



# STONEX S900 GNSS Receiver **User Manual**



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## Introduction

This document is user guide for S900, S900A, and S900T GNSS receiver, which are diverse in the internal configuration and appearance color. It is intended to introduce how to use the receivers correctly.

### 1.1 Receiver appearance

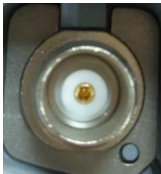
The S900 series receiver is cylindrical with a diameter of 156mm, a height of 76mm and a weight of 1.2kg. The front side of the receiver is control panel, which consists of a power button and four indicators. The bottom are interfaces of UHF antenna and cables. PUSH buttons on both sides of the receiver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



**Figure 1.1** S900 series receiver

## 1.2 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. The five-pin LEMO connector is used to connect external power supply or external radio. The seven-pin LEMO connector is used for data communication (data communication between the receiver and the computer and the handbook).



**Figure 1.2.1** UHF interface



**Figure 1.2.2** 5pin LEMO interface



**Figure 1.2.3** 7pin LEMO interface

## 1.3 Control panel






The control panel is showed in Figure 1.3.1.



**Figure 1.3.1** control panel

The function of power button and the LED indicators are shown in Table 1.

**Table 1 Function description**

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

## 2. Web User Interface

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.

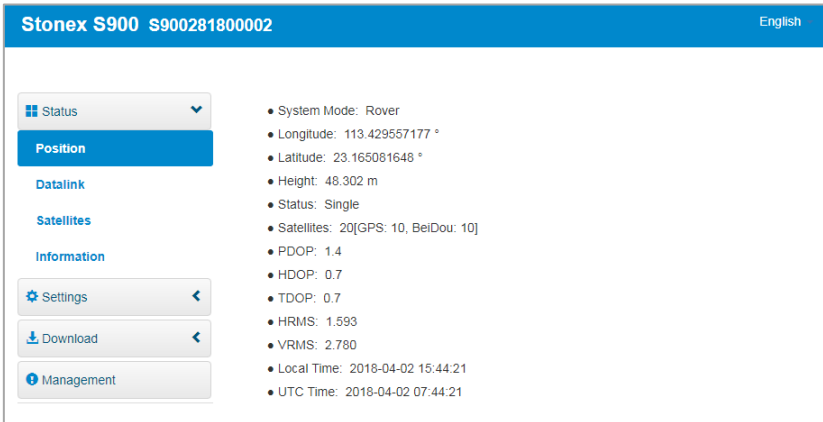
S900 receiver is default to open WIFI automatically when it's powered on. Use smart phone/PC/handheld to search the receiver hotspot, whose name is its serial number, and connect it. (Receiver WIFI only supports getting access to Web UI to check status and set up mode, not for Internet connection.)

After connecting to the S900 receiver WIFI, open the browser and enter "192.168.10.1" in IP address. A window pops up and asks for user name and password. The default user name and password are: **admin; password**.

And then you can login the Web UI of S900 receiver.

## 2.1 Status

The status page displays the current state of S900 receiver, including position information, data link status, satellite charts, and instrumentation information. Click on a module to display its details, as shown in figure 2.1.1.



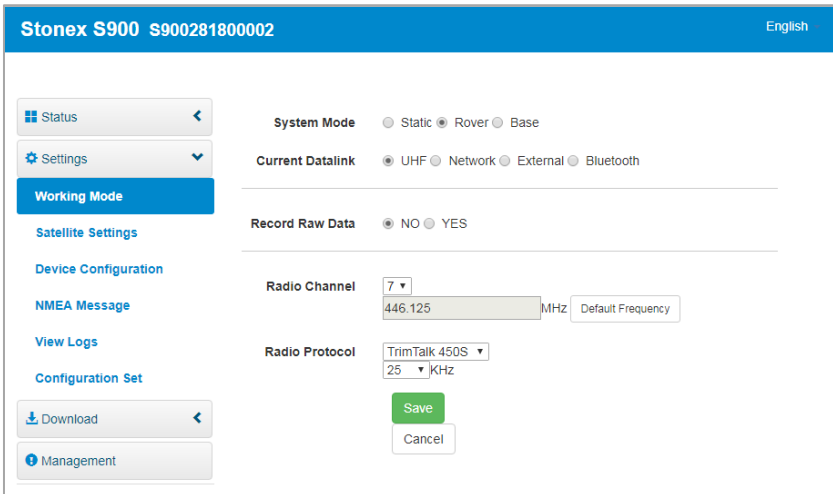
The screenshot shows the 'Stonex S900 S900281800002' interface with a language dropdown set to 'English'. A sidebar on the left contains navigation options: 'Status' (selected), 'Position', 'DataLink', 'Satellites', 'Information', 'Settings', 'Download', and 'Management'. The main content area displays the following status information:

- System Mode: Rover
- Longitude: 113.429557177 °
- Latitude: 23.165081648 °
- Height: 48.302 m
- Status: Single
- Satellites: 20[GPS: 10, BeiDou: 10]
- PDOP: 1.4
- HDOP: 0.7
- TDOP: 0.7
- HRMS: 1.593
- VRMS: 2.780
- Local Time: 2018-04-02 15:44:21
- UTC Time: 2018-04-02 07:44:21

**Figure 2.1.1** position status page

## 2.2 Settings

The Settings page includes working mode, satellite Settings, device configuration, NMEA messages, view logs, and configuration sets. You can set the host mode, satellite system, system parameters, and NMEA message. And you can view and download the logs as well. Also you could upload, download, delete and apply the related configuration. Click on a module to display its details, as shown in figure 2.2.1.



The screenshot shows the 'Stonex S900 S900281800002' settings page. The interface includes a left sidebar with navigation options: Status, Settings, Working Mode (highlighted), Satellite Settings, Device Configuration, NMEA Message, View Logs, Configuration Set, Download, and Management. The main content area contains the following settings:

- System Mode:** Radio buttons for Static, Rover (selected), and Base.
- Current Datalink:** Radio buttons for UHF (selected), Network, External, and Bluetooth.
- Record Raw Data:** Radio buttons for NO (selected) and YES.
- Radio Channel:** A dropdown menu showing '7', a text input field containing '446.125', and a 'MHz' label. A 'Default Frequency' button is also present.
- Radio Protocol:** A dropdown menu showing 'TrimTalk 450S' and a text input field containing '25' with a 'KHz' label.

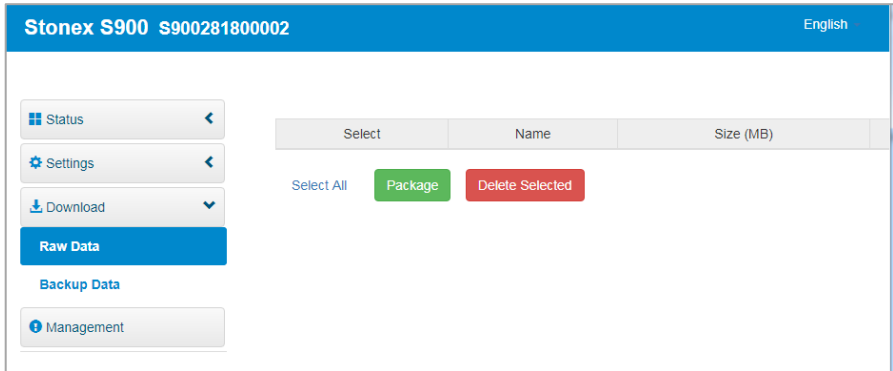
At the bottom of the settings area, there are two buttons: a green 'Save' button and a white 'Cancel' button.

**Figure 2.2.1** setting page



## 2.3 Download

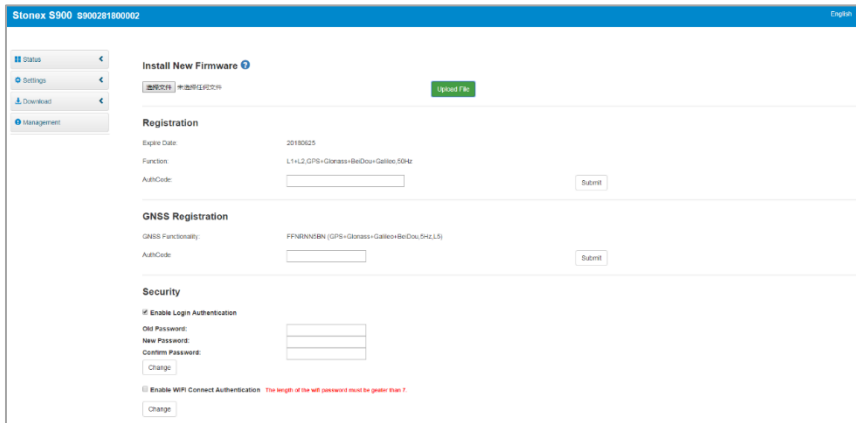
The download page provides downloads of raw data and backup data. Click on a module to display its details, as shown in figure 2.3.1.



**Figure 2.3.1** download page

## 2.4 Management

In this page, the user can upgrade the firmware, register the device, modify the login password, format the instrument disk, self-check, restore the factory Settings, restart equipment and other operations, as shown in figure 2.4.1.



The screenshot displays the management interface for the Stonex S900 GNSS Receiver. The page title is "Stonex S900 S900281800002" and the language is set to "English". A navigation menu on the left includes "Status", "Settings", "Download", and "Management". The main content area is titled "Install New Firmware" and contains several sections:

- Install New Firmware:** Includes a "Upload File" button and a "Submit" button.
- Registration:** Shows the "Expire Date" as 20180225, the "Function" as L1+L2+GPS+Galileo+BeiDou+Galileo+SOA, and an "AuthCode" input field with a "Submit" button.
- GNSS Registration:** Shows the "GNSS Functionality" as FFNNNNNN (GPS+Galileo+Galileo+BeiDou+SOA), an "AuthCode" input field, and a "Submit" button.
- Security:**
  - Enable Login Authentication:** Includes "Old Password", "New Password", and "Confirm Password" input fields, each with a "Change" button.
  - Enable WPP Connect Authentication:** Includes a "Change" button and a note: "The length of the WPP password must be greater than 7".

**Figure 2.4.1** management page

## 2.4.1 Install new firmware

In the management of the WEB UI page, you can see that “online update”, click “browse”, select the required to upgrade the firmware, click the “upload document”, system will restart to upgrade. After the upgrade, you can view the current “firmware version” on the “instrument information” page.

## 2.4.2 Device register

The register code consists of 32 digits and letters. You can register the device via WEB UI. The detailed steps are shown as followed:

In management page, you can see “registration”. Input register code and click submit, and then registration is done. After registration, you can check the expiration time of current registration in the page.

You can also register device via controller. Open Cube-a software on the handheld and connect the receiver. Click “About” - “Register instrument”, then input code and registration is done.

## 3. Basic operation

### 3.1 Model view and switch

#### a. Model view

When receiver is powered on, short press the power button and then it will voice broadcast the current working mode and data link.

#### b. Model switch

When the receiver is powered on, connect it with handheld or other instruments so as to set up and switch the working mode of receiver. See detailed operation procedures in Cube-a Software(V3.0) User Manual.

### 3.2 Receiver self-check

Self-check functionality is to check whether every module works normally. When S900 receiver has indicators off or module doesn't work normally, you can use self-check to inspect the receiver. S900 self-check consists of six parts, namely GPS, radio, network, WIFI, Bluetooth, and sensor. The self-check results will be voice broadcasted in the process. Self-check operation and result broadcast are as followed:

- a) When receiver is powered on, press power button and hold it until the receiver voice broadcasts "power off". Press it again until the receiver sounds a beep and voice broadcasts "self-check", which means the receiver starts to operate self-check. (New receiver is recommended to operate self-check at least once.)
- b) In the process of self-check, each module inspection is followed by its inspection result. If the module inspection passes, it will voice broadcast "OK" and module led keeps on until the whole self-check finishes. If the module inspection fails, it will voice broadcast current module inspection fail, keep module led flashing and buzzer sounding until you

restart the receiver. Self-check lasts for about 1 minute. If there is self-check failure, please contact local dealer.

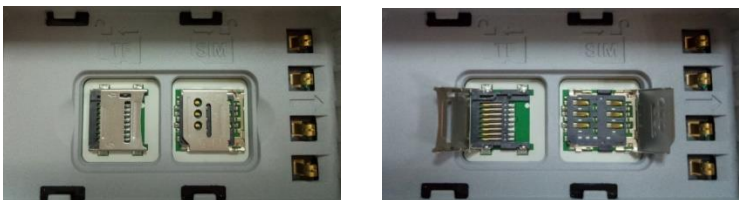
- c) If every module indicator is lit with no flashing, and voice broadcast says every module work normally (such as “GPS self-check. OK.”), it means all the modules work normally. Receiver starts to work after the whole self-check finishes.

### 3.3 Install TF card and SIM card

The bottom of receiver is left and right battery slot, which are marked by arrow A and arrow B respectively. Both the TF card and the SIM card slot are inside the battery slot pointed by arrow A.

Replace procedure of TF card and SIM card:

- (1) Push the bottom slide lock in the direction of arrow A. Press the corresponding direction PUSH key on the side of the receiver, and open the battery cover.
- (2) Remove the battery and you will see the SIM card and TF card slot at the bottom of the battery slot.
- (3) Push the upper cover of the card slot outward in the direction of the arrow above the card slot to open the card slot, put the SIM card or TF card into the card slot (the same direction as the icon), cover the card slot cover. Open the upper cover in the arrow direction , then install or uninstall the TF or SIM card(card shape is same as the above mark).



**Figure 3.3.1** TF/ SIM card slot

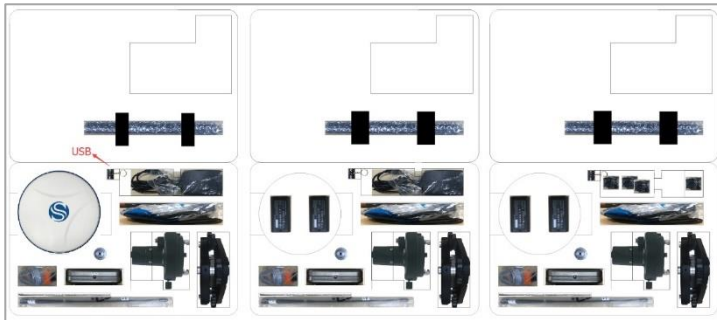
### 3.4 Power off the receiver

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

## 4. Accessories

### 4.1 Transport container

There is no difference between the base and the rover container. The internal layout of the container is showed as figure 4.1.1.



**Figure 4.1.1** internal layout of container

The external appearance of the container is shown as figure 4.1.2.



**Figure 4.1.2** external appearance of container

## 4.2 Battery and adapter

S900 series receiver use detachable dual battery to charge. You can gently press the bottom button to know the current battery power according to the four lights (power between 75%-100% with all four lights lit; power below 25% with only one light lit). Charging for lithium-ion battery lasts for 4 hours. Using charger can simultaneously charge two batteries. The charger indicator is lit red when charging, and turns green after charging completes.



**Figure 4.2.1** BP-5S battery



**Figure 4.2.2** CH-04 charger



**Figure 4.2.3** DSA-40CA-12 adapter



### 4.3 UHF antenna

When receiver is in internal radio mode, UHF antenna (as illustrated in Figure 4.3.1) is in need.



**Figure 4.3.1** QT440A UHF antenna

### 4.4 7-pin serial cable

One end of the 7-pin serial cable, the 7-pin serial port, is to connect the receiver, and the other end of the cable, the USB and the DB9 interface are for data communication respectively with PC and handheld as illustrated in Figure 4.4.1.



**Figure 4.4.1** 7-pin serial cable

## 5. Technical specification

### RECEIVER

Satellite Tracked	GPS: L1 C/A, L1C, L2C, L2P, L5
	GLONASS: L1 C/A, L2C, L2P, L3, L5
	BEIDOU: B1, B2, B3
	GALILEO: E1, E5a, E5b, E5 AltBOC, E6
	QZSS: L1 C/A, L1C, L2C, L5, L6
	IRNSS: L5
	SBAS: L1, L5
Channels	555
Position Rate	5 Hz
Signal Reacquisition	< 1 sec
RTK Signal Initialization	Typically < 10 sec
Hot Start	Typically < 15 sec
Initialization Reliability	> 99.9 %
Internal Memory	8 GB
Micro SD Card	Expansion slot up to 32 GB

### POSITIONING<sup>1</sup>

HIGH PRECISION STATIC SURVEYING	
Horizontal	2.5 mm + 0.1 ppm RMS
Vertical	3.5 mm + 0.4 ppm RMS
CODE DIFFERENTIAL POSITIONING	
Horizontal	0.25 m RMS
Vertical	0.45 m RMS
SBAS POSITIONING <sup>2</sup>	
Horizontal	0.30 m RMS
Vertical	0.60 m RMS
REAL TIME KINEMATIC (< 30 Km) – NETWORK SURVEYING <sup>3</sup>	
Fixed RTK Horizontal	8 mm + 1 ppm RMS
Fixed RTK Vertical	15 mm + 1 ppm RMS

### INTEGRATED GNSS ANTENNA

High accuracy four constellation micro-strip antenna, zero phase center, with internal multipath suppressive board

### INTERNAL RADIO

Type	Tx - Rx
Frequency Range	410 - 470 MHz
Channel Spacing	12.5 KHz / 25 KHz
Maximum Range	3-4 Km in urban environment Up to 10 Km with optimal conditions <sup>4</sup>

### INTERNAL MODEM

Band	GSM/GPRS/EDGE LTE/UMTS/WCDMA
------	---------------------------------

### COMMUNICATION

I/O Connectors	7-pins Lemo and 5-pins Lemo interfaces. Multifunction cable with USB interface for PC connection
Bluetooth	2.1 + EDR, V4.0
Wi-Fi	802.11 b/g/n
Web UI	To upgrade the software, manage the status and settings, data download, etc. via smart phone, tablet or other internet enabled electronic device
Reference outputs	RTCM 2.1, 2.3, 3.0, 3.1, 3.2, 3.3 CMR, CMR+, RTCA
Navigation outputs	GGA, ZDA, GSA, GSV, GST, VTG, RMC, GLL

### POWER SUPPLY

Battery	2 rechargeable and replaceable 7.2 V – 3400 mAh Intelligent lithium batteries
Voltage	9 to 22 V DC external power input with over-voltage protection (5 pins Lemo)
Working Time	Up to 12 hours (2 batteries hot swap)
Charge Time	Typically 4 hours

### PHYSICAL SPECIFICATION

Dimensions	φ 157 mm x 76 mm
Weight	1.19 Kg (with one battery) 1.30 Kg (with two batteries)
Operating Temperature	-30°C to 65°C (-22°F to 149°F) -40°C to 65°C (-40°F to 149°F) <sup>5</sup>
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Waterproof/Dustproof	IP67
Shock Resistance	Designed to endure to a 2 m pole drop on concrete floor with no damage
Vibration	Vibration resistant

#### Specifications are subject to change without notice.

1. Accuracy and reliability are generally subject to satellite geometry (DOPs), multipath, atmospheric conditions and obstructions. In static mode they are subject even to occupation times: the longer is the Baseline, the longer must be the occupation time.
2. Depends on SBAS system performance.
3. Network RTK precision depends on the network performances and are referenced to the closest physical base station.
4. Varies with the operating environment and with electromagnetic pollution.
5. Special version.

## Appendix 1: Default radio configuration

Internal radio frequency coverage range of 410MHz-470MHz, users can choose radio channel and radio protocol through the handbook software or WEB interface. The frequency of each channel is as follows.

**Table 2 Default frequency of internal radio**

Channel	Frequency
1	438.125 MHz
2	440.125 MHz
3	441.125 MHz
4	442.125 MHz
5	443.125 MHz
6	444.125 MHz
7	446.125 MHz
8	447.125 MHz

## Appendix 2: Copyrights, warranty and environmental

## recycling

### Copyrights and trademarks

© 2018, STONEX® Limited. All rights reserved.

STONEX®, the STONEX® logo, and S900 GNSS receiver are trademarks of STONEX® Limited.

STONEX® *Cube-a*, STONEX® *GPS Processor* are trademarks of STONEX® Limited.

Bluetooth is a trademark owned by Bluetooth SIG, Inc. and licensed to Trimble Navigation Limited. All other trademarks are the property of their respective owners.

### Release Notice

This is the May 2017 release of the STONEX® S900 GNSS new model receiver user guide.

The following limited warranties give you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

### Standard Limited Warranty

The terms and conditions of this Limited Warranty constitute the complete and exclusive warranty agreement between The Customer or Dealer and STONEX® for the Product and supersedes any prior agreement or representation made in any STONEX® sales document or advice that may be provided to Customer by any STONEX® representative in connection with Customer's purchase of the Product. No change to the conditions of this Limited Warranty is valid unless it is made in written form and signed by an authorized STONEX® supervisor.

STONEX® warrants that its Products:

- (1) are free from defects in materials or workmanship for generally 2 years.

a) accessories or specific parts for which different limited warranty period shall apply.

(2) have been tested/calibrated in proper working status prior to shipment.

The warranty period starts from date of first sale of the instruments. At its sole discretion, under the warranty period, STONEX® will repair the product or send parts for replacement at its expense. STONEX® agrees to repair or replace the defected instrument within thirty (30) days only if STONEX® recognizes that the defects of the instrument are not caused by human factors or no obvious damage to its surface is visible. STONEX® warrants any new replaced parts or products are warranted to be free from defects in materials and workmanship for thirty (30) days or for the remainder of the Limited Warranty Period of the Product in which they are installed, whichever is longer. Faulty Parts or Products replaced under this Limited Warranty shall become property of STONEX®. All products that have to be repaired have to be returned to our technical representative office location via any delivery company the customer prefers, nevertheless STONEX® is not accountable for the unlikely event that the Products gets lost in transit. Any damage inflicted by the customer or by third party after the products has been delivered to the customer is excluded from the limited warranty as well any damage arising from an improper use, from any action or use not provided for in the enclosed user guides and/or manuals.

## Shipping policy

The Customer or the dealer is required to pay for the charges for shipping of fault parts or instruments to STONEX® representative office and STONEX® is providing the shipping for return. Dealers need to follow STONEX® repair/service procedure to achieve a better and prompt service result.

## Return policy Dead On Arrival instruments.

All returned products have to be shipped to STONEX® representative office.

The original Purchaser has a period of seven (7) days starting from date of purchasing to signal the existence of a defect in the instrument for a full refund (less shipping and handling), provided the merchandise is in new, resalable condition and returned in the original, undamaged packaging. Customer has to pay for both the return and the original freight fees, regardless of the original freight paid by the Company. All warranty books, instruction manuals, parts and accessories must be included as well as the original box in which the item was shipped. We recommend placing the original carton inside another box, to avoid any additional damage to the carton itself. In some cases, returns of special items will require a re-stock fee. Acceptance of returned merchandise is final only after inspection by STONEX®.

Above terms and policies shall apply as for hardware. Dealers need to follow STONEX® repair/service procedure to achieve a better and prompt service result.

### Firmware/Software warranty.

Stonex doesn't warrant that operation of Firmware/Software on any instruments will be uninterrupted or error-free, or that functions contained in Firmware/Software will operate to meet your requirements.

Stonex will forward the Software/Firmware Fix to the dealer or customer. Firmware/software Fix means an error correction or other update created to fix a previous firmware version that substantially doesn't conform to the instruments specification.

### Over Warranty repair(s) policy.

Customer shall pay the standard repair fees for any service (whether part replacement or repairs) and performed by STONEX® under request and explicit authorization of the customer itself. In this case the customer is charged for return shipment's fees as well.

## Disclaimer and Limitation of Remedy

All other express and implied warranties for this product, including the implied warranties of merchantability and fitness for a particular purpose and/or non infringement of any third party's rights, are hereby disclaimed. Stonex® expressly disclaims all warranties not stated in this limited warranty. Any implied warranties that may be imposed by law are limited in duration to the term of this limited warranty. Some jurisdictions do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to customer. Customer must read and follow all set-up and usage instructions in the applicable user guides and/or manuals enclosed. If customer fails to do so, this product may not function properly and may be damaged. Customer may lose data or sustain personal injuries. Stonex®, its affiliates and suppliers do not warrant that operation of this product will be uninterrupted or error free; as do all electronics at times. If this product fails to work as warranted above, customer's sole and exclusive remedy shall be repair or replacement. In no event will Stonex®, its affiliates or suppliers be liable to customer or any third party for any damage in excess of the purchase price of the product. This limitation applies to damages of any kind whatsoever including (1) damage to, or loss or corruption of, customer's records, programs, data or removable storage media, or (2) any direct or indirect damages, lost profits, lost savings or other special, incidental, exemplary or consequential damages, whether for breach of warranty, contract, tort or otherwise, or whether arising out of the use of or inability to use the product and/or the enclosed user guides and/or manuals, even if Stonex®, or an authorized Stonex® representative, authorized service provider or reseller has been advised of the possibility of such damages or of any claim by any other party. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages for some products, so the exclusions or limitations may not apply to customer. This limited warranty gives customer specific legal rights, and customer may also have other rights which vary from country/state/jurisdiction to country/state/.



## Instruments

Two (2) years on STONEX® Products:

GPS Receiver: S900 GNSS Receiver

## Accessories

### **Accessories & Specific Parts Warranty:**

For Accessories provided by Stonex with the instruments S900 GNSS the following general warranty time is for reference:

- Batteries: 7 months.
- Battery chargers: 7 months.
- Adapters for battery chargers, Cables, Tribrach, Pole, Antennas: 2 years.

## Service Procedure

Repair/Service procedure for dealers.

(1) S/N of the instrument and a detailed description of the defect (sometimes pictures or video) will be required to indicate the cause and problem.

(2) If dealer wants to repair an instrument under warranty period on their site:

1) If dealers don't have the part in stock they have to send an official order to STONEX® and pay for it and so STONEX® will send the new part to them so they can repair the instrument.

2) When the repair is over, the dealer has to fill the "Spare Part Refund" module and send it to the dedicated mail address.

3) Wait for STONEX®'s authorization SPR no;

4) When dealer receive the SPR authorization no they can send back to STONEX® appointed office the broken part with attached the SPR module;

5) when STONEX® receives the broken part STONEX® shall verify it and if everything is ok the cost of the part shall be refund (refund will be done only after check of the failure part and final approval of STONEX®).

(3) If the instrument needs to be sent back to STONEX® for repair/replacement, dealer/customer has to send to STONEX® a "Returned Merchandise Authorization (RMA)" before they send back the fault instrument. STONEX® shall, at its sole discretion, decide on the place of performance for work under warranty.

## Environmental recycling

The cardboard box, the plastic in the package and the various parts of this product have to be recycled and disposed of in accordance with the current legislation of your Country.

## For countries in the European Union (EU)

The disposal of electric and electronic device as solid urban waste is strictly prohibited: they must be collected separately.

Contact Local Authorities to obtain practical information about correct handling of the waste, location and times of waste collection centre. When you buy a new device of ours, you can give back to our dealer a used similar device.

The dumping of these devices at unequipped or unauthorized places may have hazardous effects on health and environment.

The crossed dustbin symbol means that the device must be taken to authorize collection centres and must be handled separately from solid urban waste.



## For countries outside European Union (EU)

The treatment, recycling, collection and disposal of electric and electronic devices may vary in accordance with the laws in force in the Country in question.

## Appendix 4: Safety Recommendations

### Warnings and Cautions

An absence of specific alerts does not mean that there are no safety risks involved in the use of this equipment.

Always follow the instructions that accompany a Warning or Caution, reported in this.

This information is intended to minimize the risk of personal injury and/or damage to propriety. In particular, observe safety instructions that are presented in the following form:

**WARNING** - A Warning alerts about risk for health and/or damage to the propriety. A warning identifies the nature of the risk and the extent the possible injury and/or damage. It also describes how to protect yourself and/or the equipment from this risk.

**CAUTION** - A Caution alerts about a possible risk of damage to the equipment and/or loss of data, but no risk for human safety.

### Wireless Module Approval

The receivers use internal wireless modules or can be connected to an external data communications UHF radio. Regulations regarding the use of the radio-modems vary greatly from country to country. In some countries, the unit can be used without obtaining an approval license. Other countries require specific approval or auto certification by the set maker.

Before using this instrument, check if authorization to operate the receiver is required in your country. It is the responsibility of the importer to verify if it is necessary a certification or license for the equipment in the country of use.

### Instrument Approval

Covers technical features of the equipment relatives to electromagnetic emissions that can cause interference and disturbances to other instruments (note like emc compatibility) or generate not correct functionalities of the instrument itself. Approval is granted by the manufacturer of the equipment. Some countries have unique technical requirements for operation in particular frequency bands. To comply with those requirements, Stonex srl may modified the equipment to be subjected to grant.

Unauthorized modification of the units voids already got approvals, the warranty time and the operational licenses of the instrument.

## UHF 410-470 MHz Data transceiver

### General Antenna Installation Warning

1. All antenna installation and servicing are to be performed by qualified technical personnel only. When servicing the antenna, or working at distances closer than those listed below, ensure the transmitter has been disabled.
2. Typically, the antenna connected to the transmitter is a directional (high gain) antenna, fixed-mounted on the side or top of a building, or on a tower. Depending upon the application and the gain of the antenna, the total composite power could exceed 90 watts ERP. The antenna location should be such that only qualified technical personnel can access it, and that under normal operating conditions no other person can touch the antenna or approach within 0.6 meters of the antenna.

You can see below a table showing the Antenna Gain versus Recommended Safety Distance:

	Antenna Gain		
	0-5 dBi	5-10 dBi	10-16.5 dBi
Minimum RF safety distance	0.6 meters	1.06 meters	2.3 meters

**For USA:** The FCC has adopted a safety standard for human exposure to radio frequency electromagnetic energy. Proper use of this radio modem results in exposure below government limits. The following precautions are recommended:

**DO NOT** operate the transmitter when someone is located less than 20 cm (7.8 inches) of the antenna.

**DO NOT** collocate (place within 20 cm) the radio antenna with any other transmitting instruments.

**DO NOT** operate the transmitter unless all RF connectors are secure, and any open connectors are properly terminated.

**DO NOT** operate the equipment near electrical blasting caps or in an explosive atmosphere.

All equipment must be properly used according to the installation instructions for safe operation.

All equipment should be repaired and calibrated only by a qualified technician

### **For Europe**

The European Community provides some Directives for the electronic equipments introduced on the market.

All the relevant information's are available on the European Community website:

<http://ec.europa.eu/enterprise/sectors/rtte/documents/>

The text of the Directive 99/05 regarding telecommunication equipments is available, while the applicable Directives (Low Voltage and EMC) are available at:

<http://ec.europa.eu/enterprise/sectors/electrical>

## FOR USA

For your own safety, and in terms of the RF Exposure requirements of the FCC always observe the precautions listed here.

- Maintain a minimum separation distance of 20 cm (7.8 inches) between yourself and the radiating antenna.
- Do not collocate (place within 20 cm) the radio antenna with any other transmitting device.

## Bluetooth/WiFi radio Module

The radiated output power of the internal Bluetooth module of this equipment is far below the FCC and EU radio frequency exposure limits. In any case, be sure to use the equipment with the radio far at least 20 cm from the human body. The Bluetooth module match the guidelines found in radio frequency "safety standards and recommendations "published by Scientific organizations.

Stonex srl therefore believes the internal wireless radio is safe for use by end users. The level of energy emitted is far less than the electromagnetic energy emitted by wireless devices such as UMTS phones. However, the use of Bluetooth/WiFi may be restricted in some special situations or place, like aircraft , hospital ,etc. If you are unsure of existence of restrictions, you should ask for authorization before switching on the Bluetooth radio.

## Raccomandation for installing antennas for internal radios

An absence of specific alerts does not mean that there are no safety risks involved in the use of this equipment.

Always follow the instructions that accompany a Warning or Caution, reported in this. This information are intended to minimize the risk of personal injury and/or damage to propriety. In particular, observe safety instructions that are presented in the following form:

### CAUTION

For your own safety, and to match the RF Exposure requirements of the FCC, always observe these precautions:

- Always maintain a minimum separation distance of 20 cm (7.8 inches) between yourself and the radiating antenna.
- Do not collocate (place within 20cm) the radio antenna with any other transmitting device.
- Do not switch on the GSM or UHF module without the antenna mounted to the external connector.

UHF Antennas having a gain greater than 5 dBi, are strictly prohibited for use with this device. The required antenna impedance must be 50 ohms.

### Rechargeable Lithium-ion batteries

These receivers use a rechargeable Lithium-ion battery.

### WARNING

- Do not creates damage at the rechargeable Lithium-ion battery.

A damaged battery can cause an explosion, with risk of fire, and can result in personal injury and/or property damage.

To prevent injury or damage:

- Do not use or charge the battery if it appears to be damaged. Signs of damage are discoloration, warping, leaks of liquids.
- Do not expose the battery to fire, high temperature, or direct strong sunlight.
- Do not introduce the battery in water or liquid substance, in general.
- Do not use or store the battery in very hot ambient.
- Do not drop or puncture the battery.
- Do not open the battery and do not put in short-circuit its electrical contacts.



## **WARNING**

- Avoid direct contact with the rechargeable Lithium-ion battery if it appears damaged. Battery liquids are corrosive and, and contact with it can result in personal injury or damage to properties.

To prevent injury or damage:

- If the battery leaks, avoid contact with the battery fluid.
- 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.



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