STONEX

STONEX S599
GNSS Receiver
User Manual

February 2026 – Ver. 1 -Rev. 1

www.stonex.it

Contents

1. Introduction

This document is the user guide for S599, and it's intended to introduce how to use the receiver correctly.

The S599 is a compact and lightweight GNSS receiver. It is an ideal solution for GIS professionals who need high accuracy positioning in a compact and portable device. Weighing just 380 grams and measuring only 98mm in width and 46mm in height, this ultralight receiver offers exceptional ease of use and is well-suited for long hours of field data collection.

Despite its small size, the S599 is designed to withstand challenging environments. It can function perfectly in temperatures ranging from -30°C to +60°C and has an IP68 water and dust resistance rating, offering a durable and rugged design that ensures reliable performance in any environment.

Equipped with a built-in camera for AR stakeout and mapping, the S599 shows real-time navigation and distance to target points. Its impressive 12-hour battery life ensures full-day operation without the need to recharge, keeping your workflows uninterrupted.

It delivers a positioning speed of 20Hz, and an integrated IMU, ensuring precise position updates.

Additionally, the device is drop-resistant up to 1.5 meters, ensuring reliability even in difficult conditions.

The Key Features of the S599 are:

- Multi-frequency, multi-constellation satellite reception
- Tilt correction IMU sensor
- Ultra-compact & lightweight
- Integrated camera for AR stakeout
- Easy configuration using Stonex Cube-a Android application and Web User Interface
- Durable and rugged design
- IP68 rating
- 2.1+EDR, V5.0 Bluetooth

2. Receiver appearance

2.1 Front view

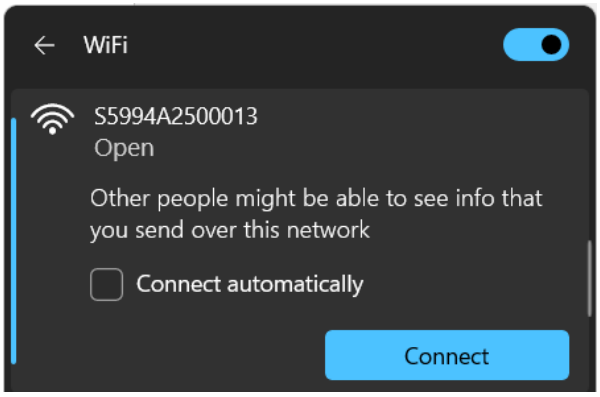
Num.	Item	Description
1	Satellite indicator /charging indicator	**Flashing red**: position not calculated **Flashing green**: position calculated without a fixed solution **Green**: fixed solution **Flashing green and red alternately**: GNSS board abnormal While powered off it act as charging indicator: **Flashing red**: charging **Green**: charge completed
2	Power button (functions)	**Power on**: keep pressed until you hear a beep. After three short beeps, the device is ready to work. **Current working mode**: short press, if the speaker is enabled the device will describe the current working mode. **Power off**: keep pressed until all LED start to flash in green, release then short press. **Self-test:** keep pressing until all LED start to flash in green, release then long press until the LED stops flashing. The device will test the internal modules. If an error is found the device will start to beep, to stop it short press the power button. Please contact your local dealer if this happens.
3	Communication indicator	**Blue**: a device is connected to the S599 via Bluetooth or WiFi **Green:** no devices are connected to the S599 via Bluetooth nor WiFi **Flashing**: • Raw data recording: flashing frequency according to the sampling interval • Datalink successful: the differential corrections are being received or transmitted.

2.2 Bottom view

Num.	Item	Description
1	USB type-C port	Charge port Can be used to access the device's internal memory if connected to a PC using a USB to type-C cable. The S599 must be on to access the internal memory
2	5/8' connector	Screw connector for support
3	Serial Number	Serial number of the device
4	Camera	Camera for AR stakeout. To provide visual indications during stakeout. The camera must face away from the operator

3. Web Interface

S599 Web User Interface (WebUI) functionality allows managing the receiver by connecting to its Wi-Fi hotspot. The name of the Stonex GNSS receiver hotspot is the receiver serial number.

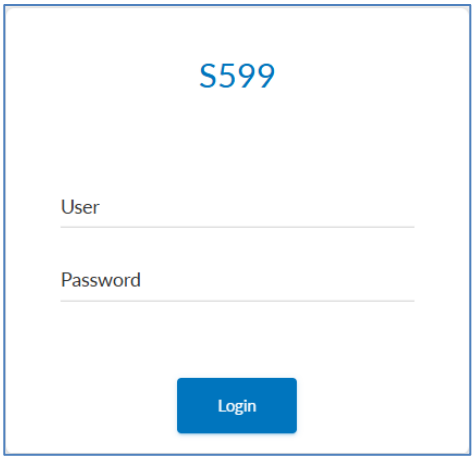


Once connected with a smartphone or PC, using any internet browser the WebUI is found at the IP address: **192.168.10.1**

The standard credentials to access the WebUI are:

User: **admin**

Password: **password**

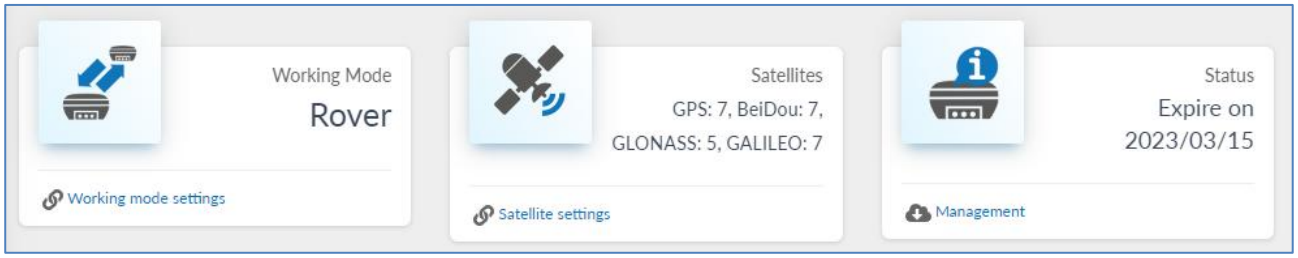


3.1 Dashboard

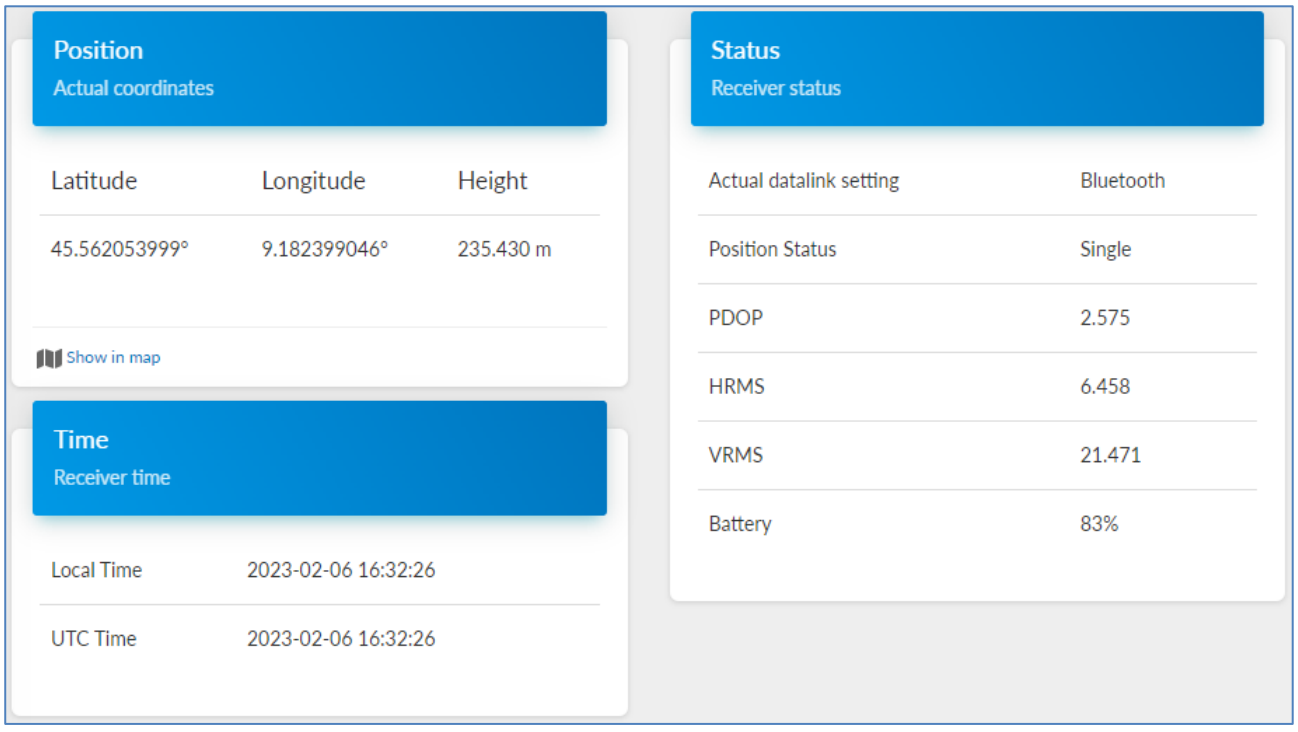
It's a summary of the status of the receiver, the top line is shared with all the other pages, it contains the serial number of the device, the battery charge status, the language selection button, the power options, and the device model.

The language selected modify the language of the WebUI and, if available, the language of the voice messages.

The second section contains the current working mode, the number of satellites used for positioning, and the expiration date of the current activation code.

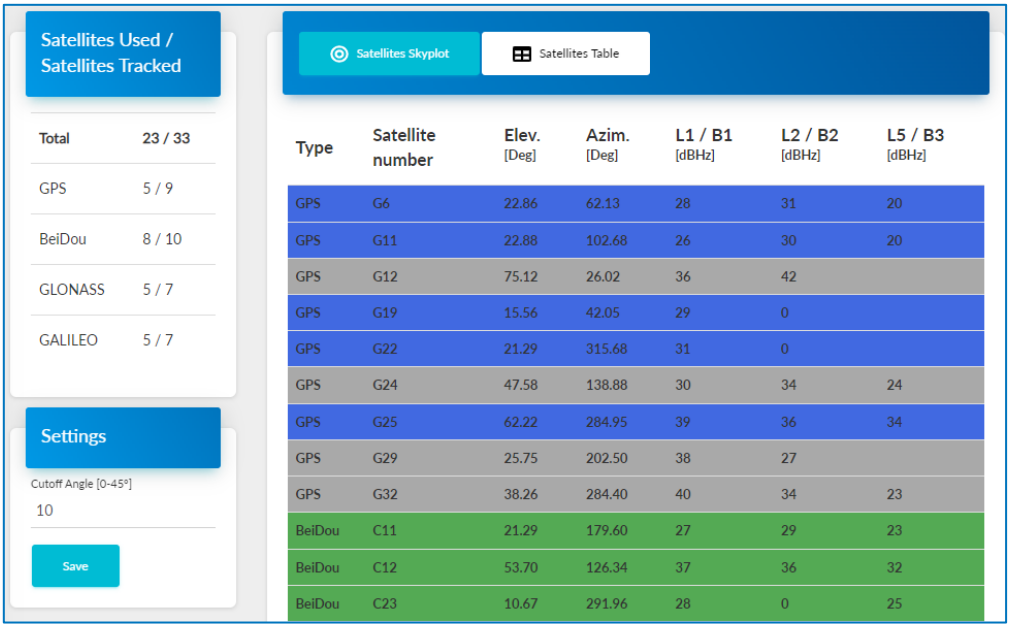


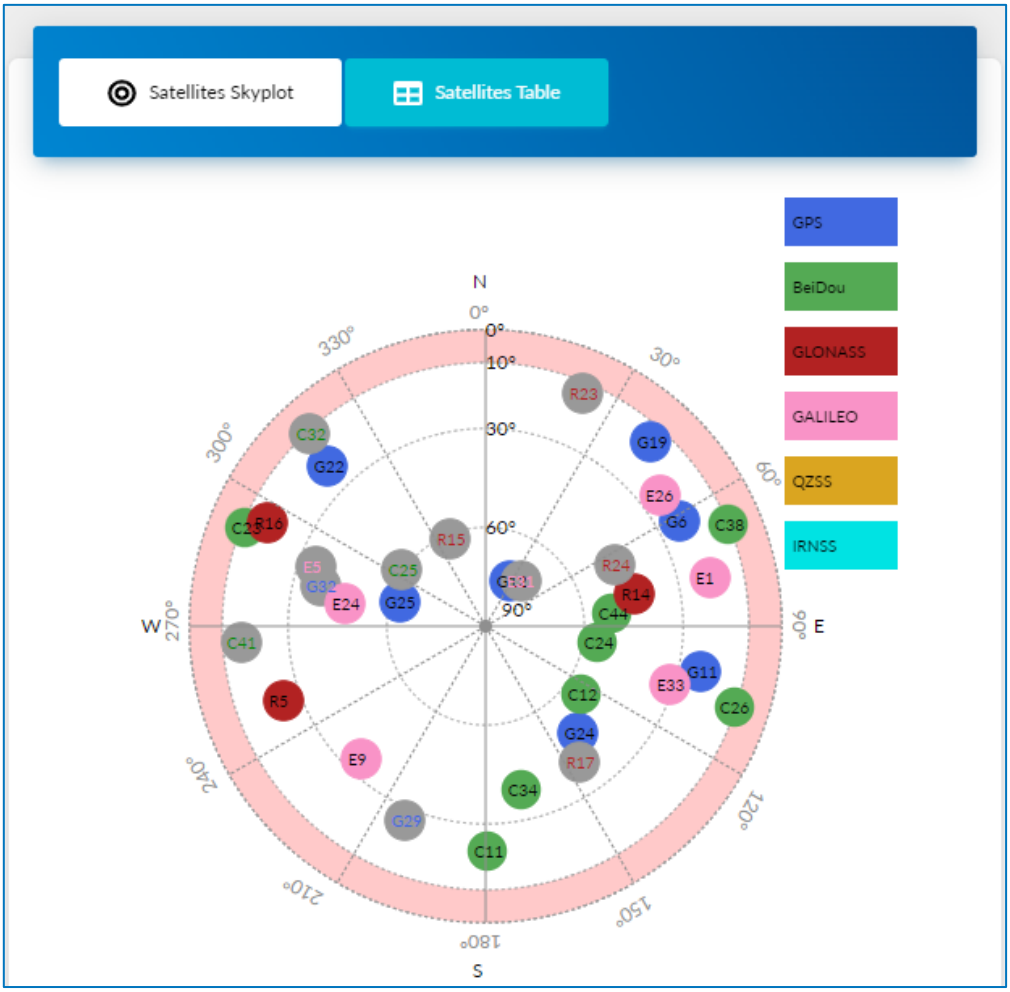
The third section recaps current WGS84 coordinates, Receiver time, and quality of the solution.
Local time refers to the time zone set on the device setting page.



3.2 Satellites

Here are shown the satellites tracked in the form of a Table and Skyplot. In both views, constellations are colour coded. Satellites shown in grey are tracked but not used for positioning. It's also possible to set the cut-off angle, every satellite with a lower elevation will not be considered as not tracked.



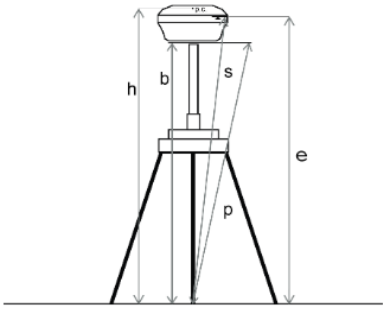


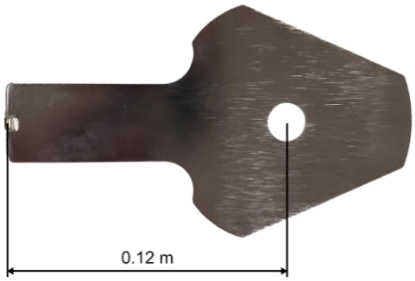
3.3 Static Survey

S599 it's able to record raw data while working as a base or as a rover. In this page is possible to set the option for raw data recording. Before changing any setting be sure that the device is not recording.

The **point name** can contain at maximum 4 alphanumeric characters, the **antenna height** can be measured with five different methods as explained by the picture. Select the correct method so that the correct phase center offset is applied.

- Antenna vertical height (fromBottom): $\boldsymbol{b}$
- Antenna vertical height (fromEdge): $\boldsymbol{e}$
- Antenna phase center height: $\boldsymbol{h = b + H + HL1}$
- Antenna slant height mode: $\boldsymbol{s = \sqrt{e^2 + R^2}}$
- Altimeter pieces: $\boldsymbol{p = \sqrt{b^2 + l^2}}$
- Length of altimeter pieces: $\boldsymbol{l = 0,12\ m}$





Altimeter pieces

- Values of parameters (HL1, HL2, H, R) are visible in information section

Interval: define the frequency of the recording, from once every minute (60 S) to twenty time in a second (20 Hz).

Duration: define the length of a recording file. When a recording has reached the full duration, a new one will start.

Recording mode: set record once or continuous recording.

Enabling **auto record after power on** set the receiver to start recording raw data when is turn on, as soon as the PDOP value is lower than the threshold set the recording will start.

Save: save the configuration without starting a recording

Start: will save the configuration and start the recording

Static Survey

Record Raw Data

Status : Record Idle

Point Name :

0000

Antenna Height : valid input [-30000 / +30000] mm

1930

Antenna Measurement :

(b)Antenna vertical height(from bottom)

Pdop Threshold :

36.00

Interval :

1 Hz

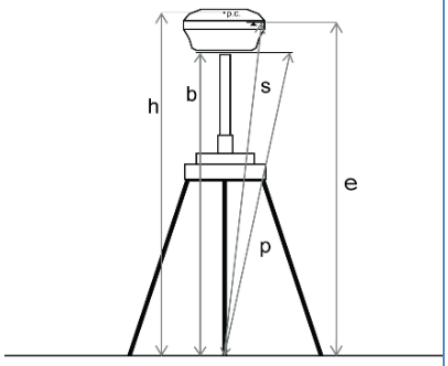
Duration Time :

Unlimited

Auto record after power on

◉NO ○YES

Save Start Stop

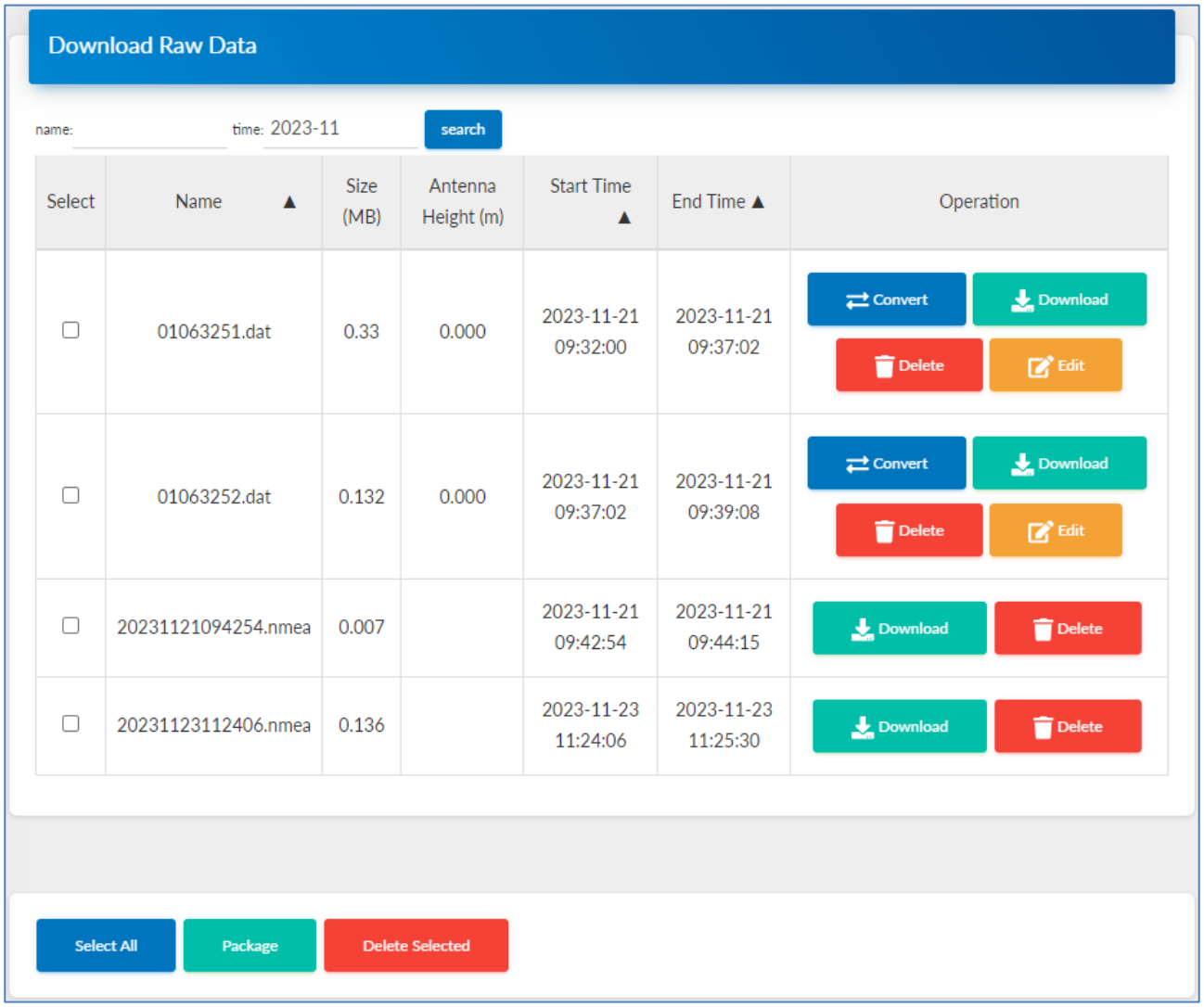


3.4 Download Raw Data

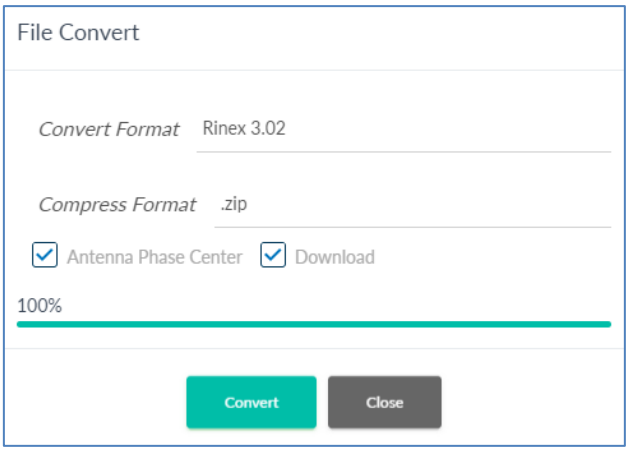
From this page, it's possible to download and delete the log files (Raw data, Rinex, NMEA, self-test report), singularly on in batch.

Is possible to filter the files by **name** and by **time**. Click on **search** to apply the filter.

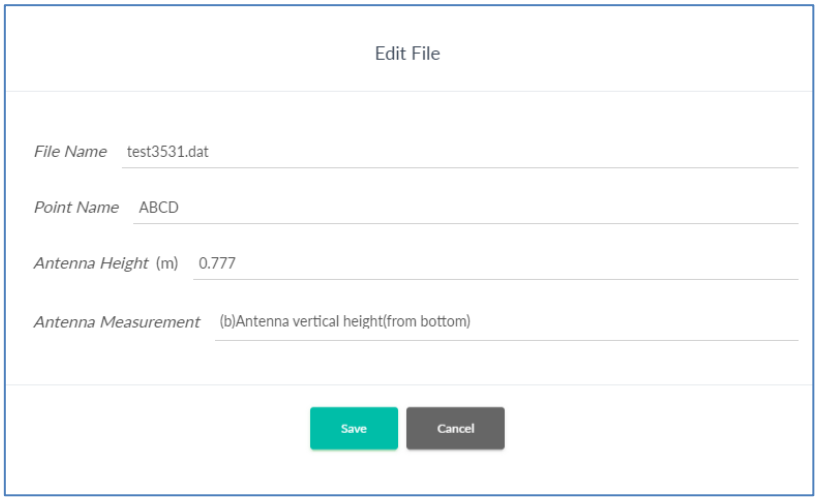
By clicking on **Name**, **Start Time** or **End Time** is possible to sort the file in ascending or descending order.



Is possible to convert the raw data files (*.dat) in Rinex format by pressing Convert. The Rinex format can be changed as well as the compression format. If Antenna Phase Center is selected, the height in the Rinex will be the one of the Antenna Phase Center. If Download is selected the Rinex files will be downloaded automatically at the end of the conversion.



For every raw data file is showed the start time and the end time, the name, the size of the file, and its set antenna height. By pressing Edit, is possible to change the file name, point name, antenna height, and measurement type.



It's possible to manage the log files also by accessing the record folder in the internal memory of the device from a PC.

3.5 Working Mode

This page contains all the settings to set up RTK datalink

3.5.1 Rover

In Rover mode, S599 automatically recognizes the RTK corrections format between:

- RTCM 3.2
- RTCM 3.0

It's necessary to correctly set the datalink between:

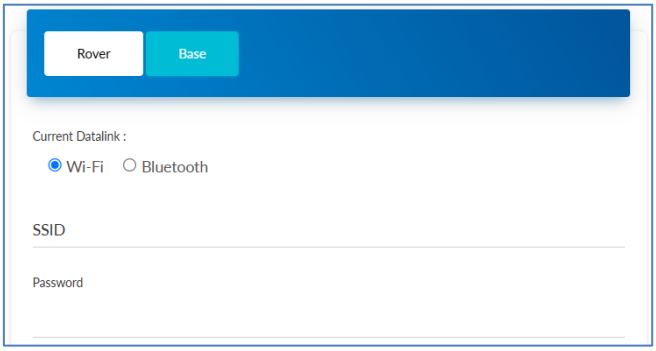
- Network (Wi-Fi)
- Bluetooth

3.5.1.1 Network

S599 can connect to the Internet using a Wi-Fi connection.

Internet Settings

To use a Wi-Fi connection, the SSID and the password must be set manually. SSID and password must contain only alphanumeric characters.



Attention! Using this functionality will disable the S599 Wi-Fi hotspot and the IP address of the WebUI will change. To access the WebUI the procedure is the same as shown in Chapter 3, but it's necessary to connect to the same Wi-Fi network set in the WebUI and use the IP address associated with the S599 by the network instead of 192.168.10.1.
It's possible to reactivate the S599 Wi-Fi hotspot, using Stonex Cube-a by setting Wi-Fi connect mode: Master in Device > Wi-Fi Mode Settings.

Connection Settings

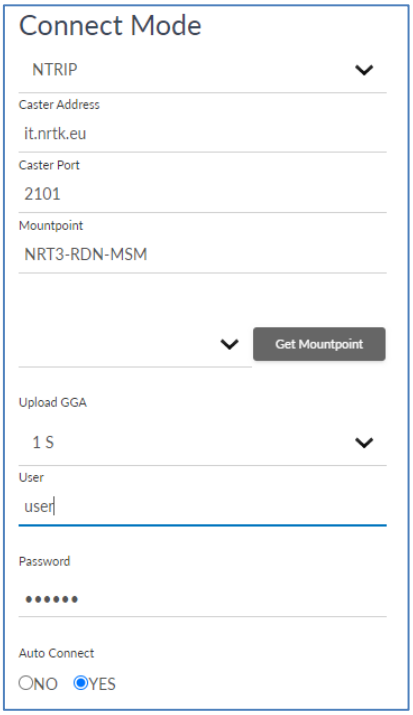
S599 uses the NTRIP protocol to receive corrections from the network.

To connect to an NTRIP caster it's necessary to set its IP address and port. The mountpoint can be written manually or selected from the list obtained by pressing Get Mountpoint, internet connection and caster IP address and port must be already set.

NTRIP Network often needs to know the position of the rover to provide the corrections, in these cases the GGA upload must be set at 1 second at least.

The user and Password are the ones necessary to access the Caster if needed.

If the "Auto connect" option is enabled, at start-up the S599 will use the last settings to connect automatically to the NTRIP caster.



3.5.1.2 Bluetooth

Bluetooth has no settings. The datalink's fully managed by the source of the transmission, for example, a controller with Stonex Cube-a will set the datalink to Bluetooth if the "Phone network" communication mode is selected.

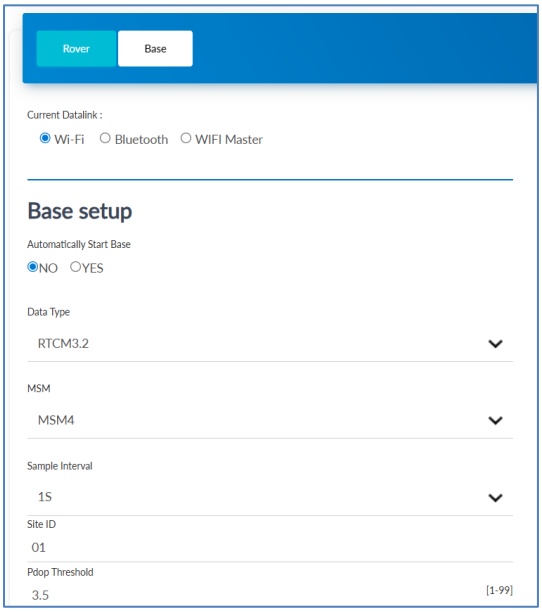
3.5.2 Base

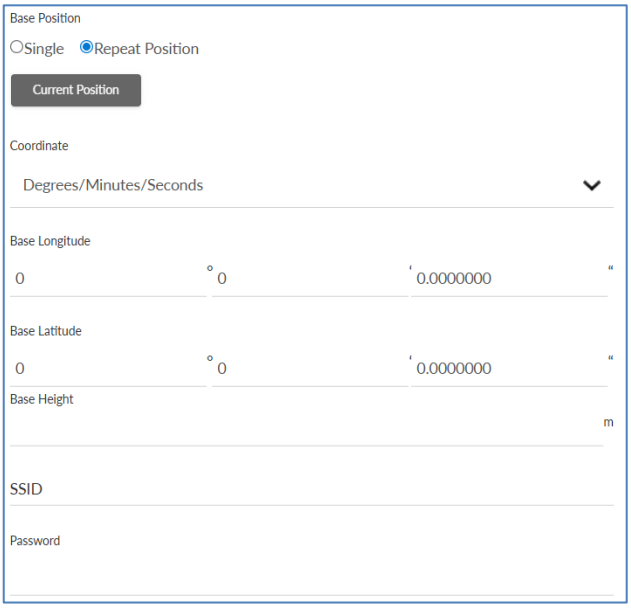
As Base S599 can provide RTK corrections in the following formats:

- RTCM 3.2
- RTCM 3.0

The PDOP threshold limits the use of the base if the PDOP value is higher.

To set the base position select Repeat Position, the coordinates requested are Longitude/Latitude/Height of the S599 phase center. The phase center offset can be found on the label or in the Information page.
By selecting the “Single” option for the base coordinates, the S599 will set the phase center coordinates calculated at the start of the base transmission.





3.5.2.1 Network

S599 can connect to the Internet using a Wi-Fi connection.

Internet Settings

To use a Wi-Fi connection, the SSID and the password must be set manually. SSID and password must contain only alphanumeric characters.

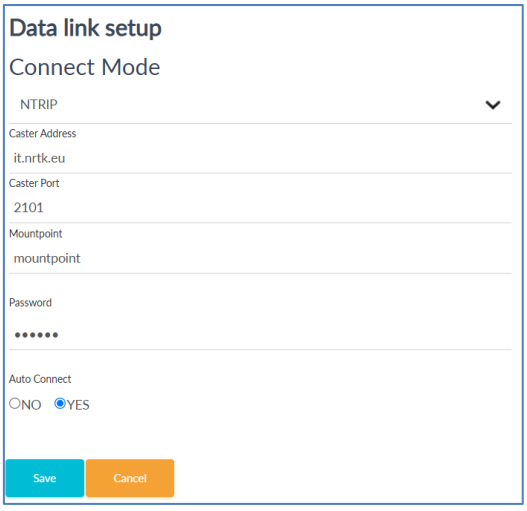
Attention! Using this functionality will disable the S599 Wi-Fi hotspot and the IP address of the WebUI will change. To access the WebUI the procedure is the same as shown in Chapter 3, but it's necessary to connect to the same Wi-Fi network set in the WebUI and use the IP address associated with the S599 by the network instead of 192.168.10.1.
It's possible to reactivate the S599 Wi-Fi hotspot, using Stonex Cube-a by setting Wi-Fi connect mode: Master in Device > Wi-Fi Mode Settings.

Connection Settings

S599 uses the NTRIP protocol to transmit corrections to a caster.

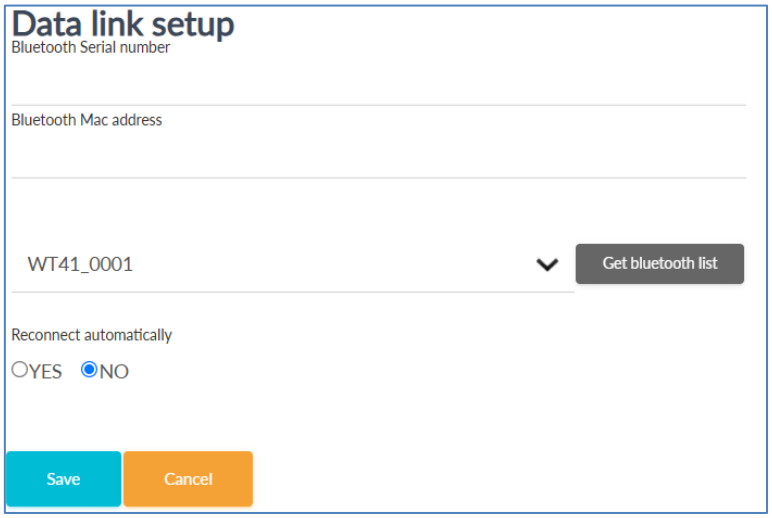
To connect to an NTRIP caster it's necessary to set its IP address and port.
Mountpoint is fixed to the device serial number.
The password is the one that can be requested by the Caster for the bases.

If the "Auto connect" option is enabled, at start-up the S599 will use the last settings to connect automatically to the NTRIP caster.



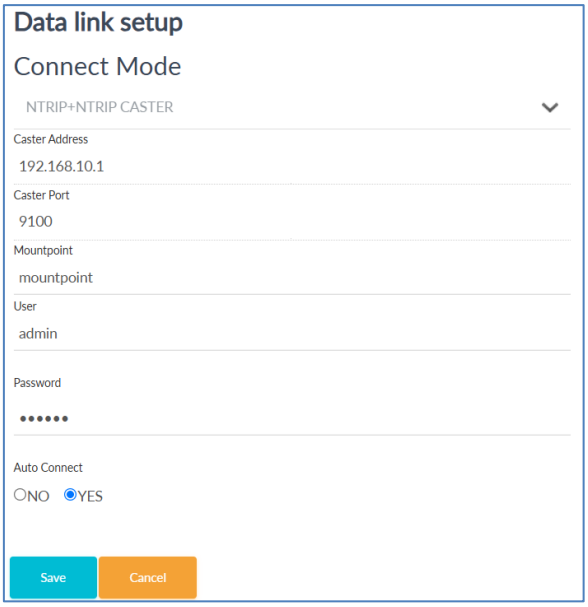
3.5.2.2 Bluetooth

Using Bluetooth datalink allows the transmission of the corrections via Bluetooth to another device (ex. SR02 external radio). It's possible to scan for nearby Bluetooth devices, selecting a voice from the scan results will automatically complete the Serial number and Mac address field.



3.5.2.3 WIFI Master

S599 has a basic internal caster, to work as a standalone base.



The caster address and port cannot be changed. Mountpoint, User and Password can be changed.
The default values are:

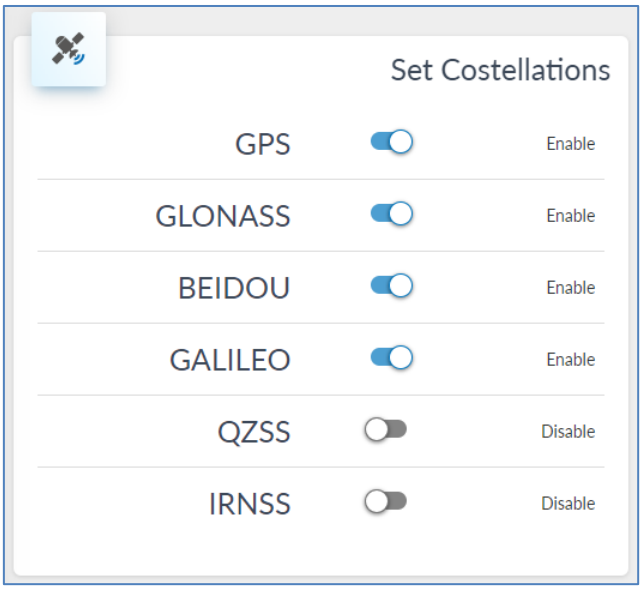
- Mountpoint: “device serial number”
- User: admin
- Password: pass

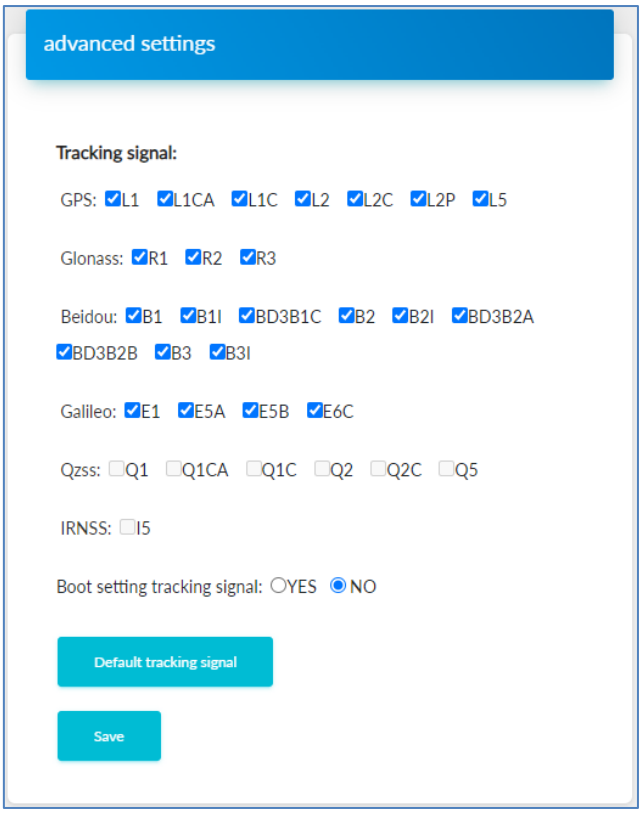
To receive the corrections from this base, the NTRIP Client must connect to the S599 WiFi hotspot identified by its serial number (like for connecting to the WebUI). The NTRIP Client settings are:

- IP address: 192.168.10.1
- Port: 9100
- Mountpoint: same as the one set for the base
- GGA Upload: not necessary
- User: same as the one set for the base
- Password: same as the one set for the base

3.6 Satellite Settings

From this page, it's possible to choose which constellation to track. In the advanced settings it's possible to select the signals to use, the password to access the advanced setting is config1234.

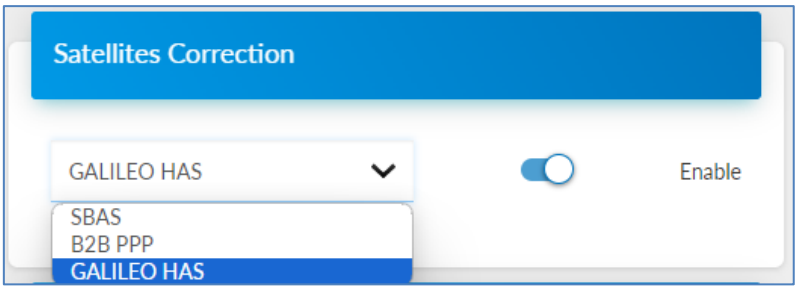




Like on the Satellite page, it's possible to change the satellite cut-off angle.

RTK timeout is the number of seconds that must pass without receiving RTK correction to consider the connections lost and so revert the solution to single or to use the satellite corrections.

In the Satellite Corrections is possible to enable different source of corrections: SBAS, B2B PPP and Galileo HAS.



Once enabled, the device will start using the corrections received from the satellites to improve the quality of the position.

These satellites corrections have the vantage to not need any datalink aside the reception of the signals which carries the corrections and are available free of charge. The performances (accuracy and convergence time) and availability depend on the service selected.

RTK correction from other means (NTRIP, etc.) are applied separately, two different solutions are calculated in real time. The position obtained by classical RTK is dominant. The table below show which solution is used for the position based on the corrections received.

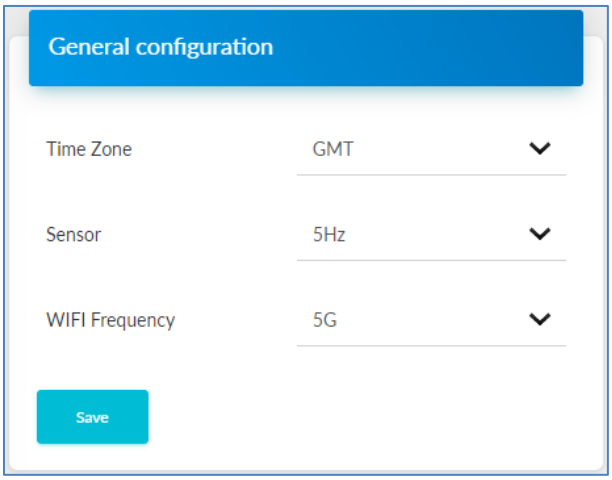
Satellite corrections / Classic RTK	YES	NO
YES	Classic RTK	Classic RTK
NO	Satellite Corrections	Single

Attention! Different source of corrections could use different reference frame.

3.7 Device Settings

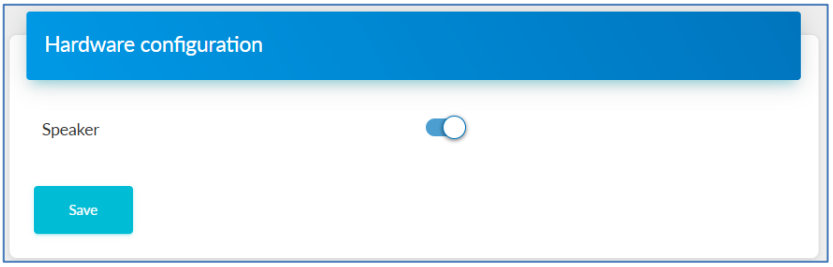
This page contains other configuration option for S599, the first section include:

- Time zone: set the time zone to change the Local time as shown in the Dashboard
- Sensor: set the refresh rate of the IMU sensor
- WIFI Frequency: frequency of the S599 WiFi hotspot, 5G is necessary to be selected to use the camera functionality



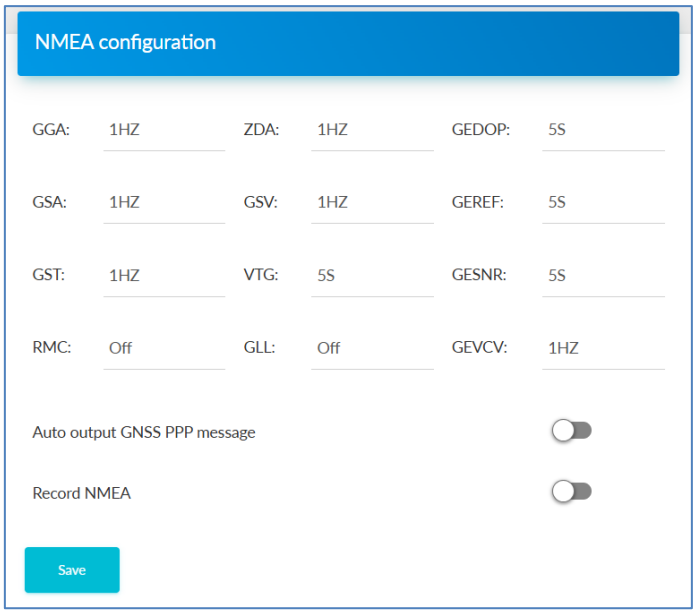
Hardware Configuration section contains:

- Speaker: enable/disable the voice messages



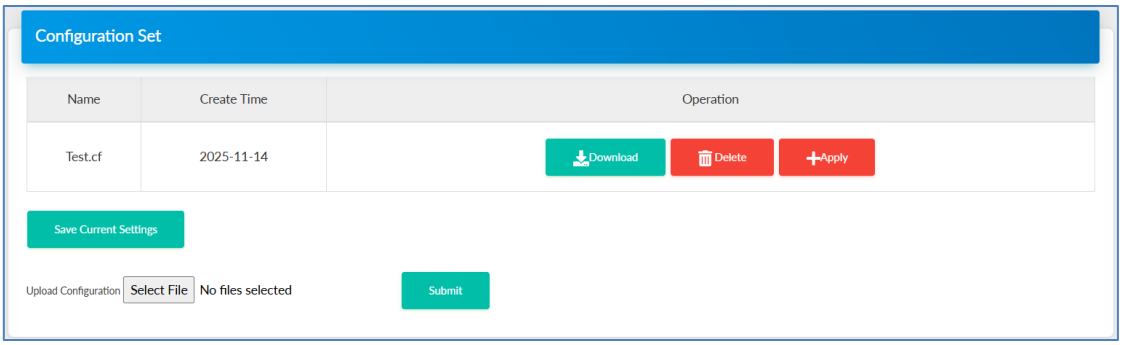
In NMEA Configuration is possible to set the frequency of the NMEA messages (up to 20Hz) transmitted via Bluetooth

Enabling Record NMEA will create log files available in the Download Raw Data section.

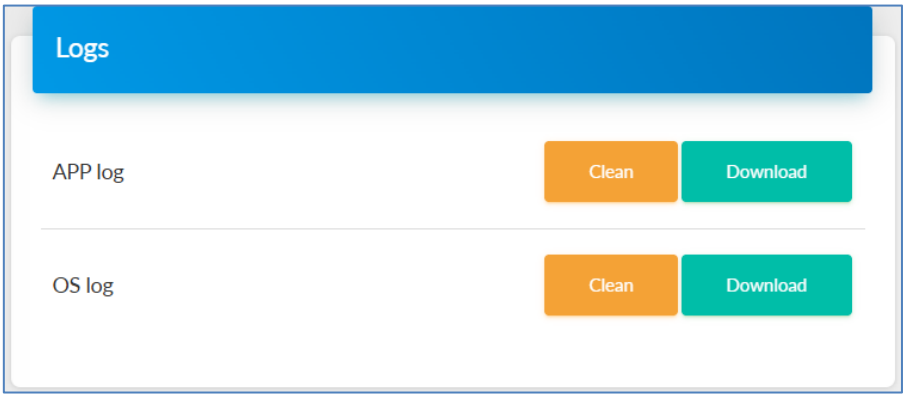

NMEA configuration
GGA:
1HZ
ZDA:
1HZ
GEDOP:
5S
GSA:
1HZ
GSV:
1HZ
GEREF:
5S
GST:
1HZ
VTG:
5S
GESNR:
5S
RMC:
Off
GLL:
Off
GEVCV:
1HZ
Auto output GNSS PPP message
Record NMEA
Save

3.8 Save Backup & Logs

On this page it's possible to manage configuration settings. Since S599 maintains the latest configuration set even if powered off, this function can be useful if is often necessary to switch between different configurations.



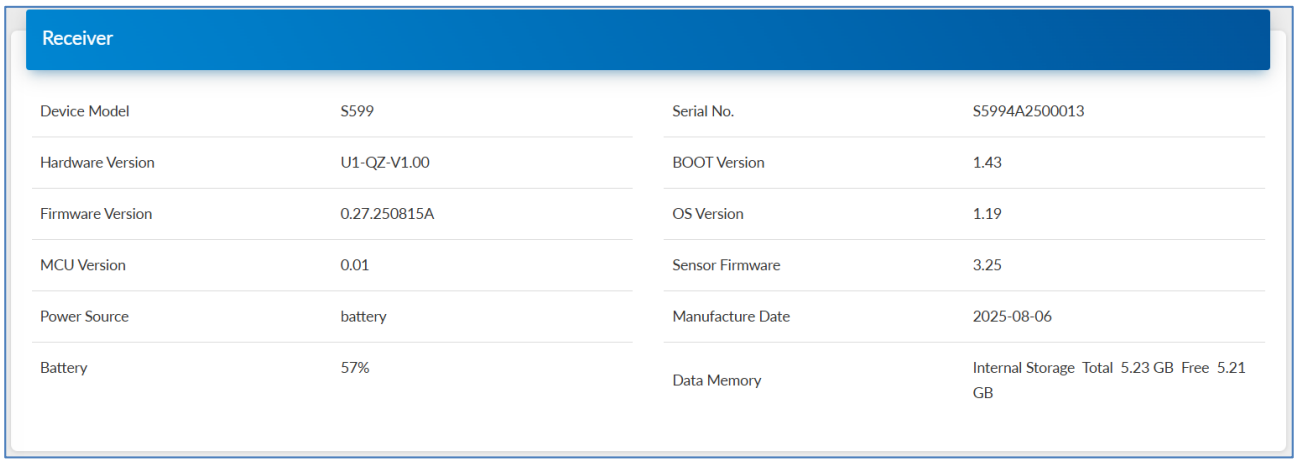
Here are also available the system logs



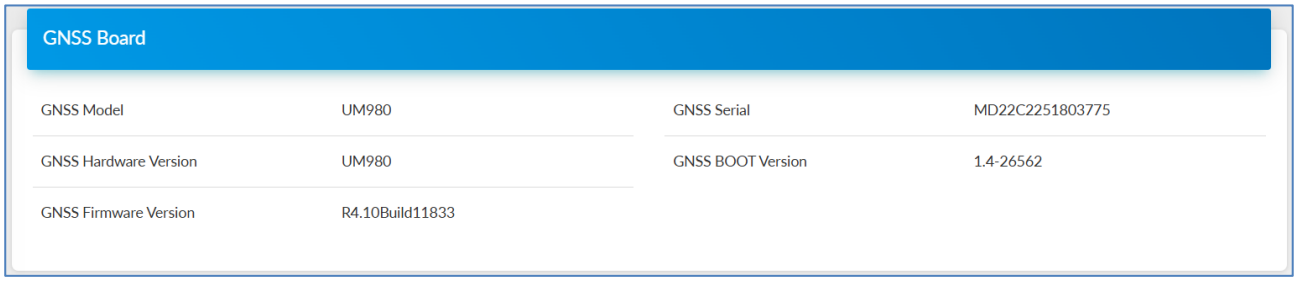
3.9 Information

This page contains information about the S599 hardware and firmware.

In the Receiver section, is shown the motherboard firmware version together with much other useful information like the available memory and the battery status.



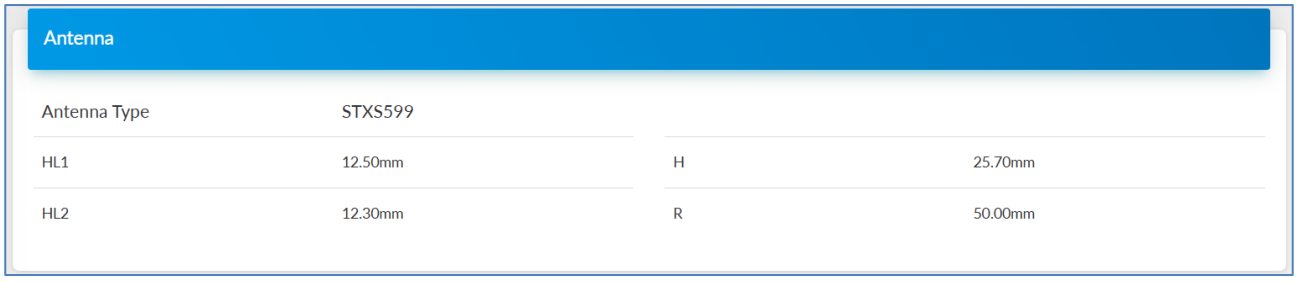
The GNSS Board section shows the GNSS board serial number and firmware version.



The antenna section contains the model and the geometrical values of the GNSS antenna:

- HL1: distance of the L1 frequency phase center from the GNSS antenna base
- HL2: distance of the L2 frequency phase center from the GNSS antenna base
- H: distance of GNSS antenna base from the S599 base
- R: radius of the GNSS antenna

So, the phase center offsets from the base of the S599 are calculated as H+HL1 and H+HL2.

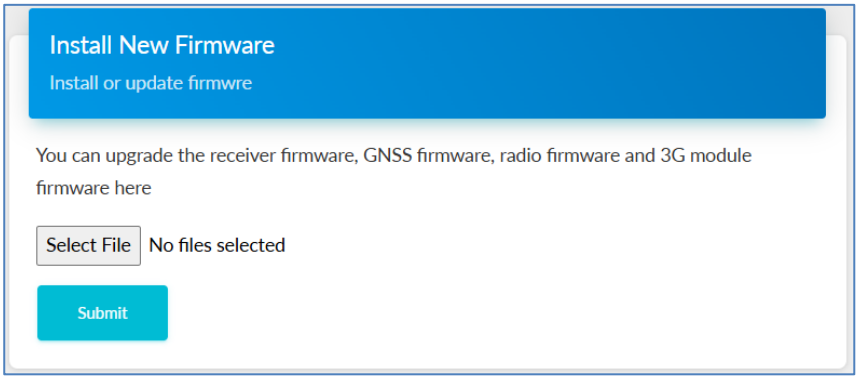


3.10 Management

The management page contains functions for the correct operativity of S599.

3.10.1 Firmware Update

To update a firmware, select the firmware file using the file explorer (Select File) then press Submit.



When the file has been decompressed, press Confirm to start the update. The motherboard firmware update will restart automatically the S599.

Attention! Do not turn off the receiver during the update.

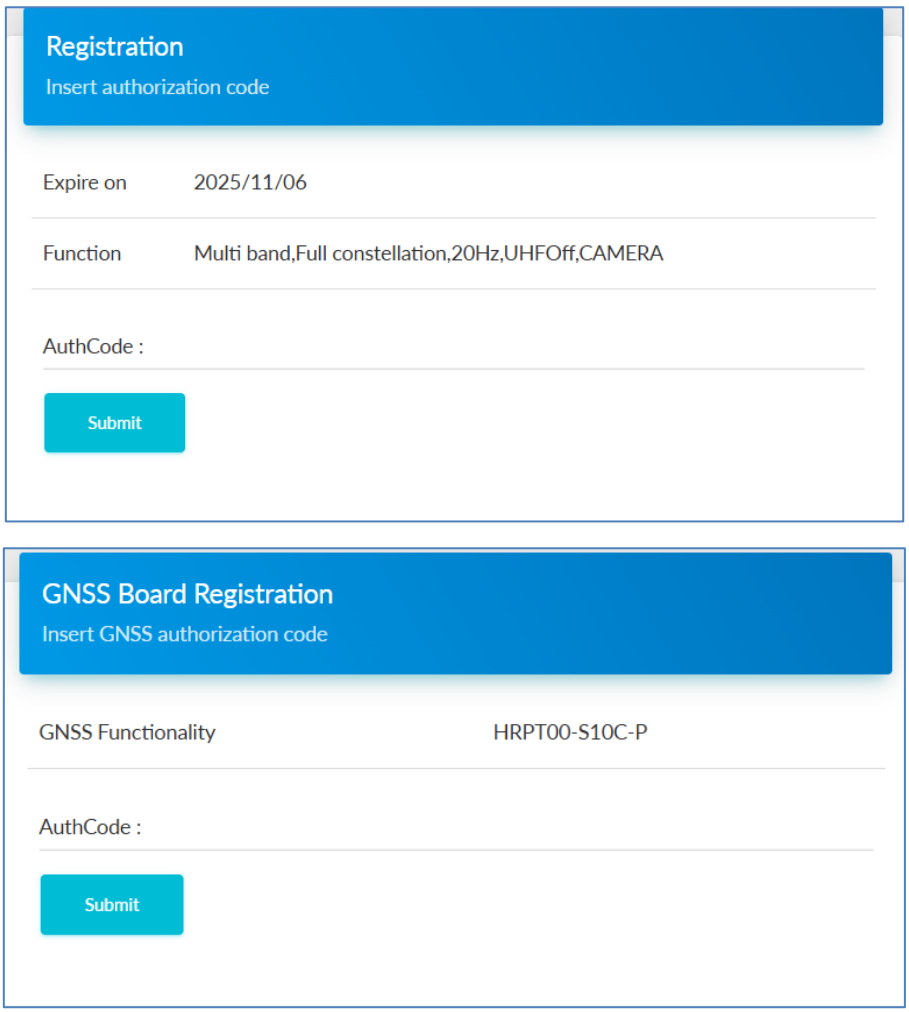
Once the firmware updates are completed perform a Factory Reset.

Attention! Use only firmware files provided by your local reseller.

3.10.2 Device Registration

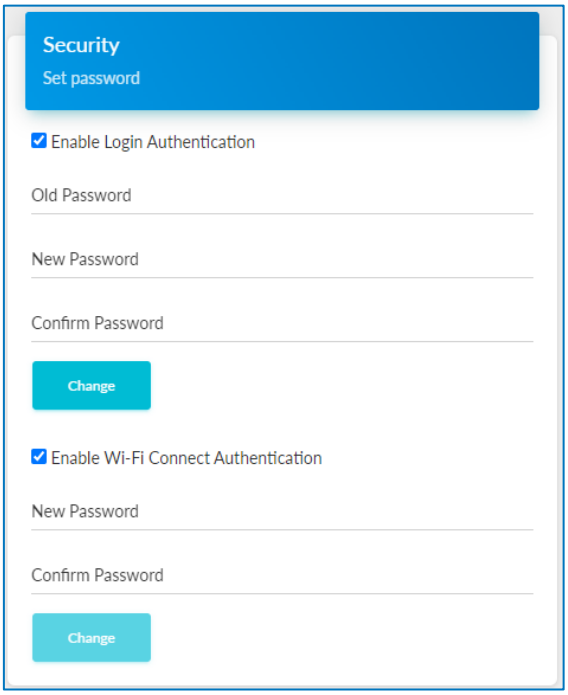
The S599 must be correctly registered to work correctly. If the registration has expired the device will beep and it will not track satellites. Contact your local reseller to request the authorization code.

To upgrade the registration, insert the 64 characters code provided by the local reseller, without any space, and press Submit. Shortly the new expiration date will be visible.



3.10.3 Security

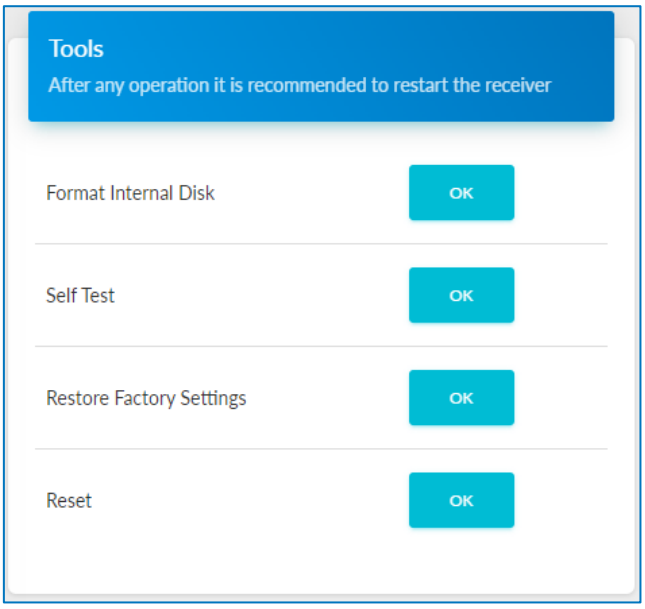
In this section is possible to change the password to access the WebUI and the S599 Wi-Fi hotspot password.



3.10.4 Tools

This section contains the following functions:

- Format Internal Disk: remove all the log files saved in the internal memory.
- Self-Test: the device will test the internal modules. Each module inspection is followed by its result, if the module inspection passes, it will say “OK” and the respective LED will stay on until the whole self-check finishes. If the module inspection fails, it will say “FAIL”, the respective led will flash until the whole self-check finishes (ex. “GPS self-check. OK.”). Self-check lasts for about 1 minute, at the end there will be a single beep if no module failed the test, otherwise, it will continue to beep until the power button is pressed. The receiver starts to work after the whole self-check finishes. Contact your local dealer if an error is found.
  The test results are also shown in real-time in the WebUI, and a copy is saved in the internal memory.
- Restore Factory Settings: the device will perform a self-test then it will proceed with the factory reset. Factory reset does not change the firmware installed nor the file in the internal memory but will reset the device configuration.
- Reset: restart the device



4. IMU Technology

The S599 is equipped with IMU Technology that allows measurements with a tilted pole.

This brings the following advantages:

- Fast and precise survey.

  It's possible to survey and store points with just one measure with a slant up to 60° (maximum 2cm error with a slant up to 30°, maximum 5cm error with a slant up to 60°).

- Simple and quick initialization process.

  After the first calibration, once a FIXED solution is obtained, is a matter of seconds to initialize the sensor and start to work.

- Guided calibration with *Stonex Cube-a*

  You can use *Stonex Cube-a* field software to calibrate the sensor; Stonex Cube-a provides all the instructions to initialize and calibrate the IMU sensor.

- Integrated inertial navigation module ensures real-time interference-free tilt compensation.

  It's not affected by any geomagnetic and external metal structures or other environmental influences. It adopts "satellite and inertial navigation" dual inspection.

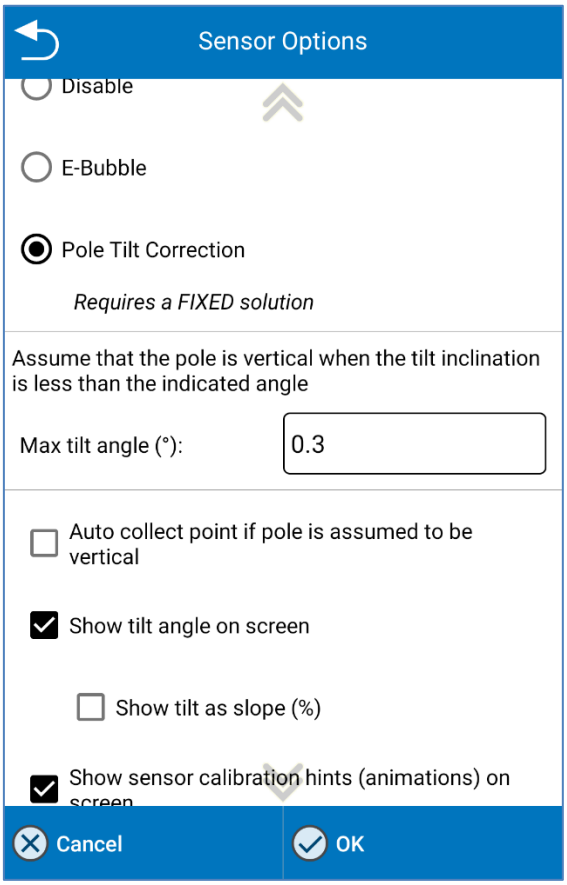
4.1 IMU with Stonex Cube-a

4.1.1 Sensor Activation and Configuration

Before using the receiver to collect points with the slanted pole, check if the pole tilt correction functionality has been enabled. The settings to enable the Pole Tilt Correction using Stonex Cube-a, are in the Configure → System Settings → Sensor Options page.

On the same screen, it is possible to set the software to show on screen the tilt angle (in decimal degrees, 0° = true vertical).

There is also the possibility of automatically starting the point collection when the pole is considered vertical with respect to the set limit.



4.1.2 Initialization

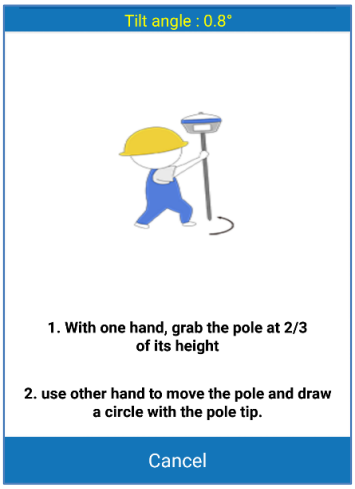
After the activation of the sensor, go to Survey mode.

If the sensor is not ready to work yet, Stonex Cube-a will show you which operations are necessary to perform its initialization, if “Show sensor calibration hints (animations) on screen” is enabled in Configure → System Settings → Sensor Options page.

There is a necessary pre-requisite to use the IMU: the status of the GNSS solution must be Fixed.

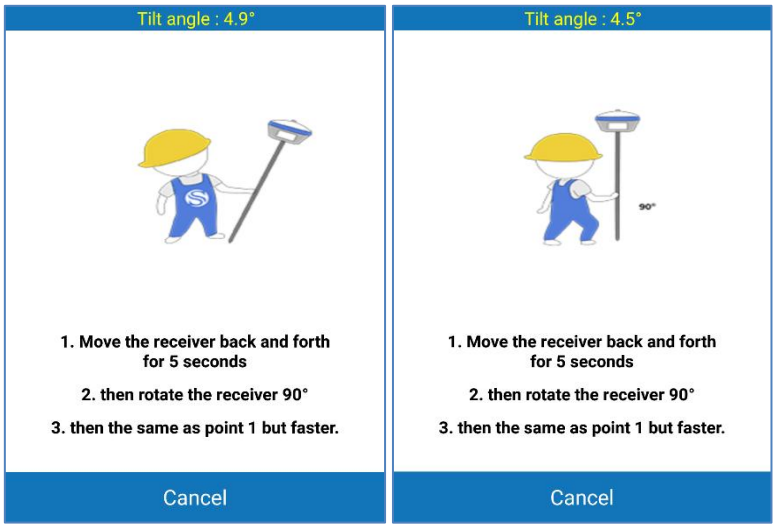
Then, if the sensor needs to be initialized, two different popup screens could show up.

The first screen contains the instruction for the magnetic initialization. Move the pole tip to draw a circle on the ground.



The second screen shows how to aid the sensor to adjust the calibration parameters based on the local GNSS position and accuracy.

Move the receiver back and forth for a few seconds in a direction. Then rotate the receiver by 90 degrees and repeat the movements, in the same direction as before, as shown in the picture below.



If the screen does not disappear, try changing the position to get lower RMS values and then repeat the two steps.

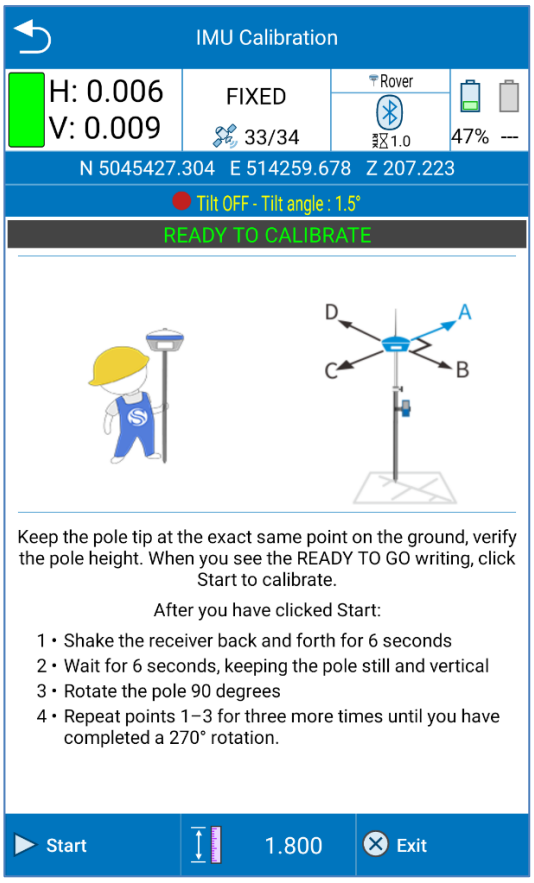
These screens could appear during the survey: this means that the IMU accuracy has degraded and it’s necessary to adjust it.

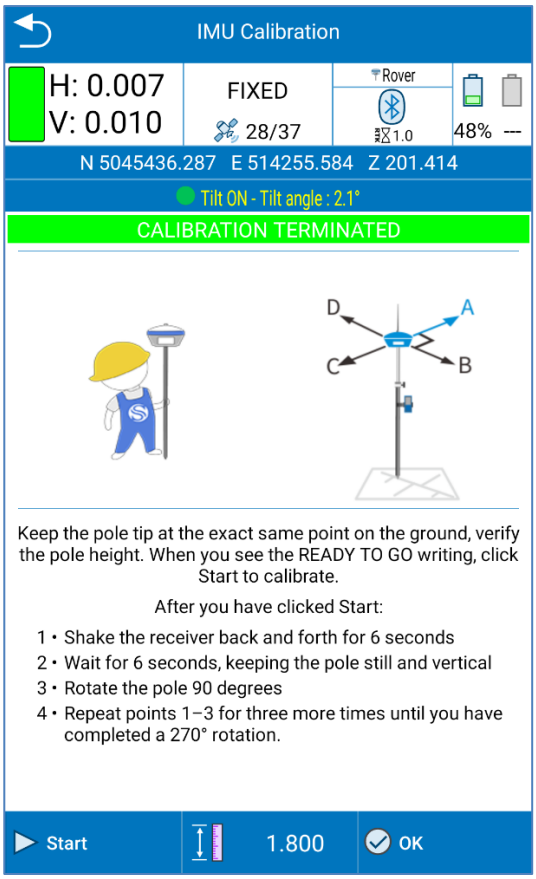
4.1.3 Calibration

To calibrate the sensor, select the Calibrate page and then click on the Calibrate Sensor command.

A FIXED solution is mandatory. Set the pole to be high at 1.8m as well as the measured height set in Stonex Cube-a.

Wait for the message Ready to Calibrate to appear then start the calibration by clicking on the Start button.





The calibration consists of the same movement repeated along the four orthogonal directions while keeping the pole tip on the same point on the ground:
Slowly move the receiver back and forth along the current direction for about 10 seconds, the inclination should reach at least 45° but not more than 60° from the vertical position, the guided procedure on Stonex Cube-a will show when to change direction.

When the calibration is completed the message Calibration Terminated appear.

Now the S599 is ready to work.

5. Stake Out with Camera aid

The integration between the live feed from the camera and the stakeout is performed in Cube-a.

Three prerequisites must be satisfied to use this function correctly:

- The S599 control panel must face the user
- The connection with Cube-a is done using the S599 WiFi 5G hotspot (see WebUI Device settings page)
- The tilt corrections must be active (See IMU chapter)

The connection must be performed using the WiFi Hotspot

1. Connect the controller to the WiFi hotspot of the GNSS receiver
2. In Cube-a > Device > Communication page select:
    a. Device type: Stonex GNSS
    b. Communication mode: WIFI
    c. Press connect
    d. If a WIFI internet popup appear click on it and press YES to remain connected.

In Cube-a > Survey > Stake out press the AR button to see the camera feedback.

For full instructions on the use of the Camera, check the video tutorial online

6. Accessories

6.1 Standard accessories

Carrying case

Power supply

1 Power adaptor with EU/UK/US/AU power socket, model: DSA-45PDH

1 Charging cable USB type-C – USB type-C

7. Technical specification

RECEIVER	
Satellite signals tracked	GPS: L1 C/A, L1C, L2P, L2C, L5
	GLONASS: L1, L2, L3
	BEIDOU: B1I, B2I, B3I, B1C, B2a, B2b
	GALILEO: E1, E5a, E5b, E6
	QZSS: L1, L2, L5, L6
	IRNSS: L5
	SBAS
PPP	B2b PPP, HAS
Channels	1408
Position Rate	Up to 20Hz
Signal Reacquisition	< 1 s
RTK Signal Initialization	< 5 s
Hot Start	Typically < 15 s
Initialization Reliability	> 99.9 %
Operating system	Linux
Internal Memory	8 GB
IMU Rate	200 Hz
Tilt Range	±60°
Tilt Accuracy	2 cm at 30° - 4 cm at 60°

POSITIONING[1]	
HIGH PRECISION STATIC SURVEYING	
Horizontal	2.5 mm + 0.5 ppm RMS
Vertical	5 mm + 0.5 ppm RMS
REAL TIME KINEMATIC (< 30 km) – NETWORK RTK[2]	
Fixed RTK Horizontal	8 mm + 1 ppm RMS
Fixed RTK Vertical	15 mm + 1 ppm RMS
PPP Accuracy	< 20 cm RMS
SBAS Accuracy[3]	< 60 cm RMS

INTEGRATED GNSS ANTENNA
High accuracy multi-constellation antenna, zero phase center, with internal multipath suppressive board

BUILT-IN CAMERA FOR STAKEOUT

Resolution	2 MP
Image frame	25 frame/s
Field of view	88°

COMMUNICATION

I/O Connectors	Type-C for charging and data transfer
Bluetooth	2.1 + EDR, V5.0
Wi-Fi	802.11 b/g/n
Web UI	To upgrade the software, manage the status and settings, and download data. Smartphone, tablet, or other electronic device with Wi-Fi capability can be used.
Reference outputs	CMR, RTCM 3.0, RTCM 3.2, DGPS
Navigation outputs	NMEA 0183

POWER SUPPLY

Battery	Internal battery not removable, 3.65V, 6000 mAh
Power	Type-C PD 12V
Working Time	Up to 12 hours
Charge Time	Typically 4 hours

PHYSICAL SPECIFICATION

Dimensions	98 mm x 98 mm x 46 mm
Weight	385 g
Operating Temperature	-30°C to 60°C (-22°F to 140°F)
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Waterproof/Dustproof	IP68
Shock Resistance	up to 1.5 m (no damage)
Humidity	100% non-condensing

Specifications are subject to change without notice.

1. Accuracy and reliability are generally subject to satellite geometry (PDOP), multipath, atmospheric conditions, and obstructions. In static mode, they are also subject to occupation times: the longer the baseline, the longer the occupation time must be.

2. Network RTK precision depends on the network performances and are referenced to the closest physical base station.

3. It depends on the SBAS system's performance.

8. Appendix 2: Copyrights and environmental recycling

8.1 Copyrights and trademarks

STONEX®, the STONEX® logo, and the S599 GNSS receiver are trademarks of STONEX® Srl.

STONEX® Cube-a is a trademark of STONEX® Srl.

All other trademarks are the property of their respective owners.

8.2 Release Notice

This is the February 2026 release of the STONEX® S599 GNSS new model receiver user guide.

8.3 Environmental Recycling

The cardboard box, the plastic in the package, and the various parts of this product must be recycled and disposed of by the current legislation of your Country.

8.3.1 For countries in the European Union (EU)

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

Contact Local Authorities to obtain practical information about the correct handling of the waste, location, and times of waste collection center. 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 the environment.

The crossed-out dustbin symbol means that the device must be disposed of in authorized collection centers and must be managed separately from solid urban waste.

8.3.2 For countries outside European Union (EU)

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

9. Appendix 3: Safety Recommendations

9.1 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 property damage. Observe safety instructions that are presented in the following form:

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

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

9.2 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 to obtain a certification or license for the equipment in the country of use.

9.3 Instrument Approval

Covers technical features of the equipment relative 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 modify the equipment to be subjected to a grant.

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

9.4 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 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

9.4.1 USA

The FCC has adopted a safety standard for human exposure to radiofrequency 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) from 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.

9.4.2 Europe

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

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

https://ec.europa.eu/growth/sectors/electrical-engineering/

From this link, you can download Directive 2014/53 / UE RED relating to telecommunication equipment, the LVD Low voltage directive, and the EMC directive for electromagnetic compatibility.

9.5 Bluetooth/Wi-Fi 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 matches 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/Wi-Fi may be restricted in some special situations or places, like aircraft, hospitals, etc. If you are unsure of the existence of restrictions, you should ask for authorization before switching on the Bluetooth radio.

9.6 Rechargeable Lithium-ion batteries

These receivers use a rechargeable Lithium-ion battery.

WARNING

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

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.

WARNING

- Do not damage the Lithium-ion battery.

A damaged battery can cause an explosion, with a 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, and 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.

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