports - such as the vehicle mileage by state report or vehicle operating report – are available only via email largely due to the time required to generate the report.

Another major difference between online reports and offline reports is the fact that an online report is typically run for a single vehicle for a

single day. Offline reports can be run for ALL your vehicles for a period of several months.

Note: When you request an offline report for multiple vehicles, bear in mind the ramifications of your request. An Excel spreadsheet only supports a maximum of 65,535 rows. If you have more data over a period of several months than can fit in 65,535 rows, the report will be truncated at row 65535.

When a report is selected from the *Reports* control, a semi-transparent overlay appears on the map. Note that the device markers continue to move, always reflecting their locations on the map beneath. On this reports overlay, you may select the specific parameters used for the selected report.

When reading a report, you will typically see a series of dates/timestamps, along with the physical address (or lat/lon, if the vehicle is continuing on a more-or-less straight course), as well as vehicle speed and heading. Headings are expressed in the range of 0 – 359, indicating the

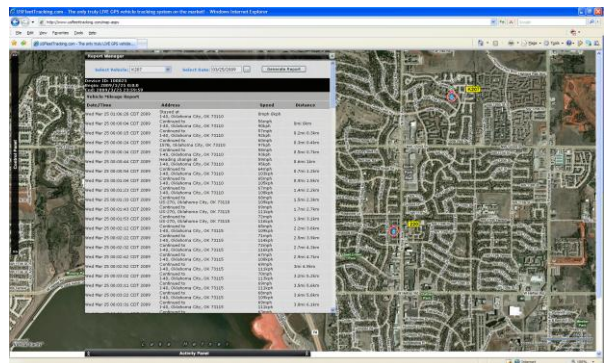


Figure 11.0 – An Online Report. Offline reports are emailed.

direction in which the vehicle is pointing. Zero is north; the value increments clockwise. Reports may be highlighted and copied/pasted into Excel spreadsheets.

The Alert System

Imagine, for a moment, that you're a homebuilder, HVAC installation contractor, electrical or plumbing contractor. You want to know what time your guys are arriving on the job site each morning... and what time they leave in the afternoon. With the Zone Alert feature of the LWU, you can easily define an unlimited number of "Alert Zones" (also known as "geo-fences") and the system will automatically notify you – by e-mail or SMS text message (or both) – any time one of your vehicles enters or exits the zones you define.

Defining Alert Zones couldn't be easier! First, zoom in on the area in which you want to create a zone notification. From here, it's as simple as clicking the Alert System tab on the Control Panel and selecting the option to "Show Alert Editor". A window similar to that shown in Figure 10.0 (right) will appear at the bottom of your screen. Click the "Add Zone Alert" button. In the first field, select a name for your zone, and then click and drag the pushpins at each corner of the highlighted zone on the screen.

You may roll the wheel on the back of the mouse to zoom in or out on the map, or click and drag to move the map while the Alert Notification Editor

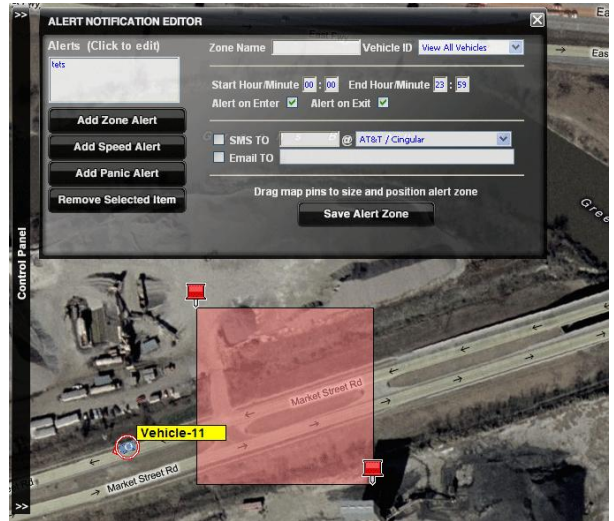


Figure 12.0 – Creating an Alert Zone.

is open. An Alert Zone can be as small as a driveway, or as large as an entire continent.

Note: While an Alert Zone can be as small as a driveway, the functionality of an Alert Zone depends on the device making one transmission on one side of the box, and a second transmission on the opposite side (inside vs. outside).

Select the notification method you prefer. You can have LWU send an SMS text message to your cell phone, or e-mail to any address you specify.

When you've finished specifying the e-mail address or SMS address, simply click the option to "Add Geo Fence Alert Zone", and the zone you've created will be added to the list at the left. It's that easy!

would populate on the map of the closest locations that matched your search criteria.

A “Search Results” box will open on the right side of your screen (See Figure 13.0) with addresses and phone numbers for the locations appearing on the screen.

In the simplest of terms, if it is in the phone book, the LWU system will show it to you on the map.

Directions and Routing

The “Directions and Routing” feature enables the user to enter a start and stop address, along with up to 20 additional stops on a route. The system will plot the route with driving directions.

By default, “no optimization” is checked. This will show the route in the order in which the stops were entered.

Note: Popups must be enabled on your browser in order to receive driving directions. Most browsers (IE, FireFox, Safari, Chrome, etc.) allow you to enable popups from our site specifically while continuing to block popups from unwanted sites.

If the checkbox is turned on for “Fastest Time”, the route will be optimized and the stops reordered in such a manner as to allow the driver to complete all stops in the shortest amount of time.

If the checkbox is turned on for “Shortest Distance”, the route will be optimized and the stops reordered in such a manner to allow the driver to complete all stops with the lowest possible mileage. Please note that the shortest mileage is not always the fastest time – for example, interstate travel might predicate slightly higher mileage, but also higher speed and thus shortest time.

In order to receive driving directions, the popup blocker on your browser may need to be disabled temporarily to enable the pop-up window with driving directions to appear.

Address Markers

The Address Markers tab exists to enable the placement of user-defined markers on the map. These markers can provide quick and easy location of warehouses, offices, and other landmarks relevant to your daily use of the LWU vehicle tracking system.

To access this feature, select the “Address Markers” tab and click “Show Address Editor”. After typing the name you wish to appear on the marker label, type the address into the address field and click the “Find Lat:Lon” button. The system will find the closest match in the database and populate the latitude and longitude with that location.

Alternatively, if you know the latitude and longitude (based on the position of a vehicle), you

coverage provides only 3 bars of service, your device would be unable to communicate due to signal deterioration based on poor antennae placement.

It is for this reason that a quality install and good antennae placement is critical.

Our objective is to install the antennae in a place where signal deterioration is kept to an absolute minimum.

2.0 - Common Problems

1. The map shows my vehicle to be stopped, but the vehicle is moving...

Answer: This is caused by either of two potential issues :

A) The device is not transmitting

- 1) poor (or no) wireless data coverage
- 2) poor antennae location resulting in deteriorated wireless data signal
- 3) antennae not plugged into device

B) The GPS unit cannot see the sky (If lat=0 and lon=0, the unit will not transmit)

- 1) antennae facing downward (the embossed or printed text should face the sky)
- 2) poor antenna placement (GPS antennae cannot see sky through metal)

3) antenna is placed too far below the dash to have a good view of the sky.

4) On a new install, it may take several minutes for the GPS to establish location.

NOTE: The unit transmits more frequently when the vehicle is moving.

1) the device transmits every 30 minutes if the vehicle is stationary.

2) the device transmits every 5 (or 10) seconds if the vehicle is moving.

2. The system shows my vehicle to be hundreds of yards from its actual location.

Answer: The GPS unit does not have a good view of the sky.

a) Under normal circumstances (with a good view of the sky) our devices are accurate to within 10-12 inches. There are 26 satellites in the GPS constellation. The more satellites the device can see, the more accurate the location.

b) when vehicles are parked facing tall buildings (or in indoor garages or under metal awnings) large portions of the sky are often obscured.

c) antenna placement is critical to ensure reliable and accurate operation.

3. When the device came on this morning, it showed the location from (another time).

Answer: The brown wire is not correctly connected to the accessory 12v (ignition) power source. When the device shuts down, it stores its last known location in a buffer. If the brown wire is not connected, the device cannot perform a graceful shutdown and thus cannot store its last known location properly.

4. My unit isn't sending me alert emails or sms text messages.

Answer: Your email server may have blacklisted usfleettracking.com

We've seen frequent cases where people request notifications from our server based on frequent alert cases (for example, 45mph). Thereafter, every time the vehicle exceeds 45mph, an email is sent. After 20-30 emails, your email server may delist or blacklist our email server because it believes our email server is spamming based on the sheer volume of notifications.

Check your spam folder to see if your email notifications are arriving there. Or contact your network administrator to determine if your email server has automatically blocked usfleettracking.com .

5. I click to zoom in (or out), but the system keeps zooming back out (or in).

Answer: The "optimize zoom" checkbox on the Map Control tab is turned ON. Turn the checkbox OFF and manual zoom control is returned.

6. I slide the map, but it keeps moving back to a different location.

Answer: The "auto-center" checkbox on the Map Control tab is turned ON. Turn the checkbox OFF and manual pan control is returned.

7. I log in, and all I get is a map of the US. My vehicle doesn't show.

Answer: In almost every case, this is because it's a newly installed device and the unit hasn't yet transmitted its first packet of data (and thus cannot appear on the map because we don't yet know its location). It generally takes approximately 5 minutes after a new device has been powered up to begin transmitting.

This process can be hastened by driving the vehicle. Under normal circumstances, the device transmits every 5-10 seconds (depending on your wireless plan) when the vehicle is moving, but only once every 15-30 minutes if the vehicle is stationary. For this reason, it could take up to 30 minutes to make its first transmission if the vehicle remains stationary.

3.0 - Diagnostic Codes

The RED LED will blink on the front of the device if a problem is encountered. Below are the diagnostic codes describing each of these error conditions :

1 blink - The modem is not detecting a SIM card.

2 blinks - The modem is not detecting a cellular signal. Check antenna connection, check with a known-good USFleetTracking antenna.

3 blinks - The GPS receiver is not tracking any satellites. Check antenna connection and placement.

4 blinks - The modem has no cellular signal AND GPS is not tracking any satellites. See items 2 and 3 (above) for troubleshooting.

5 blinks - The modem is not detecting a SIM card and GPS is not tracking any satellites.

6 blinks - The modem is not responding, and the antenna may be disconnected or the device may be incorrectly configured within the firmware. Contact USFleetTracking for further diagnostics.

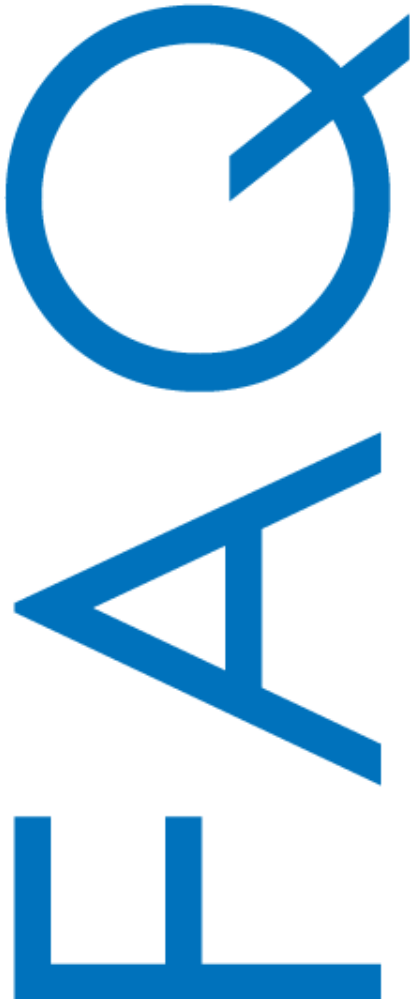
7 blinks - The modem is not responding and the antenna may be disconnected and GPS is not tracking any satellites. Contact USFleetTracking for further diagnostics.

8 blinks - GPS is OK, but the modem is not registered on a network. A problem with the cellular account should be suspected. Check with the wireless carrier that the account has been activated correctly.

9 blinks - The modem is working correctly, and GPS is tracking satellites, but GPS is not making position fixes. The vehicle or the antenna may need to be repositioned for a good view of the sky.

Frequently Asked Questions

(and answers!)



I just activated my service. Why doesn't my device show on the map?

The device cannot show its location on the map until after it makes its first transmission. Take the device for a drive and it should immediately begin tracking.

My map screen shows where the device was yesterday. Today it's in a completely different place, but the map still shows the old location.

Are the satellites down?

The satellites don't go down. The problem is that the device has not transmitted its location to the server since the last location shown on the map.

Either (A) the device does not have power, (B) it doesn't have a view of the sky (and therefore cannot calculate its location), or (C) the device is in an area with no wireless data service, and therefore cannot transmit its location.

We recommend a physical inspection of the device. It's possible the SIM door (the tab on the right side of the device which covers the SIM card) may be open, the device may be turned off, or the GPS receiver may be turned off on the device.

My device/devices were moving on the map at 60mph and suddenly they stopped moving in the middle of the highway. Is your system down?

Our system isn't down. It's far more likely your browser has disconnected from (lost its socket connection to) our server. Users of wireless networks are more likely to experience this problem than users on physical wired connections.

Simply log back into the website to reconnect to our server and see current locations of your vehicles.

I got onto Live Chat Support at 4am and nobody answered.

Live Chat is staffed from 7am to 7pm Monday through Friday, and 9am to 4pm on Saturdays. Our intent here is to fully support business hours throughout the continental US, opening at 8am New York time and closing at 5pm California time.

We could conceivably farm our live support out to India, but... we doubt our customers would appreciate that. And if we staffed personnel around-the-clock to accommodate that occasional 4am support call, the cost of monthly service would have to increase to offset the costs to pay those additional personnel (and we know nobody wants higher monthly rates).

As we continue to grow, we may well evolve into a 24x7 technical support schedule. At this time, however, tech support is only staffed from 7am to 7pm.

My SMS alerts and/or email alerts aren't coming through. What's wrong with the system?

There are several possible reasons for this problem. Either (A) you did not check the box in front of the SMS entry on the Alert Editor, (B) you have a 1 in front of your number (14057491105) when the 1 is not supported by your wireless carrier, (C) you do NOT have a 1 in front of your number and the carrier requires it, (D) the SMS text message was caught by a spam filter at your local wireless carrier (they decided it was spam), or (E) the wireless carrier simply failed to deliver the message.

Wireless carriers do not guarantee delivery of SMS text messages. We've seen cases where some messages were delivered in 20 seconds, while others were delivered days later.

To confirm Alert notifications are being sent properly, set up an email alert (and make sure the email isn't going into your spam filter).

When I go into Directions & Routing, I don't get the directions.

Your browser is disabling pop-ups. Enable pop-ups (either once, or for the entire site) and a separate browser will appear with turn-by-turn driving directions when you request a route.

When I search for any item – tires, food, fuel, etc - nothing comes up on the map.

The map will show telephone book entries for the area viewed on the map. You may want to zoom the map out slightly to encompass a larger area to ensure the viewed map area includes businesses like those for which you've searched.

My activity panel doesn't show anything moving. What's up with that?

The activity panel shows the flow of data as it is received from your devices. If you have only a single device which is not moving, you will see nothing scrolling. When the vehicle moves, you will see one line scroll past each time the vehicle updates its position.

The more moving vehicles you have on the map, the more data is transmitted, thus the data will transmit more frequently and scroll through the Activity Panel faster. The purpose of the Activity Panel is to enable you to quickly see which vehicles are moving.