



ATS Installation Setup and Maintenance

P/N SG07230018

REVISION A

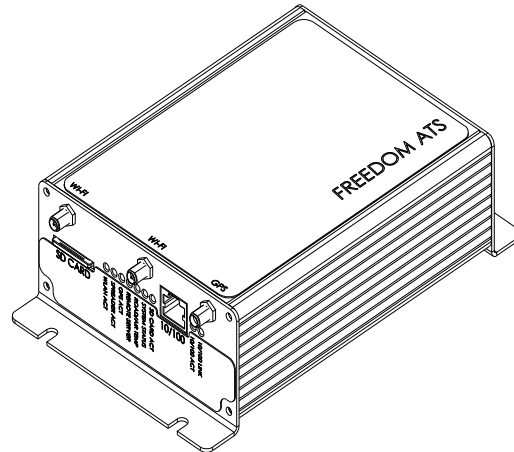
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User Manual Freedom ATS

FREEDOM ATS USERS GUIDE
MOBILE DATA COLLECTION DEVICE
PART# SG07040073(Wi-Fi, GPS Receiver.),
PART# SG07040074(non-Wi-Fi, no GPS Receiver),
PART# SG07040078(non-Wi-Fi, GPS Receiver.)


Revision history

REVISION	DATE	DESCRIPTION
1	3/27/2009	FIRST DRAFT RELEASE
A	10/30/2009	PROD. UPDATES

Purpose

- A. This manual is a guide to assist in the setup and management of the Freedom ATS (Advanced Tracking System). This manual leads the user through a step-by-step setup process for several given application examples presented below.
- B. Setup is simple and is achieved using the built in web server configuration tool included with each unit. A laptop with a 10/100 network port and the provided cable is all that is required for fast configuration.

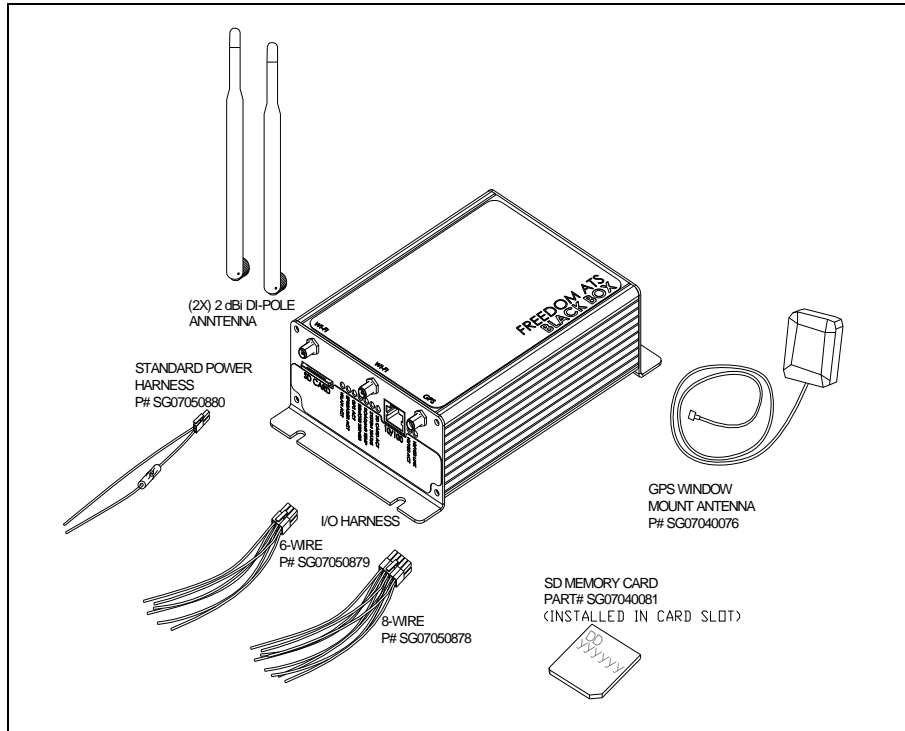
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What's included

A. The following illustration details the components included with each Freedom ATS unit.



Product Description

The Freedom ATS is a simple to apply *Mobile Data Management & Collection Device*. The primary advantage of the ATS is easy installation and setup. The ATS has standard features available that allow this device to be used out of the box without cellular data contracts utilizing a removable SD memory card for data collection or its built in on-board Wi-Fi LAN connection. The standard unit also requires NO additional software to begin management. With its built in web configuration tool, setup and maintenance couldn't be more convenient. If the vehicle is on the network or connected to your laptop using the provided cables, all setup and configuration can be done with any PC running a web browser such as Internet Explorer™ or Firefox™. The WLAN (Wi-Fi) tranceiver includes all the latest authentication methods and also the latest levels of 802.11 A/B/G/I, AES, TLS and WEP encryption. The freedom ATS is compatible with the model GL400 or ACS spreader control units. Or can be used with any other spreader control that utilizes a compliant standard RS-232 serial port. The ATS can be used for many applications that utilize its standard features

GPS Receiver (optional), The GPS signal contains GMT time, latitude and longitudinal data and other geometric data used to calculate velocity and altitude. Snap-shots of current GPS data along with a time stamp and any other data such as from a Salt Spreader controller are stored together in sequential records. If using the GPS receiver the real-time clock is based on GMT (or UTC) time received from the satellite. If no GPS receiver is installed then data is time stamped based on the set time of the internal real-time clock value.

Wi-Fi, (Wireless LAN) (optional), This Wireless IP Gateway option is one of three wireless options used for data transfer and equipment configuration and maintenance. Wireless LAN is a good cost economical alternative to the cost associated with a Cellular data contract or the complications of using a Digital radio network. The latest levels of authentication and encryption are available for the Wireless LAN (Wi-Fi). The downside of Wireless LAN offers no real-time Data transfer such as with cellular and limited signal range (120 to 900ft.)

10/100 Ethernet, This is a wired LAN port. This port is typically used for web services especially during initial setup of the ATS device when it's fresh out of the box. Web based configuration and troubleshooting are done using this connection. Web services can be accessed over the Wi-Fi port as well, once the port configuration has been setup. The wired 10/100 Ethernet port is programmed from the factory with a static IP address of 192.168.11.120. Use your computer and the provided cross-over network cable or attach the unit to your network with any standard network cable. Use your PC's Internet Explorer or Mozilla Firefox internet browser to complete setup and configuration. See the section about accessing the web server below.

Digital inputs, ANY battery level or switch to ground signal can be wired into the digital inputs. The inputs are rated for voltages from ground level to 28volts. The inputs also have integrated noise immunity. Inputs can be configured to activate by switching to ground or switching to power. Use the on-board web configuration tool to program their options. Some application examples are listed below.

- Operator Data download switch
- Plow position switch
- 3-wire Proximity switch
- Body Up detect switch
- Way-point input switch

Battery level outputs (4), Hi-level output drive capability. These outputs can switch peak loads up to 6 amps continuous. These outputs can be used for basic remote controlled functions or for many other applications. Reverse polarity, thermal, and short circuit protection make these outputs useable for any resistive or inductive load applications.

Modem serial port, This physical DB-9 connector style RS-232 serial port is intended for connection of RS-232 cellular modem or Digital 2-way radio data port using rs-232 level compliant serial communication. The port contains all control lines available for full modem control. Baud rates and all setup parameters are accessible through the web based configuration tool. Real-time cellular data is transmitted out of this port if a cellular modem is attached. Or data can be forwarded to a digital 2-way radio network for applications such as push-button data-download.

Spreader Serial port, This physical DB-9 connector style RS-232 serial port is intended for connection to Material Spreaders. This port is a 3-wire port TX,RX, and Ground connection. This data connection links the Salt spreader to the ATS system and allows materials data to be captured and stored on the ATS unit.

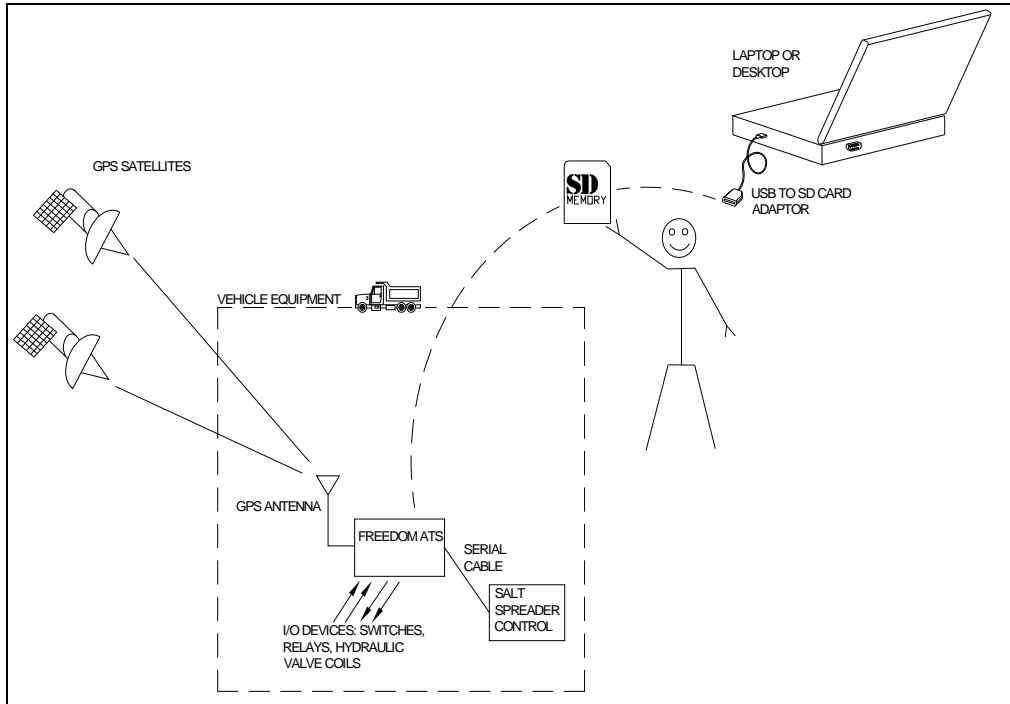
Road-Watch SS (RS-485), This half-duplex RS-485 serial ports default usage has it configured for the Commercial Vehicle Systems (Sprague devices) Road-Watch communications. The port auto detects the Road-Watch SS sensor when it is plugged in.

SD Memory card, This Industrial rated removable FAT file system drive is Microsoft Windows compatible and is the default storage location for all data records for your application. It is recommended that the SD memory card must be installed for all applications. The only Application that will run without the SD memory card on extended bases is the Push-button-data-download application. Other applications such as real-time cellular data transfer and Drive-by-download require the use of an SD card. Limited data collection can be done without the SD card installed but the file size is limited and is not a suitable substitute for the SD card.

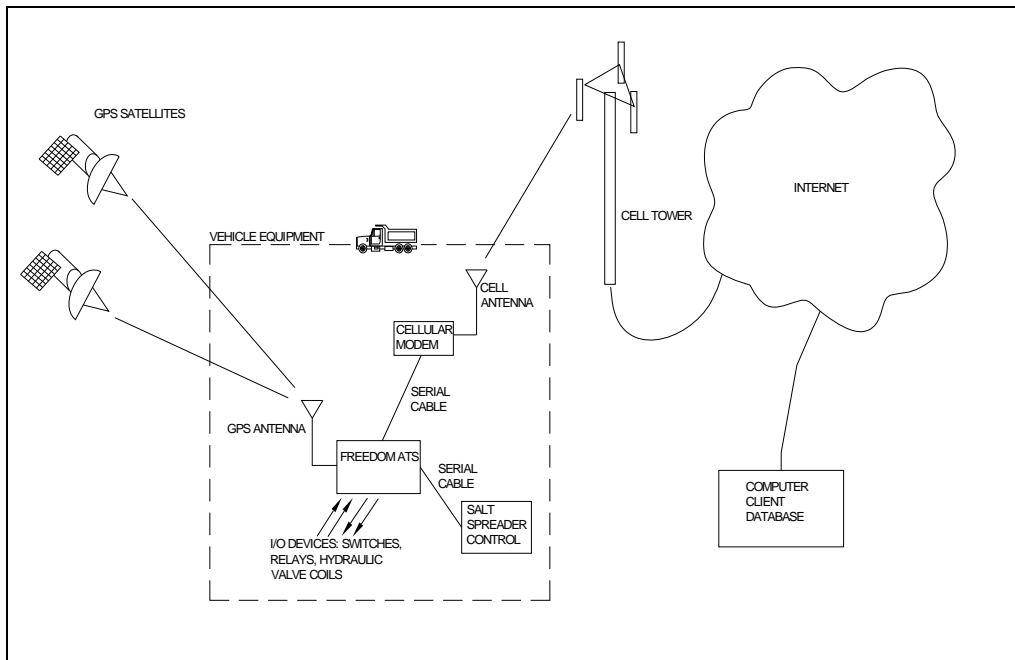
Supported Applications

Below are some rudimentary diagrams of some supported applications. This manual is intended to help the user setup or make adjustments to their application. It is likely your application could use features that encompass multiple examples below.

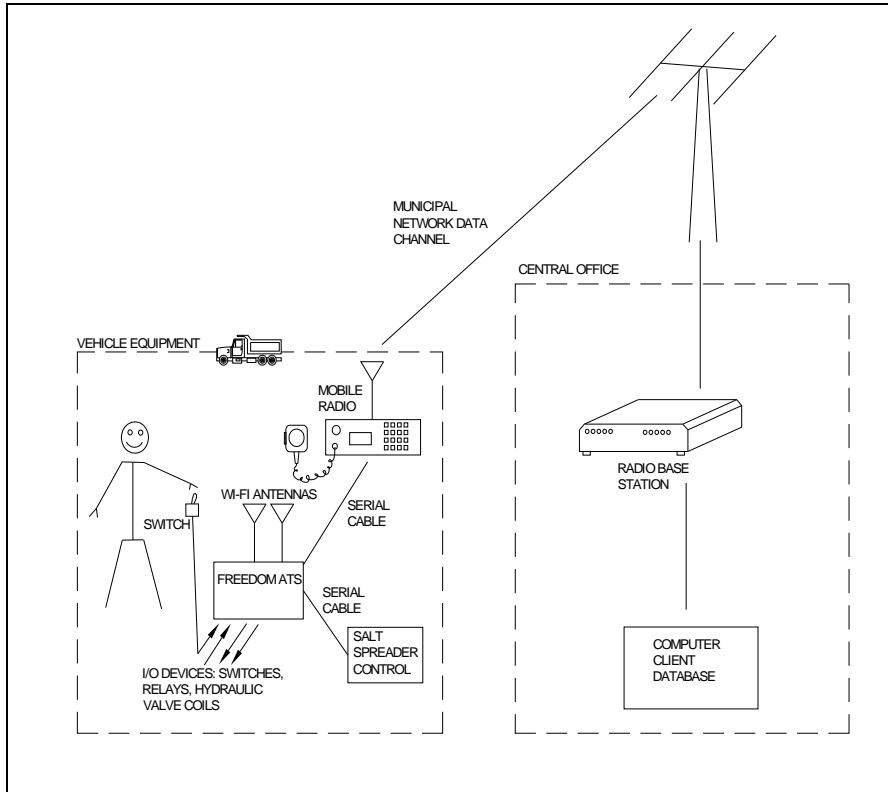
Manual Data Transfer Application (Removable data storage SD card)



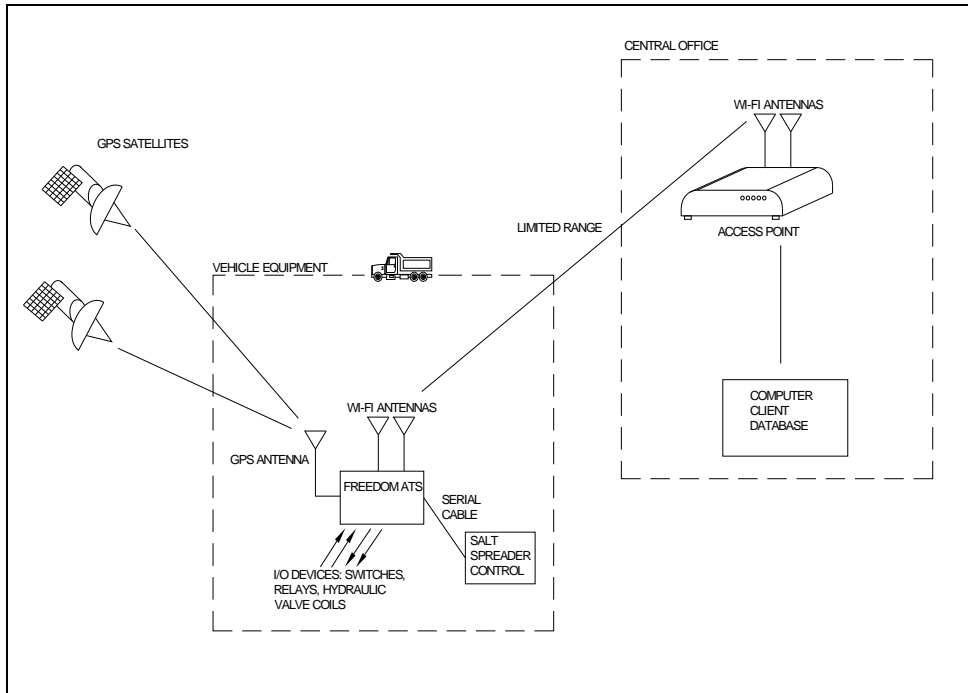
Cellular Modem Application (Real-Time Cellular Data transfer)



Drive-by Download Application (Wi-Fi)

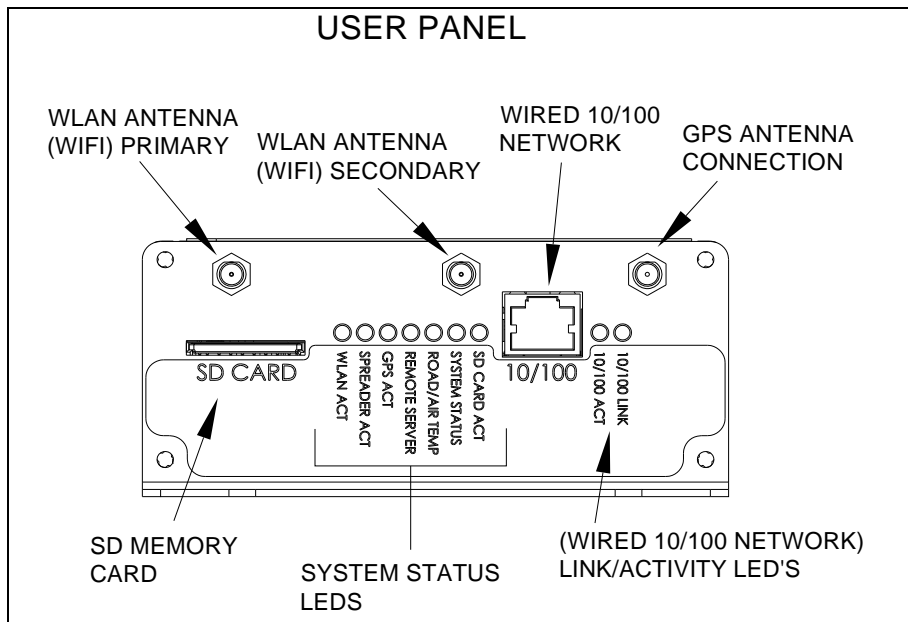


Push-button Data-Download over 2-Way Radio



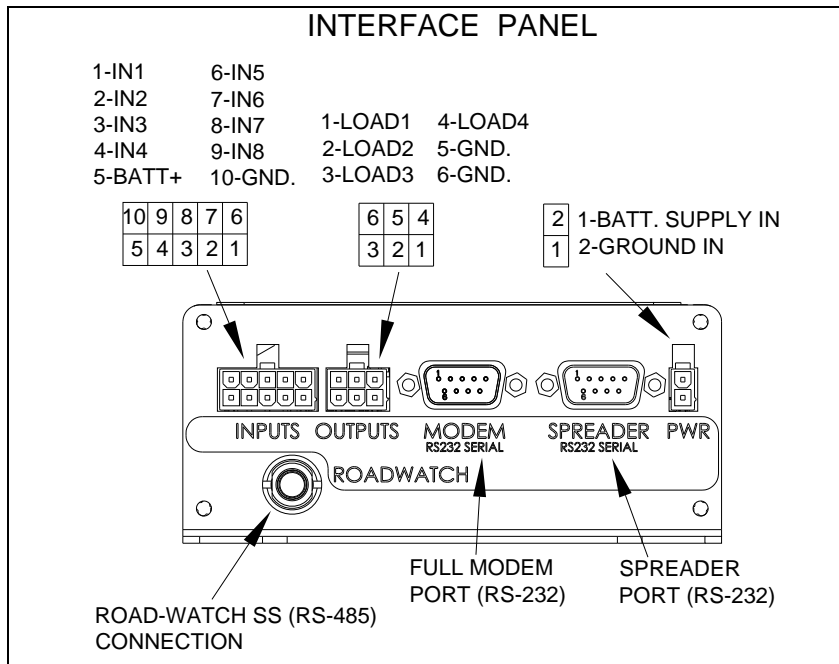
Freedom ATS (User) panel description

- A. **WLAN (WIFI).** Wireless LAN network connection. The panel connector is SMA MALE
- B. **Wired 10/100** Ethernet network. The wired port is a standard feature on all units.
- C. **System Status LED's.** Standard to all ATS units are status LED's displaying real-time diagnostic codes. See diagnostics and troubleshooting section at the end of this manual.
- D. **SD CARD.** Standard to ALL ATS units. Removable memory card is used as primary data storage. It is highly recommended this card always be installed into the ATS unit when the ATS unit is powered on.
- E. **GPS Antenna.** Attached window mount GPS antenna to this connector. The panel connector is SMA FEMALE.



Freedom ATS (Interface) panel

- A. Digital inputs.** Attach toggle switch panels, proximity switch, door and pin switch, both battery and ground signals compatible.
- B. Digital outputs.** Battery level driven outputs. Drive up to 4 separate loads simultaneously. Short circuit and thermally protected.
- C. Modem serial port (RS-232).** DB-9, RS-232 compliant full-modem control port
- D. Spreader serial port (RS-232).** Simple Db-9 RS-232 compliant 3-wire TX,RX, & Ground. type connection
- E. Battery and Ground connector.** Wire into a minimum 5 amp accessory ignition switched circuit. Attach ground lead to a good chassis ground connection.
- F. Road-Watch SS connection.** Connect the Sprague devices “Road watch” air and road surface temperature sensor here. Use s Turk M8 6P style connector. Road-watch sensor part# 849-0242-000



Installation of Equipment

Equipment required.

- Freedom ATS unit SG07040074 (without GPS) or SG07040078 (with GPS)
- ATS Server Software part# SGS00300100001
- Optional ATS Database Reporting Software SGS00300100002
- Basic tools to mount the ATS device and route and splice the wire harness into the vehicle.

Mount the ATS unit

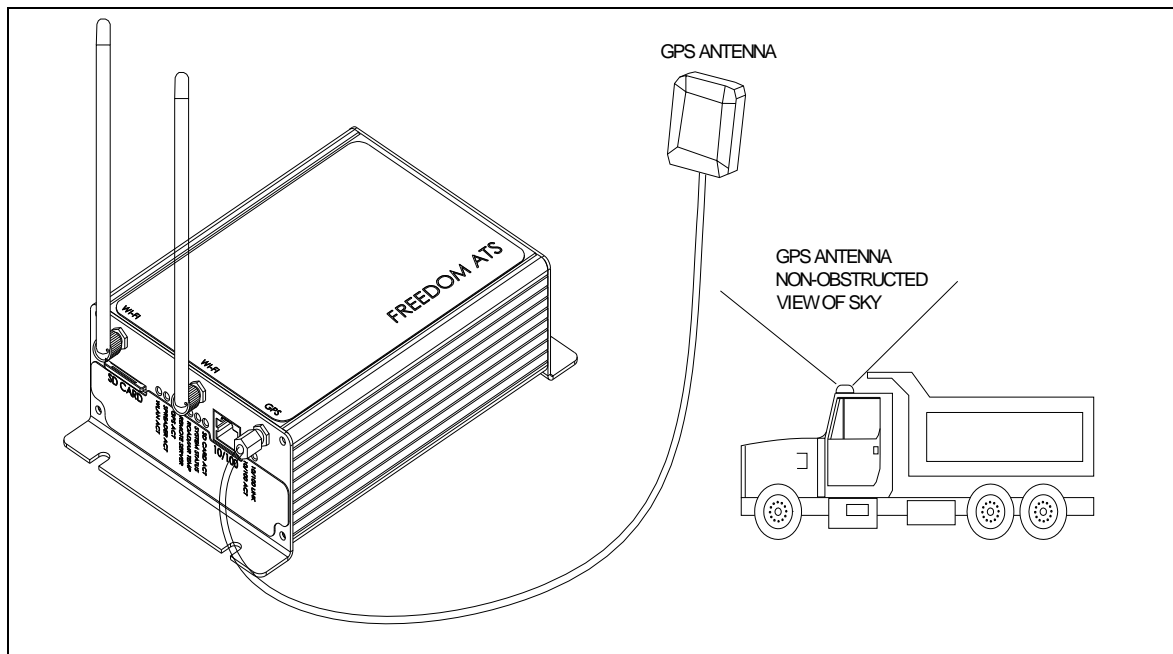
1. Securely mount ATS device inside the vehicles interior cab. The User panel would typically be oriented for easy access to the LED indicators, 10/100 port and SD Card slot.

Attach Wiring and cables

2. -Attach fused primary Battery and ground wires.
3. -Attach serial cables provided to spreader controller. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.

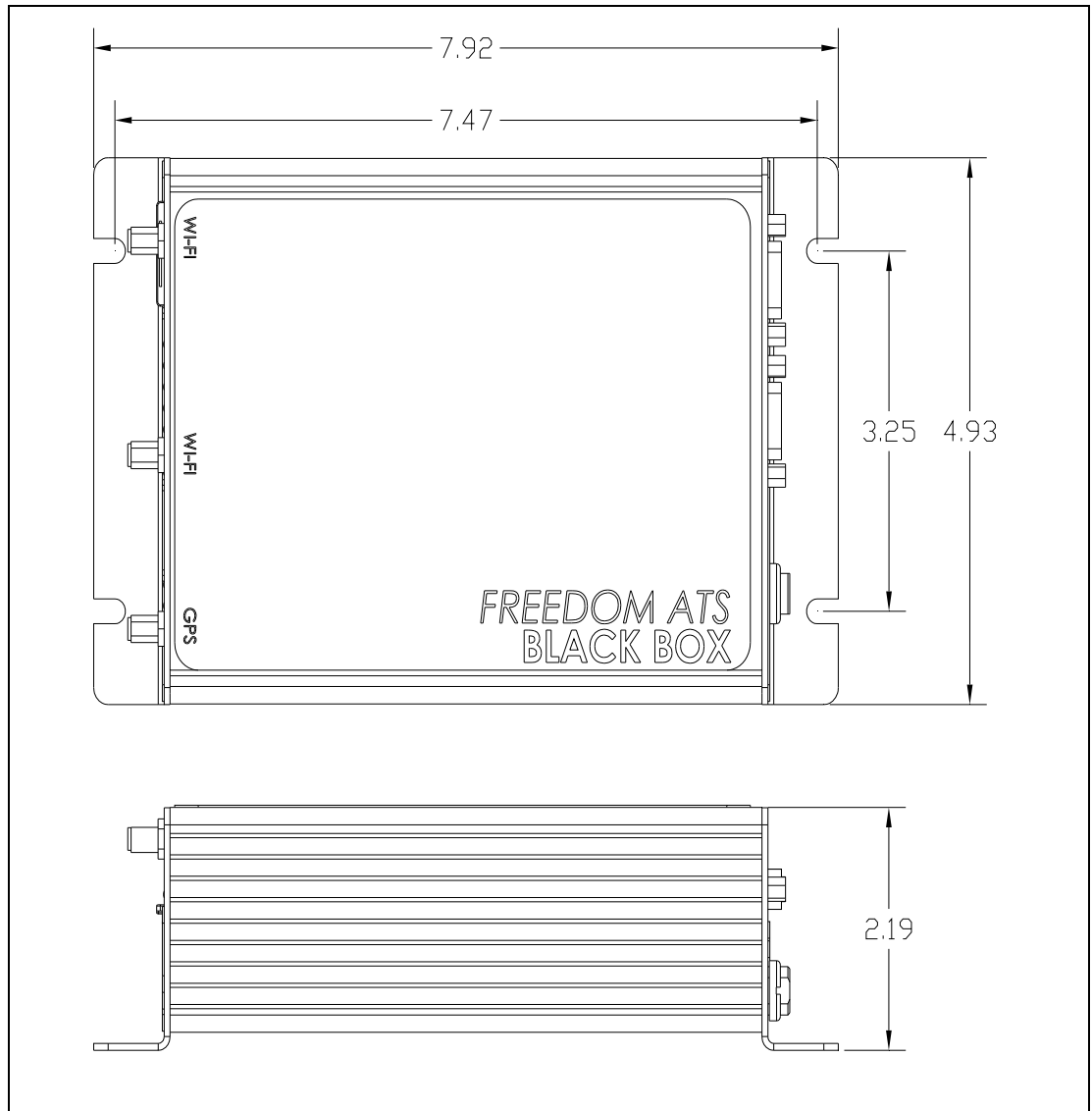
Install GPS antenna (If GPS RCVR installed)

- 1.-Properly install the GPS antenna as described in the installation steps below.
 - a. The sealed weather-proof GPS antenna has an integral magnet and ideally should be located above the vehicle with a clear view of the sky.
 - b. Avoid overhead metal objects that will interfere with satellite signals.
 - c. Avoid mounting areas that have excessive heat, vibration or locations close to other antenna's or sources of magnetic fields such as electric motors or high current or high voltage wiring such as strobe lights.



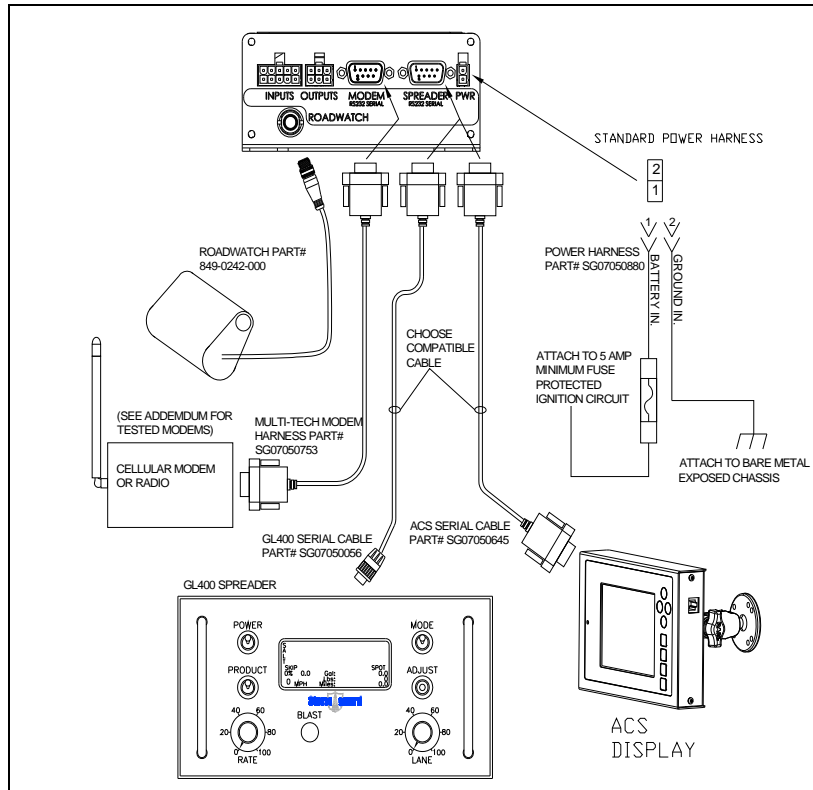
Mounting dimensions

Mounting of the ATS unit. (not to scale)

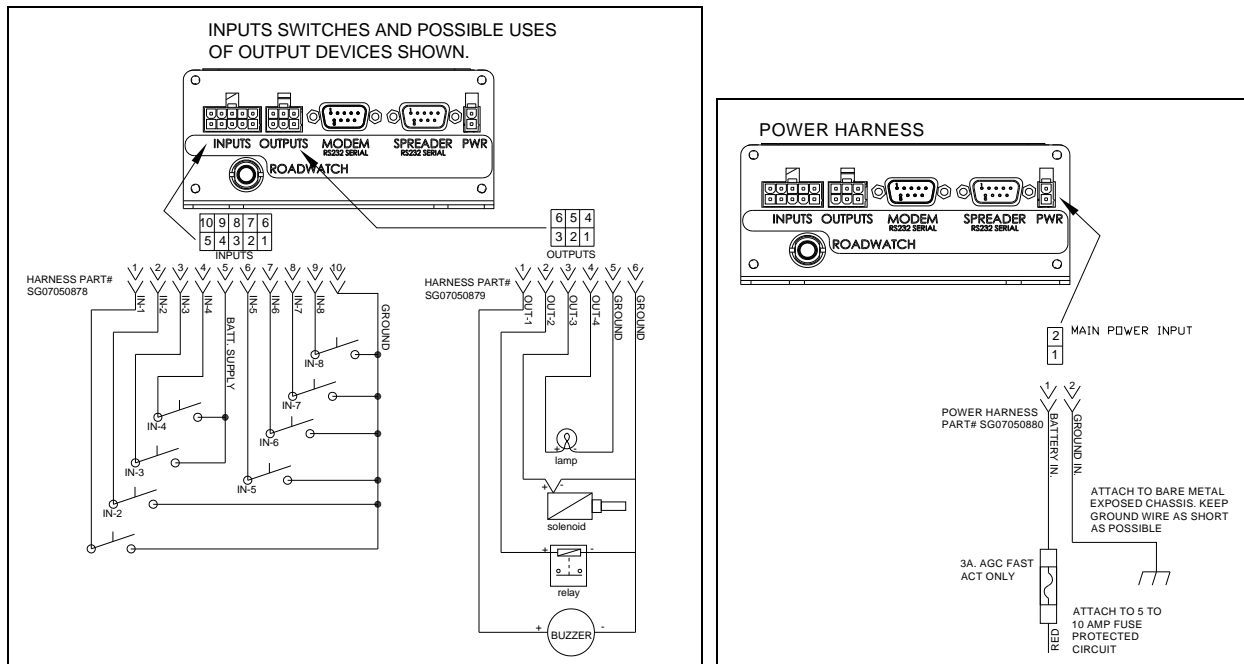


- Recommended location for mounting is the back interior wall of the vehicle cab, trunk or any location where the antennas will not be damaged. (remote antenna is always an option for trunk mounted units)

Wiring and Cable Layout

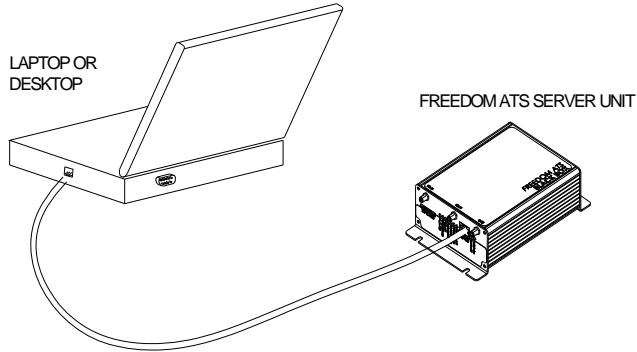


Wiring Switches and Output Devices/Main Power



Setup and Configuration

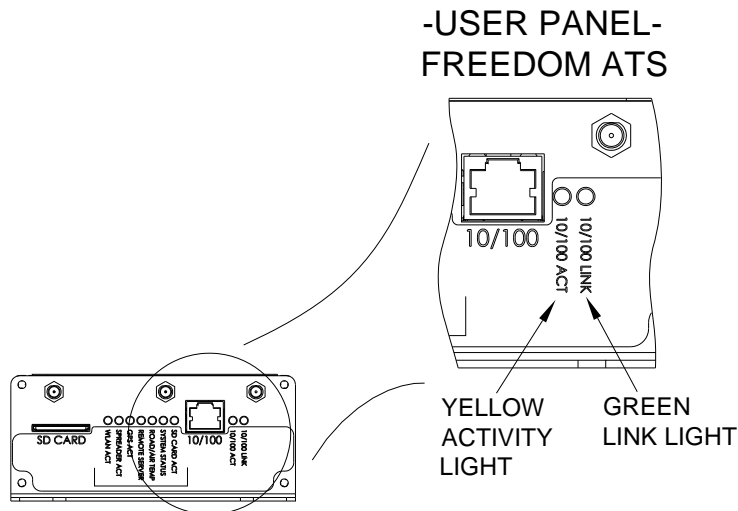
- Attach your computer to the wired Ethernet connection on the side of the ATS device using the provided cross-over cable P#SG07050774.



Connecting for the first time to the ATS configuration utility (Web browser utility)

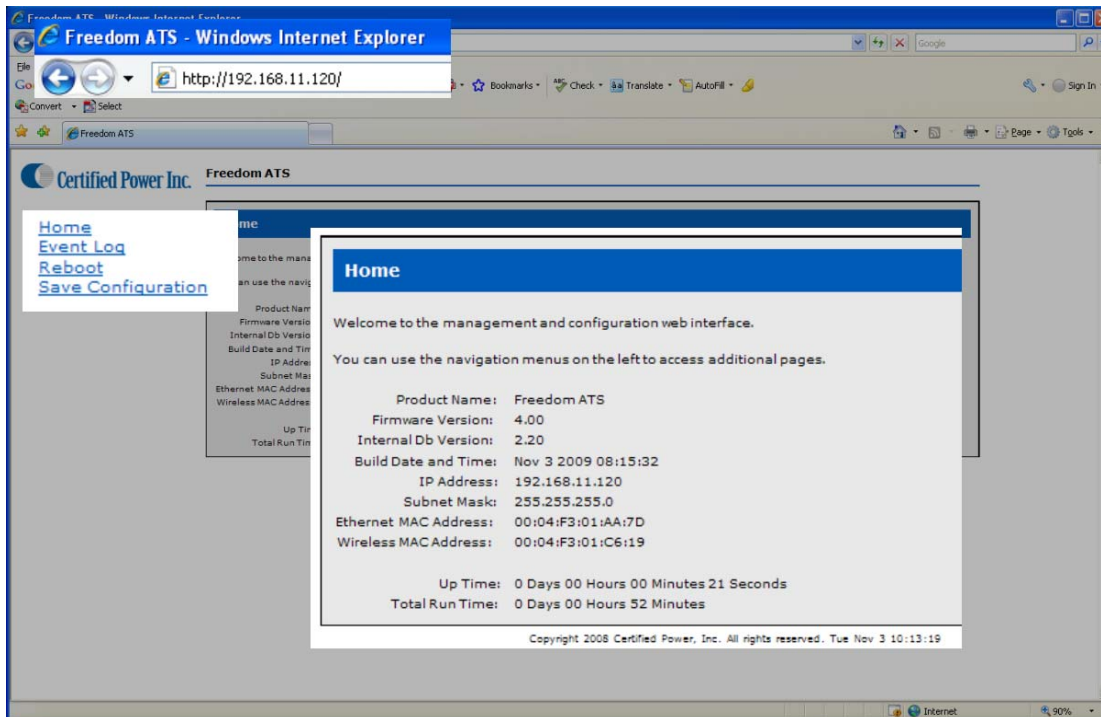
(Setup and Configuration cont.)

1. Apply Power to all devices (Spreader, ATS system, and Spreader control system)
2. The green LINK, and intermittently the yellow ACTIVITY LED's should become active if there's a good connection over the Ethernet cable from your laptop to the ATS device.



Open your Internet Browser to gain basic access to the Home Page (*Setup and Configuration cont.*)


1. First time users can use their internet browser to navigate to the default static address exactly as shown below in the upper magnified view **http://192.168.11.120**.

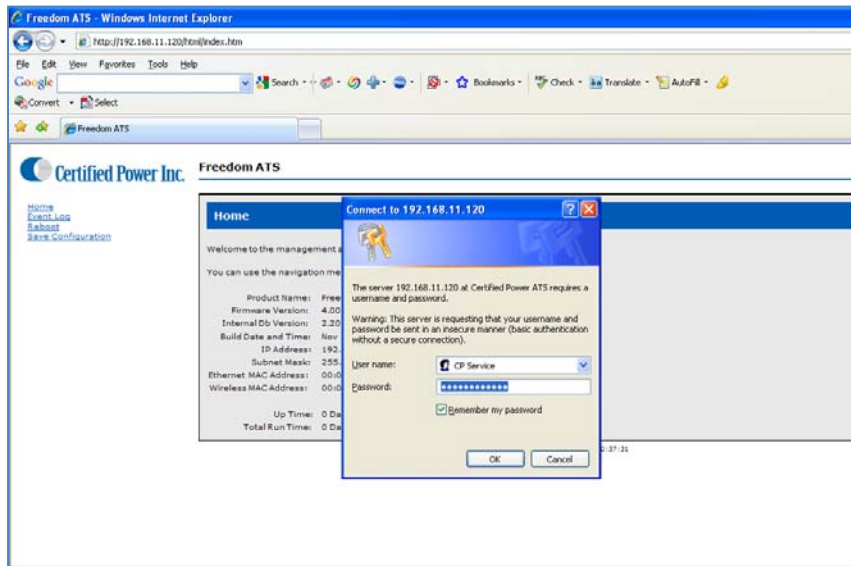


2. The Home page displays basic information about the ATS system.
 - **Product name**
 - **Firmware version**, This number tracks what software release is running on this device.
 - **Build Date**, Tells you build date of the software running on this system
 - **IP Address**, The current address assigned to this ATS unit
 - **Ethernet MAC Address**, A fixed unique address associated with the network port (admin related)
 - **Wireless MAC Address**, A fixed unique address associated with the network port (admin related)
 - **Up Time**, Continuous Run-Time since last boot.
 - **Total Run Time**, Total cumulative run time since the last configuration change.
3. Without logging there is access to a few basic menus for diagnostic purposes.
 - **Home**, Always brings you back to Home page
 - **Event log**, View Event log (Errors and Status messages)
 - **Reboot**, Reboot the ATS unit.
 - **Save Configuration**, Creates 2 files including a binary file on the SD memory card that contains all configuration data useful for restoring system configuration on a new or existing ATS unit. The second file is a text file that can be read directly using Microsoft WordPad™.
4. The default factory static IP address to navigate to through your internet browser is 192.168.11.120 and is used for the wired Ethernet port located on the side of the ATS unit. It is recommended to leave this port configured as a static address so it can be easily accessed.

Admin Access Login

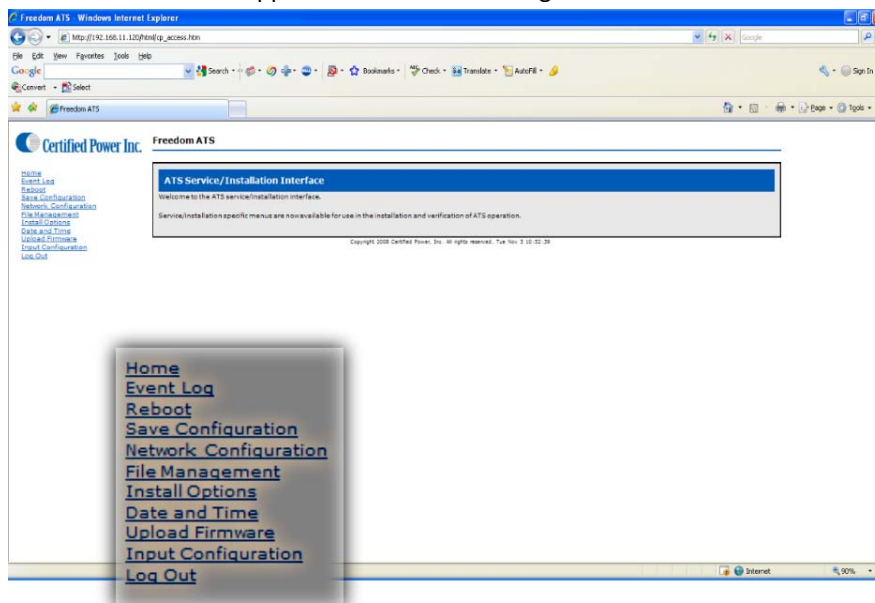
(Setup and Configuration cont.)

- Click on  logo to gain access to login dialog box. You must log-in as Administrator to make configuration changes to the ATS unit. The user name and password are case sensitive and must be entered exactly as shown below.
 - The administrator login name is "CP Service"
 - The password is "847-573-3800"



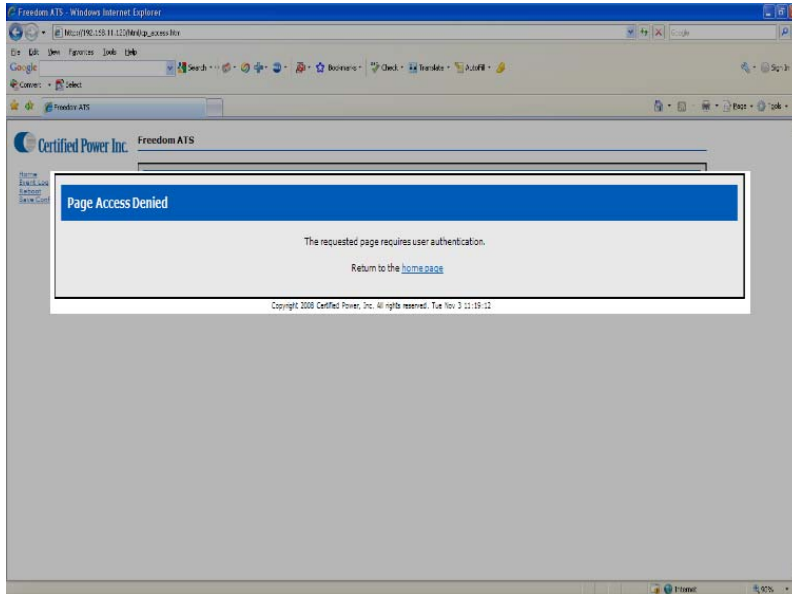
Main menu

- The HOME menu screen will appear after a successful login.



- If you have a problem logging in you will see the "page Access denied". (see next page)

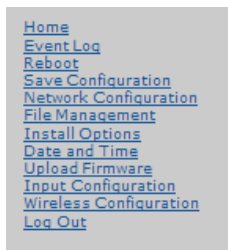
- Page Access Denied screen shown after failed login.



Menus and sub-menus (Setup and Configuration cont.)

Purpose: The menu tree always appears on the left of the web page. You can click on any item visible on the tree. The menu seen below is present after successfully logging in as an administrator. When changing items on a particular page be sure to “APPLY” any changes before leaving the page or the changes will be thrown away.

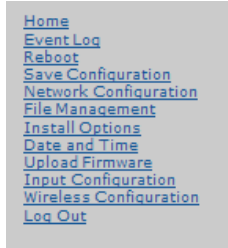
- **Home**, Clicking home always brings you back to the Home screen (The first screen viewed after successfully connecting to the ATS web server).
- **Event Log**, If “Verbose” logging is enabled you can view STATUS and ERROR logging here.
- **Reboot**, After completing changes on any webpage it is necessary to reboot to have changes take effect.
- **Save Configuration**, Creates 2 files including a binary file on the SD memory card that contains all configuration data useful for restoring system configuration on a new or existing ATS unit. The second file is a text file that can be read directly using Microsoft WordPad™.
- **Network Configuration**, Change settings relating to the physical setup of network connections (TCP/IP).
- **File Management**, View current database files in flash memory or see data records or config files saved to the FAT file system located on the SD memory card. It is also possible to select a new database file (NvDbDp.bin or ATSconfig.bin) if one is has been saved.
- **Install Options**, The application and hardware setup occurs on this screen.



Menus and sub-menus continued (on next page) (Setup and Configuration cont.)

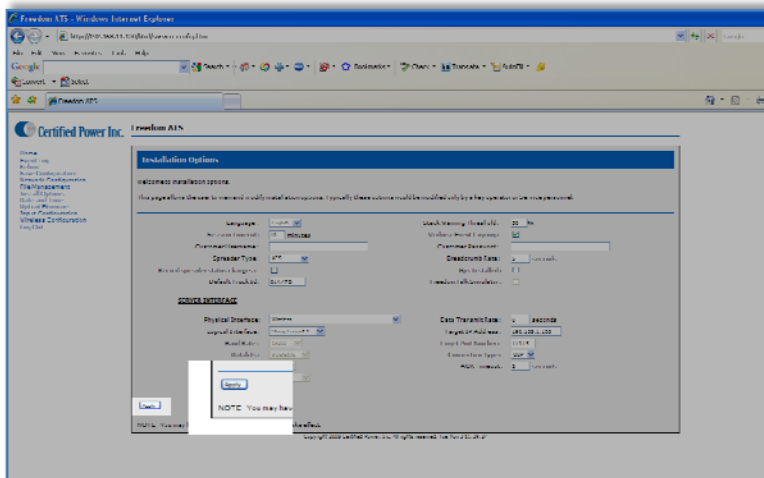
(Setup and Configuration cont.)

- **Date and Time**, Set current Date and Time
- **Upload Firmware**, If it's necessary to upgrade the firmware (functional code) then use this screen to select the **image.bin**, and **ROM.bin** file
- **Input Configuration**, Every system has 8 configurable digital inputs. Configure them in software with Pull-ups, Pull-Downs and define their logical function.
- **Wireless Configuration**, Configure the WLAN link, See signal strength of the network and setup basic security or advanced encryption settings if encryption is required.
- **Log-Out**, Log-out of your current web session



Applying Changes

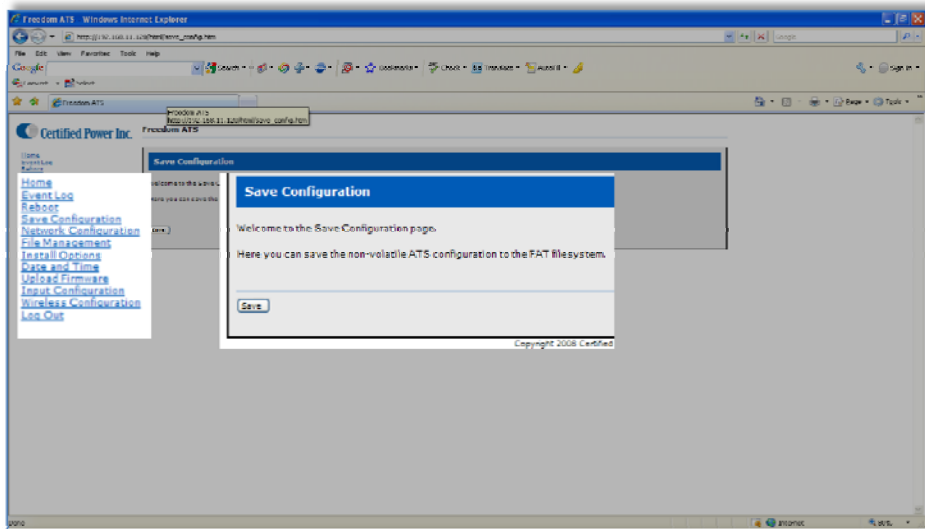
4. After changing variables on a page use the “APPLY” button.



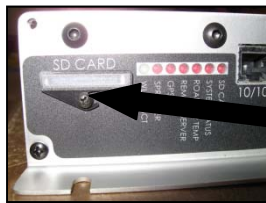
Save a Configuration File

(Setup and Configuration cont.)

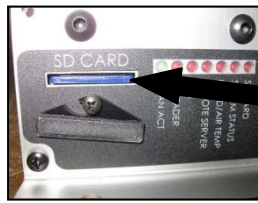
5. When the system is fully operational and all equipment is setup and working you can use the “SAVE Configuration” menu to save all configuration settings into both a binary file and text file location on the SD card. This is especially useful when it’s necessary to set up multiple units in the field.
 - Once a file has been saved on the SD card it is only there for one boot. If the configuration file exists on the card at boot it will replace the configuration in memory and the file on the SD card is deleted. A new file can be saved at anytime you wish to save the settings. When the file is saved any existing file on the SD Card is over-written.
 - Note: To retrieve a configuration file; First save the file using the “Save Configuration” menu. Power down the system. Remove the SD card after removing the Card cover. Using a Card reader on your laptop or desktop copy the files onto your hard drive.
 - It is advisable to keep a copy of the configuration file on your desktop or laptop PC for later retrieval. The file can be used on any ATS unit to install a configuration. Usually only the truck ID field must be updated when programming subsequent ATS systems.
 - The standard file name is `atsconfig.bin`



Removing the SD card



Remove screw partially and rotate cover.



Using your finger nail push the card in to activate the detent ejection of the card.

1. Do not use the ACS system for extended amounts of time without the SD card installed. The onboard memory size is limited and typically should not be used for more than a couple days without download.
2. Re-install the SD card by pushing it in until the detent mechanism clicks and resets itself. The card should be flush to the panel surface. If the system is 'on'; cycle power to the ATS unit so on boot it will find the card. The data written to the on-board memory is then moved to the SD card where the data continues to accumulate from then on.

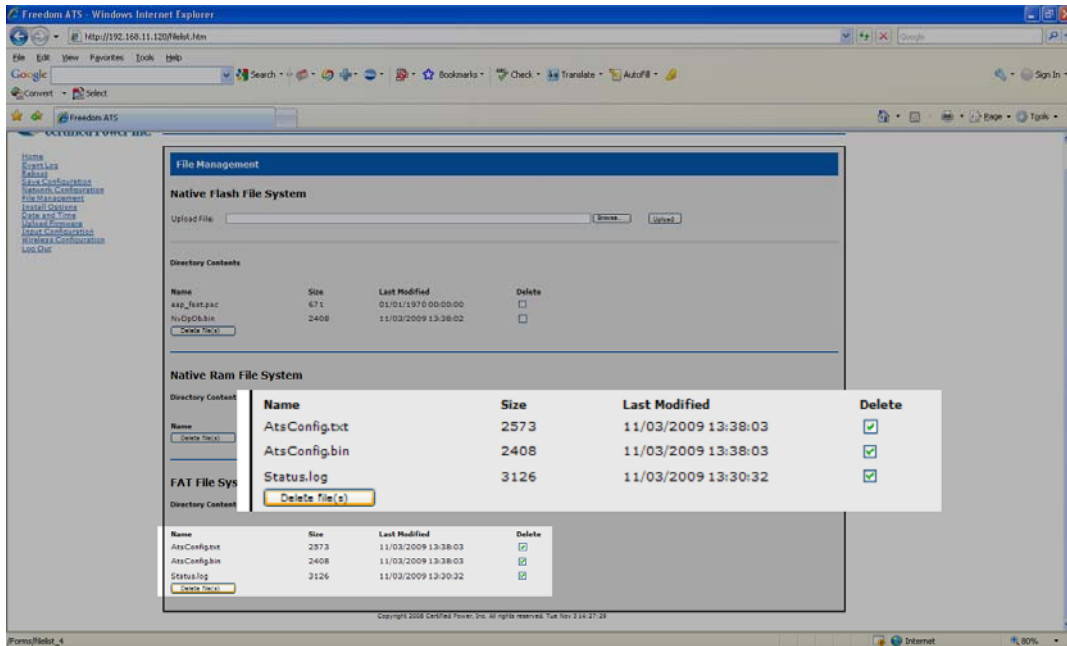
View a saved file

(Setup and Configuration cont.)

6. Use "File Management" screen to view and manage files.
 - The FAT file system refers to the SD Memory card. The native file system refers to the on-board non-removable memory.
 - If programming multiple systems, remove the SD card after saving the file and insert it into an un-configured ATS unit to automatically configure the system. Replace the SD card in an already configured system with one that is blank.
 - Keep a copy of your working configuration (ATSConfig.bin) on your desktop or laptop computer. Use an SD card reader to retrieve a saved AtsConfig.bin file. See the previous section on "Saving a configuration file".

Delete a saved file

- If the Check box is selected under "delete" and the "Delete Files" button is used the selected files will be deleted.
- Because the card is formatted using the FAT32 file system the files can be managed the same as any external drive when the SD card is installed into your Windows PC or Laptop.
- The files shown below are the Configuration files and Status log files. Deleting these will not affect the ATS unit or it's current configuration.



Restoring a saved file

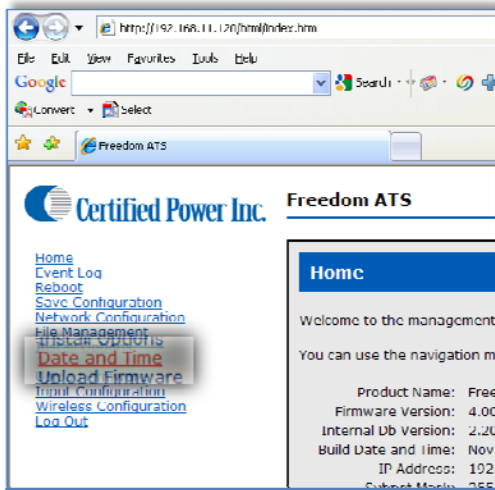
(Setup and Configuration cont.)

7. A system can be restored to it's original setup and configuration by powering-up the ATS unit with an ATSConfig.bin file located on the SD card.
 - Using a SD card reader drag and drop a file onto the SD card. Place the card into the ATS card slot and Power the ATS 'ON' If the file is good the configuration will be loaded into the unit.
 - Use the file management screen to confirm the file is no longer on the SD card. If the file is no longer listed then the file and all the associated settings were loaded into the system.

Setting Time and Date

(Setup and Configuration cont.)

Click on the “Date and Time” menu item



- **Daylight savings enabled**, If you would like to account for daylight savings check this box.
- **Daylight Savings Time**, Lets you know if you are *in* or *out* of Day-light Savings time. This is based on current set date.
- **Local Date**, Local Date is always updated from recent data received from the GPS satellite. While the satellite signal is being received then the date is automatically set by Satellite. The fields will be grayed out and cannot be changed. Selecting your proper time zone becomes important (see below “Time Zone”). If no GPS receiver is installed or a Satellite signal is not available, then the time and date is maintained locally by the real-time clock and on-board lithium battery back-up. If no GPS is installed the Time and Date will need to be set manually.
- **GMT Date, GMT Time of day** A reference to GMT Greenwich (London) Mean Time. The standard time by which all data is time and date stamped. This data comes from the GPS if installed.
- **Local Time of Day**, Local Time of Day always updated from recent data received from the GPS satellite. While the satellite signal is being received then the time is automatically set by Satellite. The fields will be grayed out and cannot be changed. Selecting your proper time zone becomes important (see below). If no GPS receiver is installed or a Satellite signal is not available, then the time and date is maintained locally by the real-time clock and on-board lithium battery back-up. If no GPS is installed the Time and Date will need to be set manually.

Note: The GPS antenna must have an unobstructed view of the sky to receive a satellite signal.

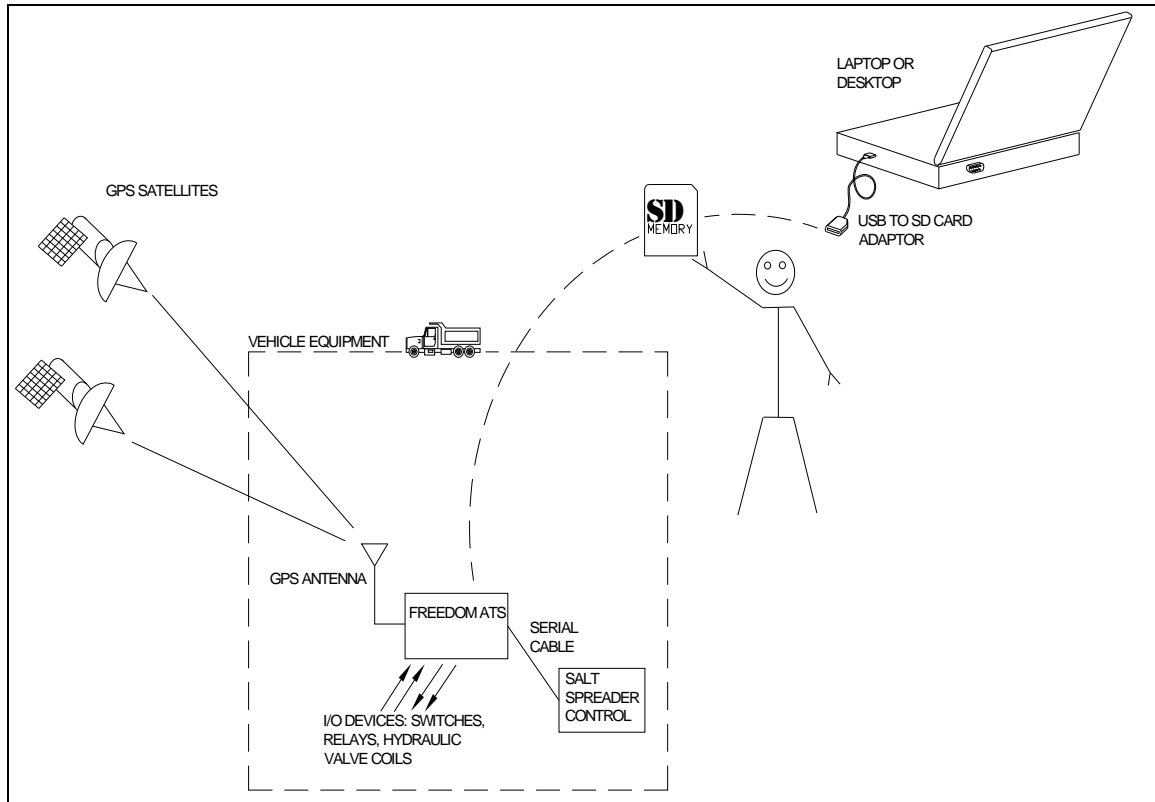
- **Time Zone**, Enter your time zone to set the correct offset from GMT time.

Daylight Savings Enabled :	<input type="checkbox"/>	Time Zone :	USA Central
Daylight Savings Time :	Out	Local Time of Day :	15 : 15 : 42
Local Date :	03 / 18 / 2009	GMT Time of Day :	20:15:42
GMT Date :	03/18/2009		

Manual Data Transfer Application Guide (Removable Data storage)

Freedom ATS using basic data collection with the following features:

- Time and location stamped data collection.
- GPS based vehicle tracking
- Material data capture
- Driver initiated Way-point logging (Optional)



Equipment required.

(Manual Data transfer continued)

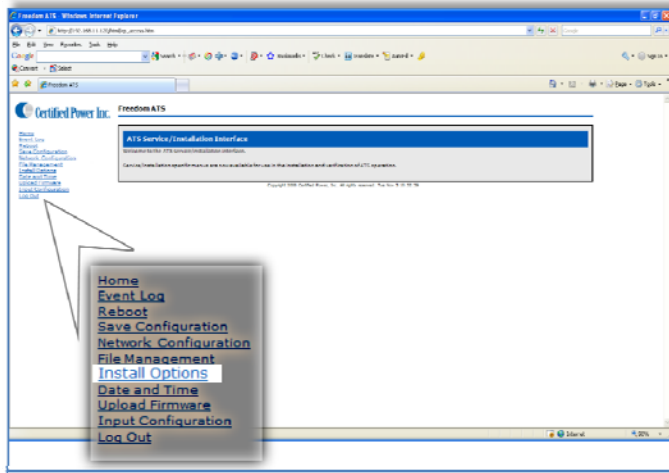
- Freedom ATS unit SG07040074 (without GPS) or SG07040078 (with GPS)
- ATS Server Software part# SGS00300100001
- Optional ATS Database Reporting Software SGS00300100002
- Basic tools to mount the ATS device and route and splice the wire harness into the vehicle.

Summary of hardware installation steps

- Install the ATS Server Software on a PC.
- Securely mount ATS device into the vehicle. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Attach fused primary Battery and ground wires to devices
- Attach serial cable to spreader controller. The SG07050645 is for use with the ACS, or SG07050056 for use with the GL400. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Install GPS window antenna. (If device is has onboard GPS receiver)
- Attach wired Ethernet connection between laptop and ATS device
- Run through configuration steps as detailed below to complete installation

Configure an Application using Manual Data transfer

1. Click on "Install Options". The application and hardware setup occurs on this screen.



Note: As you 'Mouse' over items on this screen "help messages" are displayed on the bottom of the page .

Installation Options

Welcome to installation options.

(this page allows the user to view and modify installation options. typically these options would be modified only by a key operator or Service personnel.

Language : <input type="text" value="English"/>	Stack Warning Threshold : <input type="text" value="50"/> %
Session Timeout : <input type="text" value="10"/> minutes	Verbose Event Logging : <input checked="" type="checkbox"/>
Customer Username : <input type="text" value="password"/>	Customer Password : <input type="text" value="password"/>
Spreader Type : <input type="text" value="ACS"/>	Breadcrumb Rate : <input type="text" value="5"/> seconds
Record spreader status changes : <input type="checkbox"/>	Gps Installed : <input type="checkbox"/>
Default Truck Id : <input type="text" value="01AA7D"/>	

SERVER INTERFACE

Physical Interface : <input type="text" value="None"/>	Data Transmt Rate : <input type="text" value="0"/> seconds
Logical Interface : <input type="text" value="String Format 1"/>	Target IP Address : <input type="text" value="192.168.1.106"/>
Baud Rate : <input type="text" value="19200"/>	Target Port Number : <input type="text" value="11015"/>
Databits : <input type="text" value="8 Databits"/>	Connection Type : <input type="text" value="UDP"/>
Parity : <input type="text" value="None"/>	ACK Timeout : <input type="text" value="2"/> seconds
Flow Control : <input type="text" value="None"/>	

NOTE - You may have to reboot for some changes to take effect.

2. **Language**, Select the language used on the WebPages.
3. **Session Timeout**, How long before you are automatically logged out (when there is no activity)
4. **Customer Username, Customer Password**, If you would like to add your own Administrator LOGIN name and PASSWORD use these two fields. Use any Alpha numeric text. Remember it is case sensitive. The password field can be left blank but is not recommended for security reasons.
5. **Stack Warning Threshold**: Set to 50%
6. **Verbose Event Logging**: If 'ON' detailed logs are recorded for help in troubleshooting. Leave this unchecked unless troubleshooting a problem. This increases system resources such as memory.

Language : <input type="text" value="English"/>	Stack Warning Threshold : <input type="text" value="50"/> %
Session Timeout : <input type="text" value="10"/> minutes	Verbose Event Logging : <input checked="" type="checkbox"/>
Customer Username : <input type="text" value="password"/>	Customer Password : <input type="text" value="password"/>

(Manual Data transfer continued)

- **Spreader Type**, Select from the drop-down menu the Salt Spreader you have connected to the "Spreader" serial port on the ATS device.

- **Server Interface**, For manual data transfer choose NONE for the Server Physical interface

- **Server Logical Interface**, Logical Interface is not applicable for Manual Data Transfer.

- **Breadcrumb rate**, Set the rate for which sequential records are stored. Range is 3 to 9999 seconds.

- **GPS Installed**, If your ATS device is equipped with a GPS check this box to enable it. ATS Part# SG07040078 would include GPS. ATS Part# SG07080074 would not include GPS.

- **Target IP address**, Not applicable for manual data transfer

- **Target Port Number**, Not applicable for manual data transfer

- **Connection Type**, Not applicable for manual data transfer

- **ACK Timeout**: Not applicable for manual data transfer

Installation Options

Welcome to installation options.
This page allows the user to view and modify installation options. Typically these options would be modified only by a key operator or Service personnel.

Language : english
Session Timeout : 10 minutes
Customer Username : password
Spreader type : ACS
Record spreader status changes : | |
Default Truck Id : 01AA7D

Stack Warning Threshold : 50 %
Verbose Event Logging :
Customer Password : password
Breadcrumb Rate : 5 seconds
Gps Installed : | |

SERVER INTERFACE

Physical Interface : None
Logical Interface : String Format 1
Baud Rate : 19200
Databits : 0 Databits
Parity : None
Flow Control : None

Data Transmit Rate : 0 seconds
Target IP Address : 192.168.1.106
Target Port Number : 11015
Connection Type : UDP
ACK Timeout : 2 seconds

Apply

NOTE - You may have to reboot for some changes to take effect.

Maintenance.

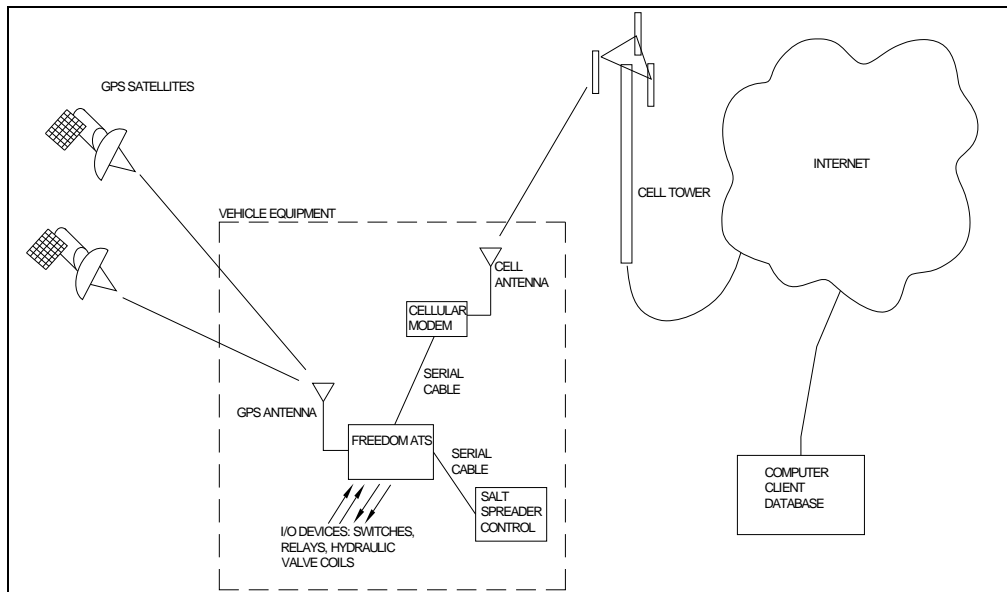
(Manual Data transfer continued)

1. Periodically (Per shift, per week, or per month) remove the SD card from the ATS unit. Install the card into your PC or laptops SD card reader using the "ATS Server" software tool part# SGS00300100001 to read the SD Card, moving all the data into a CSV file or into the optional ATS Database Reporting Software SGS00300100002.
2. Replace the SD Card when finished. The ATS has onboard memory that can be utilized during the time the SD card is out of the unit. It is limited to 512k bytes however (About 12 hours at a 5 second breadcrumb). Using 2 cards in a rotation works well also.

Cellular Modem Application Guide (Real-time cellular data transfer):

Freedom ATS using GPS location and REAL-TIME CELLULAR DATA TRANSFER with the following features:

- GPS based vehicle tracking
- Real-time Cellular Data Link
- Material data capture
- Driver initiated Way-point logging (Optional)



Equipment required.

(real time cellular continued)

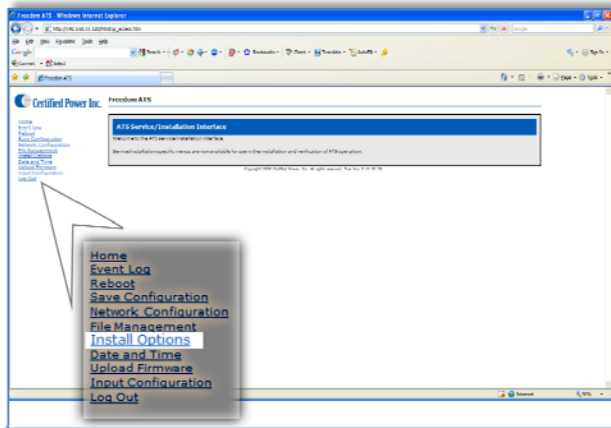
- Freedom ATS unit SG07040074(without GPS) or SG07040078(with GPS)
- ATS Server Software part# SGS00300100001
- Optional ATS Database Reporting Software SGS00300100002
- Basic tools to mount the ATS device and route and splice the wire harness into the vehicle.

Summary of hardware installation steps

- Securely mount ATS device. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Securely install cellular modem using the modem manufacturer's instructions.
- Attach fused primary battery and ground wires to devices
- Attach serial cable to spreader controller. The SG07050645 is for use with the ACS, or SG07050056 for use with the GL400. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Install GPS window antenna. (If device is has onboard GPS receiver
- Attach wired Ethernet connection between laptop and ATS device
- Run through configuration steps as detailed below to complete installation

Configure an Application using Real-time Cellular
(real time cellular continued)

1. Click on the "Install Options" Menu



Click on "Install Options", The application and hardware setup occurs on this screen.

Note: As you 'Mouse' over items on this screen "help messages" are displayed on the bottom of the page.

Installation Options

Welcome to installation options.

This page allows the user to view and modify installation options. Typically these options would be modified only by a key operator or Service personnel.

Language : <input type="text" value="English"/> Session Timeout : <input type="text" value="10"/> minutes Customer Username : <input type="text" value="password"/> Spreader Type : <input type="text" value="ACS"/> Record spreader status changes : <input type="checkbox"/> Default Truck Id : <input type="text" value="01AA7D"/>	Stack Warning Threshold : <input type="text" value="50"/> % Verbose Event Logging : <input checked="" type="checkbox"/> Customer Password : <input type="text" value="password"/> Breadcrumb Rate : <input type="text" value="5"/> seconds Gps Installed : <input type="checkbox"/>
SERVER INTERFACE	
Physical Interface : <input type="text" value="None"/> Logical Interface : <input type="text" value="String Format 1"/> baud Rate : <input type="text" value="19200"/> Databits : <input type="text" value="8 Databits"/> Parity : <input type="text" value="None"/> Flow Control : <input type="text" value="None"/>	Data Transmit Rate : <input type="text" value="0"/> seconds Target IP Address : <input type="text" value="192.168.1.100"/> Target Port Number : <input type="text" value="11015"/> Connection Type : <input type="text" value="UDP"/> ACK Timeout : <input type="text" value="2"/> seconds

NOTE - You may have to reboot for some changes to take effect.

2. **Language**, Select the language used on the WebPages.
3. **Session Timeout**, How long before you are automatically logged out (when there is no activity)
4. **Customer Username, Customer Password**, If you would like to add your own Administrator LOGIN name and PASSWORD use these two fields. Use any Alpha numeric text. Remember it is case sensitive. The password field can be left blank but is not recommended for security reasons.
5. **Stack Warning Threshold**: Set to 50%
6. **Verbose Event Logging**: If 'ON' detailed logs are recorded for help in troubleshooting. Leave this unchecked unless troubleshooting a problem. This increases system resources such as memory.

Language : <input type="text" value="English"/>	Stack Warning Threshold : <input type="text" value="50"/> %
Session Timeout : <input type="text" value="10"/> minutes	Verbose Event Logging : <input checked="" type="checkbox"/>
Customer Username : <input type="text" value="password"/>	Customer Password : <input type="text" value="password"/>

(real time cellular continued)

7. **Spreader Type**, Select from the drop-down menu the Salt Spreader you have connected to the "Spreader" serial port on the ATS device.

Spreader Type : GL400

- GL400
- ACS
- GL400
- Undefined

8. **Server Physical Interface**, Select from the drop down menu the physical medium used to transmit data to the Remote Server. **For this Cellular Application select the Cellular modem you have connected to the Modem serial port. Be sure to choose your specific model from the list.**

Physical Interface : None

- Macom803
- MultiTech(MTCBA-C) CDMA Modem
- MultiTech(MTCBA-G-F4) GSM/GPRS Modem
- CalAmp(LMU4111-N2-G100) IDEN Modem
- Wired Ethernet
- Wireless
- Serial
- None

9. **Server logical Interface**, Choose the format of the data packets sent to the remote server. The ATS Server software is compatible with all three.
 - String Format 1: is used for legacy support of older Certified Power equipment.
 - String Format 2: is used for legacy support of older Certified Power equipment.
 - Freedom talk: This is the new format currently used on new installations.

Logical Interface : String Format 1

- String Format 1
- String Format 2
- Freedom Talk

10. **Breadcrumb rate**, Set the rate for which sequential records are stored. Range is 3 to 9999 seconds.

Breadcrumb Rate : 5 seconds

11. **GPS Installed**, If your ATS device is equipped with a GPS check this box to enable it. ATS Part# SG07040078 would include GPS. ATS Part# SG07080074 would not include GPS.

Gps Installed :

12. **Target IP address**, Set the IP address of the destination host for which the ATS Server Application resides.

Target IP Address : 192.168.11.26

13. **Target Port Number**, Set the port number of the destination host for which the ATS Server or other Host Application resides.

Target Port Number : 11015

14. **Connection Type**, Select your IP protocol layer UDP. UDP is all that is currently supported

Connection Type : UDP

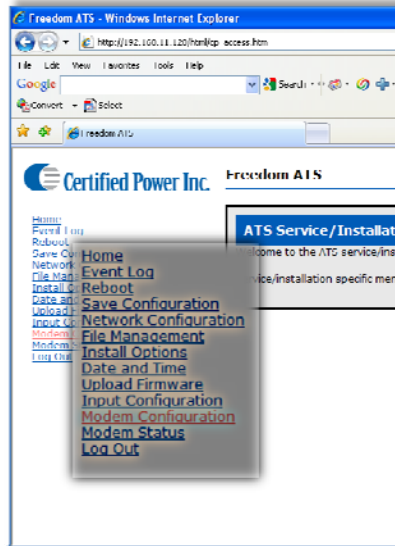
15. **ACK timeout**, Typically this value is set between 2 (recommended) and 5 seconds . This sets the resend rate of each packet of data until an acknowledge has been received for that packet. If set to -0- the ATS sends data without acknowledge from the receiving side. If Acknowledge is not used it is extremely possible for large amounts of data to be lost.

ACK Timeout : 2 seconds

Modem Configuration and setup

(real time cellular continued)

1. Select the "Modem Configuration" page from the menu.



Modem Configuration,

2. For modems selected in the list under Install Options there are always default settings that pre-populate the fields on this screen. However these options are made available and can be changed if necessary. (The example below would be typical of a Multitech CDMA modem)

Modem Configuration

Welcome to the controller modem configuration.

Here you can establish the configuration for the modem currently assigned as the server physical interface.

Dial up Number :

Network/Access Point Name :

Toggle DTR :

No Authentication to Remote Peer : No Authentication from Remote Peer :

Use PAP to Remote Peer : Use PAP from Remote Peer :

Use CHAP to Remote Peer : Use CHAP from Remote Peer :

PAP Username :

PAP Password :

CHAP Username :

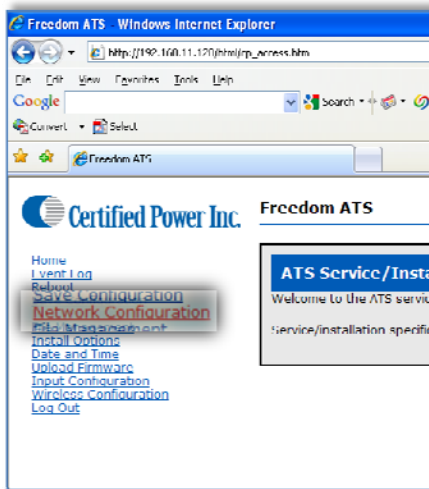
CHAP Password :

NOTE - You must reboot for changes to take effect.

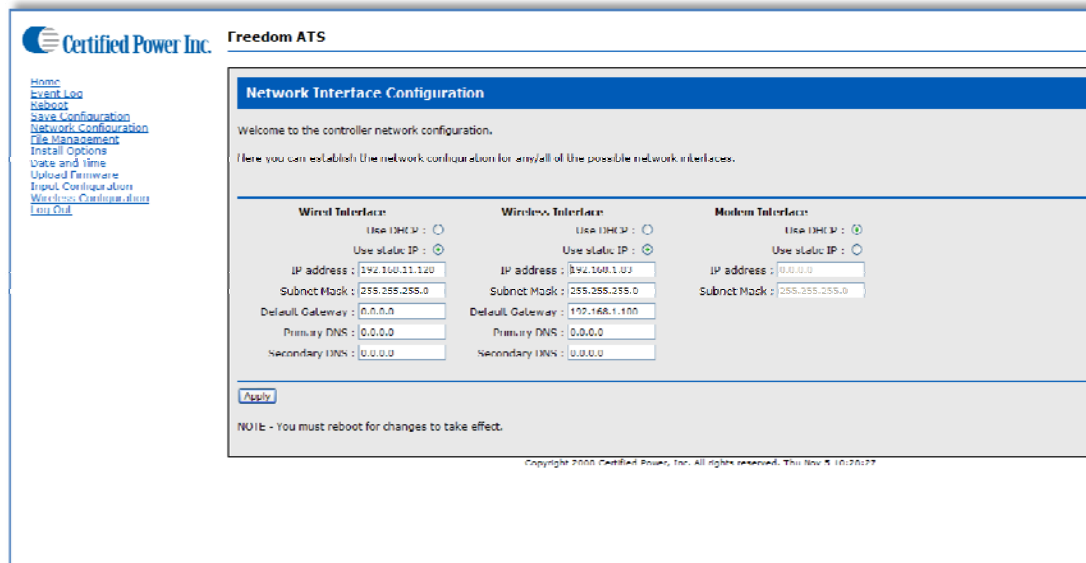
Network Configuration

(real time cellular continued)

1. Click the “Network Configuration” Settings page.



2. It is recommended that you leave the default **WIRED** address as it is, and ALWAYS as a static address. If you change the address please note it for future reference. NEW address: [HTTP://](http://192.168.1.100). The static address insures the ability to connect to the Web Server at any time regardless of network services like DHCP.
3. A Cellular Modem Application would typically be set to DHCP.
4. When configured under “Install Options” for Cellular modem use, the Wireless Interface is disabled for any ATS device even if you are using an ATS that is Wi-Fi equipped.



Maintenance

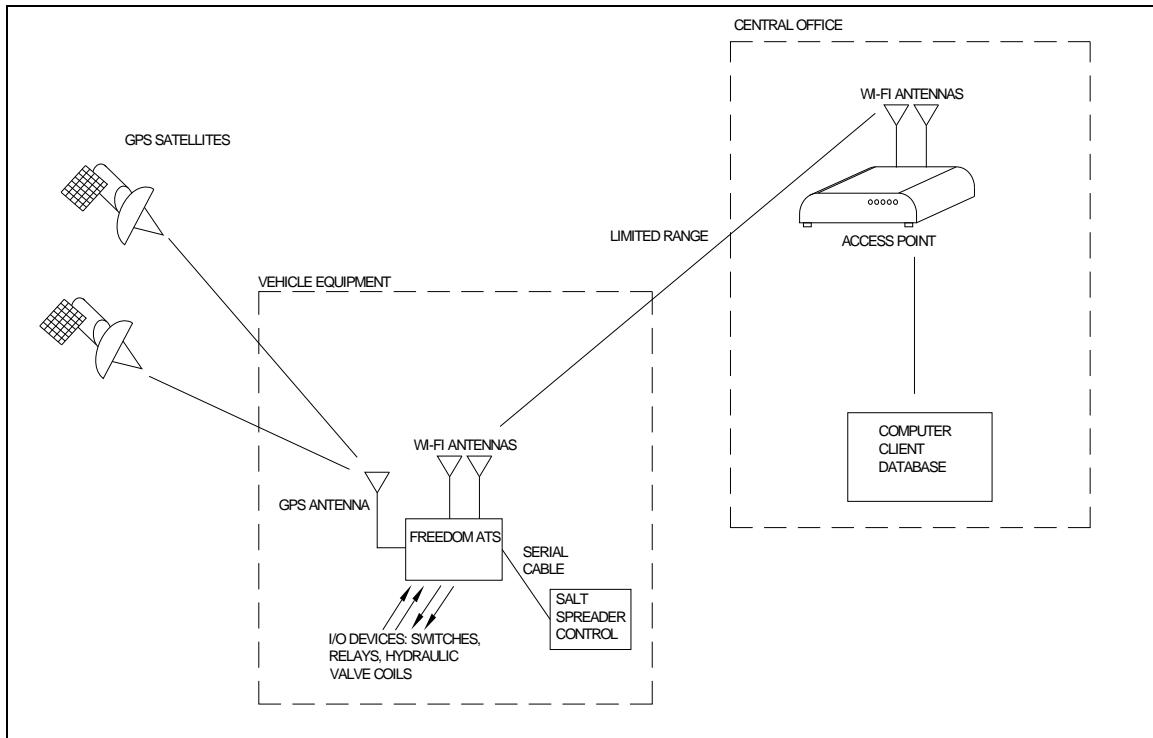
1. The cellular modem application requires no maintenance or user intervention for normal operation within the vehicle.
2. Additional tools used for diagnosis of modem problems exist in the “Diagnostics tools/Troubleshooting “ section.

3.

Drive-by Download Application Guide (Wi-Fi)

Freedom ATS using GPS location and DRIVE-BY DOWNLOAD data transfer with the following features:

- GPS based vehicle tracking
- Built in Wi-Fi device for data transfer
- Material data capture
- Driver initiated Way-point logging (Optional)



Equipment required.

(Wi-Fi drive-by continued)

- Freedom ATS unit part#SG07040073
- Wi-Fi access point.
- ATS Server Software part# SGS00300100001
- Optional ATS Database Reporting Software SGS00300100002
- Basic tools to mount the ATS device and route and splice the wire harness into the vehicle.

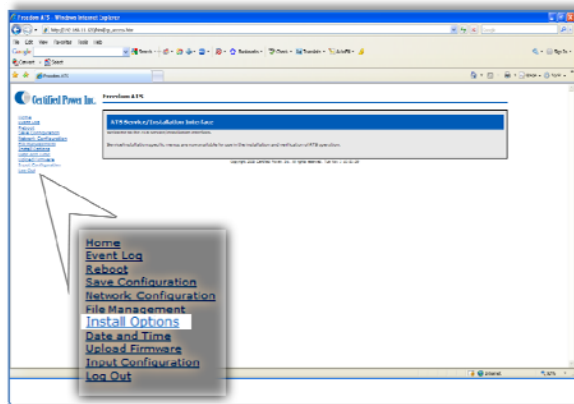
Summary of hardware installation steps
(Wi-Fi drive-by continued)

- Securely mount ATS device. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Attach fused primary Battery and ground wires to devices
- Attach serial cable to spreader controller. The SG07050645 is for use with the ACS, or SG07050056 for use with the GL400. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Install GPS window antenna.
- Install BOTH Wi-Fi antennas for full signal strength.
- Attach wired Ethernet connection between laptop and ATS device
- Run through configuration steps as detailed below to complete installation

Using your browser to connect to the Web configuration tool as described in the previous section “Accessing the Web Server”.

Configure a Wi-Fi Drive-by Application

1. Click on “Install Options”, The application and hardware setup occurs on this screen.



Note: As you ‘Mouse’ over items on this screen “help messages” are display on the bottom of the page .

Installation Options

Welcome to installation options.

This page allows the user to view and modify installation options. Typically these options would be modified only by a key operator or Service personnel.

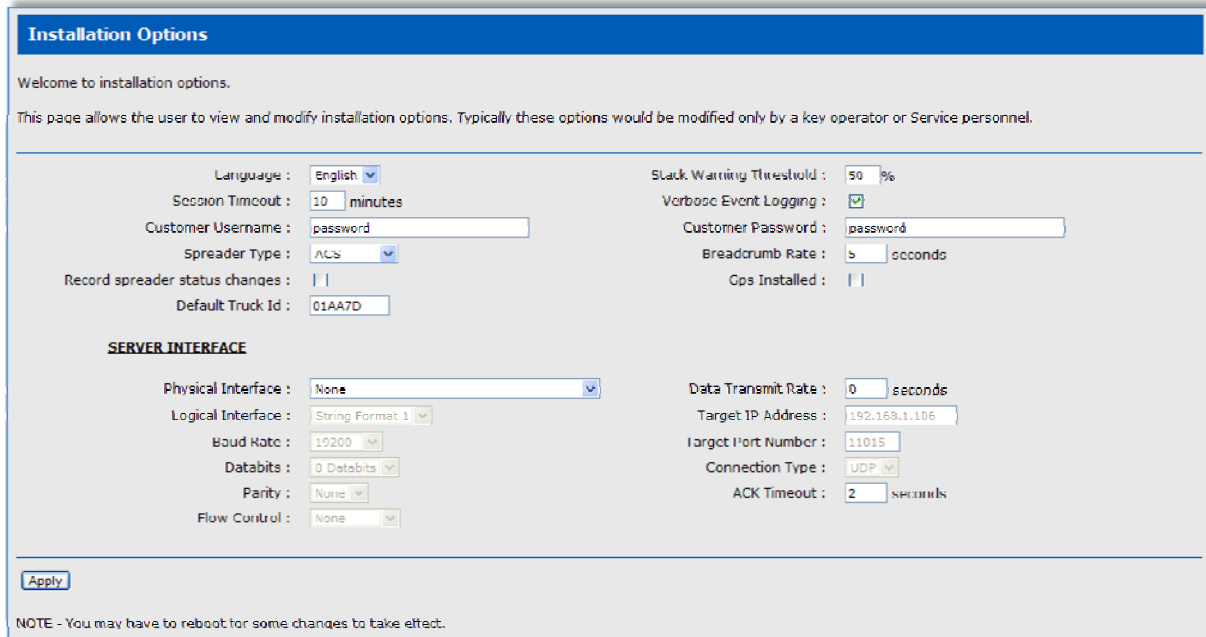
Language : english	Stack Warning Threshold : 50 %
Session Timeout : 10 minutes	Verbose Event Logging : <input checked="" type="checkbox"/>
Customer Username : password	Customer Password : password
Spreader type : ACS	Breadcrumb Rate : 5 seconds
Record spreader status changes :	Gps Installed :
Default Truck Id : 01AA7D	

SERVER INTERFACE

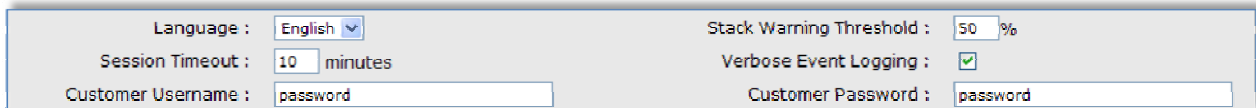
Physical Interface : None	Data Transmit Rate : 0 seconds
Logical Interface : String Format 1	Target IP Address : 192.168.1.106
Baud Rate : 19200	Target Port Number : 11015
Databits : 0 Databits	Connection Type : UDP
Parity : None	ACK Timeout : 2 seconds
Flow Control : None	

NOTE - You may have to reboot for some changes to take effect.

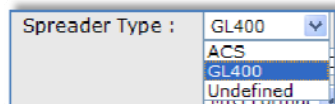
(Wi-Fi drive-by continued)



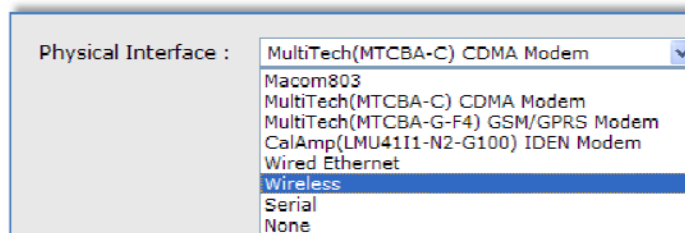
2. **Language**, Select the language used on the WebPages.
3. **Session Timeout**, How long before you are automatically logged out (when there is no activity)
4. **Customer Username, Customer Password**, If you would like to add your own Administrator LOGIN name and PASSWORD use these two fields. Use any Alpha numeric text. Remember it is case sensitive. The password field can be left blank but is not recommended for security reasons.
5. **Stack Warning Threshold**: Set to 50%
6. **Verbose Event Logging**: If 'ON' detailed logs are recorded for help in troubleshooting. Leave this unchecked unless troubleshooting a problem. This increases system resources such as memory.



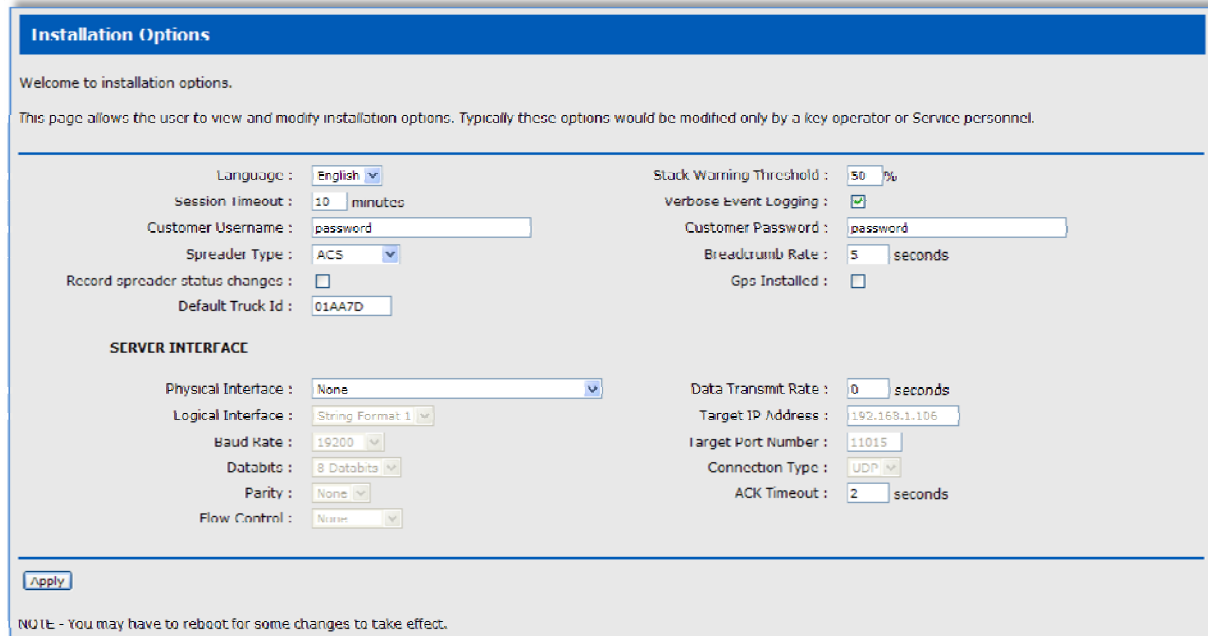
7. **Spreader Type**, Select from the drop-down menu the Salt Spreader you have connected to the "Spreader" serial port on the ATS device.



8. **Server Physical Interface**, Select from the drop down menu the physical medium used to transmit data to the Remote Server. **For this drive-by-download application select "Wireless"**.

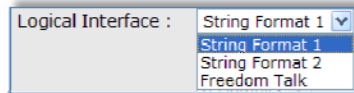


(Wi-Fi drive-by continued)

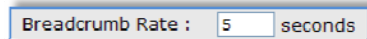


9. **Server logical Interface**, Choose the format of the data packets sent to the remote server. The ATS Server software is compatible with all three.

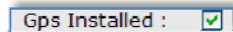
- String Format 1: is used for legacy support of older Certified Power equipment.
- String Format 2: is used for legacy support of older Certified Power equipment.
- Freedom talk: This is the new format currently used on new installations.



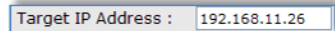
10. **Breadcrumb rate**, Set the rate for which sequential records are stored. Range is 3 to 9999 seconds.



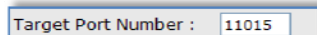
11. **GPS Installed**, If your ATS device is equipped with a GPS check this box to enable it. The standard Wi-fi enabled ATS part# SG07040073 includes a GPS receiver.



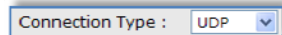
12. **Target IP address**, Set the IP address of the destination host for which the ATS Server Application resides.



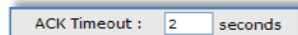
13. **Target Port Number**, Set the port number of the destination host for which the ATS Server or other Host Application resides.



14. **Connection Type**, Select your IP protocol layer UDP. UDP is all that is currently supported



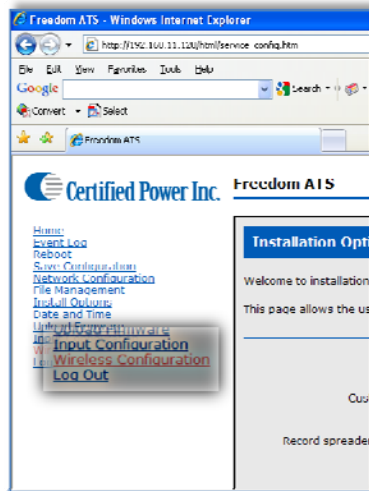
15. **ACK timeout**, Typically this value is set between 2 (recommended) and 5 seconds . This sets the resend rate of each packet of data until acknowledge has been received for that packet. If set to -0- the ATS sends data without acknowledge from the receiving side. If Acknowledge is not used it is extremely possible for large amounts of data to be lost.



Wireless Configuration.

(Wi-Fi drive-by continued)

1. Select the Wireless Configuration page from the menu. The “Wireless Configuration” is only visible if the “Wireless” option has been chosen under “Installation Options” the “Physical interface”



2. It will be necessary to add your wireless access point settings/passwords/and configure levels of encryption if required using this page.

Note: Also Access-point signal strength is displayed on the page.

Note: As Different Authentication methods and Encryption methods are selected fields that do not pertain to those methods will gray out.

Below is an EAP Fast setup example. A “PAC” file is stored in on-board flash memory and can be seen through the “File Management” menu after successfully connecting to the to your gateway for the first time.

Wireless Configuration

Network Type: Join Any type	Signal Strength: 0 dBm	AP In Range Delay: 0 secs
Network Name/SSID: freedomAP	Receive Rate: 0 kbps	ON Time: 1000 milliseconds
Frequency Band: Band B/G only		OFF Time: 0 milliseconds
Channel: 7	Channel used: 0	
Max Xmit Rate (Mbps): 54	Fragmentation Threshold: 1536 bytes	
Transmit Power Level: Maximum dBm	RTS Threshold: 0 bytes	

Authentication: Cisco EAP FAST		
Data Encryption: CCMP (AES)	Outer EAP Methods	Inner EAP Methods
Passphrase: 	PEAP <input type="checkbox"/>	GTC <input type="checkbox"/>
Login: truck1	TLS <input type="checkbox"/>	MD5 <input type="checkbox"/>
Password: •••••	TTLS <input type="checkbox"/>	MSCHAP2 <input type="checkbox"/>
		OTP <input type="checkbox"/>
WEP Encryption: 40-bit		TTLS/CHAP <input type="checkbox"/>
Default WEP Key Index: 1		TTLS/MSCHAP <input type="checkbox"/>
WEP key 1: 012345ABCD		TTLS/MSCHAP2 <input type="checkbox"/>
WEP key 2: 012345ABCD		TTLS/PAP <input type="checkbox"/>
WEP key 3: 012345ABCD		
WEP key 4: 012345ABCD		

Other Options		
<input type="checkbox"/> Antenna Diversity		
<input type="checkbox"/> Short Preamble		
<input type="checkbox"/> Certificate Verification		
<input type="checkbox"/> Use 802.11b rates ONLY		
<input type="checkbox"/> RTS/CTS Protection Frames		
<input type="checkbox"/> Fixed Transmit Rate		
<input type="checkbox"/> Multi domain(802.11d)		
<input type="checkbox"/> Wi-Fi Duty Cycling		
<input type="checkbox"/> Spectrum management(802.11h)		

Apply

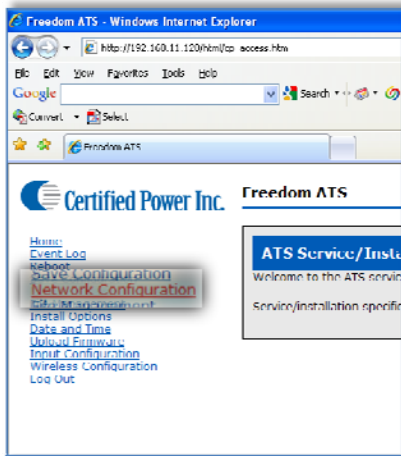
NOTE - You must reboot for changes to take effect.

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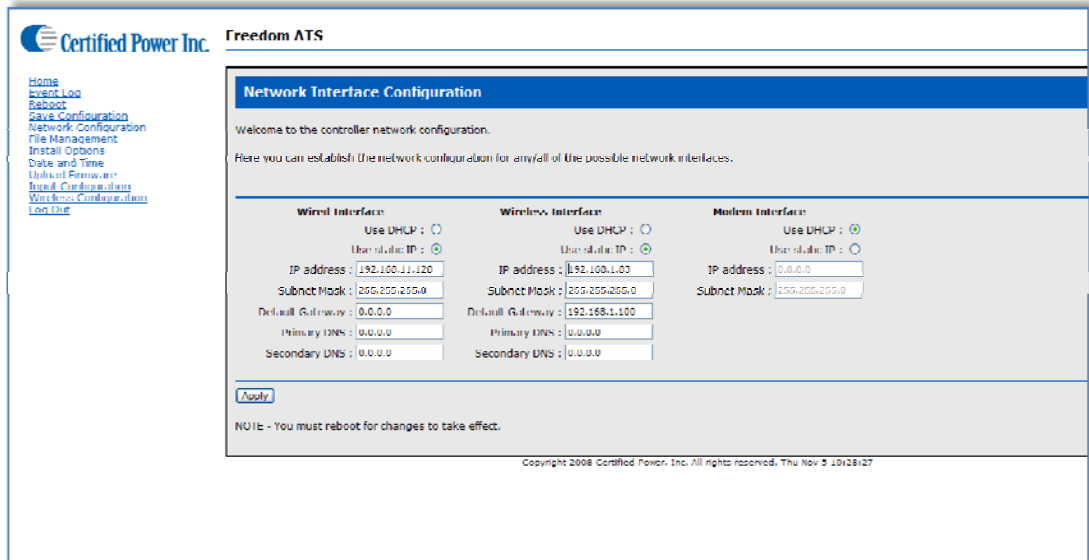
Network Configuration

(Wi-Fi drive-by continued)

1. Click the "Network Configuration" Settings page.



2. It is recommended that you leave the default **WIRED** address as it is, and ALWAYS as a static address. If you change the address please note it for future reference. NEW address: [HTTP://. . .](http://. . .). The static address insures the ability to connect to the Web Server at any time regardless of network services like DHCP.
3. The Wireless Interface typically would be left as DHCP. However each Access point must have DHCP service is available. If DHCP is a problem then a static address may be used such as the example listed below. A gateway may or may not be required for network routing. Check with your Systems Administrator.



Maintenance

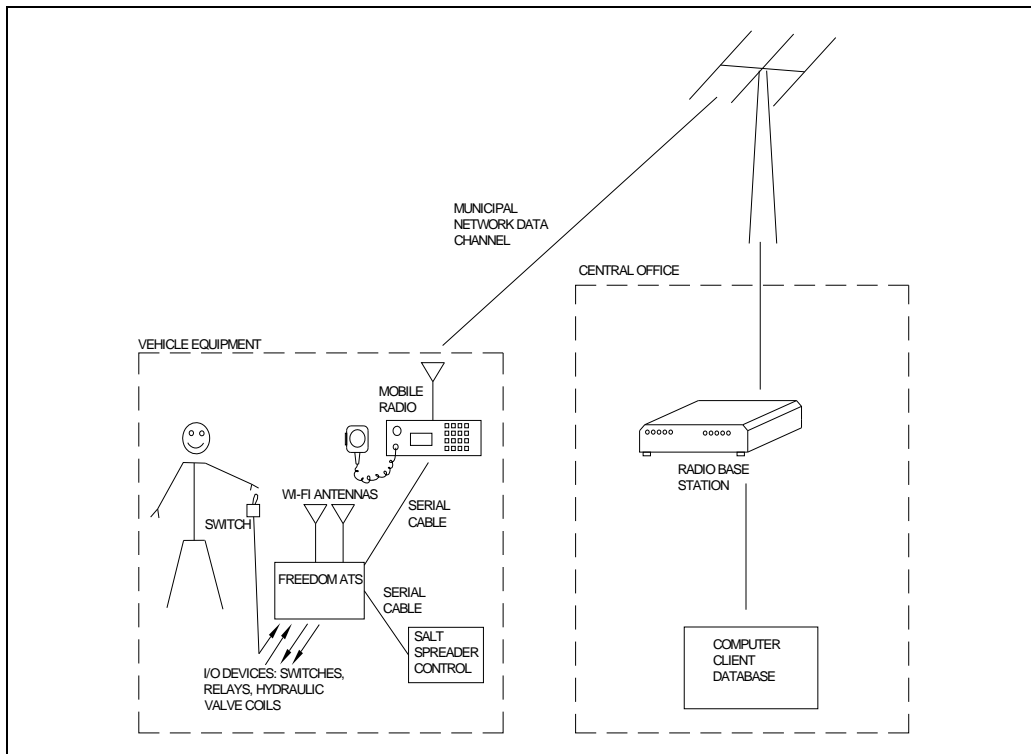
1. All configuration and maintenance through the Web Server is available using the Wireless port when the vehicle is on the network.
2. The Drive-by-download application requires no maintenance or user intervention for normal operation within the vehicle.

Push-button Data-Download Over 2-Way Radio

(Usable however with any IP gateway methodology)

Freedom ATS using GPS location and DRIVE-BY DOWNLOAD data transfer with the following features:

- Can be used with Mobile-2way radios where data transmissions need to be limited
- Optional Wi-Fi for use during setup process
- Material data capture or Storm totals download and forwarding
- Driver initiated Way-point logging (Optional)



Equipment required.

- Freedom ATS unit SG07040074 (without GPS) or SG07040078(with GPS) or SG07040073 (Wi-fi and GPS)
- Digital 2-way radio system with data channel
- ATS Server Software part# SGS00300100001
- Optional ATS Database Reporting Software SGS00300100002
- Basic tools to mount the ATS device and route and splice the wire harness into the vehicle.

Summary of hardware installation steps

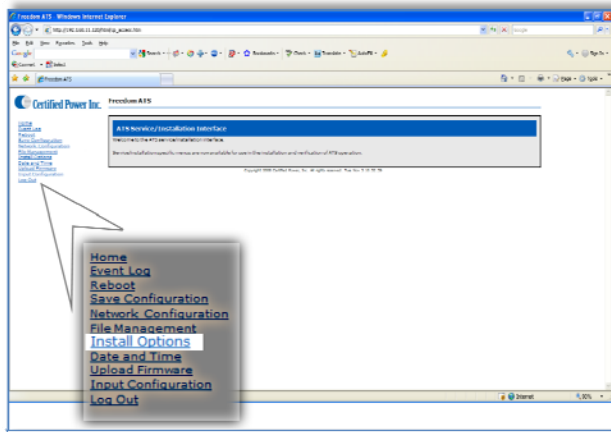
(Push-button data download continued)

- Securely mount ATS device. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Attach fused primary Battery and ground wires to devices
- Attach serial cable to spreader controller. The SG07050645 is for use with the ACS, or SG07050056 for use with the GL400. Use the INSTALLATION and WIRING AND CABLE LAYOUT pictorials as a guide.
- Install GPS window antenna. (If unit equipped with GPS ATS part# SG07040078, or SG07040073)
- Install BOTH Wi-Fi antennas for full signal strength. (If unit has Wi-Fi ATS part#SG07040073)
- Attach wired Ethernet connection between laptop and ATS device
- Run through configuration steps as detailed below to complete installation

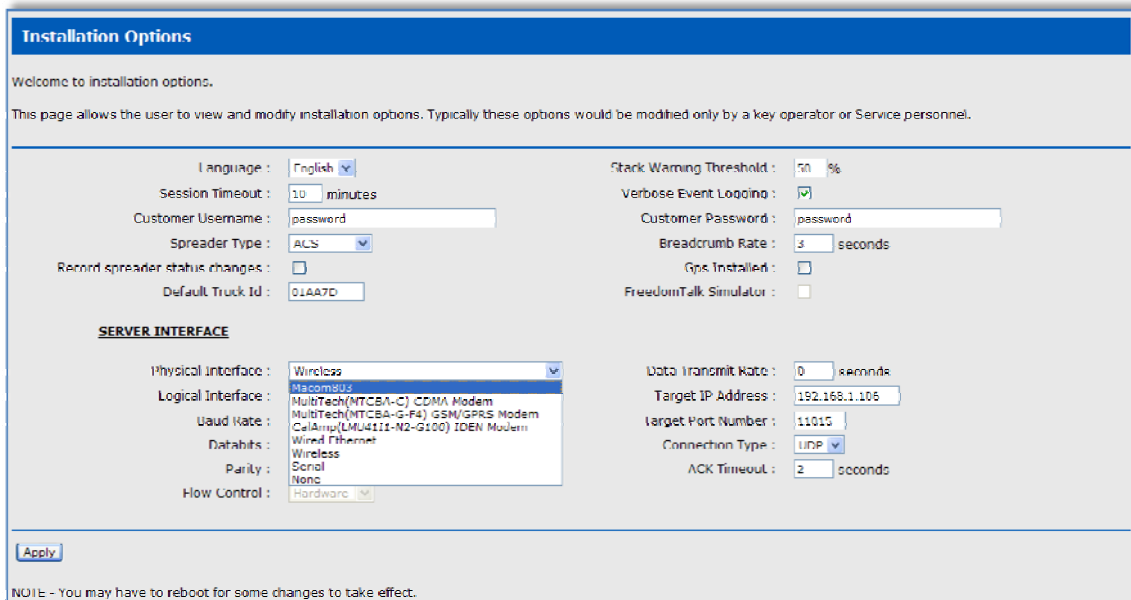
Using your browser connect to the Web configuration tool as described in the previous section “Accessing the Web Server”.

Configure an Application using Push Button Data-download over a 2-way radio.

1. Click on “Install Options”, The application and hardware setup occurs on this screen.



Note: As you ‘Mouse’ over items on this screen “help messages” are display on the bottom of the page .



(Push-button data download continued)

2. **Language**, Select the language used on the WebPages.
3. **Session Timeout**, How long before you are automatically logged out (when there is no activity)
4. **Customer Username, Customer Password**, If you would like to add your own Administrator LOGIN name and PASSWORD use these two fields. Use any Alpha numeric text. Remember it is case sensitive. The password field can be left blank but is not recommended for security reasons.
5. **Stack Warning Threshold**: Set to 50%
6. **Verbose Event Logging**: If 'ON' detailed logs are recorded for help in troubleshooting. Leave this unchecked unless troubleshooting a problem. This increases system resources such as memory.

7. **Spreader Type**, Select from the drop-down menu the Salt Spreader you have connected to the "Spreader" serial port on the ATS device.

8. **Server Physical Interface**, Select from the drop down menu the physical medium used to transmit data to the Remote Server. **For this push-button data-download application we will select the Macom radio but any Physical Interface (IP gateway) can be used for this.**

(Push-button data download continued)

9. **Server logical Interface**, Choose the format of the data packets sent to the remote server. The ATS Server software is compatible with all three.

- String Format 1: is used for legacy support of older Certified Power equipment.
- String Format 2: is used for legacy support of older Certified Power equipment.
- Freedom talk: This is the new format currently used on new installations.

10. **Breadcrumb rate**, Set the rate for which sequential records are stored. Range is 3 to 9999 seconds.

11. **GPS Installed**, If your ATS device is equipped with a GPS check this box to enable it.

12. **Target IP address**, Set the IP address of the destination host for which the ATS Server Application resides.

13. **Target Port Number**, Set the port number of the destination host for which the ATS Server or other Host Application resides.

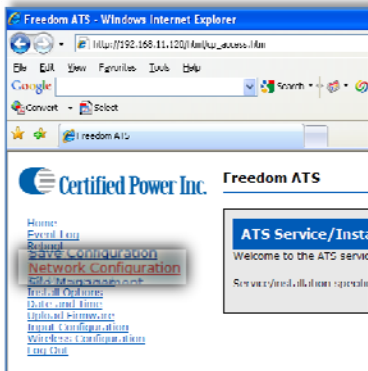
14. **Connection Type**, Select your IP protocol layer UDP. UDP is all that is currently supported

15. **ACK timeout**, Typically this value is set between 2 (recommended) and 5 seconds . This sets the resend rate of each packet of data until acknowledge has been received for that packet. If set to -0- the ATS sends data without acknowledge from the receiving side. If Acknowledge is not used it is extremely possible for large amounts of data to be lost.

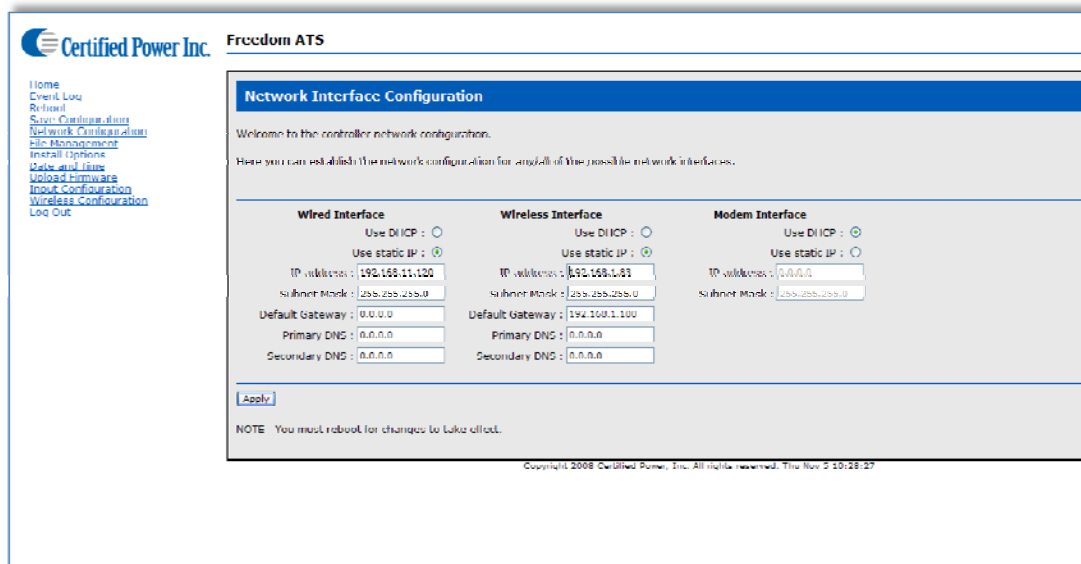
Network Configuration

(Push-button data download continued)

1. Click the “Network Configuration” Settings page. (Real time cellular continued)



2. It is recommended that you leave the default **WIRED** address as it is, and ALWAYS as a static address. If you change the address please note it for future reference. NEW address: [HTTP:// 192.168.1.100](http://192.168.1.100). The static address insures the ability to connect to the Web Server at any time regardless of network services like DHCP.
3. The modem Interface as listed below would also be used for the radio interface, Whether an IP address is required or not is dependent upon the protocol used on the data channel of the radio.
4. When configured under “Install Options” for Radio use, the Wireless Interface is disabled for any ATS device even if you are using an ATS that is Wi-Fi equipped.



Additional configuration

1. A push-button must be wired into one of the 8 digital inputs. See “Wiring Switch” section at the beginning of the manual to assist in wiring in a “Data down-load” switch then follow the next section on configuring an input specifically for “Data Download”.

Maintenance

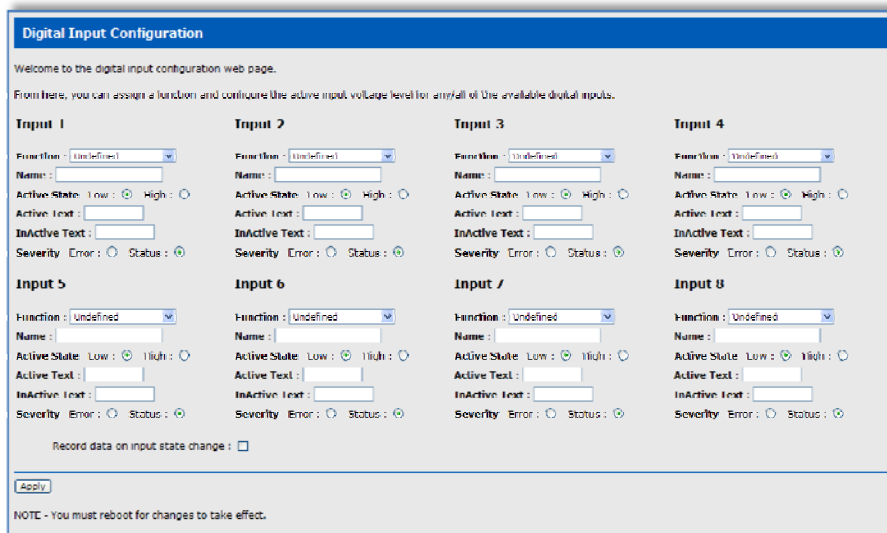
1. The cellular modem application requires no maintenance or user intervention for normal operation within the vehicle.
2. Additional tools used for diagnosis of modem problems exist in the “Diagnostics tools/Troubleshooting “ section.

Input Configuration

1. Select Input Configuration from the on-screen menu. You must be logged in as Administrator to see the "Input Configuration" link.

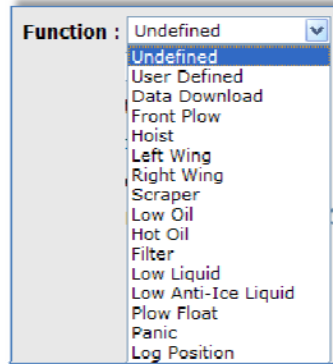


2. The following text describes the features and functions available through the "Inputs Configuration" screen.

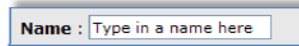


Function, Select the function for the input (1-8) that you would like to configure.

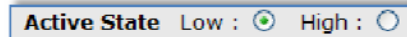
- Data Download, Configure an input to use for Data-download switch. Only one input can be used for the Data-download input. (Required for “Push-button data download application”)
- User defined, Use this setting when you need a “Named” input. See “Name” below.
- Undefined, This is the DEFAULT selection for inputs that are disabled.
- Function specific: All other specific names in the list are required to include as part of the legacy support for older systems.



Name, Assign a ‘name’ using any alpha numeric function such as “Plow”. This field can only be used for “User defined” function above.

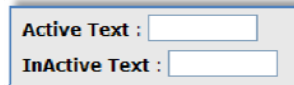


Active State, Low High. This sets the ACTIVE state of a valid input. Setting a Low defines the input is valid when pulled to ground. Setting a High state defines the input as valid when pulled to battery level.



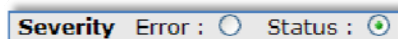
- Note: “Active low” applies a pull-up voltage equal to ½ Battery Supply. to the pin. The current through the pin is 8.06mA when the input is shorted to ground.
- Note: “Active high” applies a pull-down resistor between ground and the input pin. The current through the pin is 3.8mA when the input is shorted to Battery.

Active/Inactive text, Define text to be displayed when the input is ‘Active’ or ‘Inactive’ such as “Up” or “Down”.

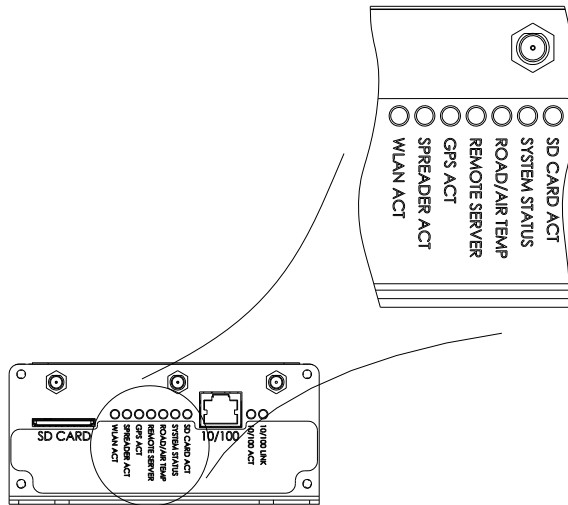


- Note: Using the example above for NAME “Plow”; and combining that with the input “active” state and [Text] such as “UP” would result in an “active” state logged as “Plow Up” or “Plow Down” as corresponds to the “inactive” {text} box being filled in as “Down”
- Note: Check the “Event logs” to view input status or to test the input circuit

Severity, Define whether the input will be recorded as an “Error” or as a “status” message. The severity level will be used to help prioritize messages on the management side using the remote client/server.



Diagnostic tools/Troubleshooting Assistance



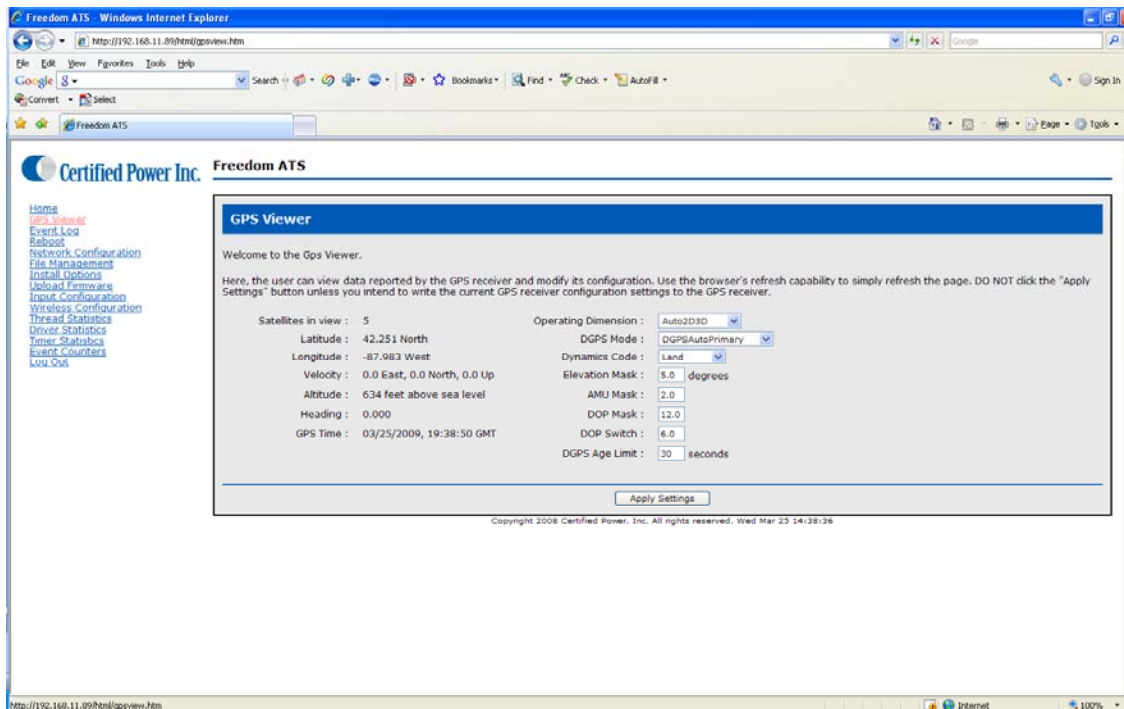
Diagnostic LED's.

1. The cellular modem application requires no maintenance or user intervention for normal operation within the vehicle.
 2. Additional tools used for diagnosis of modem problems exist in the “Diagnostics tools/Troubleshooting “ section.
-
1. The LED status codes are universal for all the RED status LED's located on the side of the ATS unit. The code is as follows:
 - a. Lights that Blink at a fast rate confirm normal operation.
 - b. Light that blink at a slow rate 1 sec. on 1 sec. off indicate a service that is down.
 2. “Spreader Act”, If the Spreader controller is powered on and a serial cable is properly attached the “SPREADER ACT” light should be blinking fast. Remember for ACS units “AVL” must be enabled internally in the “System Settings” menu. For GL400's only software installed in GL400-7's :” rev. 18” is compatible with the ATS.
 3. “GPS Act”, If the GPS receiver is operational the GPS receiver light should be blinking fast. Normal operation does not include requiring a Satellite fix.
 4. “Remote Server”, With a remote server configured for Cellular Link, Wi-Fi LAN or Wired LAN (Ethernet) a fast blink reflects network connectivity. The WLAN (Wi-Fi) or wired LAN of course include activity lights.
 5. “Road/Air Temp”, If a signal is received from a Sprague Devices RoadWatch SS™ sensor this light will blink fast.
 6. “System Status”, If this light is blinking fast the ATS unit is operating normally and the internal processor is running all it's software normally. If this light goes solid at any time the ATS unit will reset itself after a 15 second delay.
 7. “SD Card Status”, If an SD card is installed and the ATS unit is successfully reading and writing data to the card this light will blink fast. Don't forget SD cards have a write-protect switch. If the switch is in the “Lock” position the ATS cannot write to the card and the LED status light will blink slowly. If no Card is installed in the slot the status light is 'Off'.

GPS Viewer

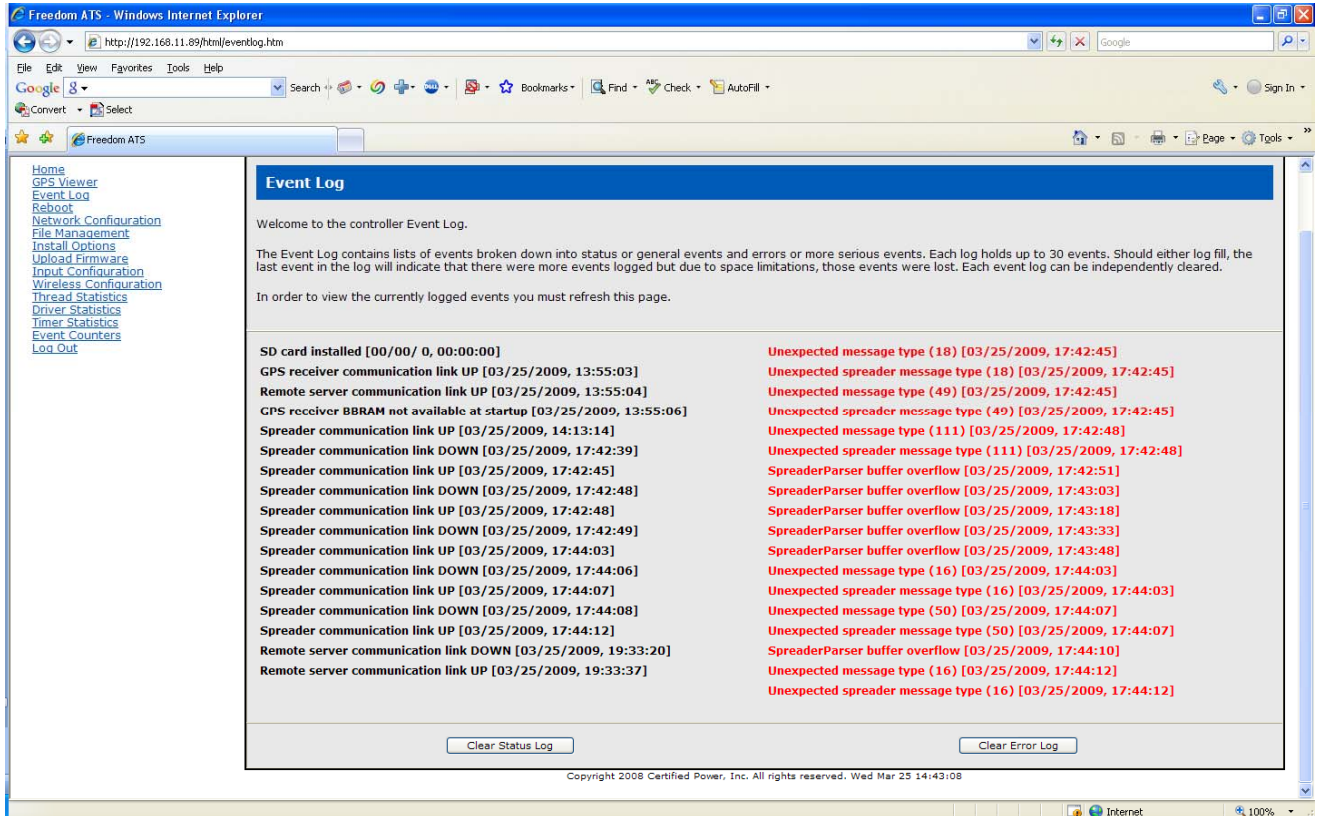
(Diagnostics and Troubleshooting cont.)

1. Select the “GPS Viewer” from the main menu.
 - Use the GPS viewer to observe real-time data streaming from the GPS receiver.
 - Typically these settings should not be changed.
 - A minimum of 3 satellites are required for location & direction. 4 satellites are required for Altitude and velocity.



Event log

(Diagnostics and Troubleshooting cont.)



Event Log

Welcome to the controller Event Log.

The Event Log contains lists of events broken down into status or general events and errors or more serious events. Each log holds up to 30 events. Should either log fill, the last event in the log will indicate that there were more events logged but due to space limitations, those events were lost. Each event log can be independently cleared.

In order to view the currently logged events you must refresh this page.

SD card installed [00/00/ 0, 00:00:00]	Unexpected message type (18) [03/25/2009, 17:42:45]
GPS receiver communication link UP [03/25/2009, 13:55:03]	Unexpected spreader message type (18) [03/25/2009, 17:42:45]
Remote server communication link UP [03/25/2009, 13:55:04]	Unexpected message type (49) [03/25/2009, 17:42:45]
GPS receiver BBRAM not available at startup [03/25/2009, 13:55:06]	Unexpected spreader message type (49) [03/25/2009, 17:42:45]
Spreader communication link UP [03/25/2009, 14:13:14]	Unexpected message type (111) [03/25/2009, 17:42:48]
Spreader communication link DOWN [03/25/2009, 17:42:39]	Unexpected spreader message type (111) [03/25/2009, 17:42:48]
Spreader communication link UP [03/25/2009, 17:42:45]	SpreaderParser buffer overflow [03/25/2009, 17:42:51]
Spreader communication link DOWN [03/25/2009, 17:42:48]	SpreaderParser buffer overflow [03/25/2009, 17:43:03]
Spreader communication link UP [03/25/2009, 17:42:48]	SpreaderParser buffer overflow [03/25/2009, 17:43:18]
Spreader communication link DOWN [03/25/2009, 17:42:49]	SpreaderParser buffer overflow [03/25/2009, 17:43:33]
Spreader communication link UP [03/25/2009, 17:44:03]	SpreaderParser buffer overflow [03/25/2009, 17:43:48]
Spreader communication link DOWN [03/25/2009, 17:44:06]	Unexpected message type (16) [03/25/2009, 17:44:03]
Spreader communication link UP [03/25/2009, 17:44:07]	Unexpected spreader message type (16) [03/25/2009, 17:44:03]
Spreader communication link DOWN [03/25/2009, 17:44:08]	Unexpected message type (50) [03/25/2009, 17:44:07]
Spreader communication link UP [03/25/2009, 17:44:12]	Unexpected spreader message type (50) [03/25/2009, 17:44:07]
Remote server communication link DOWN [03/25/2009, 19:33:20]	SpreaderParser buffer overflow [03/25/2009, 17:44:10]
Remote server communication link UP [03/25/2009, 19:33:37]	Unexpected message type (16) [03/25/2009, 17:44:12]
	Unexpected spreader message type (16) [03/25/2009, 17:44:12]

Clear Status Log Clear Error Log

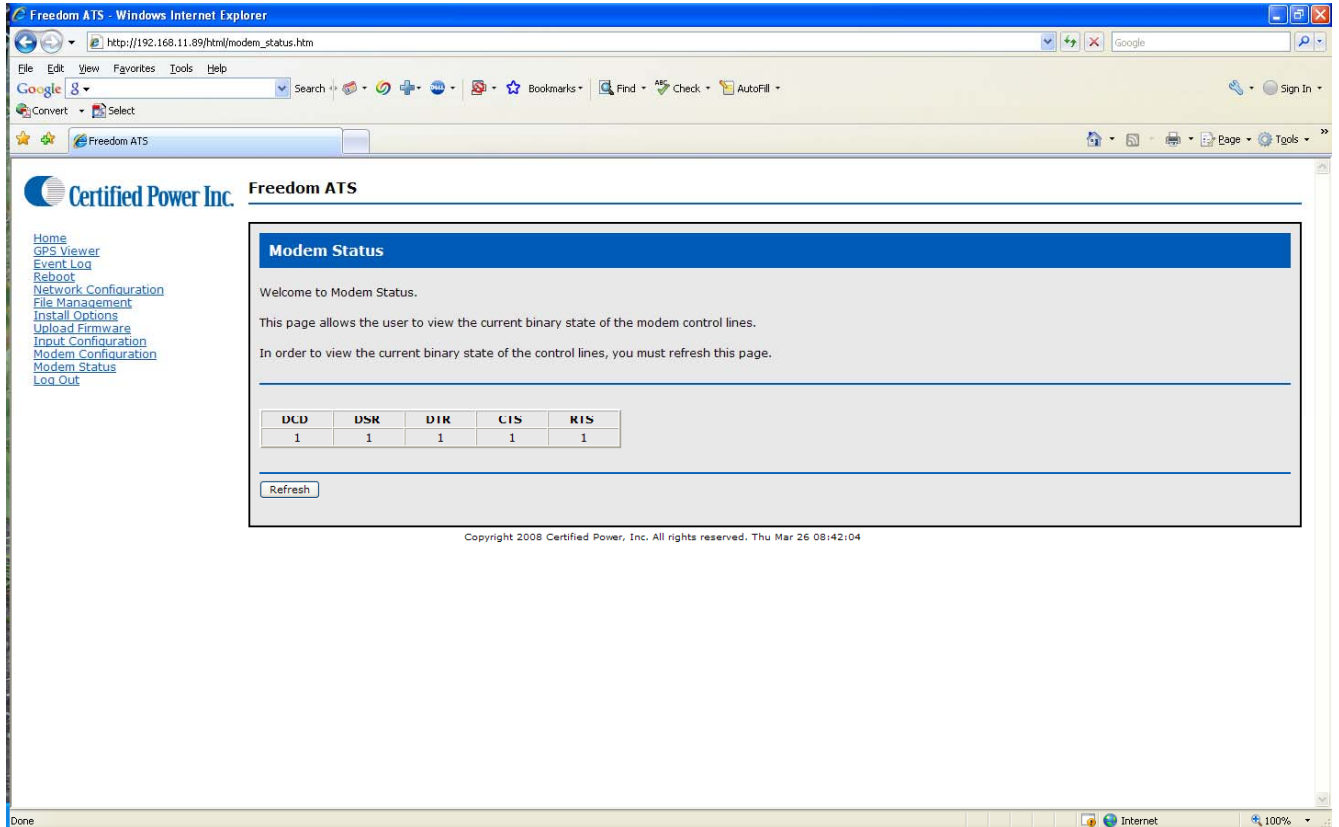
Copyright 2008 Certified Power, Inc. All rights reserved. Wed Mar 25 14:43:08

- Status logs give information about status of services .
 - Works in unison with status LED's located on ATS device user's panel.
 - GPS receiver
 - Remote Server
 - Road-Watch
 - ATS System health
 - Spreader link
 - SD Card
 - Error level severity inputs.
- Error logs report errors that will affect system services
 - Memory overruns
 - Database errors
 - Buffer overruns
 - SD card write-protects
 - Corrupt atconfig.bin files
 - Status level severity inputs
- *Status* and *Errors* can be cleared using the provided buttons or are cleared when the system power is cycled.

Modem status

(Diagnostics and Troubleshooting cont.)

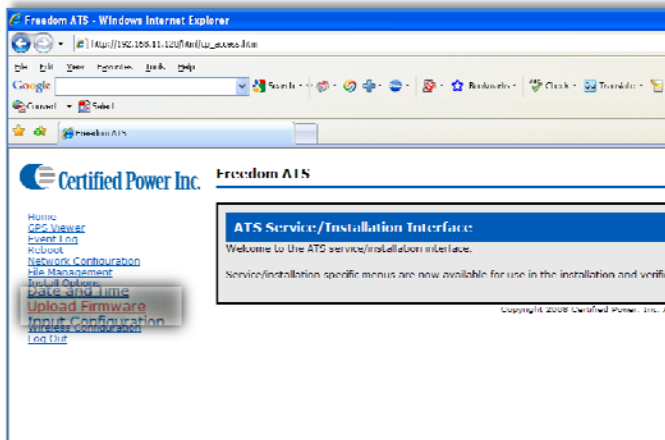
1. View modem serial port control lines to modem (Useful for modem troubleshooting)
 - This screen shows the status of the physical control lines exiting the Modem RS-232 serial port located on the side of the ATS unit. This can be useful if diagnosing problems relating to the modem serial port. The below screen pictured below would be typical for the (tested) Multi-tech manufactured modem when a valid cellular network connection has been established.



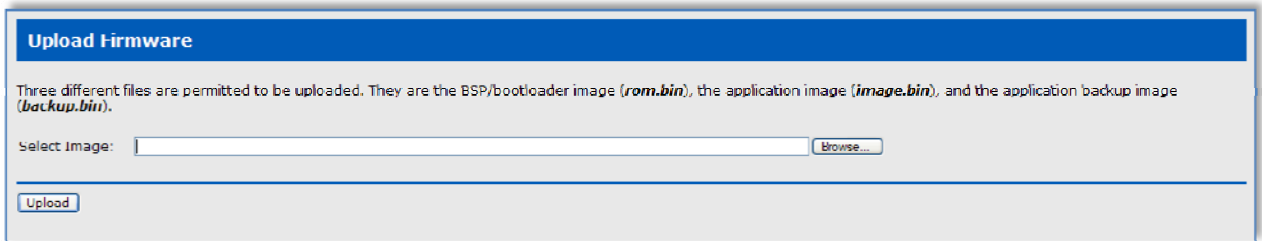
Updating firmware/Loading defaults

Updating firmware (*Diagnostics and Troubleshooting cont.*)

1. 2 files are needed when updating firmware on an ATS system.
 - Image.bin
 - Rom.bin
2. Click on “Upload Firmware” menu item.



3. The file selection dialogue box should then appear



4. Select the image.bin file using the “Browse” button.
5. Upload the file using the “Upload” button.
6. The ATS will reboot on it’s own. It may be necessary to browse back to the ATS and re-login again if the page does not refresh on it’s own. The System status LED on the side of the ATS unit should be blinking fast indicating normal operation has resumed when it is ok to browse the webserver again.
7. Repeat the process loading the “Rom.bin” file. Again the system will reboot itself. Verify the correct version numbers are listed on the “Home” page.
8. The system configuration will need to be restored after firmware has been upgraded. Use the ATScfg.txt file to reload your settings. Once the system is configured save the “ATScfg.bat” file and archive a copy on your laptop or PC for future use if needed or use it to update other ATS units that also need a firmware update. See the Section under “Setup and Configuration” for help on saving and restoring config files using the SD card.
 - Note: The backup.bin file shown above is for future use.

(Diagnostics and Troubleshooting cont.)

- Below is an example of an "ATScnfig.txt" file viewed through Microsoft Wordpad™. (hard-copy of all settings)



Deleting a Configuration (Restoring defaults) *(Diagnostics and Troubleshooting cont.)*

Check the box to the right of the NVDPDb.bin (Native data point data-base) file then press the "Delete file(s)" button.

- Rebooting the system will then force the rebuilding of this file using factory settings. The ATS device will be restored to factory defaults.

