



S20 User Manual

V1.1

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This is the V1.0 (Oct, 2024) revision of the S20 GNSS Receiver User Guide. It cannot be copied or translated into any language without the written permission of SingularXYZ.

Technical Assistant

If you have any questions that can't be solved in this manual, please contact your local SingularXYZ distribution partner. Alternatively, request technical support from SingularXYZ Intelligent Technology Ltd.

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Support Skype: [Support.SingularXYZ](https://www.skype.com/join/Support.SingularXYZ)

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Chapter 1 Overview

1.1 About S20

Equipped with a high-precision GNSS engine, the S20 offers full-constellation tracking and versatile work modes. The S20 receiver integrates the GNSS antenna and GNSS module together, largely streamlining the system components and installation. Featuring a standard DB9 serial port and NMEA-0183 message output, it facilitates seamless integration into navigation system development, ensuring high adaptability and ease of use.

1.2 Specification


Key Features:

- Size: $\Phi 150\text{mm} \times 58.4\text{mm}$
- Weight: 424g
- 1408 channels of simultaneously signal tracking
- Precision positioning: centimeter-level RTK accuracy and sub-meter standalone accuracy
- IP67 waterproof & dustproof
- Designed to survive a 2m drop onto concrete
- Cable-free Bluetooth wireless technology

1.3 Packing List

Thanks for choosing SingularXYZ S20 GNSS receiver. Please check your package for the items listed below.

No.	Name	Quantity	Figure
1	S20 GNSS receiver	1	
2	5-pin Cable	1	

3	Magnetic Base*	1	
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Tips: Item with * is Optional.

2.1 Environmental Requirements

S20 GNSS receiver is so rugged and designed compactly, but to keep the receiver with a reliable performance

and have a lengthy life span, we strongly advise you to use S20 under circumstances below:

- Operating Temperature: $-40^{\circ}\text{C} \sim +65^{\circ}\text{C}$
- Storage Temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Humidity: 100% non-condensing.
- Avoid violent impact (designed to survive a 2m drop onto concrete).
- Avoid soaking in fluid.
- With a clear view of the sky.

2.2 Installation

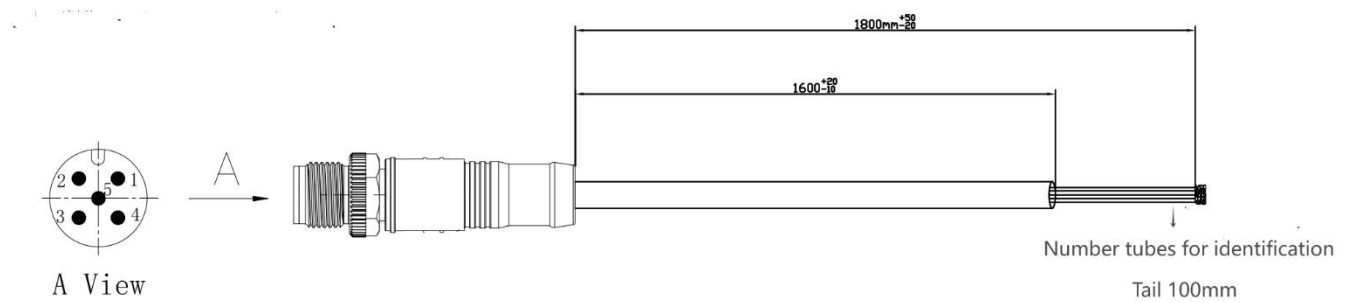
The S20 is placed on the roof using a magnetic base. Please contact technical support for details.



2.3 Interface Definition

S20 GNSS receiver comes with a 5-pin data cable, which needs to be connected to the power cable and serial port cable by yourself. The following is the definition of the data cable for reference.

Connection Definition		
M12/5PIN Male	Wire color	Description
1	Brown	VCC
2	White	GND
3	Blue	RXD
4	Black	TXD
5	Grey	GND
Shield	Braided wire mesh	



2.4 Power supply

S20 GNSS Receiver only supports external power supply. Please use a DC2.1 female for power supply.



Chapter 3

Output Data

3.1 Cable Connection

After power supply, the output data needs to be connected to the computer via a USB to RS232 converter.

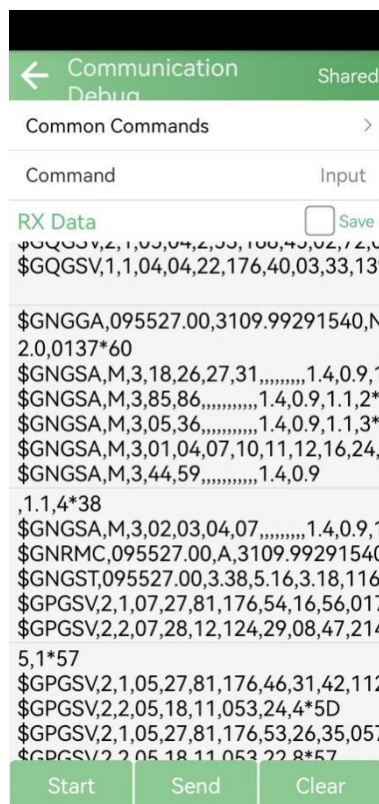
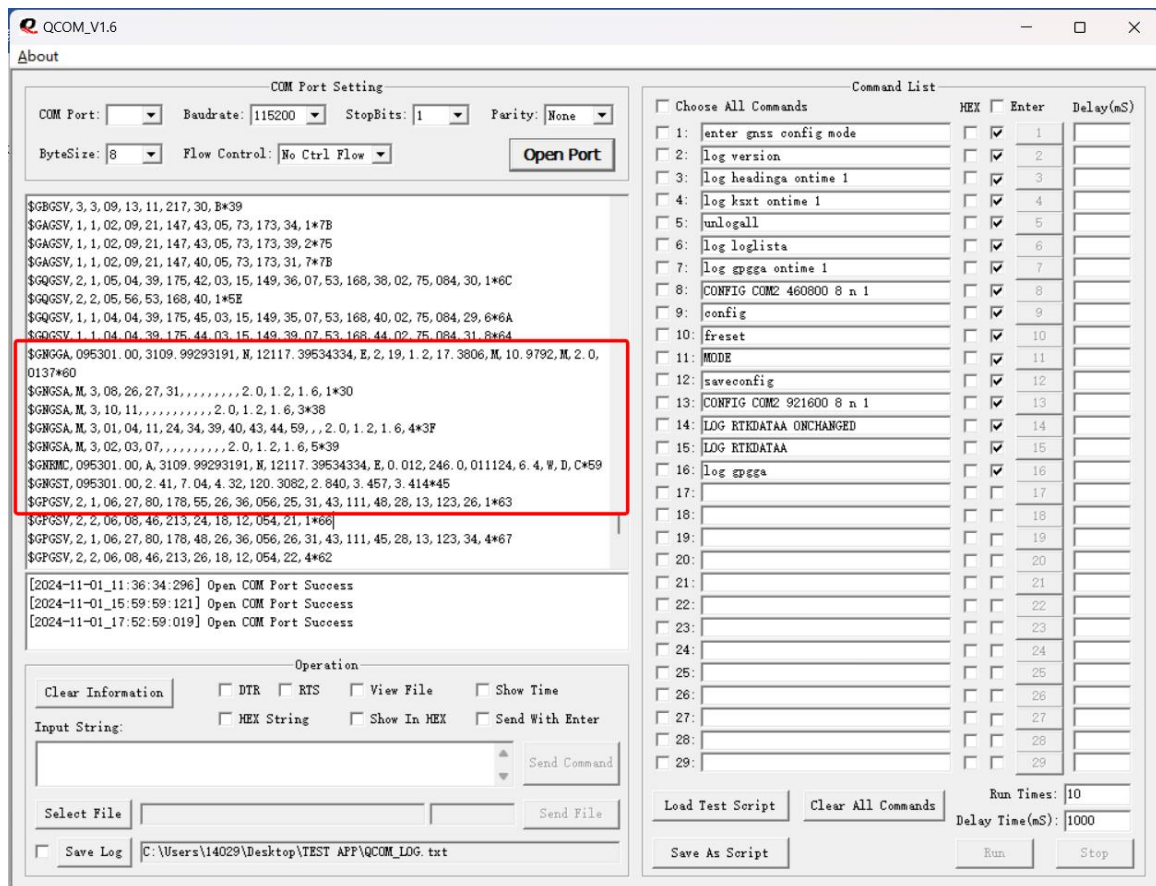


3.2 Output NMEA data

S20 GNSS receiver serial port and Bluetooth output NMEA by default, which can be used directly.

The default 1HZ output NMEA messages are GGA, GSA, RMC, GST, GSV.

S20 supports changing the message output settings by yourself. For details, please contact technical support.

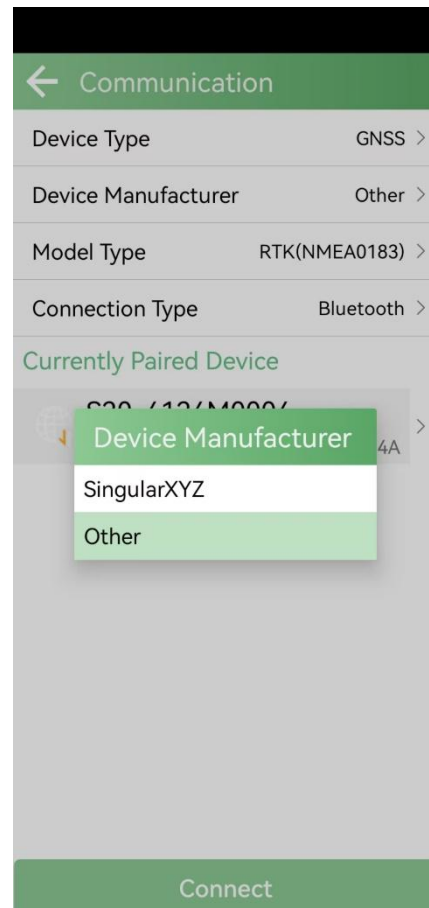
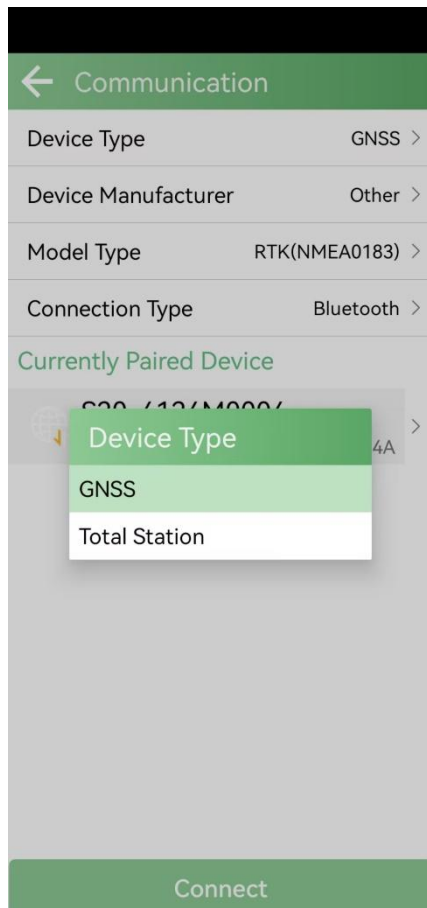


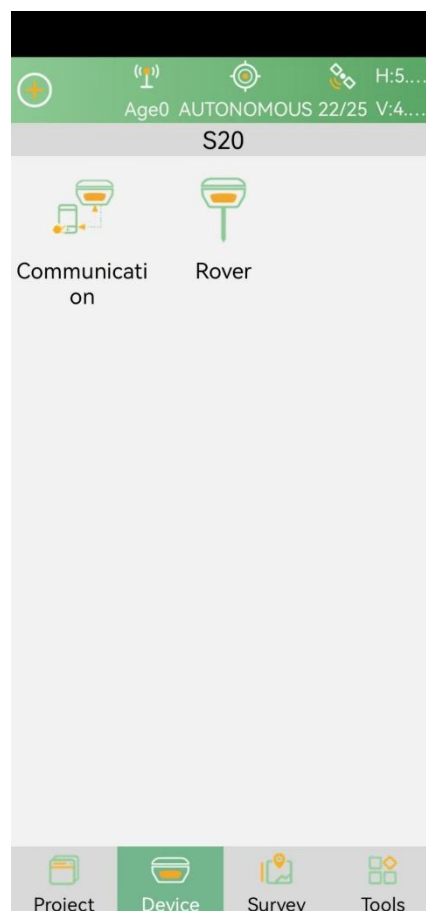
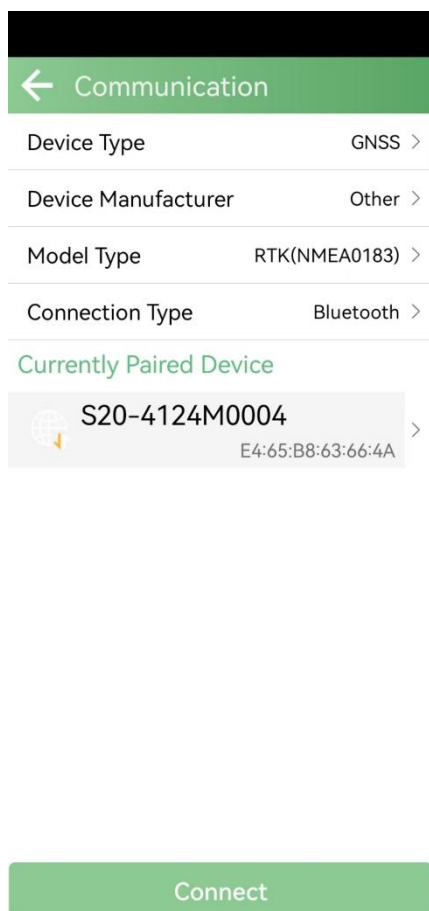
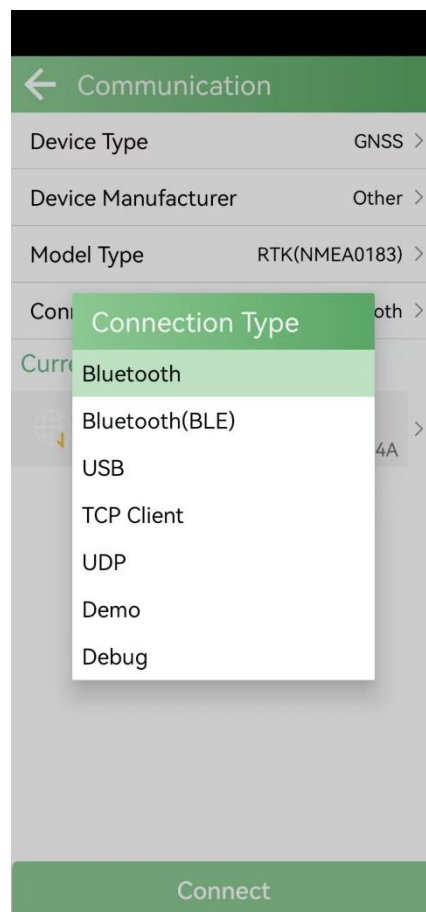
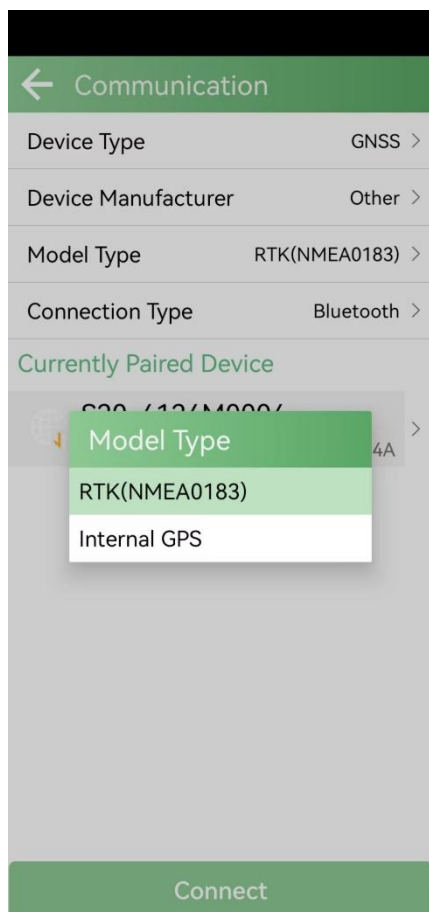
Chapter 4

Working Mode

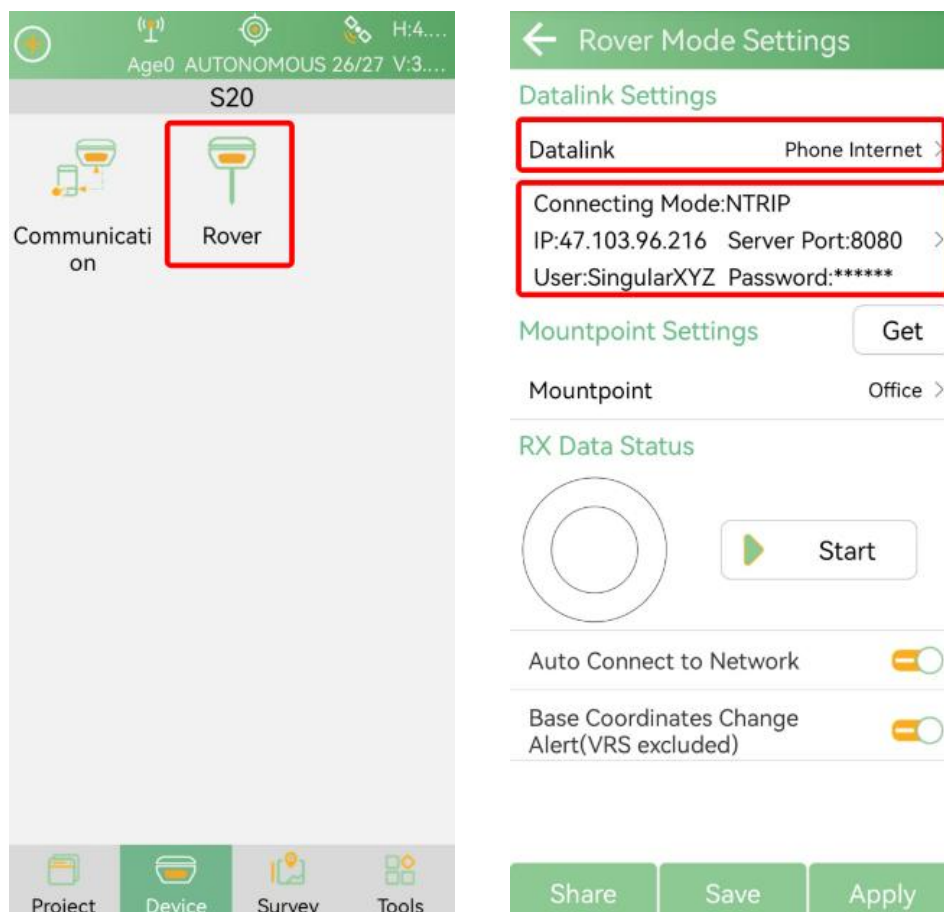
4.1 RTK Configuration

Connect SingularPad with SingularXYZ S20 receivers. You should choose the following types, search and connect the Bluetooth of S20:





S20 can only be used as rover in Phone Internet mode. You can set it in **Rover** interface, set the **Datalink** as Phone Internet and **Connecting Mode** as NTRIP, enter the IP address, Port, User and Password of your CORS. Click get to get the mount point, and then select the mount point and click start. You can determine whether the connection is successful by whether you have received data in the RX Data Status circle, if you receive the data, then click Apply, the position status will change to Fixed.



← Parameter Settings

Phone Internet

Connecting Mode NTRIP >

CORS Settings

IP 47.103.96.216

Port 8080

User SingularXYZ X

Password

← Rover Mode Settings

Datalink Settings

Datalink Phone Internet >

Connecting Mode:NTRIP

IP:47.103.96.216 Server Port:8080 >

User:SingularXYZ Password:*****

Mountpoint Settings **Get**

Mountpoint Office >

RX Data Status

Start

Auto Connect to Network

Base Coordinates Change Alert(VRS excluded)

OK

← Rover Mode Settings

Datalink Settings

Datalink Phone Internet >

Con Mountpoint ↑↓ ✓

Office

KIN1

Mor1

Mor2

Mor4jadida

NEAREST

Office

Preston

Auto TarabutStation

Base Willingale_RTCM3.0

Alert Y111 02470

Get Mountpoint successfully!

Share Save Apply

Share Save Apply

← Rover Mode Settings

Datalink Settings

Datalink Phone Internet >

Connecting Mode:NTRIP

IP:47.103.96.216 Server Port:8080 >

User:SingularXYZ Password:*****

Mountpoint Settings **Get**

Mountpoint Office >

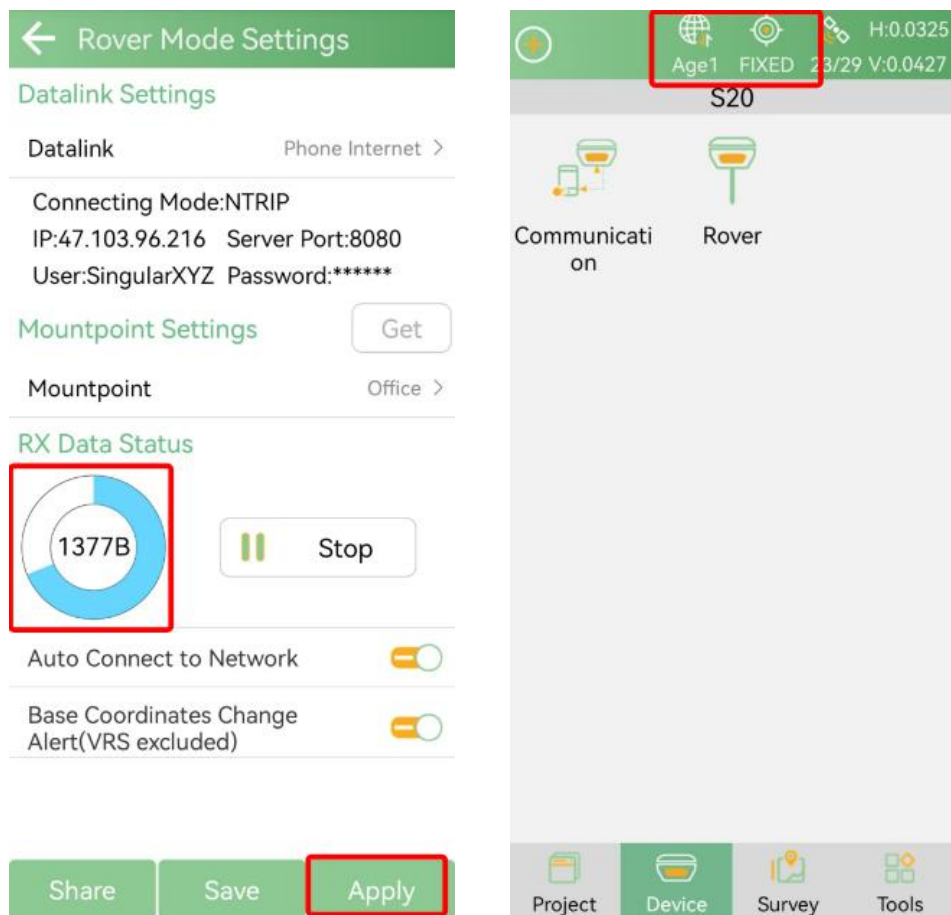
RX Data Status

Start

Auto Connect to Network

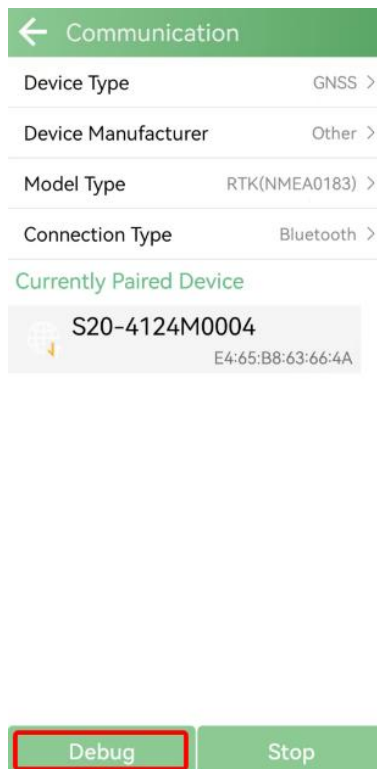
Base Coordinates Change Alert(VRS excluded)

Share Save Apply

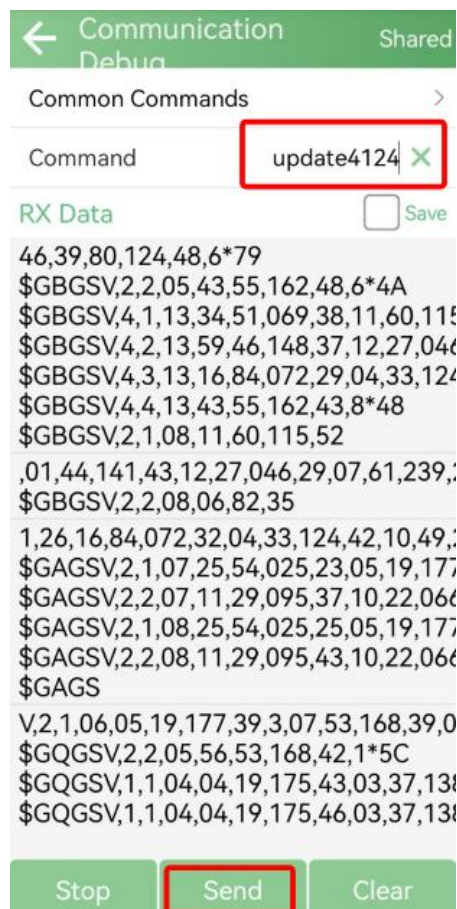


4.2 SBAS Configuration

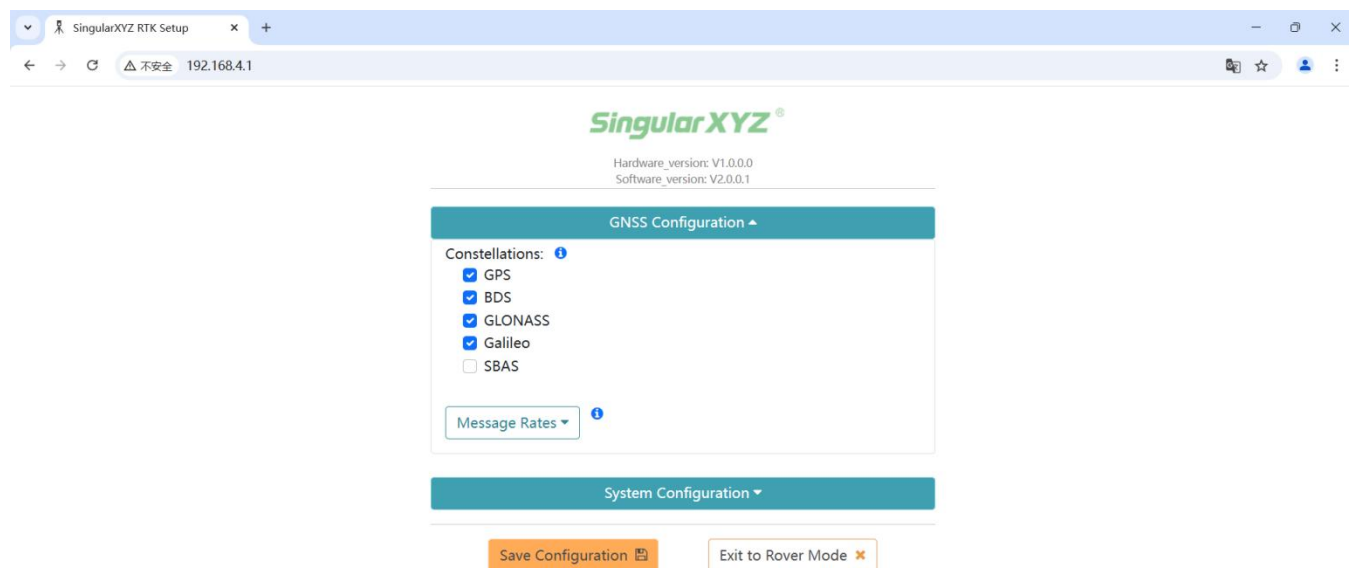
Choose the Device type as NMEA device and connect. You will see the NMEA message from the bluetooth port, it means you successfully connect to the bluetooth.



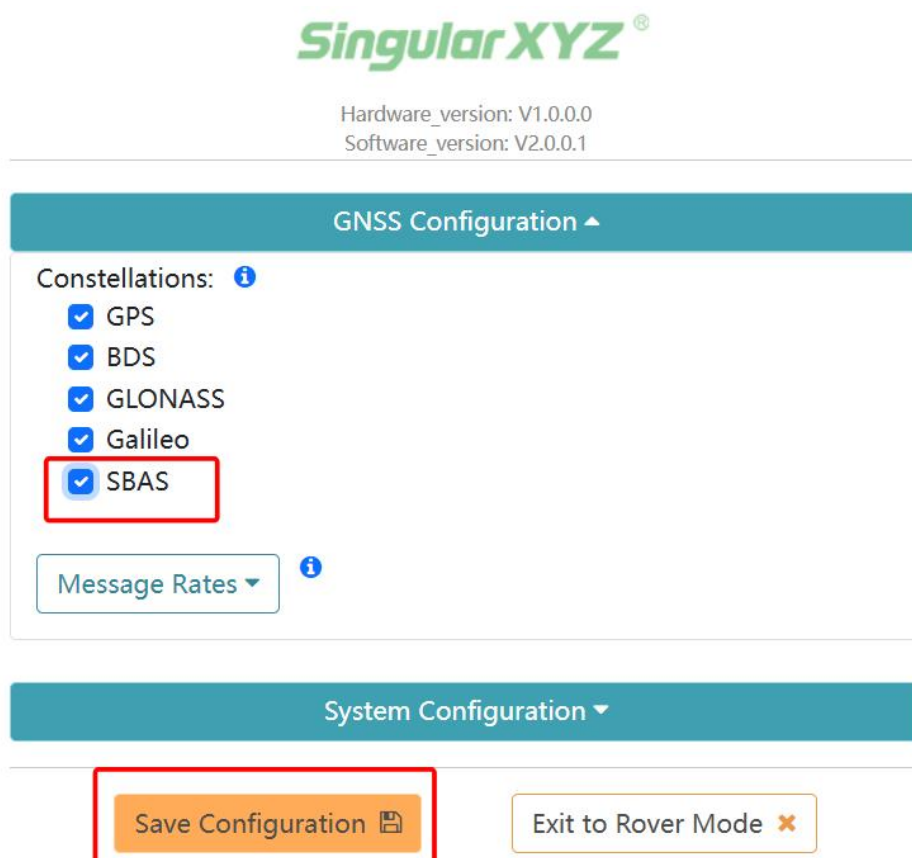
Send command “update4124”, the NMEA message will stop output after you send the command. And the wifi of S20 will be on.



Connect your PC to S20's WiFi, visit IP 192.168.4.1 in browser.



Check SBAS and click Save configuration.



Now the S20 has entered SBAS mode, you can continue to use S20 for your application.

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Hardware_version: V1.0.0.0

Software_version: V2.0.0.1

GNSS Configuration ▲

Constellations: ⓘ

- ☒ GPS
- ☒ BDS
- ☒ GLONASS
- ☒ Galileo
- ☒ SBAS

Message Rates ▼ ⓘ

System Configuration ▼

Save Configuration 

Exit to Rover Mode ✕

