



Stonex S900 Static Base Configuration Via Web User Interface

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Introduction

Thank you very much for choosing to purchase and use an S900 GNSS receiver from Phoenix LiDAR Systems!

All products and brand names mentioned in this publication are trademarks of their respective holders.

This guide is designed to help you familiarize yourself with your new equipment and successfully use it in the field. This manual is intended to guide you through the basic functions required to collect static GNSS observation data using a Stonex S900 receiver.

This manual is not a replacement for any of your equipment's (hardware or software) user manuals, and is intended only as a supplement to the following official user manuals:

[Stonex S900 GNSS Receiver User Manual](#)

Warning Information

Before you use your receiver, please make sure that you have read and understood the following warnings and safety requirements.

GNSS Warning

The S900 GNSS receivers track and utilize signals from many space based satellite navigation systems:

The Global Positioning System (GPS) is operated by the US Government which is solely responsible for the accuracy and maintenance of the GPS network. Accuracy can also be affected by bad satellite geometry and obstructions including buildings and tree canopy.

The GLONASS (GLObal NAVigation Satellite System), is a satellite navigation system operated by the Russian Aerospace Defense Forces.

The Galileo System is the global navigation satellite system (GNSS) that is operated by the European Union (EU) and European Space Agency (ESA)

BeiDou Navigation Satellite System (BDS) (also known as COMPASS or BeiDou-2) is a system operated by CNSA (China National Space Administration.)

SBAS (Satellite Based Augmentation Services) may also be utilized by the S900 for carrier-phase corrections, in addition to differential corrections.

Phoenix LiDAR Systems is not responsible for nor warrants the viability of the space segment portion of the GNSS system. The user is cautioned that they alone are responsible for determining the suitability of the S900 receivers to their task at hand.

Use and Care

The S900 GNSS receivers are field ready instruments; however they are also delicate electronic instruments. Take suitable care to avoid damage to the instrument.

- Avoid dropping the receiver as it can change the phase center of the antenna!
- Avoid storing the receiver at excessive temperatures (hot or cold) as it will damage the internal batteries.
- Avoid storing the batteries at temperatures less than -40° F (-40° C) and temperatures higher than 160°F (70°C) as it will permanently reduce the battery capacity and life.
- DO NOT leave the receivers or accessories inside a vehicle in the summer. Temperatures higher than 160°F will permanently reduce battery capacity and battery life.

Battery Warnings

The batteries supplied with your receiver are Lithium-Ion type cells.

WARNING - Do not damage the rechargeable Lithium-ion battery. A damaged battery can cause an explosion or fire, and can result in personal injury and property damage.

To prevent injury or damage:

- Do not use or charge the battery if it appears to be discolored, warped, or leaking battery fluid.
- Do not expose the battery to fire, high temperature, or direct sunlight.
- Do not immerse the battery in water.
- Do not store the battery inside a vehicle during hot weather.
- Do not drop or puncture the battery.
- Do not open the battery or short-circuit its contacts.
- Do not charge the batteries in chargers other than the supplied charger or a direct replacement.
- Do not charge similar batteries in the supplied charger, even if they fit well.
- **WARNING** - Avoid contact with the rechargeable Lithium-ion battery if it appears to be leaking. The battery fluid is extremely corrosive, and contact with it will result in personal injury and/or property damage.
- If battery fluid gets into your eyes, immediately rinse your eyes with clean water and seek medical attention. Do not rub your eyes!
- If battery fluid gets onto your skin or clothing, immediately use clean water to wash off the battery fluid.

Each battery, when new, will power the receiver for approximately 5 hours at temperatures higher than 50 degrees F. At lower temperatures battery life is shortened. The S900 receivers are equipped with two battery compartments. Two new fully charged batteries will power the unit for 10 hours.

Fully charge the batteries using the supplied charger before first use

TOO COLD: Do not leave charged or uncharged batteries in your vehicle at night if the temperature will be less than 20 deg F. Extreme cold battery storage will permanently reduce the capacity and lifetime of the batteries.

TOO HOT: Do not leave charged or uncharged batteries in your vehicle on hot days with the windows rolled up when temperature will be higher than 90 deg F. Hot temperatures will permanently reduce the capacity and lifetime of the batteries.

Stonex S900 Receiver

Receiver Appearance

The S900 series receiver is cylindrical with a diameter of 156mm, a height of 76mm and a weight of 1.2kg. The front side of the receiver is control panel, which consists of a power button and four indicators. The bottom are interfaces of UHF antenna and cables. PUSH buttons on both sides of the receiver are used to open the bottom battery cover.



Interfaces

The bottom interface of the instrument is shown below, and the protective plug covered on it is used for the dustproof and waterproof of the external interface. The TNC connector is used to connect to the built-in radio antenna (Left: UHF interface). The five-pin LEMO connector (Middle) is used to connect external power supply or external radio. The seven-pin LEMO connector (Right) is used for data communication (data communication between the receiver and the computer and the handbook).








Control Panel

The control panel is shown below:



The function of power button and the LED indicators are shown below:

Indicators/Button	Color	Description
Satellite led 	Red and green	<ul style="list-style-type: none"> Off : No receiving satellites ; red flash: receiving satellites but no solution status. Green flash: having a solution status but no fix. green: fix. Red and green flashes alternately: GNSS mainboard abnormal.
Data link led 	Green and blue	<ul style="list-style-type: none"> green: datalink set up completely. green flash: data transmission normally. Blue flash: under the static mode, the blue led flash according to the sampling intervals.
Bluetooth led 	Blue	<ul style="list-style-type: none"> Off : no Bluetooth connection to device. Blue: Bluetooth connection to device.
Power led 	Red and green	<ul style="list-style-type: none"> Green: power between 30% -100%; Green flash: power between 10%-30% ; Red: power below 10%.
Power button 	/	<ul style="list-style-type: none"> Used to turn on and off the receiver. Short press to broadcast the current working mode and status.

1 Base Location and Setup

1.1 Choose a Great Location for the Base

Locate the Base at an optimum location for tracking GNSS signals. Your primary concern should be finding an open location for the base that minimizes multipath (via GNSS signal reflections on hard surfaces.)

A clear view of the sky above a 10 degree mask is also important. Partially obstructed/masked satellites (through tree branches) are worse than fully obstructed satellites. Clearance to the South, East and West is most important. Obstructions directly to the North have the least effect on your static solutions.

1.2 Base Setup

1. Setup the base
 - a. Choose a suitable location for the base. A clear view of the sky is most important.
 - b. Put a freshly charged battery in the head and/or connect external power to the base
 - c. Attach the receiver to a tripod or pole as appropriate
 - d. Level the receiver
 - e. Rotate the receiver so the buttons face North
 - f. Turn on the base GNSS receiver by holding the power button for 3 seconds
 - g. The receiver head will begin to track satellites (SV's)
2. Proceed to the next step once the Satellite LED displays green

2 Base Configuration Through Web User Interface (Web UI)

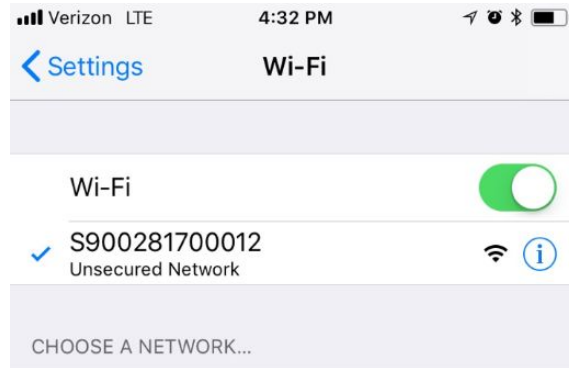
2.1 Web UI Functionality

The S900 receiver has Web UI functionality. By getting access to its internal hotspot, you can easily manage it on the Web UI. As long as you have a smart phone, PC or handheld with WIFI functionality, you can easily connect to the S900 receiver to view status, download data and configure the receiver.

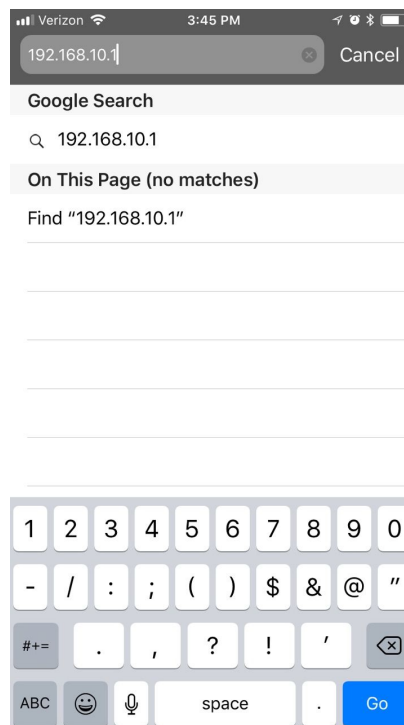
S900 receiver is default to open WIFI automatically when it's powered on. Use smart phone/PC/handheld to search the receiver hotspot, whose name is its serial number, and connect it. (Receiver WIFI only supports getting access to Web UI to check status and set up mode, not for Internet connection.)

2.1 Connect to S900 via Web UI

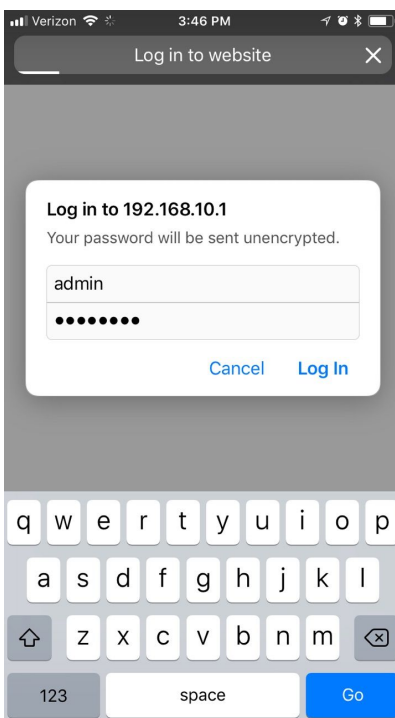
On your smart phone, PC, or handheld, go to Wifi settings and connect to the S900 receiver via WIFI



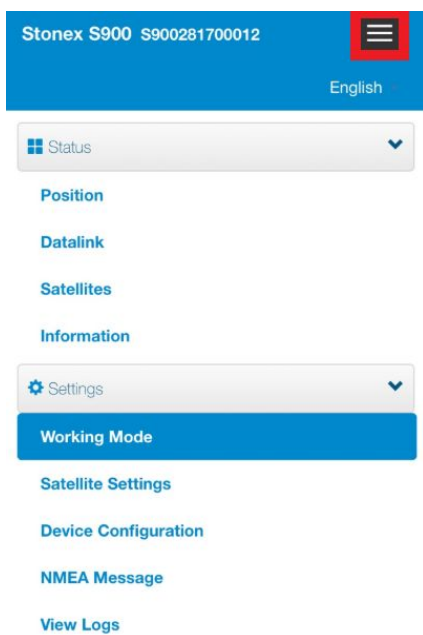
On your device, open an internet browser and search "192.168.10.1"



A window pops up and asks for "user name" and "password". The default "user name" and "password" are: admin; password.



Select the button that looks like 3 horizontal lines. Under Settings, Select "Working Mode"



Working Mode Settings:

System Mode: Static

Point Name: S900

Antenna height: Input measured Antenna Height in mm (Ex: 1800 for 1.8 meters)

Antenna Measurement: Ex: Antenna Vertical height (from bottom)

PDOP Threshold: OK to leave artificially high at 99

Interval: 1 Hz

Auto Record: Yes

The screenshot shows the configuration interface for the Stonex S900. At the top, the status bar displays 'Verizon', signal strength, Wi-Fi, time '4:11 PM', and IP address '192.168.10.1'. Below this, a blue header contains 'Stonex S900 S900281700012' and a menu icon. The language is set to 'English'. The main settings are as follows:

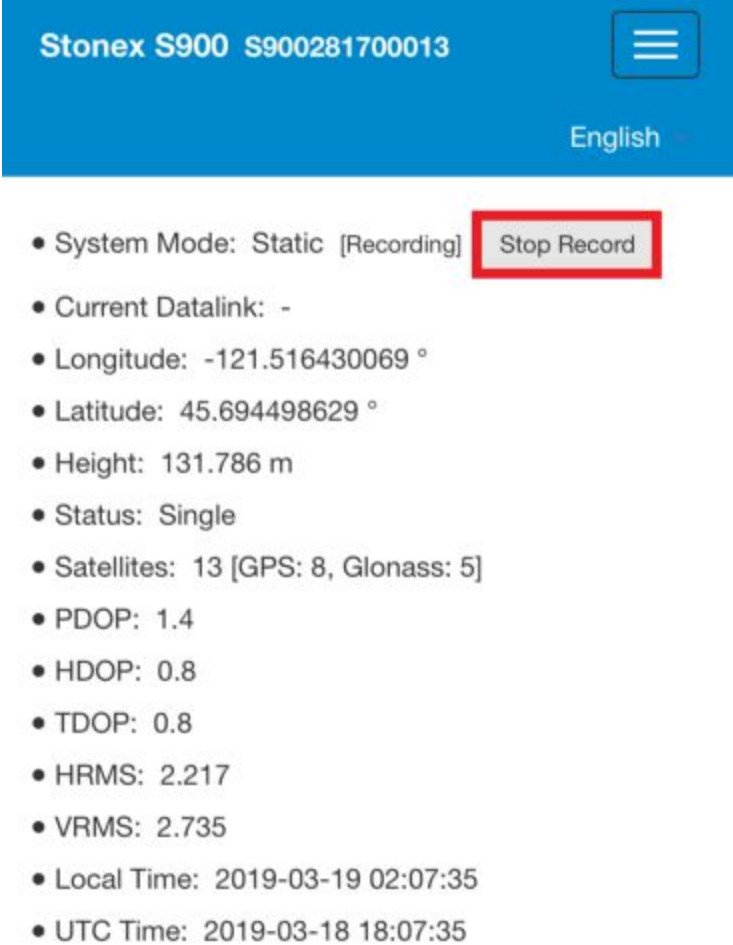
- System Mode:** Radio buttons for Static (selected), Rover, and Base.
- Point Name:** Text input field containing 'S900'.
- Antenna Height:** Text input field containing '1800' with a range of '[-30000 - +30000] mm'.
- Antenna Measurement:** Dropdown menu set to 'Antenna vertical height(from bottom)'.
- Pdop Threshold:** Text input field containing '99.0' with a range of '[1-99]'.
- Interval:** Dropdown menu set to '1HZ'.
- Auto Record:** Radio buttons for NO and YES (selected).

Note: By selecting "Auto Record: Yes", the next time you power on the S900, it will begin recording static data (using the established configuration above) once it has a solution status.

Select "Save" at the bottom of the screen

Once you select "save" the Data Link LED will blink blue meaning the data is being recorded at the same interval as the blinking rate

To stop recording, Navigate to the “Status” tab and click on “Position”. Here, you can simply select “Stop Record” within the Web UI (while connected to the head), or power off the receiver head.



The screenshot displays the Stonex S900 Web UI interface. At the top, a blue header bar contains the device name "Stonex S900 S900281700013" on the left and a hamburger menu icon on the right. Below the header, the language is set to "English". The main content area lists system parameters:

- System Mode: Static [Recording] **Stop Record**
- Current Datalink: -
- Longitude: -121.516430069 °
- Latitude: 45.694498629 °
- Height: 131.786 m
- Status: Single
- Satellites: 13 [GPS: 8, Glonass: 5]
- PDOP: 1.4
- HDOP: 0.8
- TDOP: 0.8
- HRMS: 2.217
- VRMS: 2.735
- Local Time: 2019-03-19 02:07:35
- UTC Time: 2019-03-18 18:07:35

Note: Once you power off the S900 receiver head, the Static working mode configuration is stored. This configuration will be applied to future static sessions (when receiver head is powered back on) until the configuration is changed.

3 Power Off the Receiver

When the receiver is powered on, press power button and hold it until the receiver voice broadcast “power off”, then short press the power button again, and the receiver is powered off.

This content is subject to change.

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If you have any questions about this document, please contact Phoenix LiDAR Systems by sending a message to support@phoenixlidar.com.

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