

N10 GNSS Reference Receiver

User Manual

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Revisions:

Version	Date	Description	Revised By
1.5	2025.02.28	First release	Terry.Qin

Read Before Use:



Operate in strict accordance with this manual.

Failure to follow the instructions may result in device damage and performance degradation.

If you have any questions during use, contact the service personnel.

Disclaimer:

- The purchased products, services, and features are stipulated by the contract. All or part of the products, services, and features described in this manual may not be within the scope of your purchase or usage. Unless otherwise specified in the contract, all the content in this manual is provided "AS IS" without warranties of any kind, express or implied.
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- This manual only provides guidance for use of this product. Every effort has been made in the preparation of this manual to ensure accuracy of the content, but no information in this manual constitutes a warranty of any kind, express or implied.

Preface

Thank you for using this N10 GNSS Reference Receiver from Sveaverken. This manual provides detailed instructions for use of this product. Read this manual carefully and follow the instructions to operate this product. If you have any questions, contact the customer service of Sveaverken.

Purpose

This manual introduces the physical characteristics, specifications, operation, and use of the product.

Technical Support

- Sveaverken official website: <https://www.sveaverken.com>

Safety Instructions

Before using this product, ensure that you have read and understand all the safety instructions and precautions in this manual. You must abide by the safety instructions in this manual and all applicable local laws and regulations.

Operation Environment:

- Keep away from tall trees, high-voltage power lines, tall buildings, airports, signal towers, and other obstacles, to avoid interference to GNSS signals and ensure the positioning accuracy and stability.

Others:

1. Do not disassemble the product without authorization, which may invalidate the warranty.
2. Damage caused by force majeure events, such as lightning strikes, high voltage, and collision, is not covered by the warranty.
3. Use the device in strict accordance with this manual. When connecting cables such as data cables, hold the end of the connector and gently plug or unplug it to avoid damaging the connector.
4. Use chargers designated by Sveaverken and pay attention to the rated voltage of the receiver to avoid device damage.
5. During charging, keep away from fire sources, flammables, and explosives to avoid fire and other serious consequences.
6. Do not plug or unplug cables when the receiver is powered on. Replace damaged cables in time to avoid device damage and personal injury.

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1 Product Introduction

1.1 Overview

N10 GNSS Reference Receiver is the second-generation receiver developed by Sveaverken. It is a high-precision receiver that supports multiple frequencies from multiple constellations such as BDS, GPS, GLONASS, Galileo, and QZSS. Supporting chip-level multipath mitigation, it can offer millimeter-level carrier phase measurements and centimeter-level RTK positioning.

Being highly reliable and available, it is widely applied to GBAS, precision agriculture, surveying and mapping, deformation monitoring, and machine control.

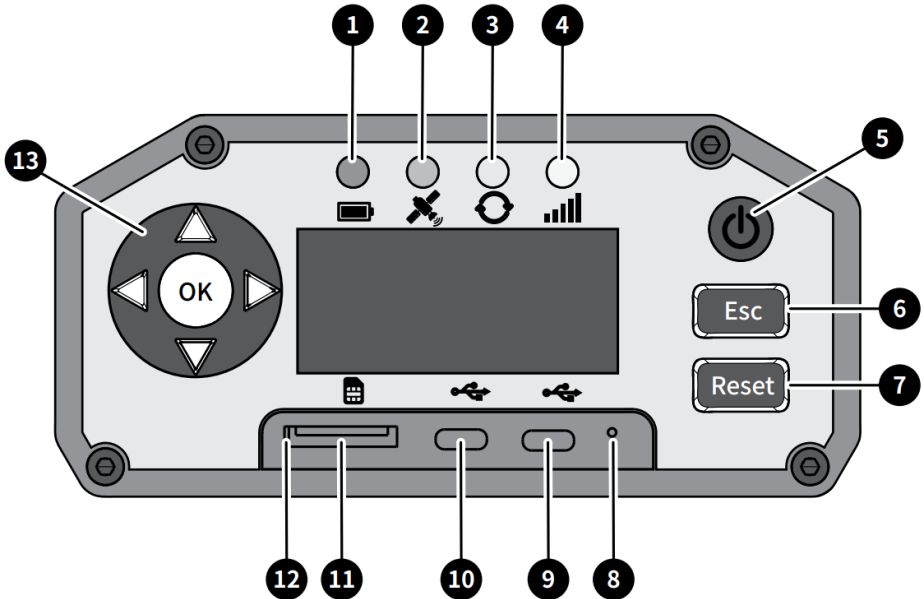
It supports 4G, Wi-Fi, and Ethernet communications. With an aluminum alloy housing and IP67 rating, it is suitable for outdoor applications. The voltage stabilizing and lightning protection features ensure a higher stability.

Highlights:

1. **Easy and convenient to use.** It adopts an embedded Linux system and allows users to access the web interface via Wi-Fi to configure the receiver, making the operations easy and convenient.
2. **Various ports.** It comes with a GNSS antenna port, an RJ45 Ethernet port, a USB HOST port, a USB DEVICE port, a COM2 port, a COM1 port, an SMA external clock port, an SMA PPS output port, an SMA EVENT input port, and a 2-pin LEMO external power supply, and charging port, meeting all the input and output requirements of the reference station and peripherals.
3. **Huge storage space.** It has a storage space of 8 GB, and stores data in files that can be exported via the USB port or the web interface remotely. Stored data will be overwritten after a month.
4. **Remote management.** The 10/100 Mbps Ethernet port can meet GNSS data transfer requirements. Users can configure the receiver parameters through the LAN, front panel, and remote management. OTA firmware updates are also supported, reducing maintenance costs.
5. **Rugged and durable.** With an industrial-grade design, rugged aluminum alloy housing, and IP67 rating, it is highly reliable and available.

1.2 Panels

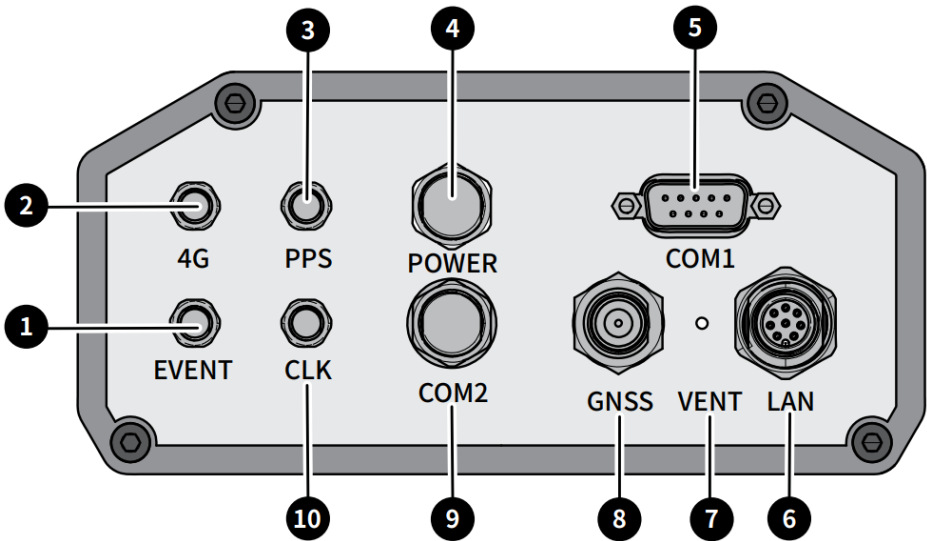
1.2.1 Front Panel



No.	Name	Type	Description
1	Battery level indicator	LED	- Solid blue: With external power supply (charging). - Solid green: The battery level is between 30% and 100% (not charging). - Solid red: The battery level is below 30% (not charging).
2	Satellite tracking indicator	LED	- Off: The receiver does not track any satellite or tracks less than four satellites. - Solid blue: The receiver tracks at least four satellites.
3	Differential correction indicator	LED	- Blinks blue once per second: The base station mode is enabled successfully. - Blinks green once per second: The positioning status in rover mode is fixed solution. - Blinks red once per second: The positioning status in rover mode is single point solution, float solution, or RTD.
4	Network indicator	LED	- Solid green: Ethernet/4G/Wi-Fi connection works, and data can be transmitted stably. - Blinks green once per second: 4G/Wi-Fi signal strength is

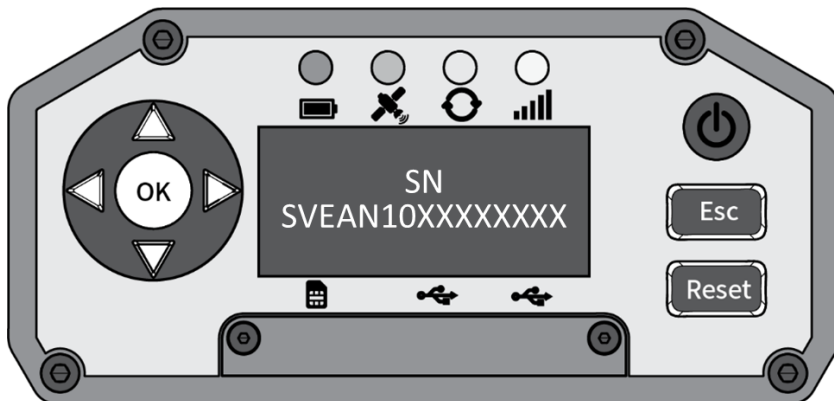
No.	Name	Type	Description
			poor, and data cannot be transmitted.
5	Power button	Button	Turn on or off the receiver.
6	Escape button	Button	Exit operations on the screen.
7	Reset button	Button	Reset the receiver.
8	Force restart button	Button	Use a card removal pin to press and hold the button for 1 second and then release it, and the receiver will restart automatically.
9	USB DEVICE port	Type-C	Connect to a Type-C cable to burn firmware. Put on the cover and fasten the screws after firmware burning to protect the port.
10	USB HOST port	Type-C	Connect to an external storage device to log data or use a USB flash drive to upgrade the receiver firmware. Use storage devices and USB flash drives from mainstream brands, for example, Kingston and SanDisk.
11	SIM card slot	Micro	Micro-sized IoT SIM cards are supported. Put on the cover and fasten the screws after inserting or replacing the IoT SIM card to protect the slot.
12	Force burning button	Button	Press and hold this button, connect to an AC power supply through the power adapter, turn on the AC power supply, and then release this button to enter the force burning mode.
11	Navigation arrow buttons and OK button	Button	Control the operations on the screen.

1.2.2 Rear Panel

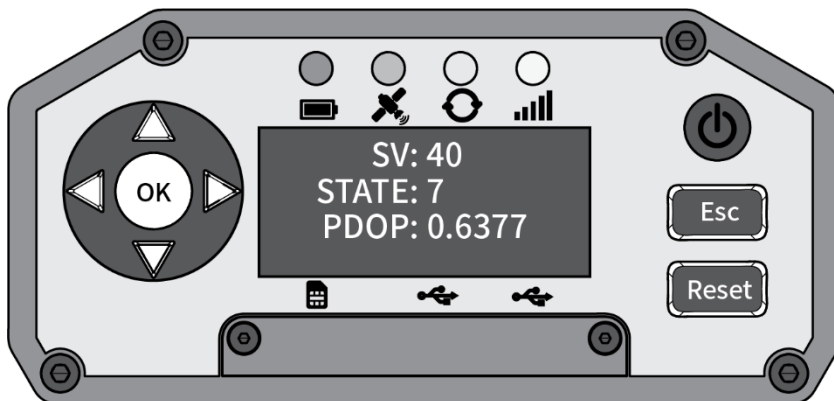


No.	Name	Type	Description
1	EVENT input port	SMA	Inputs external events.
2	4G antenna port	SMA	Connects to the external 4G antenna.
3	PPS output port	SMA	Outputs PPS signals.
4	External power supply port	2-pin LEMO	Provides power to the receiver.
5	COM1 port	DB9	Configures and transparently transfers GNSS board data.
6	Ethernet port	8-pin LEMO to RJ45	Configures and views the receiver parameters.
7	VENT	N/A	Keeps air pressure at the same level inside and outside the receiver.
8	GNSS antenna port	TNC	Connects to the external GNSS antenna.
9	COM2 port	7-pin LEMO	Outputs receiver data.
10	External clock port	SMA	Inputs external clock signals (reserved).

1.3 Display



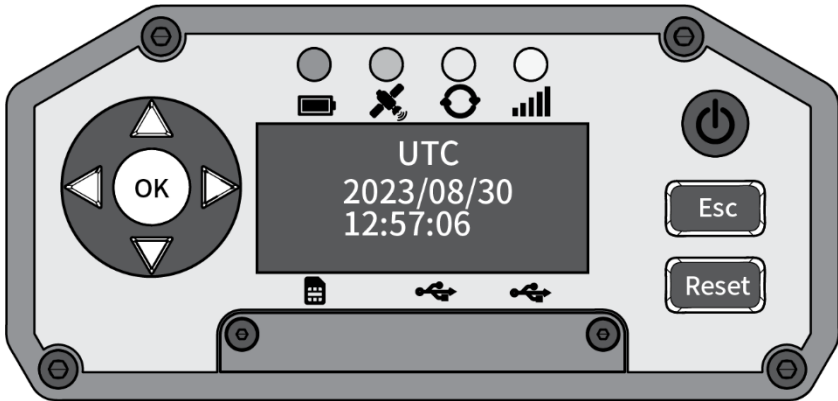
SN: serial number of the receiver.



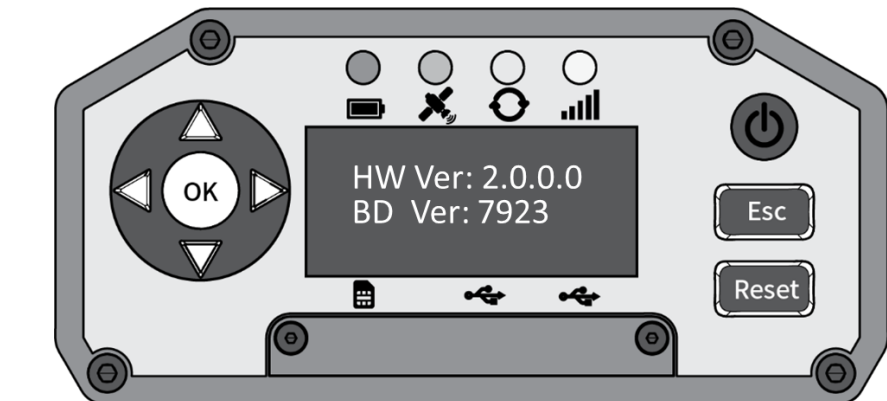
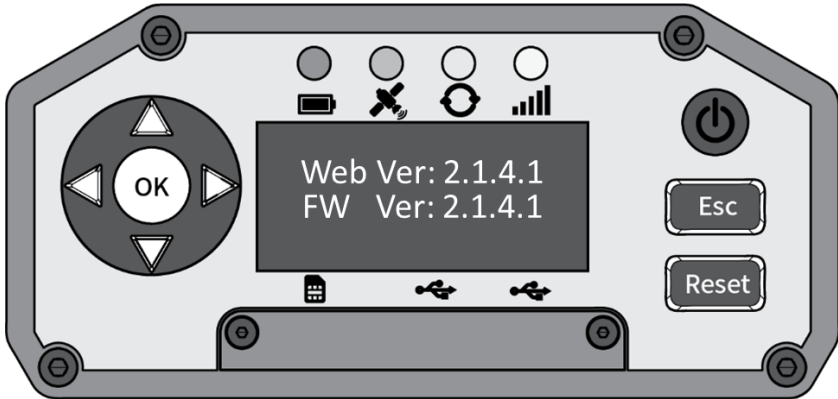
SV: number of satellites used by the receiver.

STATE: positioning status of the receiver. **1:** single; **2:** RTD; **4:** fixed; **5:** float; **6:** INS; **7:** reference station.

PDOP: position dilution of precision of the receiver.



UTC: UTC time of the receiver.

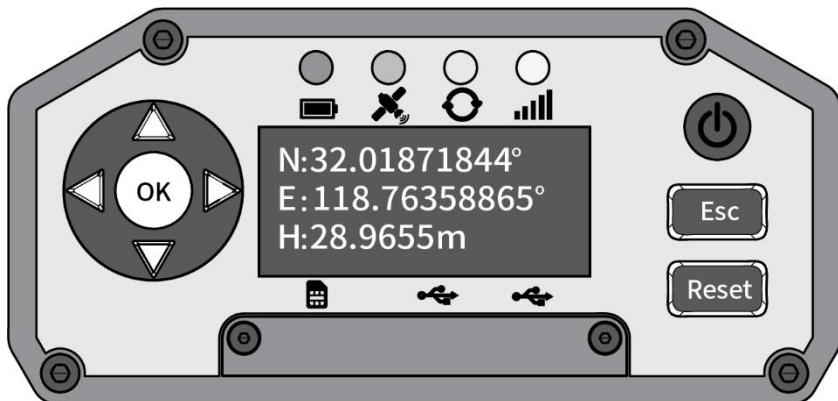


Web Ver: web version of the receiver.

FW Ver: firmware version of the receiver.

HW Ver: hardware version of the receiver.

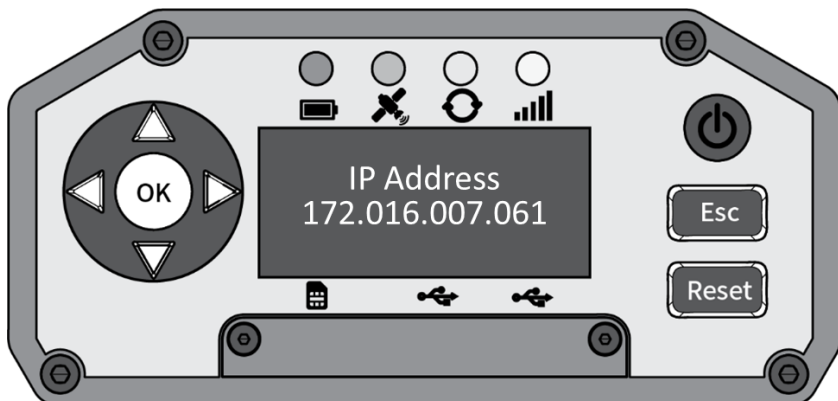
BD Ver: GNSS board version of the receiver.



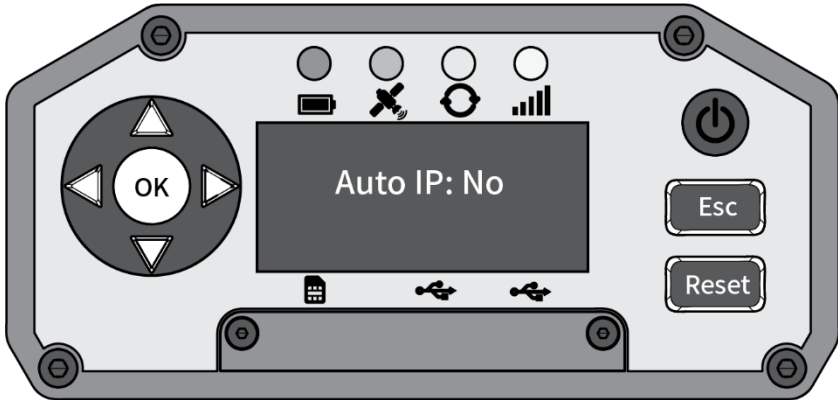
N/S, **E/W**, and **H**: latitude, longitude, and height of the receiver.



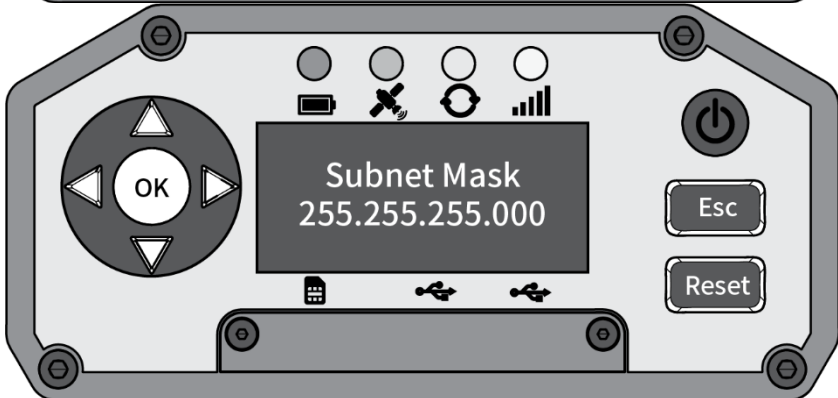
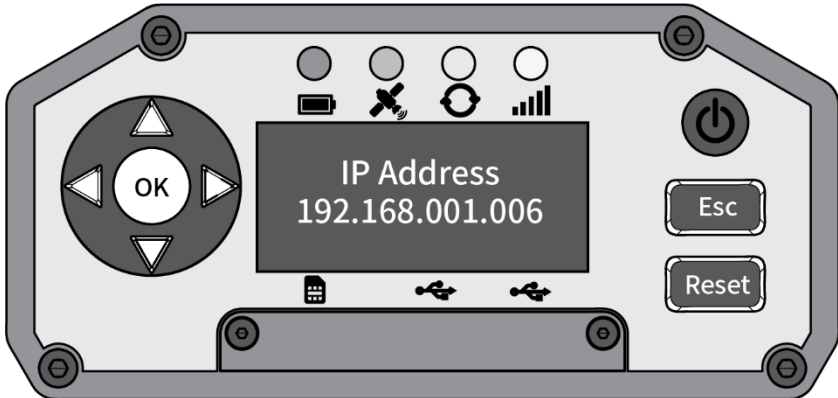
Auto IP: wired network mode of the receiver. **Yes:** DHCP.

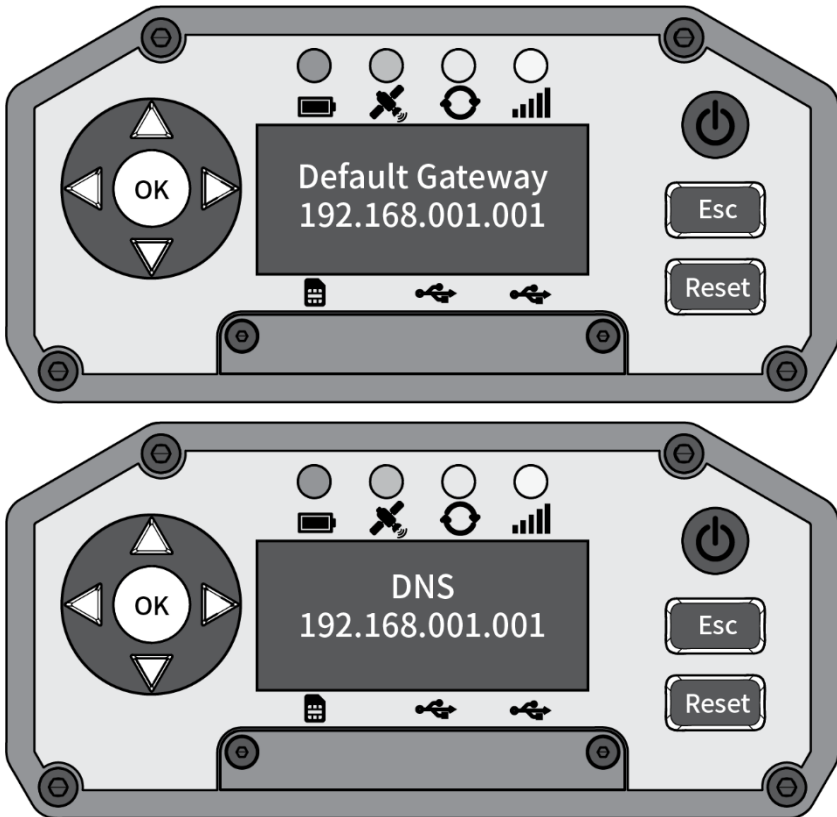


The IP address of the receiver is automatically displayed, when **Auto IP** is set to **Yes**.



Auto IP: wired network mode of the receiver. **No:** static IP.

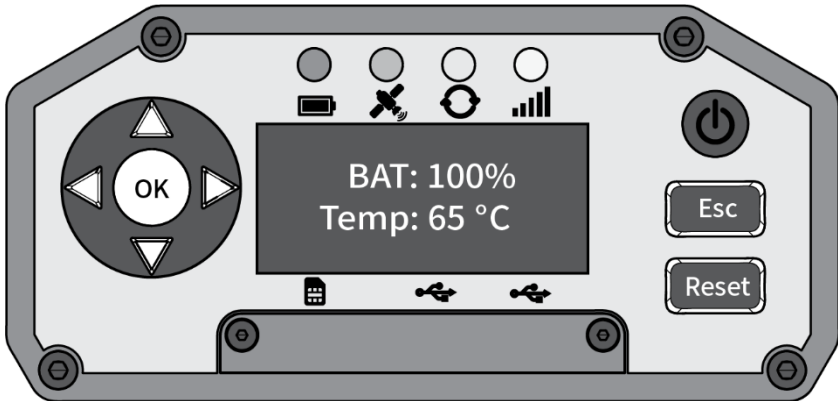




Configure the IP address, subnet mask, default gateway, and DNS based on Ethernet connection, when **Auto IP** is set to **No**.

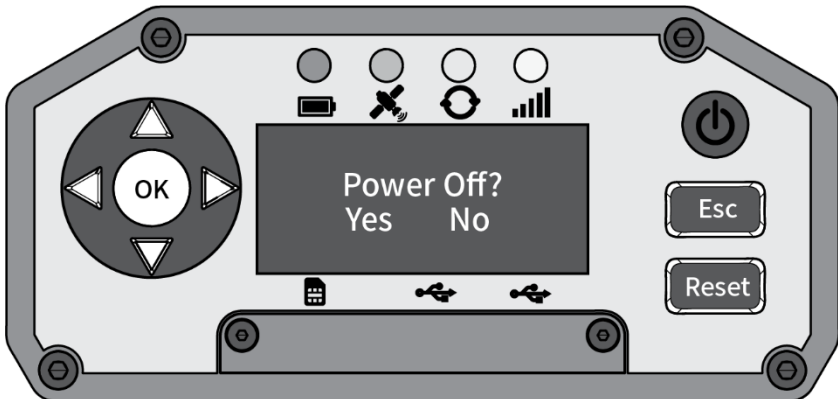
The configuration procedure is as follows, using subnet mask configuration as an example:

1. Press the up or down button to access the subnet mask screen. The default value is 255.255.255.255.
2. Press **OK** to start editing. By default, the first number of the subnet mask is selected. Press the left or right button to select a different number. Press the up or down button to change the selected number to any integer in the range of 0–9. Press **OK** to save changes and exit, or press **Esc** to exit without saving changes.



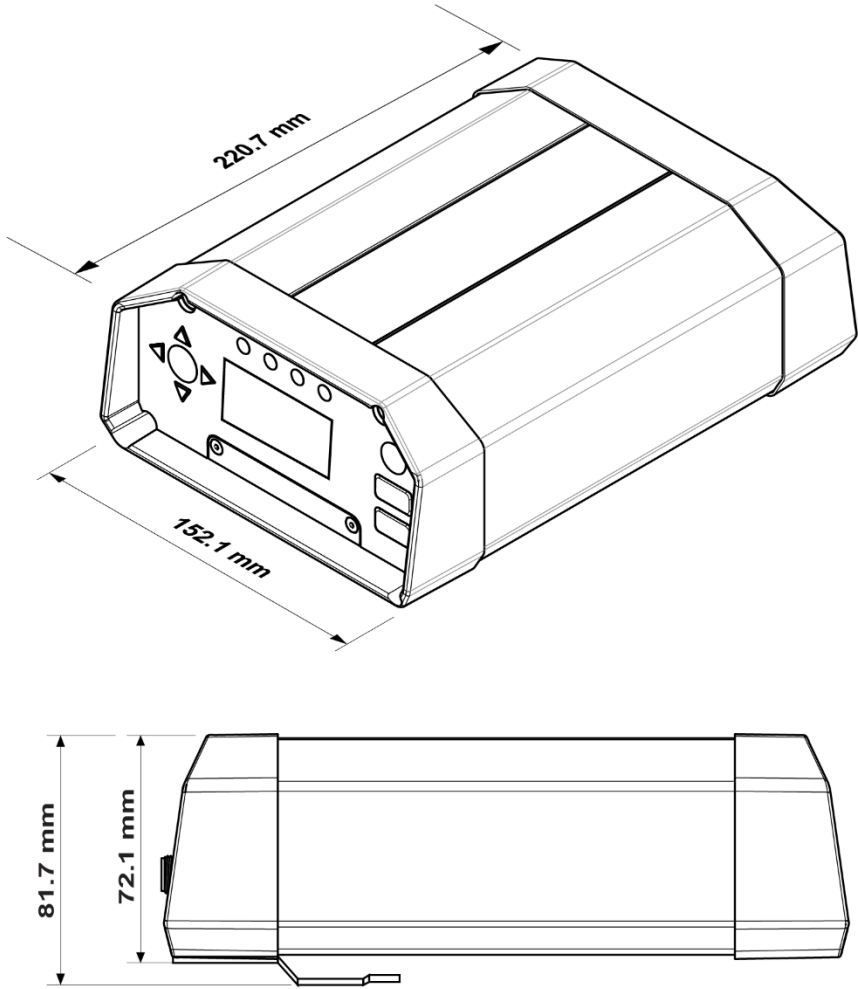
BAT: battery level of the receiver.

Temp: battery temperature of the receiver.



Power Off?: This message appears when you press and hold the power button. Press **OK** to turn off the receiver, or press **Esc** to keep the receiver on.

1.4 Dimensions

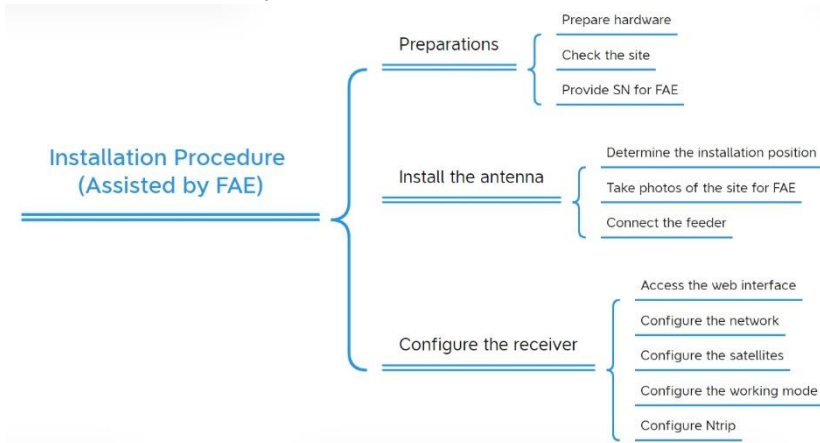


2 Quick Start Guide

2.1 Preparations

No.	Item	Qty.	Description
1	N10 GNSS Reference Receiver	1	
2	Network cable	1	To configure the receiver network. Its length should be decided on site.
3	PC (with a network port)	1	To configure the receiver.

Note: Provide the receiver SN for the FAE before the installation, and the FAE will provide the Ntrip Caster information for you. The SN, such as SVEAN1023300002ZC, can be found on the nameplate at the bottom of the receiver or on the side of the packaging.



2.2 Installing the GNSS Antenna

To improve the quality of satellite data received by the receiver and minimize problems caused by unstable receiver status, the following requirements must be followed when you install the GNSS antenna.

- Ensure that there is no interfering object within 300 meters of the GNSS antenna. Interfering objects include tall buildings, trees, large areas of waters, beaches, and large areas of photovoltaic panels, as shown below.

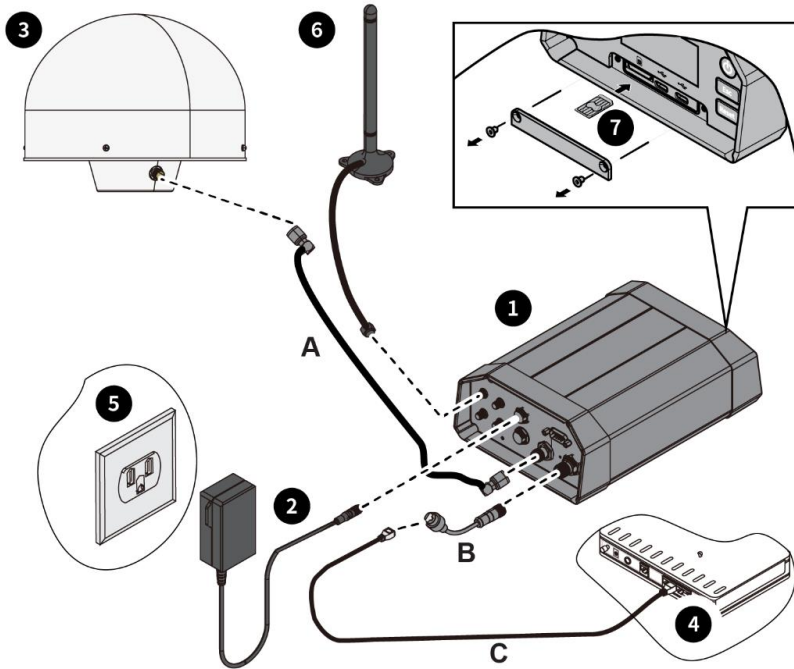


- Ensure that there is no obstruction beyond a vertical angle of 10° above the GNSS antenna. That is to say, there is no obstruction in the line of sight. Setting up the GNSS antenna at a higher position will facilitate the reception of satellite signals.
- Ensure that there is no electromagnetic interference within 300 meters of the GNSS antenna. Electromagnetic interference can be generated by microwave stations, microwave channels, radio transmitting stations, and high-voltage power lines, as shown below.



- The reference station should be set up in areas with easy access to the communication network, stable power supply, convenient transportation, and good public security.

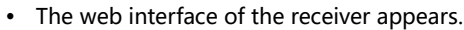
2.3 Device Connections



No.	Name	Remarks
1	N10 GNSS Reference Receiver	N/A
2	Power adapter	N/A
3	Choke ring antenna	N/A
4	Ethernet	External network (to be prepared by the user)
5	AC power supply	External power supply (to be prepared by the user)
6	4G antenna	N/A
7	IoT SIM card	Micro-sized 4G SIM card (to be prepared by the user)
A	Feeder	N/A
B	Network cable adapter	N/A
C	Network cable	To be prepared by the user

After connecting the cables as shown above, turn on the receiver and configure it through the following procedure.

- Enable Wi-Fi on the PC, find the receiver Wi-Fi "SVEAN10SW", and enter the password "123456789" to connect to it.
- Open a browser and enter 192.168.200.1 in the address bar. Enter the username "admin" and the password "123456" to log in.



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2.4.2 Configuring the Network

To check the Ethernet/4G/Wi-Fi network status of the receiver, choose **Network Settings** > **Network Status**.

Method 1 (DHCP):

- Use the network cable to connect the Ethernet port of the receiver to the Ethernet port of the router or switch.
- Go to **Network Settings**. Under **Wired Network**, set **Connection Type** to **DHCP**, and click **Save**. The settings take effect automatically.

Method 2 (static IP):

- Use the network cable to connect the network port of the PC to the Ethernet port of the router or switch.
- Open a browser and access any website to ensure that the network is working normally.
- Go to **Settings** > **Network and Internet** > **Network and Sharing Center** > **Ethernet** > **Details** in Windows 10 to access and record the IPv4 address, IPv4 subnet mask, IPv4 default gateway, and IPv4 DNS server information, which are required when configuring the wired network of the receiver. If you are using a different operating system, operations may vary slightly.
- Unplug the network cable from the PC and then plug it into the Ethernet port of the receiver via the network cable adapter.
- Go to **Network Settings**. Under **Wired Network**, set **Connection Type** to **Static IP**, enter the IP address, subnet mask, default gateway, and DNS information recorded above (enter DNS1 and retain the default value 8.8.8.8 for DNS2), and then click **Save**.

Method 3 (4G network):

- Use a hex wrench to remove the screws from the cover on the front panel of the receiver, take down the cover (put on the cover after installation and commissioning), and insert a micro-sized 4G IoT SIM card into the SIM card slot as instructed.
- Go to **Network Settings**. Under **Mobile Network**, set **Network Module** to **On**, and **Network Mode** to **2G/3G/4G (auto)**, enter the APN information provided by the carrier, and then click **Save**. The settings take effect immediately.

Method 4 (Wi-Fi network):

- Go to Network Settings. Under Wi-Fi Client, Click Obtain Wi-Fi Name 1 to select the target Wi-Fi name, enter the corresponding Wi-Fi password in Wi-Fi Password 1, and click Save.

Network Settings

Network Status

Ethernet: Connected
IP Address: 10.64.177.215
NZN: On
Dial-up Connection: On
Carrier: China Unicom
Cellular Signal Strength: 31(dBm)
IoT Card ID: 99860623560015316111
SIM Card: Normal
Wi-Fi: Disconnected

Mobile Network

*Network Module: On
*Network Mode: 2G/3G/4G (auto)
APN: 3gnet
Save

Wired Network

*Connection Type: Static IP
*IP Address: 192.168.1.6
*Subnet Mask: 255.255.255.0
*Default Gateway: 192.168.1.1
DNS1:
DNS2:
Save

Wi-Fi Client

Wi-Fi Name 1: ABCC Obtain
Wi-Fi Password 1: *****
Wi-Fi Name 2: ABC
Wi-Fi Password 2: *****
Save

Note:
1. Connect to a 2.4 GHz Wi-Fi network using DHCP.
2. The Wi-Fi network may use WPA-PSK/AES or WPA2-PSK/AES for security or not use any protection.

2.4.3 Configuring the Satellites

- Choose **Satellites > Tracking (Table) > Settings**.
- Set **Elevation Mask Angle to 15°**, and click **OK**. The settings take effect immediately.

The screenshot shows the Sveaverken GNSS software interface. The left sidebar contains navigation options: Receiver Status, Satellites, Tracking (Table), Tracking (Graph), Tracking (Skyplot), Receiver Config, I/O Config, Network Settings, and Firmware Update. The main window displays the 'Tracking (Table)' settings. A 'Settings' dialog box is open, showing the 'Elevation Mask Angle' set to 15°. Below this, the 'Satellite System' and 'Frequency' sections are visible, with checkboxes for GPS, BDS, GLONASS, Galileo, and QZSS, and their respective frequencies (L1, L2, L5, B1C, B2a, E1, E5a, E5b).

No.	Type	Elevation (°)	Azimuth (°)	L1/R1/E1 SNR	L2/R2/E2a SNR	L5/R5/E5b SNR	B1C SNR	B2a SNR	Used
5	GPS	28.2	102.8	42.9	41.3	0.0	0.0	0.0	Yes
13	GPS	22.7							Yes
15	GPS	52.5							Yes
18	GPS	66.5							Yes
23	GPS	37.4							Yes
24	GPS	68.7							Yes
1	BDS	45.0							Yes
2	BDS	39.3							Yes
3	BDS	54.0							Yes
4	BDS	33.0							Yes
5	BDS	17.7							No
6	BDS	50.0							Yes
8	BDS	67.3							Yes
9	BDS	34.5	201.8	40.2	43.0	36.2	0.0	0.0	No
11	BDS	24.8	302.0	40.5	46.1	43.2	0.0	0.0	No
12	BDS	38.5	238.7	43.6	48.7	47.0	0.0	0.0	Yes
13	BDS	63.1	347.1	48.5	47.2	47.3	0.0	0.0	Yes
16	BDS	52.6	196.6	43.9	44.6	41.5	0.0	0.0	Yes
21	BDS	52.6	324.4	51.1	0.0	51.3	46.1	48.8	Yes

2.4.4 Configuring the Working Mode

- Choose **Receiver Config > Reference Station**. Under **Work Mode**, set **Mode** to **Base over known point**.

1. If the reference station position is unknown,

- Click **Obtain Current Position**, set the **Sampled Points** to a positive integer in the range of 1 to 10,000 (60 by default), and then click **OK**. After the sampling is complete, click **Save**.

The screenshot shows the 'Reference Station' configuration screen in the Sveaverken GNSS software. The 'Station Information' section includes fields for Station Number (SVEAN10A191000N2C), Station Name (20001), and Station Owner. The 'Work Mode' section shows the mode set to 'Base over known point'. The 'Historical Coordinates' table displays three rows of data for different UTC times.

UTC Time	Latitude	Longitude	Height
2024-06-28 07:26:50	32.01872781°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

2. If the reference station position is known,
- Enter the latitude, longitude, and height, select **N** or **S**, select **E** or **W**, and then click **Save**.

Reference Station

Station Information

*Station Number: SVEAN10A191000NKZC
*Station Name: 20001
Station Owner:
Save

Work Mode

*Mode: Base over known point
*Latitude: 32.01872783 * ☒ N ☐ S
*Longitude: 118.76358761 * ☒ E ☐ W
*Height: 28.8695 m
Save **Obtain Current Position**

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872537°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.0187215°N	118.76358250°E	27.7200m

2.4.5 Configuring Ntrip

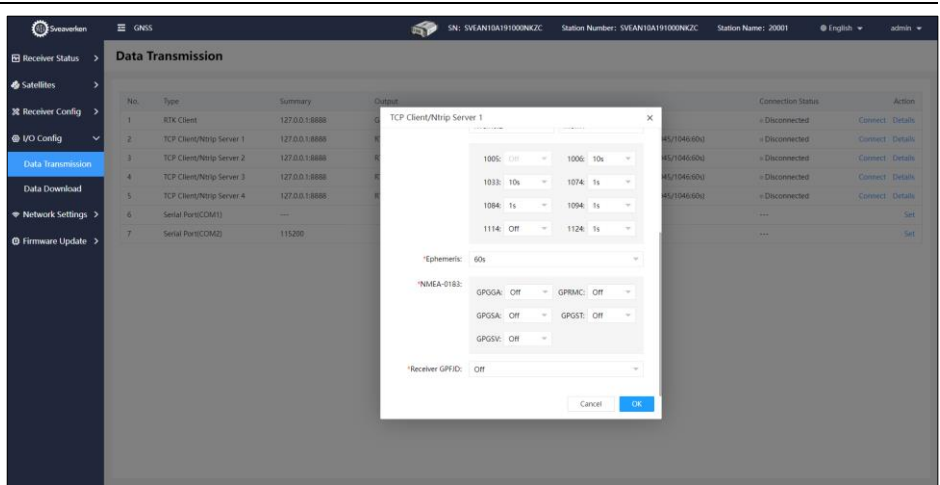
- Choose **I/O Config > Data Transmission**, find **TCP Client/Ntrip Server 1** (or any of the other three TCP Client/Ntrip Server links) in the list, and click **Connect** on the right. On the pop-up, set **Protocol** to **NTRIP**, enter the Ntrip Caster information provided by the FAE, including the server IP address, port, username, password, and mountpoint. Under **RTCM Data**, choose **RTCM3.2** and **MSM4**, and set **1006** and **1033** to **10s**, **1074**, **1084**, **1094**, and **1124** to **1s**, **Ephemeris** to **60s**, and other settings to **Off**, and then click **OK**.

Data Transmission

No.	Type	Summary	Output	Connection Status	Action
1	RTX Client	127.0.0.1:8888		-> Disconnected	Connect Details
2	TCP Client/Ntrip Server 1	127.0.0.1:8888		-> Disconnected	Connect Details
3	TCP Client/Ntrip Server 2	127.0.0.1:8888		-> Disconnected	Connect Details
4	TCP Client/Ntrip Server 3	127.0.0.1:8888		-> Disconnected	Connect Details
5	TCP Client/Ntrip Server 4	127.0.0.1:8888		-> Disconnected	Connect Details
6	Serial Port(COM1)	---		---	Set
7	Serial Port(COM2)	115200		---	Set

TCP Client/Ntrip Server 1

*Protocol: NTRIP
*Server IP Address:
*Port:
*Username:
*Password:
*Mountpoint:
*RTCM Data: RTCM3.2 MSM4
1006: 10s 1006: 10s
1033: 10s 1074: 1s
1084: 1s 1094: 1s
Cancel **OK**



- After the above operations are complete, the FAE will inform you whether the receiver configuration is successful.

3 Web Interface

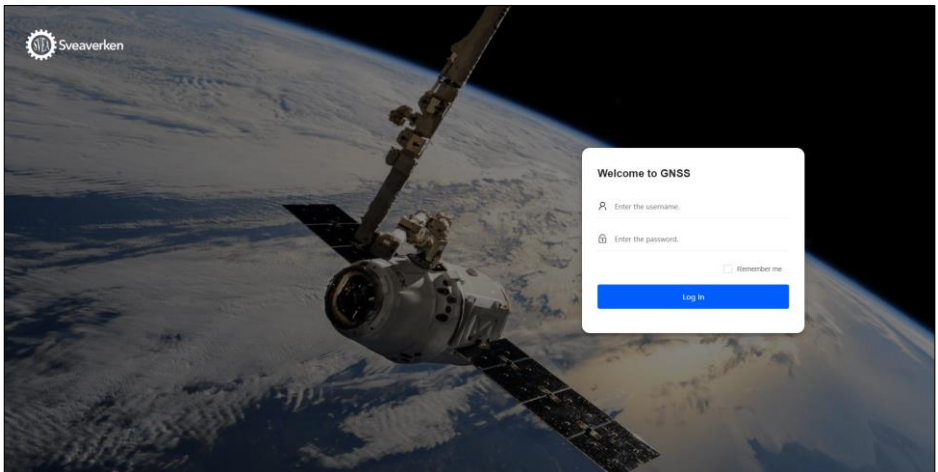
You can access the web interface of the N10 receiver through wired LAN and Wi-Fi.

Method 1: wired LAN

Check and set the receiver IP address on the front panel. Use the network cable to connect the Ethernet port of the receiver (via the network cable adapter) to the network port of the PC. Open a browser on your PC, and enter the receiver IP address in the address bar. Ensure that the IP addresses of the PC and the receiver are on the same subnet.

Method 2: Wi-Fi (recommended)

Enable Wi-Fi on the PC, find the receiver Wi-Fi "SVEAN10.SM", and enter the password "123456789" to connect to it. Open a browser and enter 192.168.200.1 in the address bar.



Enter the username "admin" and the password "123456". By checking **Remember me**, you can log in automatically the next time you enter the right IP address in the browser address bar.

Click **Log In** to access the web interface of the N10 receiver. The interface consists of six modules: **Receiver Status**, **Satellites**, **Receiver Config**, **I/O Config**, **Network Settings**, and **Firmware Update**.

 Sveaverken

GNSS

 SN: SVEANT0A19100NKGZC

Station Number: SVEANT0A19100NKGZC

Station Name: 20001

English

admin

Receiver Status

Positioning

General

Satellites

Receiver Config

I/O Config

Network Settings

Firmware Update

Positioning

Position

Latitude: 32.01872215°(N)

Longitude: 118.7635825°(E)

Height: 27.7200(m)

Type: Reference Station

Satellites Used: 32

GPS(7): 5,11,13,15,20,29,30

BDS(17): 1,2,3,4,7,8,10,13,19,22,35,38,39,40,44,59,60

GLONASS(4): 42,43,57,58

Galileo(4): 7,13,19,26,33

QZSS(0):

Satellites Tracked: 40

GPS(7): 5,11,13,15,20,29,30

BDS(24): 1,2,3,4,5,6,7,8,10,12,13,16,19,21,22,29,35,38,39,40,44,48,59,60

GLONASS(4): 42,43,57,58

Galileo(5): 7,13,19,26,33

QZSS(0):

DOP

PDOP: 0.6278

HDOP: 1.8928

VDOP: 1.3000

TDOP: 5.0000

Receiver Clock

GPS Week: 2320

GPS Seconds: 456436

Standard Deviations 1σ

Latitude: 0.0000(m)

Longitude: 0.0000(m)

Height: 0.0000(m)

3.1 Receiver Status

This module consists of two parts: **Positioning** and **General**.

3.1.1 Positioning

This part shows the satellite data received by the receiver.

- **Position:** position of the receiver antenna and receiver work mode.
- **Satellites Used:** number of satellites used by the receiver.
- **Satellites Tracked:** number of satellites tracked by the receiver.
- **DOP:** DOP values of the receiver position.
- **Receiver Clock:** GPS time of the receiver.
- **Standard Deviation 1 σ :** receiver position errors.

Sveaverken

GNSS

Receiver Status

Positioning

General

Satellites

Receiver Config

I/O Config

Network Settings

Firmware Update

SN: SVEAN10A191000KZC

Station Number: SVEAN10A191000KZC

Station Name: 20001

English

admin

Positioning

Position

Latitude: 32.01872215°(N)

Longitude: 118.7635825°(E)

Height: 27.7200(m)

Type: Reference Station

Satellites Used: 32

GPS(7): 5,11,13,15,20,29,30

BDS(17): 1,2,3,4,7,8,10,13,19,22,35,38,39,40,44,59,60

GLONASS(4): 42,43,57,58

Galileo(4): 7,13,26,33

QZSS(0):

Satellites Tracked: 40

GPS(7): 5,11,13,15,20,29,30

BDS(24): 1,2,3,4,5,6,7,8,10,12,13,16,19,21,22,29,35,38,39,40,44,45,59,60

GLONASS(4): 42,43,57,58

Galileo(5): 7,13,18,26,33

QZSS(0):

DOP

PDOP: 0.6278

HDOP: 1.8928

VDOP: 1.3000

TDOP: 5.0000

Receiver Clock

GPS Week: 2320

GPS Seconds: 456436

Standard Deviations 1 σ

Latitude: 0.0000(m)

Longitude: 0.0000(m)

Height: 0.0000(m)

3.1.2 General

This part shows the general information of the receiver.

- **Time:** UTC time and total running time of the receiver.
- **Storage:** internal and external storage capacities of the receiver.
- **Temperature:** operating temperature and battery temperature of the receiver.
- **Power Supply:** power supply of the receiver, including the external power supply status and battery level.

Sveaverken

GNSS

Receiver Status

Positioning

General

Satellites

Receiver Config

I/O Config

Network Settings

Firmware Update

SN: SVLAN10A19100NKGZ

Station Number: SVLAN10A19100NKGZ

Station Name: 2001

English

admin

General

Time

UTC Time: 2024-06-28 09:34:39

Running Time: 1d 02h 29m 11s

Storage

Internal Storage: 429MB/11693MB

External storage: Disconnected

Temperature

Operating Temperature: 52°C

Battery Temperature: 52°C

Power Supply

External Power Supply: Disconnected

Battery Level: 67%

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3.2 Satellites

This part shows the satellite tracking status of the receiver in the form of table, graph, and skyplot.

3.2.1 Tracking (Table)

The **Tracking (Table)** page shows the details of satellites from five constellations, namely GPS, BDS, GLONASS, Galileo, and QZSS, tracked by the receiver in a table, including the satellite number, elevation angle, azimuth angle, and signal to noise ratio (SNR).

Sveaverken

GNSS

SN: SVEAN10A191000NKCZ

Station Number: SVEAN10A191000NKCZ

Station Name: 20001

English

admin

Receiver Status

Satellites

Tracking (Table)

Tracking (Graph)

Tracking (Skyplot)

Receiver Config

I/O Config

Network Settings

Firmware Update

AllGPS(BD)BDS(G)GLONASS(SR)Galileo(E)QZSS(S)

No.	Type	Elevation (°)	Azimuth (°)	L1/B1/E1 SNR	L2/B2/E2a SNR	L5/B5/E5a SNR	B1C SNR	B2a SNR	Used
5	GPS	27.2	104.2	42.0	40.6	0.0	0.0	0.0	Yes
13	GPS	21.5	48.2	42.0	37.5	0.0	0.0	0.0	Yes
15	GPS	51.4	35.5	47.8	45.9	0.0	0.0	0.0	Yes
18	GPS	66.3	259.6	47.2	49.0	51.7	0.0	0.0	Yes
23	GPS	38.6	319.5	45.4	44.6	48.2	0.0	0.0	Yes
24	GPS	70.2	150.3	49.1	45.5	50.6	0.0	0.0	Yes
1	BDS	45.0	136.2	43.6	42.8	39.8	0.0	0.0	Yes
2	BDS	39.4	234.9	39.0	46.5	41.1	0.0	0.0	Yes
3	BDS	54.0	196.0	42.5	45.8	43.0	0.0	0.0	Yes
4	BDS	33.0	120.2	40.1	43.4	37.4	0.0	0.0	Yes
5	BDS	17.7	254.5	36.4	39.8	38.0	0.0	0.0	No
6	BDS	50.7	198.9	41.5	44.5	42.6	0.0	0.0	Yes
8	BDS	67.9	14.2	44.4	50.1	45.7	0.0	0.0	Yes
9	BDS	35.1	202.6	38.8	42.4	36.9	0.0	0.0	No
11	BDS	25.1	300.5	41.0	47.5	44.7	0.0	0.0	No
12	BDS	37.4	237.2	42.4	49.7	47.8	0.0	0.0	Yes
13	BDS	63.7	347.3	47.6	47.3	47.5	0.0	0.0	Yes
16	BDS	53.3	197.7	44.0	45.2	42.0	0.0	0.0	Yes
21	BDS	53.2	326.5	50.4	0.0	51.1	46.7	49.0	Yes

Select or deselect check boxes to show or hide the satellite system data.

Sveaverken

GNSS

SN: SVEAN10A191000NKCZ

Station Number: SVEAN10A191000NKCZ

Station Name: 20001

English

admin

Receiver Status

Satellites

Tracking (Table)

Tracking (Graph)

Tracking (Skyplot)

Receiver Config

I/O Config

Network Settings

Firmware Update

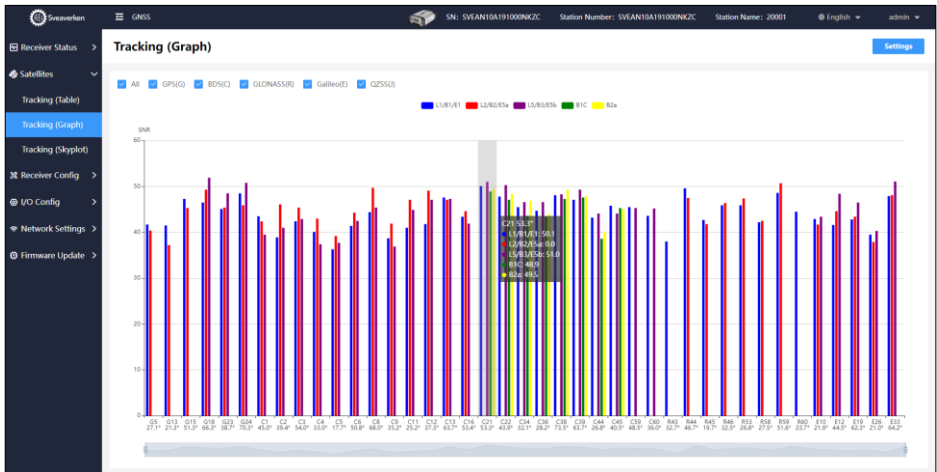
AllGPS(BD)BDS(G)GLONASS(SR)Galileo(E)QZSS(S)

No.	Type	Elevation (°)	Azimuth (°)	L1/B1/E1 SNR	L2/B2/E2a SNR	L5/B5/E5a SNR	B1C SNR	B2a SNR	Used
1	BDS	45.0	136.2	44.2	43.0	39.8	0.0	0.0	Yes
2	BDS	39.4	234.9	39.7	46.7	41.2	0.0	0.0	Yes
3	BDS	54.0	196.0	43.2	46.0	43.2	0.0	0.0	Yes
4	BDS	33.0	120.2	40.7	43.6	37.7	0.0	0.0	Yes
5	BDS	17.7	254.5	36.8	39.9	38.0	0.0	0.0	No
6	BDS	50.7	198.9	41.9	44.7	42.8	0.0	0.0	Yes
8	BDS	67.9	14.3	45.1	50.3	45.8	0.0	0.0	Yes
9	BDS	35.1	202.6	39.9	42.5	37.0	0.0	0.0	Yes
11	BDS	25.1	300.5	41.8	47.9	45.1	0.0	0.0	No
12	BDS	37.4	237.1	42.3	49.7	47.7	0.0	0.0	Yes
13	BDS	63.7	347.4	48.2	47.7	47.6	0.0	0.0	Yes
16	BDS	53.3	197.7	44.2	45.4	42.2	0.0	0.0	Yes
21	BDS	53.2	326.6	51.0	0.0	51.3	48.8	49.2	Yes
22	BDS	44.0	55.1	48.4	0.0	50.6	47.1	48.2	Yes
34	BDS	32.1	273.2	45.7	0.0	47.1	43.7	46.4	Yes
36	BDS	28.2	64.3	45.4	0.0	46.9	43.6	43.6	Yes
38	BDS	73.5	56.4	48.8	0.0	48.6	47.1	49.1	Yes
39	BDS	63.7	196.5	47.9	0.0	49.6	47.3	47.7	Yes
44	BDS	26.9	211.0	41.0	0.0	44.8	40.5	41.1	No

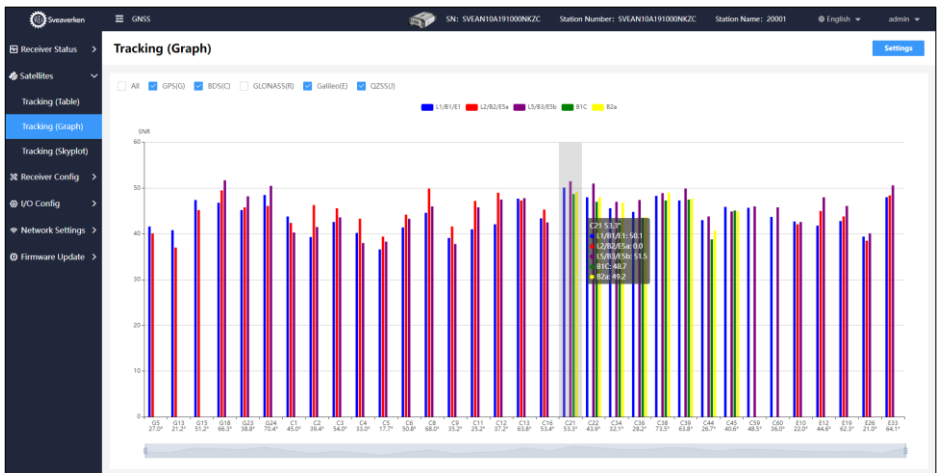
3.2.2 Tracking (Graph)

The **Tracking (Graph)** page shows the details of the satellites tracked by the receiver in a

bar graph. When your cursor points at a point on the bar graph, the system shows the SNR of a satellite tracked by the receiver.



Select or deselect check boxes to show or hide the satellite system data.

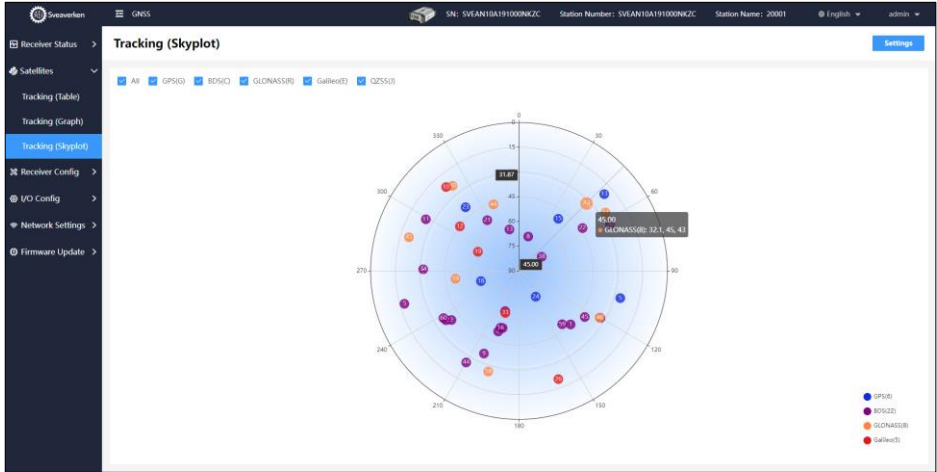


Use the bottom slider to zoom in or out on the bar graph.

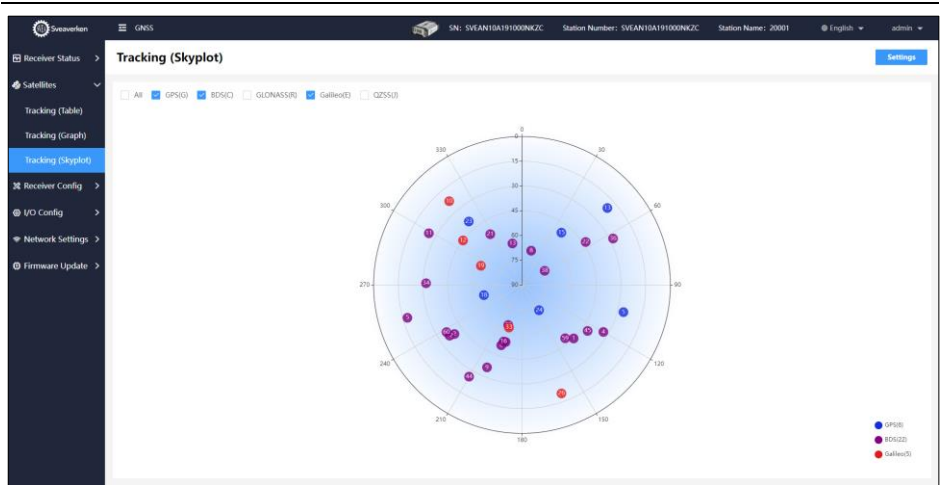


3.2.3 Tracking (Skyplot)

The **Tracking (Skyplot)** page shows the details of the satellites tracked by the receiver in a skyplot. When your cursor points at a point on the skyplot, the system shows the number of satellites tracked, azimuth angle, elevation angle, and SNR.

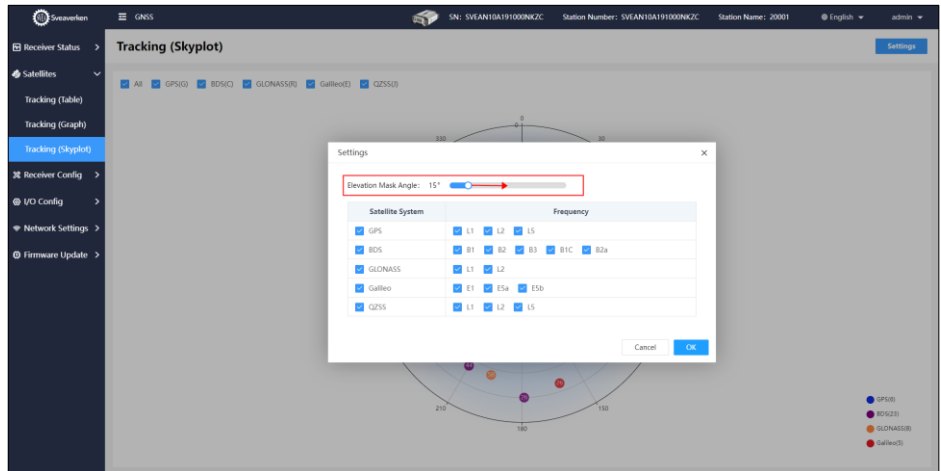


Select or deselect check boxes to show or hide the satellite system data.

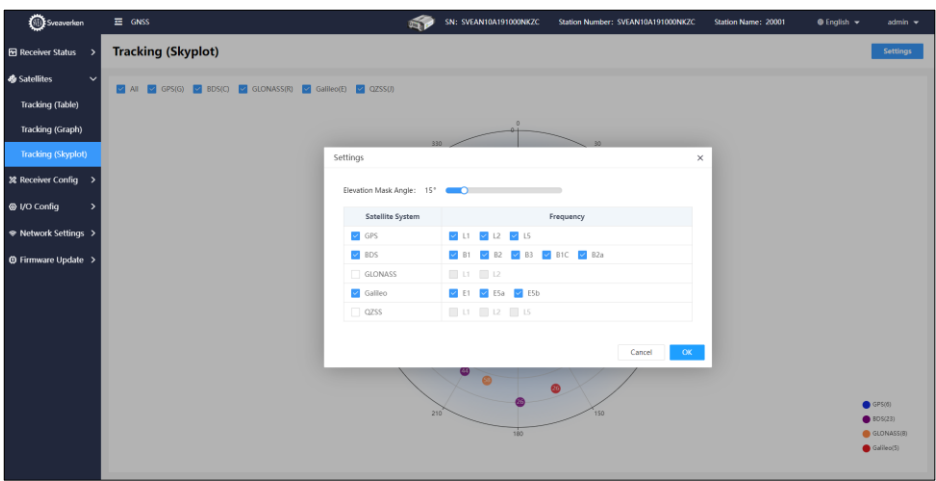


3.2.4 Settings

Click **Settings** to set the elevation mask angle, satellite system, and frequency information of satellites tracked by the receiver. You can adjust the elevation mask angle in the range of 0°–90° by the slider. The default angle is 5°.



Select or deselect the satellite system and frequency band check boxes to set frequencies of satellites tracked by the receiver.



3.3 Receiver Config

This module allows for working mode configuration and operation management of the receiver.

3.3.1 Reference Station

Set the receiver to work as a reference station or a rover. No modification is required to the default station information.

1. Set the reference station mode

- **Mode:** Select **Base over known point**.
- **Latitude** and **Longitude:** Enter a positive value with 8 decimal places, select **N** or **S**, and then select **E** or **W**.
- **Height:** Enter the geodetic height with 4 decimal places.

Ensure that all above data is correct, and click **Save**. The reference station mode is enabled immediately.

The screenshot shows the 'Reference Station' configuration page in the Sveaverken GNSS web interface. The page has a dark sidebar with navigation options: Receiver Status, Satellites, Receiver Config (selected), Reset, Users, Logs, Others, I/O Config, Network Settings, and Firmware Update. The main content area is titled 'Reference Station' and contains two sections: 'Station Information' and 'Work Mode'.

Station Information:

- Station Number: SVEAN10A191000NKZC
- Station Name: 20001
- Station Owner: (empty field)
- Save button

Work Mode:

- Mode: Base over known point
- Latitude: 32.01872783, N (selected), S (radio button)
- Longitude: 118.76358761, E (selected), W (radio button)
- Height: 28.8695 m
- Save button
- Obtain Current Position button (disabled)

Historical Coordinates:

UTC Time	Latitude	Longitude	Height
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358420°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

If the current receiver position is unknown, click **Obtain Current Position**, and set **Sampled Points** to a positive integer in the range of 1 to 10,000 (60 by default). The sampling frequency is once per second.

Sveaverken

GNSS

SN: SVEAN10A19100NKZC

Station Number: SVEAN10A19100NKZC

Station Name: 20001

English

admin

Receiver Status

Satellites

Receiver Config

Reference Station

Reset

Users

Logs

Others

I/O Config

Network Settings

Firmware Update

Reference Station

Station Information

*Station Number: SVEAN10A19100NKZC

*Station Name: 20001

Station Owner:

Save

Work Mode

*Mode: Base over known point

*Latitude: 32.01872783

*Longitude: 118.76358761

*Height: 28.8695 m

Save

Obtain Current Position

Sampled Points: 60

OK

Cancel

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

Click **OK**. When the sampling is complete, the system automatically enters the latitude, longitude, and height values.

Sveaverken

GNSS

SN: SVEAN10A19100NKZC

Station Number: SVEAN10A19100NKZC

Station Name: 20001

English

admin

Receiver Status

Satellites

Receiver Config

Reference Station

Reset

Users

Logs

Others

I/O Config

Network Settings

Firmware Update

Reference Station

Station Information

*Station Number: SVEAN10A19100NKZC

*Station Name: 20001

Station Owner:

Save

Work Mode

*Mode: Base over known point

*Latitude: 32.01872783

*Longitude: 118.76358761

*Height: 28.8695 m

Save

Obtain Current Position

Loading...

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

Click **Save**. The reference station mode is set.

Reference Station

Station Information

*Station Number: SVEAN10A191000NZC

*Station Name: 20001

Station Owner:

Save

Work Mode

*Mode: Base over known point

*Latitude: 32.01871197

*Longitude: 118.76359011

*Height: 30.7810 m

Save Obtain Current Position

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-07-01 01:52:13	32.01871197°N	118.76359011°E	30.7810m
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

2. Set the rover mode

Set **Mode** to **Rover**, and click **Save**. The rover mode is set.

Reference Station

Station Information

*Station Number: SVEAN10A191000NZC

*Station Name: 20001

Station Owner:

Save

Work Mode

*Mode: Rover

Save

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-07-01 01:52:13	32.01871197°N	118.76359011°E	30.7810m
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 08:33:22	32.01872215°N	118.76358250°E	27.7200m

3. Historical Coordinates

The historical latitudes, longitudes, and heights of the receiver recorded in the reference station mode are shown for future reference.

GNSS

SN: SVEAN10A191000KZC

Station Number: SVEAN10A191000KZC

Station Name: 20001

English

admin

Receiver Status

Satellites

Receiver Config

Reference Station

Reset

Users

Logs

Others

I/O Config

Network Settings

Firmware Update

Station Information

*Station Number: SVEAN10A191000KZC

*Station Name: 20001

Station Owner:

Save

Work Mode

*Mode: Base over known point

*Latitude: 32.01871197

*Longitude: 118.76359011

*Height: 30.7810 m

Save

Obtain Current Position

Historical Coordinates

UTC Time	Latitude	Longitude	Height
2024-07-01 01:52:13	32.01871197°N	118.76359011°E	30.7810m
2024-06-28 07:26:50	32.01872783°N	118.76358761°E	28.8695m
2024-06-28 06:59:30	32.01872553°N	118.76358426°E	28.5793m
2024-06-27 06:33:22	32.01872215°N	118.76358250°E	27.7200m

3.3.2 Reset

Restart, factory reset, or turn off the receiver here.

Note: You cannot turn off the receiver here if an external power supply is used.

GNSS

SN: SVEAN10A191000KZC

Station Number: SVEAN10A191000KZC

Station Name: 20001

English

admin

Receiver Status

Satellites

Receiver Config

Reference Station

Reset

Users

Logs

Others

I/O Config

Network Settings

Firmware Update

Reset

Restart Receiver

OK

Factory Reset

OK

Turn Off Receiver

OK

The following changes occur on the web interface after a factory reset.

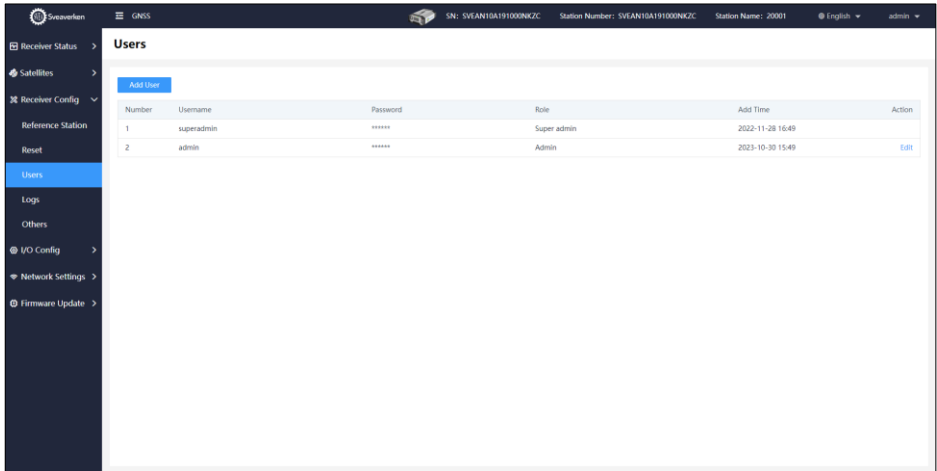
- Under **Receiver Status** and **Satellites**, all GNSS data fields (such as satellite type, satellite number, azimuth angle, elevation angle, and SNR) are empty. The elevation mask angle becomes 5° on the **Settings** screen.
- On the **Reference Station** screen, under **Work Mode**, the latitude, longitude, and height values become zero while other data remains unchanged, when **Mode** is set to **Base over known point**. No changes are made when **Mode** is set to **Rover**.

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3. On the **Others** screen, interface settings are off while other data remains unchanged.
4. In **I/O Config > Data Transmission**, the RTK Client and TCP Client/Ntrip Servers are disconnected, and other data (**Summary** and **Output**) remains unchanged; the serial port (COM1) mode is set to serial port direct communication and the serial port (COM2) output is empty. Data download is still available.

3.3.3 Users

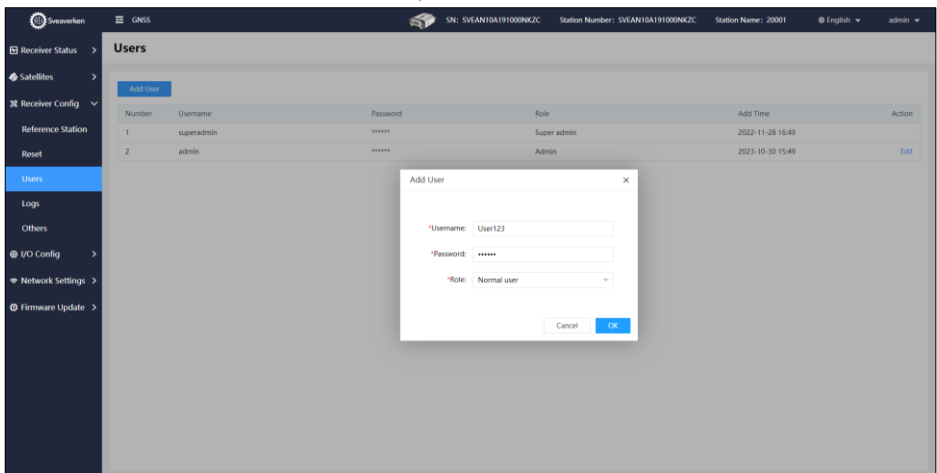
Users can be assigned different access to the receiver here.



The screenshot shows the 'Users' management screen. At the top, there is a header bar with the Sveaverken logo, 'GNSS', and device information (SN: SVLAN10A191000NJCZ, Station Number: SVLAN10A191000NJCZ, Station Name: 20001). A sidebar on the left contains navigation options: Receiver Status, Satellites, Receiver Config, Reference Station, Reset, Users (selected), Logs, Others, I/O Config, Network Settings, and Firmware Update. The main area is titled 'Users' and features an 'Add User' button. Below the button is a table with the following data:

Number	Username	Password	Role	Add Time	Action
1	superadmin	*****	Super admin	2022-11-28 16:49	
2	admin	*****	Admin	2023-10-30 15:49	Edit

Click **Add User**, enter the username and password, and then select a role.



The screenshot shows the 'Add User' dialog box. It contains three input fields: 'Username' (labeled with a red asterisk) containing 'User123', 'Password' (labeled with a red asterisk) containing masked characters '*****', and 'Role' (labeled with a red asterisk) with a dropdown menu currently showing 'Normal user'. At the bottom right of the dialog box are 'Cancel' and 'OK' buttons.

Click **OK** to add the user.

Sveaverken

GNSS

SN: SVLANT0A19100NGZC

Station Number: SVLANT0A19100NGZC

Station Name: 2001

English

admin

Receiver Status

Satellites

Receiver Config

Reference Station

Reset

Users

Logs

Others

IO Config

Network Settings

Firmware Update

Users

Add User

Number	Username	Password	Role	Add Time	Action
1	superadmin	*****	Super admin	2022-11-28 16:49	Edit
2	admin	*****	Admin	2023-10-30 15:49	Edit
3	User123	*****	Normal user	2024-07-01 09:53	Edit Delete



Note: The username and password must contain at least 5 and 6 characters respectively.

Add User

*Username: User

The username must contain at least 5 characters.

*Role: Normal user

Cancel

OK

Add User

*Username: User123

The password must contain at least 6 characters.

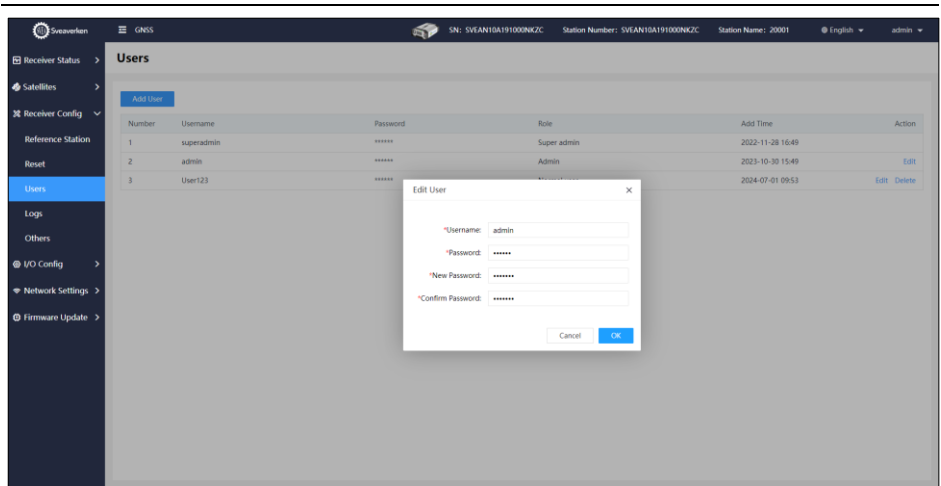
*Role: Normal user

Cancel

OK

Normal admin:

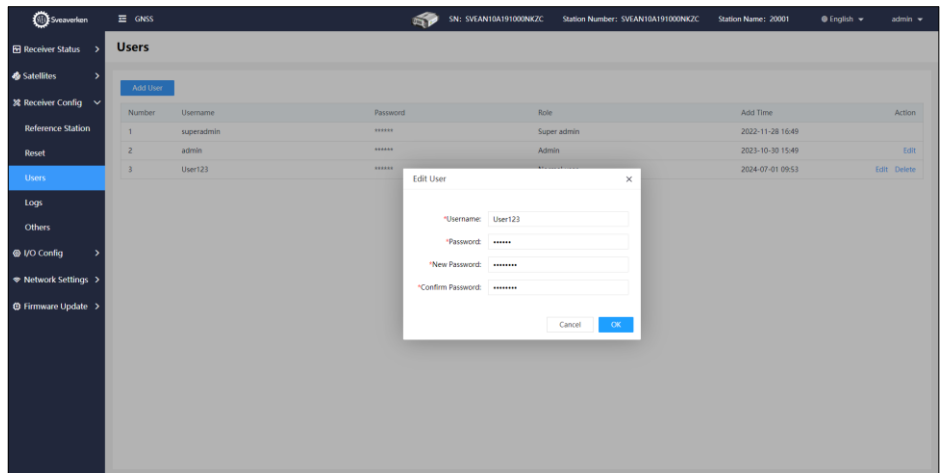
Click **Edit** to change the username and password.



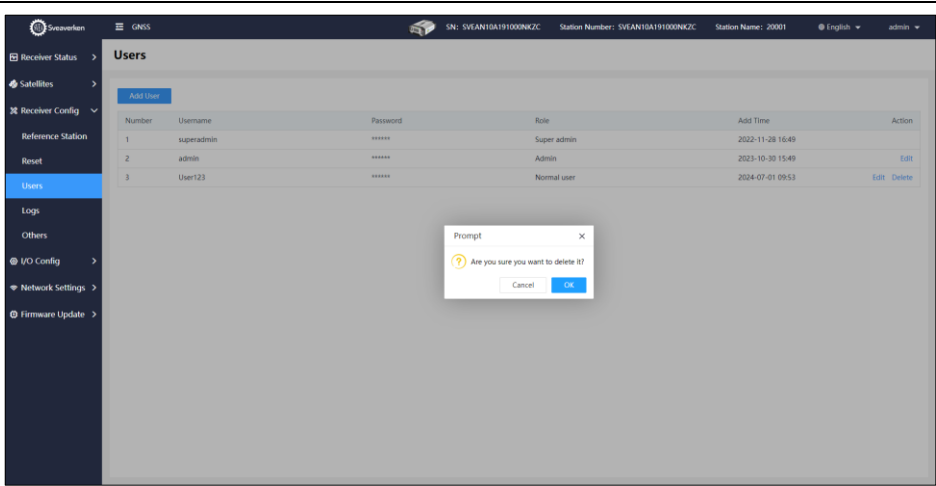
! **Note:** The super admin user cannot be deleted.

Normal user:

Click **Edit** to change the username and password.

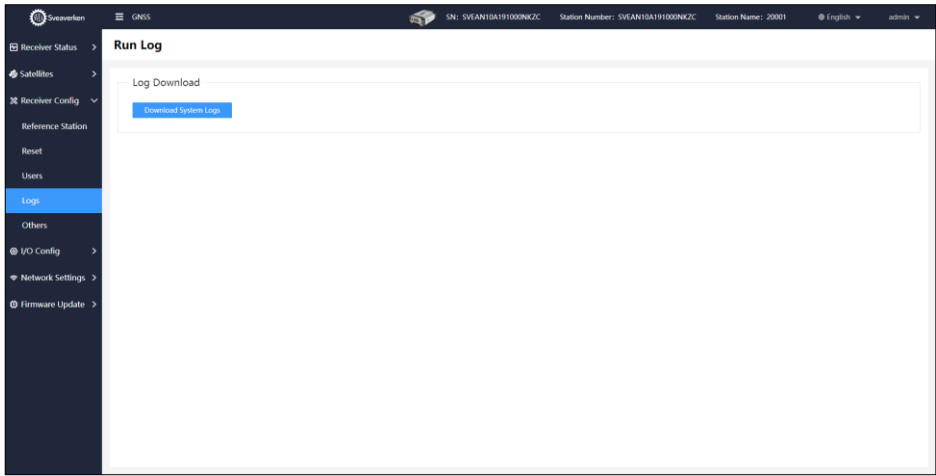


Click **Delete**, and click **OK** or **Cancel** on the pop-up.



3.3.4Logs

This feature records the running status of the receiver. Click **Download System Logs**, and specify the storage path. The system automatically downloads logs.



3.3.5 Others

Set the receiver Wi-Fi hotspot under **Wi-Fi Hotspot**.

- **Wi-Fi Status:** Select **On** or **Off**. The default status is **On**.
- **Wi-Fi Name:** receiver SN by default, which cannot be changed.
- **Wi-Fi Password:** 123456789 by default, which can be changed.

When **Wi-Fi Status** is **On**, set parameters and click **Save**.

On or off external interfaces (**1 PPS Output** and **Event Input**) of the receiver under **Interface**, and click **Save**.

Set the external antenna connected to the receiver under **Antenna**.

- **Antenna Type**, **Manufacturer**, and **Antenna Number**: Enter information based on facts.
- **Measurement Method**: **Bottom of antenna mount (h)**, **Antenna phase center (H)**, or **Antenna slant height (H')**.
- **Antenna Height**: Enter the value measured with one of the above methods.

- **Height Anomaly Correction: Auto** by default. You can change the setting to any value with up to 4 decimal places.

Click **Save**.

Antenna

Antenna Type:

Manufacturer:

Antenna Number:

Measurement Method: Antenna phase center (H)

Antenna Height: Bottom of antenna mount (H)

Height Anomaly Correction: Antenna phase center (H)

Antenna slant height (H)

N2N information retains the factory settings.

N2N

*Virtual IP Address:

*Server IP Address:

3.4 I/O Config

In this module, you can set data transmission and storage, and download data when the receiver works in the reference station or rover mode.

No.	Type	Summary	Output	Connection Status	Action
1	RTK Client	127.0.0.1:8888	GPQGA: 1s	Disconnected	Connect Details
2	TCP Client/Ntrip Server 1	51.104.158.151:60121	RTCM3.2(1074/1084/1094/11241s; 1006/1033:10d); Ephemeris(1019/1020/1042/1045/1046:60d)	Connected	Disconnect Details
3	TCP Client/Ntrip Server 2	51.104.158.151:60125	Receiver GPSID: 1s	Connected	Disconnect Details
4	TCP Client/Ntrip Server 3	127.0.0.1:8888	RTCM3.2(1074/1084/1094/11241s; 1006/1033:10d); Ephemeris(1019/1020/1042/1045/1046:60d)	Disconnected	Connect Details
5	TCP Client/Ntrip Server 4	127.0.0.1:8888	RTCM3.2(1074/1084/1094/11241s; 1006/1033:10d); Ephemeris(1019/1020/1042/1045/1046:60d)	Disconnected	Connect Details
6	Serial Port(COM1)	115200	RTCM3.2(1074/1084/1094/11241s; 1006/1033:10d); Ephemeris(1019/1020/1042/1045/1046:60d)	---	Set
7	Serial Port(COM2)	115200		---	Set

3.4.1 RTK Client

This feature is available when the receiver is in rover mode.

The protocol is NTRIP by default. Enter the server IP address, port, mountpoint, username, and password based on your account information, and click **OK**. The settings take effect immediately.

RTK Client

*Protocol:

NTRIP

*Server IP Address:

*Port:

*Mountpoint:

Get

*Username:

*Password:

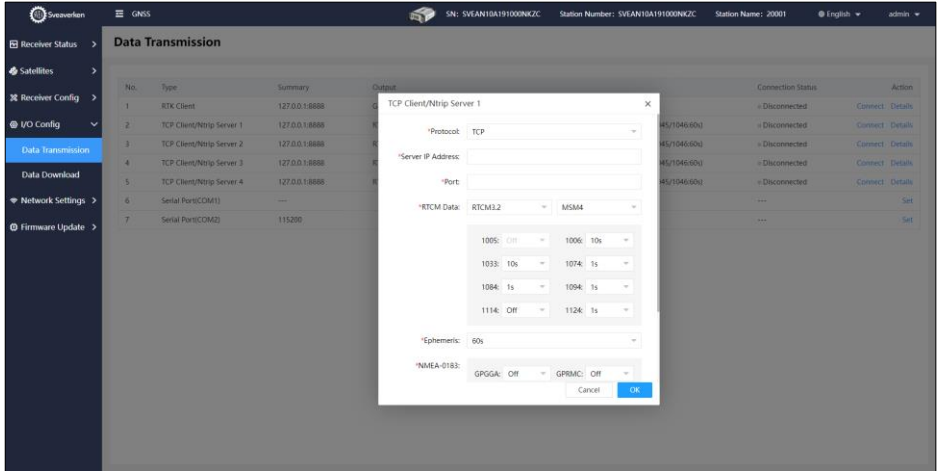
Cancel

OK

3.4.2 TCP Client/Ntrip Server

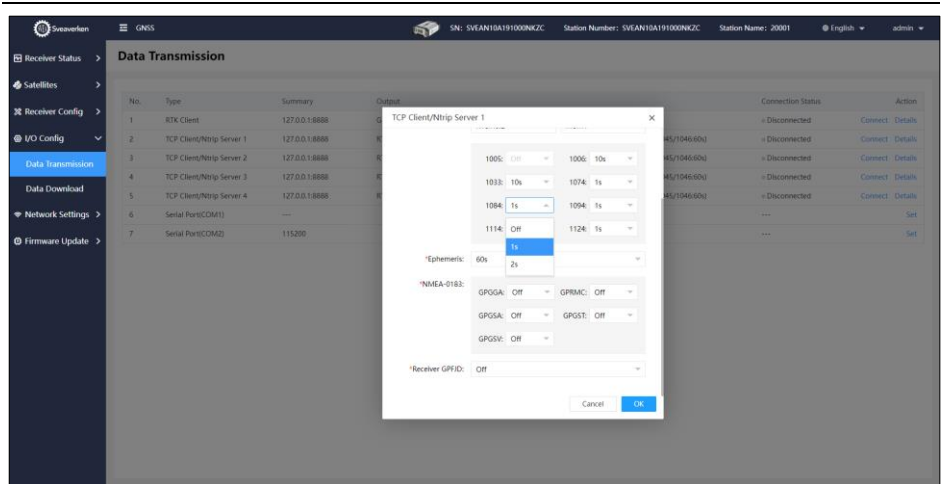
This feature supports synchronous data transmission via four links. The available protocols are TCP and NTRIP.

1. Set Protocol to TCP.

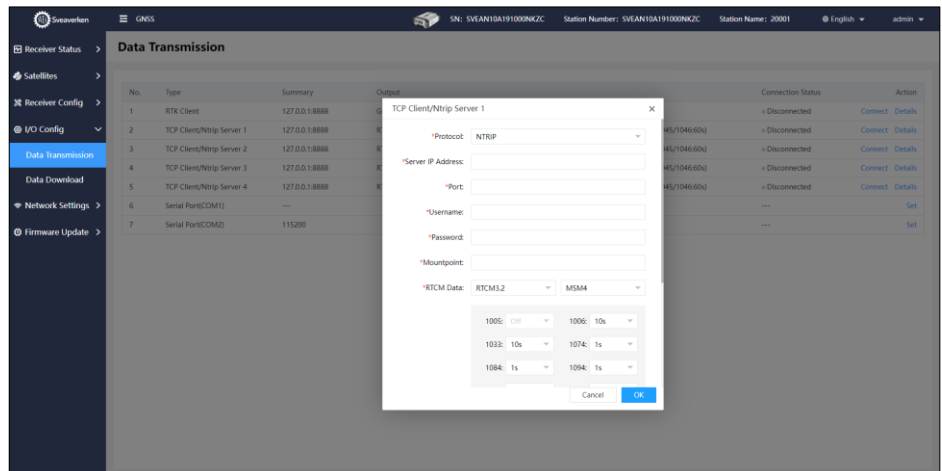


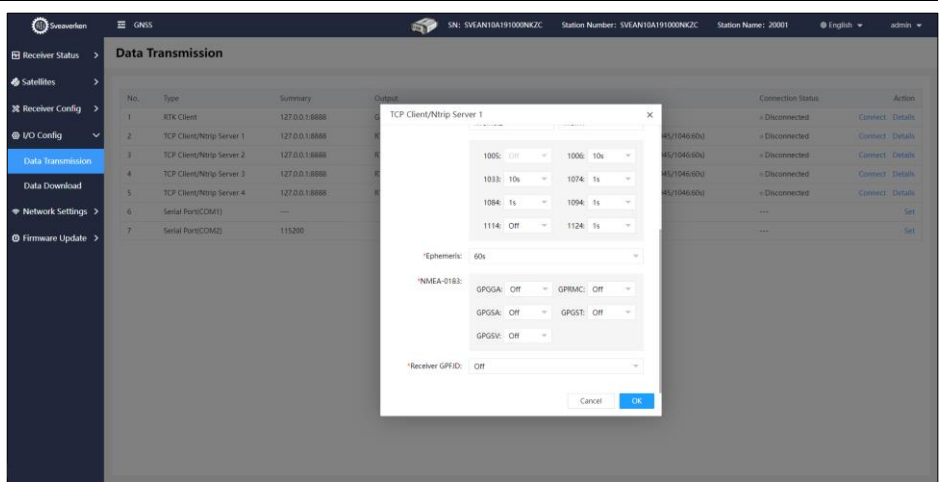
- Enter the server IP address and port as required.
- **RTCM Data:** Set **RTCM3.0**, **RTCM3.2(MSM4)**, **RTCM3.2(MSM5)**, or **Off**.
 - ① **RTCM3.0:** Set **1005,1006**, and **1033** to **10s** or **Off**, and **1004** and **1012** to **1s** or **Off**.
 - ② **RTCM3.2(MSM4):** Set **1005,1006**, and **1033** to **10s** or **Off**, and **1074**, **1084**, **1094**, **1114**, and **1124** to **1s**, **2s**, or **Off**.
 - ③ **RTCM3.2(MSM5):** Set **1005**, **1006**, **1013**, and **1033** to **10s** or **Off**, and **1075**, **1085**, **1095**, **1115**, and **1125** to **1s**, **2s**, or **Off**.
 - ④ **1005** and **1006** are mutually exclusive options. Please choose one of them.
- **Ephemeris:** Select **60s** or **Off**.
- **NMEA-0183:** Set **GPGGA**, **GPGSA**, **GPGST**, **GPGSV**, and **GPRMC** to **5Hz**, **2Hz**, **1s**, **2s**, **5s**, or **Off**.
- **Receiver GPFJD:** Select **1s**, **2s**, **5s**, or **Off**.

Set the above parameters, and click **OK**. The settings take effect immediately.



2. Set Protocol to NTRIP.



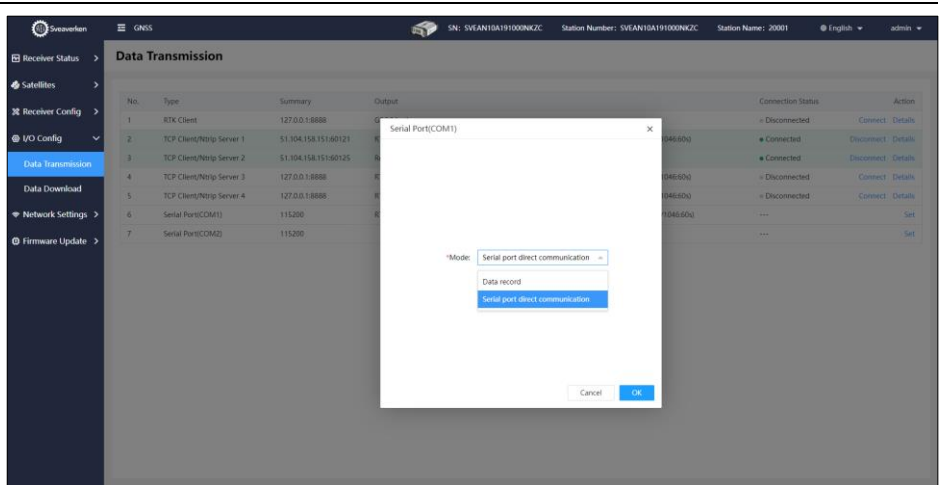


- Enter the server IP address, port, username, password, and mountpoint based on the NTRIP CASTER configuration.
- **RTCM Data:** Set **RTCM3.0**, **RTCM3.2(MSM4)**, **RTCM3.2(MSM5)**, or **Off**.
 - ① **RTCM3.0:** Set **1005,1006**, and **1033** to **10s** or **Off**, and **1004** and **1012** to **1s** or **Off**.
 - ② **RTCM3.2(MSM4):** Set **1005,1006**, and **1033** to **10s** or **Off**, and **1074**, **1084**, **1094**, **1114**, and **1124** to **1s**, **2s**, or **Off**.
 - ③ **RTCM3.2(MSM5):** Set **1005**, **1006**, **1013**, and **1033** to **10s** or **Off**, and **1075**, **1085**, **1095**, **1115**, and **1125** to **1s**, **2s**, or **Off**.
 - ④ **1005** and **1006** are mutually exclusive options. Please choose one of them.
- **Ephemeris:** Select **60s** or **Off**.
- **NMEA-0183:** Set **GPGGA**, **GPGSA**, **GPGST**, **GPGSV**, and **GPRMC** to **5Hz**, **2Hz**, **1s**, **2s**, **5s**, or **Off**.
- **Receiver GPFJD:** Select **1s**, **2s**, **5s**, or **Off**.

Set the above parameters, and click **OK**. The settings take effect immediately. Refer to section 2.4.5 for details.

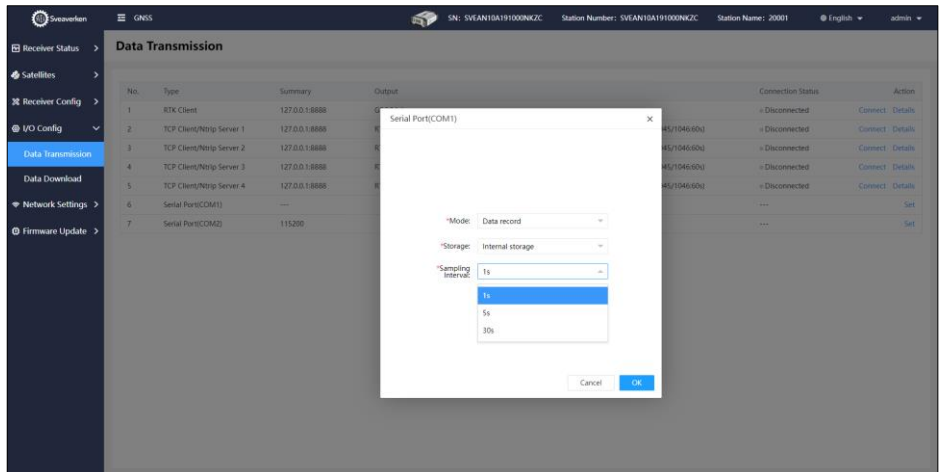
3.4.3 Serial Port (COM1)

Two modes (choose one out of two), namely **Data record** and **Serial port direct communication**, are supported.



Mode 1: Data record

This mode allows recording the RTCM data of the receiver locally. Set **Storage Location** to **Internal memory** or **External memory**, and set **Sampling Interval** to **1s**, **5s**, or **30s**, then click **OK**. The settings take effect immediately.



Data recorded is shown in the red box below.

Sveaverken

GNSS

SN: SVLAN10A191000KZC

Station Number: SVLAN10A191000KZC

Station Name: 2001

English

admin

Receiver Status

Satellites

Receiver Config

I/O Config

Data Transmission

Data Download

Network Settings

Firmware Update

No.

Type

Summary

Output

Connection Status

Action

1

RTK Client

127.0.0.1:8888

GPGGA: 1s

Disconnected

Connect Details

2

TCP Client/Ntrip Server 1

S1.104.158.151:60121

RTCM3.2(1074/1084/1094/11241s: 1006/103310s): Ephemeris(1019/1020/1042/1045/1046.60s)

Connected

Disconnect Details

3

TCP Client/Ntrip Server 2

S1.104.158.151:60125

Receiver GPSID: 1s

Connected

Disconnect Details

4

TCP Client/Ntrip Server 3

127.0.0.1:8888

RTCM3.2(1074/1084/1094/11241s: 1006/103310s): Ephemeris(1019/1020/1042/1045/1046.60s)

Disconnected

Connect Details

5

TCP Client/Ntrip Server 4

127.0.0.1:8888

RTCM3.2(1074/1084/1094/11241s: 1006/103310s): Ephemeris(1019/1020/1042/1045/1046.60s)

Disconnected

Connect Details

6

Serial Port(COM1)

115200

RTCM3.2(1074/1084/1094/11241s: 1006/103310s): Ephemeris(1019/1020/1042/1045/1046.60s)

Set

7

Serial Port(COM2)

115200

Set

Mode 2: Serial port direct communication

This mode allows for data exchange with the GNSS board through an RS232 cable connected to the COM1 port on the rear panel of the receiver. Set **Mode** to **Serial port direct communication**, and click **OK**.

Sveaverken

GNSS

SN: SVLAN10A191000KZC

Station Number: SVLAN10A191000KZC

Station Name: 2001

English

admin

Receiver Status

Satellites

Receiver Config

I/O Config

Data Transmission

Data Download

Network Settings

Firmware Update

No.

Type

Summary

Output

Connection Status

Action

1

RTK Client

127.0.0.1:8888

Disconnected

Connect Details

2

TCP Client/Ntrip Server 1

S1.104.158.151:60121

Connected

Disconnect Details

3

TCP Client/Ntrip Server 2

S1.104.158.151:60125

Connected

Disconnect Details

4

TCP Client/Ntrip Server 3

127.0.0.1:8888

Disconnected

Connect Details

5

TCP Client/Ntrip Server 4

127.0.0.1:8888

Disconnected

Connect Details

6

Serial Port(COM1)

115200

Set

7

Serial Port(COM2)

115200

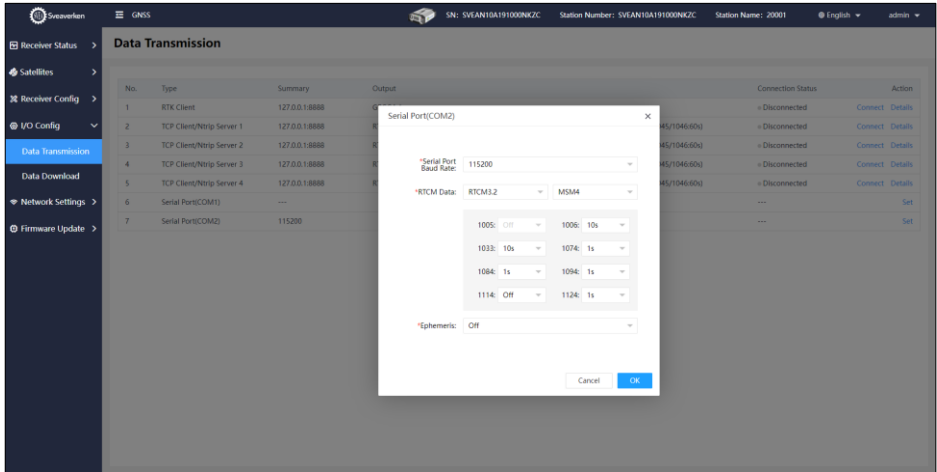
Set

Serial Port(COM1)

Mode: Serial port direct communication

Cancel OK

3.4.4 Serial Port (COM2)

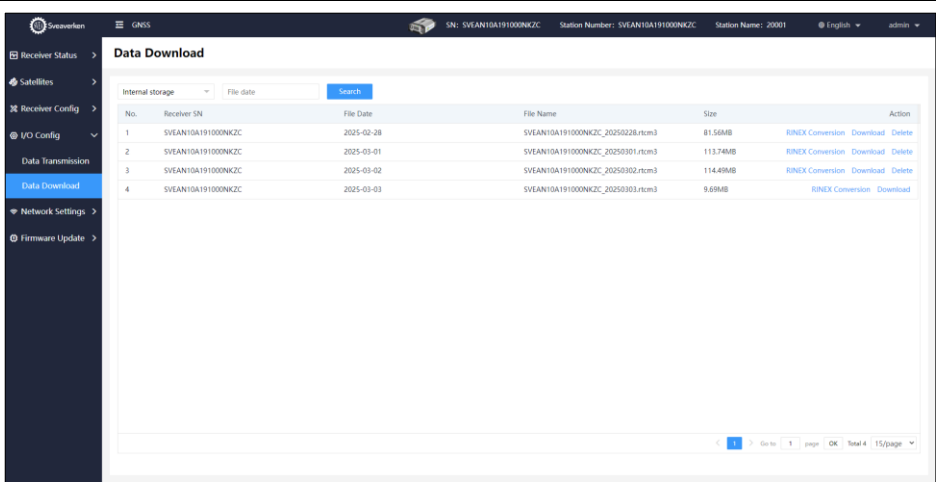


- **Serial Port Baud Rate:** Select **9600, 19200, 38400, 57600, or 115200**.
- **RTCM Data:** Set **RTCM3.0, RTCM3.2(MSM4), RTCM3.2(MSM5), or Off**.
 - ① **RTCM3.0:** Set **1005, 1006**, and **1033** to **10s** or **Off**, and **1004** and **1012** to **1s** or **Off**.
 - ② **RTCM3.2(MSM4):** Set **1005, 1006**, and **1033** to **10s** or **Off**, and **1074, 1084, 1094, 1114**, and **1124** to **1s, 2s**, or **Off**.
 - ③ **RTCM3.2(MSM5):** Set **1005, 1006, 1013**, and **1033** to **10s** or **Off**, and **1075, 1085, 1095, 1115**, and **1125** to **1s, 2s**, or **Off**.
 - ④ **1005** and **1006** are mutually exclusive options. Please choose one of them.
- **Ephemericis:** Select **60s** or **Off**.

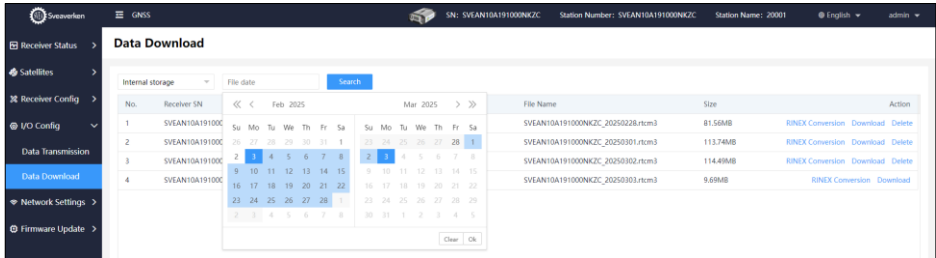
Set the above parameters, and click **OK**. The settings take effect immediately.

3.4.5 Data Download

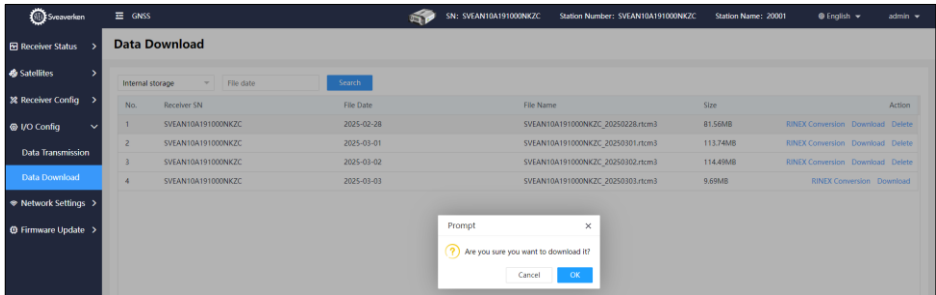
After the serial port (COM1) is set to data record mode, RTCM data stored can be downloaded here.



Select **Internal storage** or **External storage**, and set the time range. Data stored in the last 30 days can be downloaded.



Find the required data file, click **Download**, and then click **OK**. The system downloads the file automatically. Click **RINEX Conversion**, and the system will convert the stored data file into RINEX3.04 format and download the file.



 Sveaverken

GNSS

 SN: SVEAN10A191000NKZC

Station Number: SVEAN10A191000NKZC

Station Name: 2001

English

admin

Receiver Status

Satellites

Receiver Config

I/O Config

Data Transmission

Data Download

Network Settings

Firmware Update

Data Download

Internal storage File date

No.	Receiver SN	File Date	File Name	Size		Action
1	SVEAN10A191000NKZC	2025-02-28	SVEAN10A191000NKZC_20250228.rcm3	81.58MB	RINEX Conversion	Download Delete
2	SVEAN10A191000NKZC	2025-03-01	SVEAN10A191000NKZC_20250301.rcm3	113.74MB	RINEX Conversion	Download Delete
3	SVEAN10A191000NKZC	2025-03-02	SVEAN10A191000NKZC_20250302.rcm3	114.49MB	RINEX Conversion	Download Delete
4	SVEAN10A191000NKZC	2025-03-03	SVEAN10A191000NKZC_20250303.rcm3	9.69MB	RINEX Conversion	Download

 Conversion started...

100%

3.5 Network Settings

This module allows for network configuration of the receiver. Ethernet, 4G and Wi-Fi network connection are supported.

The screenshot displays the 'Network Settings' page of a receiver's web interface. The left sidebar contains navigation links: Receiver Status, Satellites, Receiver Config, I/O Config, Network Settings (highlighted), and Firmware Update. The main content area is titled 'Network Settings' and includes a top bar with device information (SN, Station Number, Station Name) and language/user controls.

Network Status

- Ethernet: Connected
- IP Address: 10.64.177.215
- NZNN: On
- Dial-up Connection: On
- Carrier: China Unicom
- Cellular Signal Strength: 31(good)
- IoT Card ID: 9980623560015316111
- SIM Card: Normal
- Wi-Fi: Disconnected

Mobile Network

- *Network Module: On
- *Network Mode: 2G/3G/4G (auto)
- APN: 3gnet
- [Save]

Wired Network

- *Connection Type: Static IP
- *IP Address: 192.168.1.6
- *Subnet Mask: 255.255.255.0
- *Default Gateway: 192.168.1.1
- DNS1:
- DNS2:
- [Save]

Wi-Fi Client

- Wi-Fi Name 1: ABC
- Wi-Fi Password 1:
- Wi-Fi Name 2: ABC
- Wi-Fi Password 2:
- [Save]

Note:

1. Connect to a 2.4 GHz Wi-Fi network using DHCP.
2. The Wi-Fi network may use WPA-PSK, AES or WPA2-PSK, AES for security or not use any protection.

3.5.1 Network Status

This feature shows the network connection status of the receiver.

3.5.2 Wired Network

This feature is used when the receiver connects to Ethernet.

Method 1 (DHCP)

- **Connection Type:** Select **DHCP**.
- Click **Save**.

Method 2 (Static IP)

- **Connection Type:** Select **Static IP**.
- Enter the IP address, subnet mask, default gateway, DNS1, and DNS2 based on the assigned network.

Refer to section 2.4.2 for details.

3.5.3 Mobile Network

This feature is used when the receiver connects to the 4G network.

- **Network Module:** Select **On**.
- **Network Mode:** Select **2G/3G/4G (auto)** by default.
- **APN:** Enter information provided by the SIM card carrier.

3.5.4 Wi-Fi Client

This feature is used when the receiver connects to the Wi-Fi network.

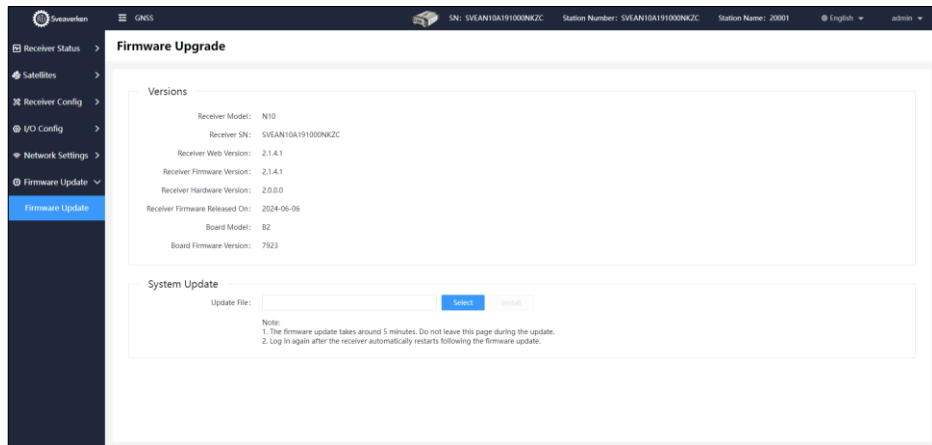
-
- **Wi-Fi Name 1:** Click **Obtain** to select from the dropdown list or manually enter the target Wi-Fi name.
 - **Wi-Fi Password 1:** Enter the corresponding Wi-Fi password.

3.6 Firmware Update

3.6.1 Web Update

This feature allows updating the receiver firmware and board through the Web.

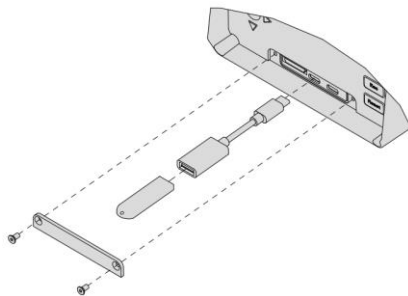
Versions: shows the receiver model, receiver SN, receiver web version, receiver firmware version, receiver hardware version, firmware release date, board model, and board firmware version.



System Update: Select and install an update file to update the web, firmware, and board of the receiver.

3.6.2 USB Flash Drive Update

This feature allows updating the receiver firmware and board through a USB flash drive (Use USB flash drives from mainstream brands, for example, Kingston and SanDisk.). Insert the USB flash drive with the N10 update package into the USB HOST interface (Type-C), and the N10 receiver will automatically recognize the update package and perform the version update. After the updating is completed, the receiver will automatically restart.



Appendix 1 Specifications

Functionality	Positioning	Channels	1,408
		Frequencies	BDS B1I/B2I/B3I/B1C/B2a GPS L1C/A/L2P (Y)/L2C/L5 GLONASS L1/L2 Galileo E1/E5a/E5b QZSS L1/L2/L5
		Accuracy	Single point (RMS) Horizontal: 1.5 m Vertical: 2.5 m
			RTK (RMS) Horizontal: 0.8 cm + 1 ppm Vertical: 1.5 cm + 1 ppm
			Static differential (RMS) Horizontal: 2.5 mm + 1 ppm Vertical: 5.0 mm + 1 ppm
		Update rate	Up to 5 Hz
		Protocols	NMEA-0183, RTCM 2.x/3.x
		GNSS antenna	Survey GNSS antenna or choke ring antenna
	4G network	4G module	Universal
		Coverage	Global (except the Antarctic and Arctic regions)
		SIM card slot	Micro SIM
	Wi-Fi network	Wi-Fi hotspot	For configuring the receiver
		Wi-Fi hotspot properties	Name: SVEAN10SV Initial password: 123456789 Initial IP address: 192.168.200.1
		Wi-Fi client	For receiver networking (connect to a 2.4 GHz Wi-Fi network using DHCP)
	Ethernet	Ethernet transceiver	Transmission speed: 10/100 Mbps Initial IP address: 192.168.1.6
I/O	USB	USB port	Compliant with USBIF USB2.0 standards. Max. transmission speed: 480 Mb/s
		Connector	Type-C

		Type	
		Usage	For connecting to an external storage or updating firmware
	LEMO	LEMO connector	2-pin, applicable power supply: DC 9 V–36 V, recommended power supply: DC 12 V
	RJ45	Aviation connector	Ethernet port
	COM1	RS232 connector	DB9 connector
	COM2	RS232 connector	7-pin LEMO
	GNSS	GNSS antenna	TNC connector
	4G	4G antenna	SMA connector
	PPS	PPS output	SMA connector
	EVENT	External event input	SMA connector
	CLK	External frequency standard input	SMA connector, reserved
Power supply	Protection	Input voltage	DC 9 V–36 V AC 90 V–260 V
		Over-voltage protection	Threshold: DC 38 V
		Protection against reverse connection	Supported
	Powering method		Lithium battery of 22,000 mAh (under standard conditions) External DC power supply via LEMO connector
	Battery life		>24 h
	Restart		Remote restart supported

Physical and environmental	Power consumption	≤10 W
	Dimensions	L×W×H: 220.7×152.1×81.7 mm
	Weight	2.08 kg
	IP rating	IP67
	Operating temperature	-40°C to 65°C
	Storage temperature	-40°C to 80°C

Appendix 2 Packing List

No.	Item	Qty.
1	N10 GNSS Reference Receiver	1
2	Power adapter	1
3	4G antenna	1
4	Network cable adapter	1
5	Clip	1
6	Plug (The quantity depends on your country/region.)	2 (for EU)
		1 (for US)
		1 (for China)
7	M3 hexagon socket countersunk head screw	2
8	Hex wrench	1
9	N10 GNSS Reference Receiver Quick Start Guide	1
10	Warranty	1
11	Certification	1

!	Note: This is a general packing list. If there is any inconsistency with the actual shipment, refer to the contract. Check the received items against this list or the contract, and contact your dealer if you have any questions.
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