Installation Instructions

MLU-B

GPS Fleet Solutions
MLU-B Installation Guide

www.gpsfs.com

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Introduction

Satellites are in a 12-hour orbit at 12,000 miles above the earth. There are 24 satellites in the system and generally there are at least 5 satellites orbiting overhead at any one time. This antenna must be positioned to receive signals from these satellites. The antenna location must be selected carefully so that the antenna can receive the satellite signals. The standard GPS antenna is designed to be located inside the vehicle. The ideal location is in a place that allows line of sight reception from the GPS satellites in orbit above. The satellite signals will pass through glass if it is not coated with a metallic film. Both the radio transceiver antenna and GPS antenna is designed to be mounted inside the vehicle, **(not exposed to the outside weather).**

Through formal agreements with cellular carriers throughout North America enabling the wireless transmission of data. This network covers virtually the entire population of the U.S, Canada, and Mexico that is within reach of the cellular network.

1.1 Safety Statement

This installation manual covers the installation of the Mobile Location Unit (MLU). This manual is for the professional and novice installer and should be used to ensure a safe and functional install of the MLU.

***Always a suggested practice to disconnect the vehicle's 12-volt system. There is no on-off switch on the unit. The installed unit operates 24 hours a day and must be energized to log vehicle events or send data as required by anyone using the service.

The MLU is shipped with one in-line 3-amp fuse attached to the power cable. This fuse must be installed as close as possible to the primary 12-volt source connection. The fuse protects the power cable should there be a short in the cable between the fuse and the MLU. This fuse must be installed properly. If the fuse is replaced, it should be of the same type as originally supplied from the factory. The original fuse supplied is a 3 amp 125-volt type 3AG (Little Fuse 321 Series).

Failure to use the proper fuse or to install the fuse in the recommended location could cause a vehicle fire hazard. The fuse provides overload protection for the power cable and MLU. The wiring installed between the fuse and primary vehicle power is not protected from overheating if a short should occur. Use care when routing the power cable and fuse. Route the cables where they will be protected and use commonly accepted install practices for after market automotive electronic devices.

There are two acceptable methods of making a wire connection:

- Soldering your connections (recommended)
- Crimp connectors (with the use of the proper crimping tool)
- Posi-Tap connectors (supplied in package)

Regardless of the method you choose, ensure that connection is mechanically sound and properly insulated. Use high quality electrical tape or shrink tubing, cheap tape will unravel in hot weather making it a poor insulator.

Not recommended connections:

- T-tap connectors (poor quality mechanical type connection)
- Twist and tape without soldering your connection.

***** Using these connection types could result in numerous start up notifications*****

1.2 Additional Support

* Over the phone training is available (recommended). See activation worksheet for detail (Page 9).

2. Tool List

- Power drill AC/DC (Cordless recommended)
- Magnetic bit holder that houses Phillips and flat-head bits
- Wire stripper and cutters
- Crimpers for insulated connectors
- Electronic voltage meter (Digital display recommended)
- Tools to disconnect and reconnect vehicle battery (Crescent wrench,open end wrenches, etc.)
- Tools to remove internal vehicle trim (Panel popper, sockets, ratchet, screwdrivers, torx & hex bits, etc.)
- Butt connectors (Various sizes)
- Ring terminal connectors (For grounding wire)
- Self tapping screws (Various sizes)
- Star washers for grounding (Strongly recommended)
- Electrical tape
- Wire 18 gauge
- Velcro and/or double sided tape (For mounting antenna)
- Wire ties (Various sizes)
- Soldering iron & solder

Using Your Digital Multi Meter

We at GPSFS Technical Support hear more and more often about damaged computer and air bag systems as a result of probing with a test light. Not all air bag wires are in yellow tubing, and not all transistorized outputs can light a test light bulb without shorting out! The best solution, as it has always been, is a good digital mulitmeter.

How to Find (+) 12V Ignition with Your Multi Meter

1. Set your meter to DCV or DC voltage (12V or 20V is fine)
2. Attach the (-) probe of the meter to chassis ground.
3. Probe the wire you suspect of being the ignition wire. The steering column is an excellent place to find this wire. Your meter should read (+) 0V.
4. Turn the ignition key to the “ON” position. If your meter reads (+) 12V go to the next step. If it doesn’t probe another wire.
5. Now turn the key to the start position. The meter display should stay steady (+) 12V, not dropping by more than a few tenths of a volt. If it drops close to or all the way to zero, go back to step 3. If it stays steady at (+) 12V you have the ignition wire.

How to Find (+) 12V Starter Wire with Your Multi Meter

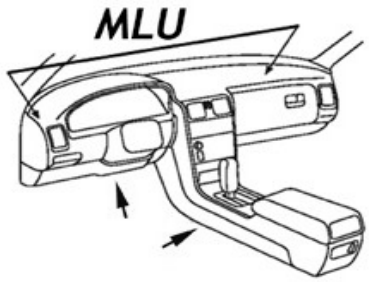
1. Set your meter to DCV or DC voltage (12V or 20V is fine)
2. Attach the (-) probe of the meter to chassis ground.
3. Probe the wire you suspect of being the starter wire. The steering column is an excellent place to find this wire. Your meter should read (+) 0V. Note: Remember you do not have to interrupt the starter at the same point you test it. Hiding the starter kill is always recommended.

4. Turn the key to the “ON” position, your meter should still read (+) 0V. Not: Make sure the car is not in gear. Now turn the key to the “START/RUN’ position if the meter reads (+) 12V when the engine is cranking. Go to the next step. If it doesn’t probe another wire.
5. Cut the wire you tested and attempt to start the car. If the starter will not turn over you have the right wire. If it still starts reconnect it and go back to step 3.

3. Selecting the Mounting Location for the MLU

The Mobile Location Unit (MLU) is supplied with a 6ft power cable. The unit should be mounted so it will not be exposed to damage from people or objects. The cables that connect to the unit should also be routed to protect them from possible damage. The MLU has mounting base or flange with four mounting holes. Normal installation is with these four holes and #6 or #8 sheet metal screws. The unit must be mounted where it will not be exposed to direct sunlight or excessive heat generated by the vehicle operation. Some examples of mounting locations include under the dash above the knee bolster, under center console, behind glove compartment, and in the trunk. If the optional battery is to be installed there should be room to mount the battery within 1 ft of the MLU.

The unit has a diagnostic wire and LED that will be used to verify operation by the installer. These items are normally not used by the owner.



4. Selecting the Antenna Locations

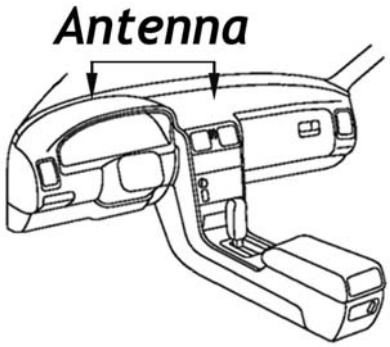
The MLU requires two antenna elements. One antenna is for receiving GPS signals from The Navistar GPS satellites. The second antenna is a radio transceiver antenna that communicates with the Cellular network. The antenna does not require a ground plane to function properly.

There are two antenna cables in addition to the main power harness that must be connected to the MLU, also be sure there is room to access the connectors for installation and service. If an exterior installation location is required you will need to use the optional antennas designed for exposure to the outside elements.

The GPS/RF Combo antenna must be mounted flat with the GPS Receiver faced up. The ideal location is under the dashboard. It can be placed under the dash pad as long as the pad or covering is not metallic or a barrier to the GPS satellite signals.

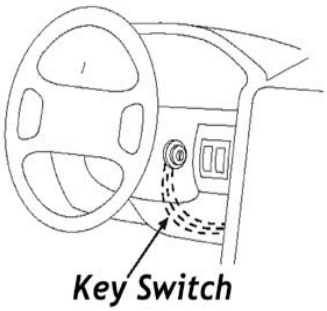
If the vehicle window has a solid dark coating around the edge, do not place the GPS antenna behind the coating. The GPS signals will travel through the clear glass but will be reduced if the window has any metallic coating or tint applied.

The GPS/RF Combo antenna will work best if it has a clear view to the sky and as much of the horizon as possible. Any metallic objects between the antenna and the satellites will degrade the signaland reduce the overall performance.

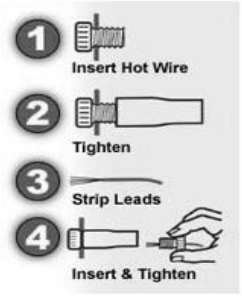


5. Locating Vehicle Power

The MLU has an internal power management program that monitors the vehicle power at all times. The internal power management program is continuously looking at the condition of the vehicle power by detecting changes in the battery voltage over time. It is critical in this installation that the vehicle power be taken from a source as close to the battery as possible. Possible sources beside the direct connection to the battery are the main fuse block panel or the point where the vehicle charging circuits are connected to the 12-volt system.



Connect the red led or fuse end of the power cable to the +12 volt vehicle power. The power cable can be shortened if needed but be sure to also install the in line fuse. Connect the black lead to the vehicle chassis (ground).



Posi-Tap connectors used to make wire connections (12 volt Constant and Ignition).

***Improper connection could result in numerous "Start up test" notifications, and increased usage on monthly billing.**

6. Powering the Unit for the First Time

Basic Installation / Locate only
Refer to page 9, Section 9 Wiring Schematic (View #1).

Basic Installation / OBDII Interface connector
Wiring Schematic (View #2).

Basic Installation Plus Output Options
Refer to page 10, Section 10
Wiring Schematic (View #1)
Starter Disable (View #2)

***Disconnect the backup battery if it is installed.** Connect the two coax cables from the combo antenna (securely) and connect the vehicle's 12-volt power and observe the LED on the MLU. During the initial 15 minutes after +12 volts is connected to the MLU, the LED should flash green at the rate of 1 second "on", 5 seconds "off", this feature is designed for installation test purposes (15 minute Start-Up).

Within five minutes the flash rate will change to approximately one second on and one second off to indicate that the GPS Receiver has established a location "lock". Within 1 minute the flash color should be green to indicate good cellular coverage. If you do not get the results above, refer to page 11, Section 12 - Troubleshooting.

7.1. Confirming Proper Operation

The Test wire (see wiring diagram) on the MLU is for testing the internal functionality of the hardware. Running tests with this wire grounded will not send data to the call center. The user account does not need to be activated to run the tests. Grounding the wire will start test mode function. If the wire is not removed from ground the unit will remain in the test mode for 5 minutes and then return to normal operation. To start the tests again you must ground the test wire again. If you want the MLU to function normally after testing, remove the test wire from ground and tape the end to prevent the device from going into test mode during normal operation.

Remember that the MLU will remain in the test mode for only 5 minutes at a time and you will need to cycle the test wire to re-enter the test mode. The MLU interface circuits are all pre-wired in the cable harness. Table 1 also shows the wire colors associated with the input and output circuits. The digital outputs are provided to switch optional external devices. Each can sink 1 amp at 35 volts. The outputs are voltage protected so they can sink current from inductive loads. If the individual sink current is allowed to exceed 1 amp, the outputs could be damaged. The digital inputs are triggered by a contact closure or short of less tha 100 ohms from the contact to ground on their inputs.

7.2 LED Operation

BI-COLOR ON-BOARD LED: Each device is equipped with one bi-colored LED.

SOLID LED COLOR:

SOLID GREEN - Device is in Test Mode; no inputs are currently being triggered.
SOLID ORANGE - Device is in Test Mode; at least one input is currently being triggered.
SOLID RED - Device is in Setup Mode.

BLINKING LED COLOR:

BLINKING GREEN - Microburst and Cellular Service are available.
BLINKING ORANGE - Cellular Service, but not Microburst Service is available.
BLINKING RED - Neither Cellular Service nor Microburst Service is available.

BLINKING LED TIMING:

OFF FOR 1 SECOND - GPS Module is powered and signal is Valid, Cell Module is powered.
OFF FOR 5 SECONDS - GPS Module is powered and signal is InValid, Cell Module is powered.
OFF FOR 10 SECONDS - GPS Module is turned off, Cell Module is powered.
OFF FOR 21 SECONDS - GPS Module is powered and signal is Valid, Cell Module is turned off.
OFF FOR 25 SECONDS - GPS Module is powered and signal is InValid, Cell Module is turned off.
OFF FOR 30 SECONDS - GPS Module is turned off, Cell Module is turned off.

8. MLU Activation Worksheet

Check one:

____I.e. accept over the phone web and installation training by GPSFS

To complete activating my account...

____I.e. do not need training of any kind, please activate my account.

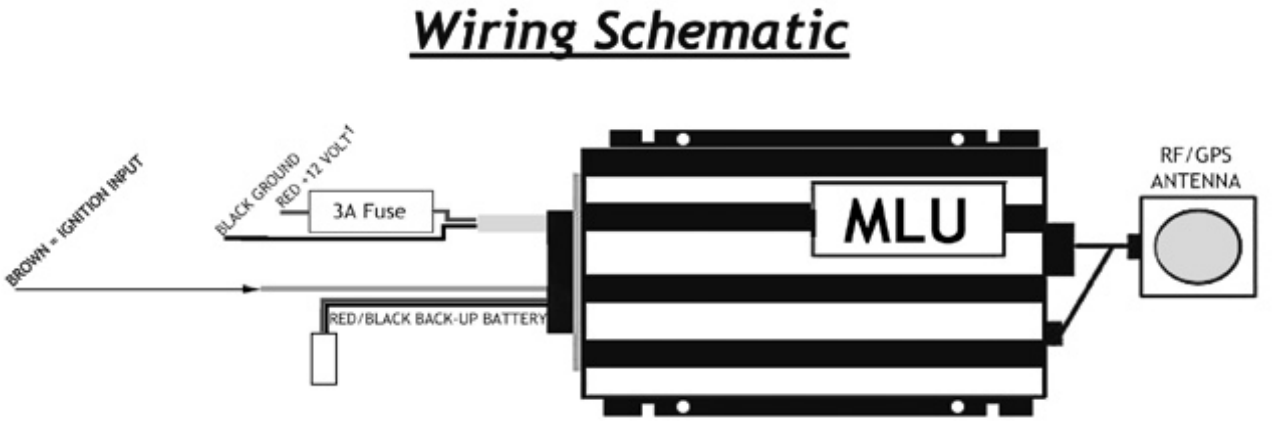
Printed Name/Company:_____/_____

Signature:_____

Please choose one of the above sign and fax copy to 905-831-5174
To schedule a training time or activate your account please call 1-877-684-2040.
Hours of Operation: 6:00 AM to 5:00 [EST].

9.1 Basic Installation / Locate Only

View 1: Hardware



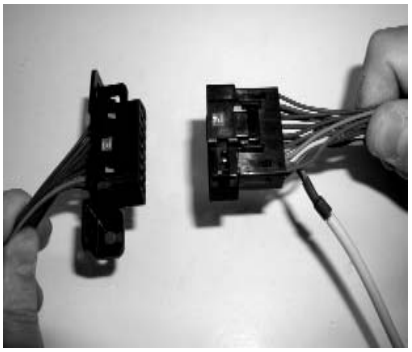
View 2: OBDII Interface Connector

The Power Cable requires connection to the vehicle OBDII diagnostic connector. This connection will provide constant power and ground to the MLU.

1. The OBDII connector is typically located on the drivers side, under the dash. Remove the OBDII connector fron the current vehicle mounting postion.
2. Plug the Power Cable into the vehicles OBDII connector.
3. Remount the OBDII that is on the power harness to the vehicles mounting postion.

1

2



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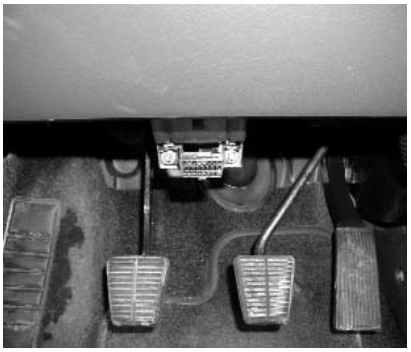
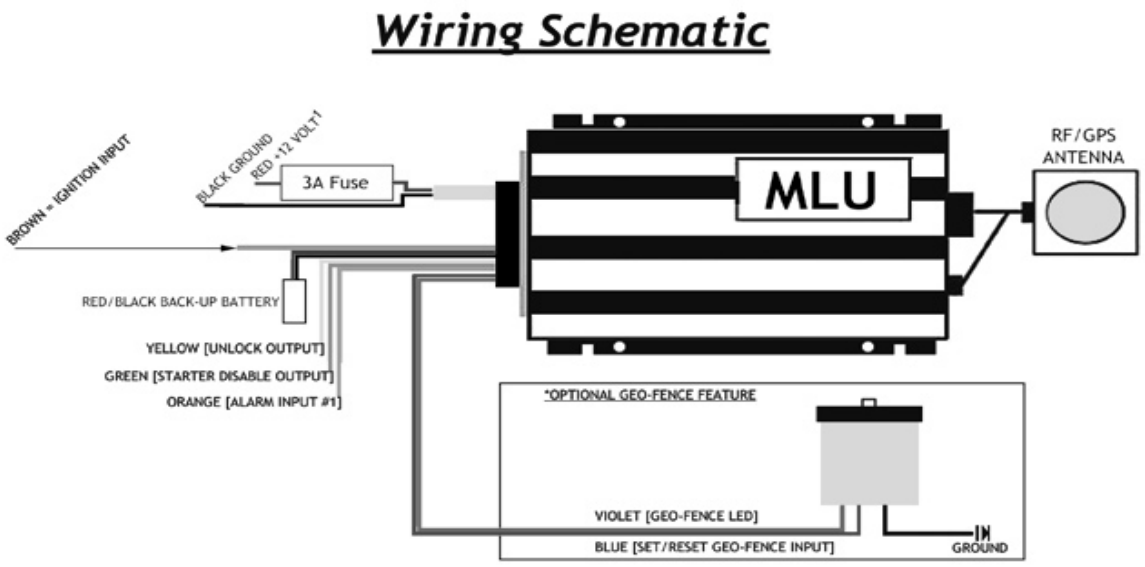


10 Basic Installation Plus Output Options

View #1



View #2 Connecting the Starter Disable Relay to the Power Harness

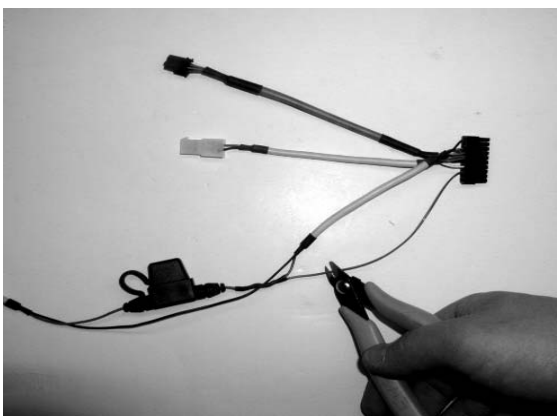
The Starter Disable feature requires true ignition power **(a wire with +12VDC when the engine is cranking and running**) for proper operation. In order to have Ignition Power the ignition wire (brown) on the wiring harness will need to be cut, an in-line fuse (3amp max) must be added and connected to vehicle ignition power.

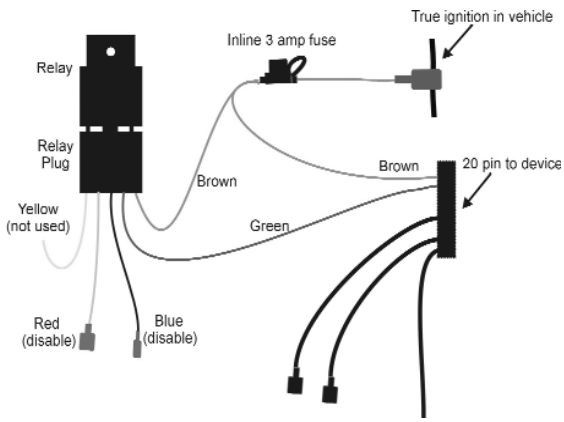
1. Cut the Ignition wire (brown) on the power harness close to the fuse, and tape the exposed end by the fuse with electrical tape to ensure there is no bare wire exposed.

2. Using a butt connector, tie the brown wires from the disable relay and the power harness and crimp them into one end of the butt connector.

3. Crimp another wire to the other side of the butt connector. This end connects through a fuse to the ignition wire of the vehicle.

4. Using a butt connector, crimp the green wires from the power harness and the disable relay together.





11. Wire Harness Pin Connection

PIN#	WIRE COLOR	DESCRIPTION	MESSAGE RECEIVED WHEN TRIGGERED
P-1	BLACK	RSA Ground/Extra Ground	NONE
P-2	YELLOW	Remote Door Unlock (Output #1)	Doors Unlocked
P-3	GREEN	Starter Disable (Output #2)	Vehicle Disabled/Starter Disabled Starter Enabled
P-4	ORANGE	Alarm 1(15 sec ground trigger) Door Open/Close (Input #1)	Alarm 1 Triggered Door Open/Door Closed
P-5	BLUE	GEO FENCE Button(2 sec ground) Alarm 2(15 sec ground trigger) (Input #2)	If GEOFENCE Button is used no message Alarm 2 Triggered
P-6	NOT USED	NOT USED	NONE
P-7	NOT USED	NOT USED	NONE
P-8	RED	Primary Battery +12Vdc	Start up test (on power up)
P-9	RED	Back-Up Battery +12Vdc	NONE
P-10	BLACK	Primary Ground	NONE
P-11	WHITE	Overheat (2 min ground trigger) RSA (2 sec ground trigger)	Engine Overheat Roadside Assistance
P-12	BLACK	Back-up Battery Ground	NONE
P-13	NOT USED	NOT USED	NONE
P-14	GREY	N/A	N/A
P-15	BROWN	ANA(Alternate Ignition Sense) Ignition On/Off	NONE Ignition On/Ignition Off
P-16	WHITE/BROWN	Extra Output Trigger (Output #3)	If GEOFENCE Button is used no message
P-17	NOT USED	NONE	NONE
P-18	GREEN/YELLOW	TEST	NONE
P-19	VIOLET	GEO FENCE or RSA LED	NONE
P-20	WHITE/YELLOW	N/A	NONE

Note: Please refer to your Configuration Sheet to determine if any of the above listed output messages apply to your account.

PROBLEM	CAUSE	SOLUTION
I CANNOT POLL MY VEHICLE	1. NO POWER TO UNIT	1. CHECK ALL CONNECTIONS
	2. BLOWN/LOOSE FUSE	2. REPLACE/TIGHTEN FUSE
	3. LOW CAR BATTERY	3. REPLACE OR CHARGE BATTERY
	4. CAR IN GARAGE OR OVERHEAD ROOF	4. MOVE VEHICLE TO OPEN AREA
	5. BAD CELL COVERAGE	5. DRIVE VEHICLE AWAY FROM AREA
	6. BAD ANTENNA LOCATION	6. REPOSITION ANTENNA
	7. WRONG ESN NUMBER	7. VERY ESN ON DEVICE WITH WEBSITE
	8. TEST WIRE IS GROUND (GREEN/YELLOW)	8. REMOVE TEST FROM GROUND
UNIT RESPONDS BUT I GET NO MAP SOMEWHERE NEAR RESPONSE	1. BAD ANTENNA LOCATION	1. REPOSITION ANTENNA INSURING NO METAL ABOVE AND IS LAYING FLAT WITH GPS RECIEVER FACING UPWARDS
	2. NOT ENOUGH VOLTAGE TO UNIT WHEN CAR IS OFF	2. IF BROWN WIRE IS CONNECTED TO IGNITION, TURN CAR ON AND IT SHOULD WAKE THE UNIT FROM POWER MANAGEMENT MODE
	3. BUILDING COVERING GPS RECEPTION	3. MOVE VEHICLE 20FT-30FT AWAY FROM BUILDING
	4. CAR IN GARAGE OR OVERHEAD ROOF RACK	4. MOVE VECHILE TO OPEN AREA
STARTER DISBALE DOES NOT WORK	1. WRONG WIRES ARE CONNECTED	1. MAKE SURE CORRECT WIRES ARE CONNECTED.(I.E. GREEN WIRE NOT GREEN/YELLOW)
	2.INCORRECT POWER SOURCE	2.ESTABISH GOOD POWER SOURCE BEFORE CRANKING AND DURING CRAMKING
	3. INCORRECT IGNITION SOURCE	3. TEST IGNITION WIRE FOR TURE IGNITION SOURCE
	4. LOOSE CHASSIS GROUND	4. MAKE SURE GROUND IS SECURED TIGHT
DOOR UNLOCK WON'T WORK	1. WRONG WIRES ARE CONNECTED	1. MAKE SURE CORRECT WIRES ARE CONNECTED. (I.E. YELLOW NOT ORANGE)
	2. VEHICLE DOOR UNLOCK IS + TRIGGER	2. ADD RELAY TO SWITCH TO + TRIGGER
3. SOME VEHICLE REQUIRE A CAR MANUFACTURER MODULE INTERFACE		
WEB ISSUES		
WHEN I TRACK MY VEHICLE NO MAP COMES UP TAKES ME BACK TO LOGIN PAGE	POP UP BLOCKER	DISABLE/TURN OFF POP-UP BLOCKER DO NOT USE AOL BROWSER
I LOGIN, BUT WHEN I TRY TO USE ANY FEATURES IT TAKES ME BACK TO THE LOGIN PAGE	COOKIES ACCEPTED	DISABLE/TURN OFF COOKIES BLOCKER DELETE COOKIES AND TEMP. INTERNET FILES

13. Access Information

Congratulations, you have just installed the Internet based vehicle telematics system. Now that it's installed, here's how to use your system.

Turn on your computer and log on to the Internet using your standard Internet browser.

- Go to the GPSFS home page at www.gpsfs.com
- Choose the applicable site from the drop down menu.
- Enter customer login and password. Then click login.

You will now be on the Control Panel page.

Select the vehicle which will be tested.

Click the vehicle Location Request button to obtain a location, speed and direction. This step is to ensure proper functionality of the MLU.

A map will generally appear on average of about 2 min. Make sure the information on the map is correct.

Zoom in/out on the map by using the circular buttons located on the bottom right hand corner.

Optional features to test are located on the Control Panel (i.e. Door unlock, Starter Disable, and GEO-FENCE).

FCC Certifications

FCC ID: xxxx xxxxxxxxx

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause h▫
operation.

The equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These l▫
environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the inst▫
cause harmful interference in which case user will be required to correct the interference at their own expense.

Changes or modifications not expressly approved by Aircept.Com, LLC. Could void the user's authority to operate the equipment.