

SinoGNSS

A300L

Base Station

User Guide

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This is the V1.0 (January, 2026) revision of the A300L base station User Guide. It cannot be copied or translated into any language without the written permission of ComNav Technology.

Technical Assistance

If you have any question and can't find the answer in this manual, please contact your local dealer from which you purchased the A300L base station. Alternatively, request technical support from ComNav Technology Website: www.ComNavtech.com or technical support email: support@ComNavtech.com. Your feedback about this Guide will help us to improve it with future revisions.

Safety Information

Before using the base station, please make sure that you have read and understood this User Guide, as well as the safety requirements.

- Connect your devices strictly based on this User Guide

- Install the base station in a location that minimizes vibration and moisture
- Avoid falling to ground, or colliding with other items
- Do not rotate 14-pin Lemo port
- Do not cover the radio, keep a sound ventilation environment
- To reduce radiation, please keep above 2 meters away from the radio station
- Take lightning protection measures when installing antennas
- Change the cable if damaged

Related Regulations

The base station contains integral Bluetooth® wireless technology. Regulations regarding the use of the datalink vary greatly from country to country. In some countries, the unit can be used without obtaining an end-user license. But in some countries the administrative permissions are required. For license information, please consult your local dealer.

Use and Care

The base station can withstand the rough treatment that typically occurs in the field. However, the base station is high-precision electronic equipment and should be treated with reasonable care.

Warning and Caution

An absence of specific alerts does not mean that there are no safety risks involved. A Warning or Caution information is intended to minimize the risk of personal injury and/or damage to the equipment.

WARNING- A Warning alerts you to a potential risk of serious injury to your person and/or damage to the equipment, because of improper operations or wrong settings of the equipment.

CAUTION- A Caution alerts you to a possible risk of damage to the equipment and/or data loss.

Warranty Notice

ComNav Technology does not warranty devices damage because of force majeure (lighting, high voltage or collision).

ComNav Technology does not warranty the disassembled devices.

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1 A300L Base Station Display

1.1 Main Appearance and Main Features

A300L base station appearance is shown below.



Figure 1. A300L GNSS base station

Main features:

- ✧ Independent core technology, which can be used for single BeiDou system positioning or multi-system joint positioning.
- ✧ Rich wireless communication, supporting 4G, Bluetooth and other communications. Support cloud service function, which can realize remote management and monitoring.
- ✧ Support quick installation, self-start when power on.
- ✧ Lightweight integrated and IP68 waterproof and dust-proof design, can adapt to the field environment.

1.2 Packing List

This section provides A300L parts list, including basic supplies and optional accessories.

Table 1. A300L packing list

	Item	Picture
Basic	A300L * 1	
	Power adapter * 1	
	DC cable * 1	
	11m Power cable * 1	
	4G card bolt * 1	

Optional	2m Power cable * 1	
	Debug cable * 1	

1.3 Ports and Indicators

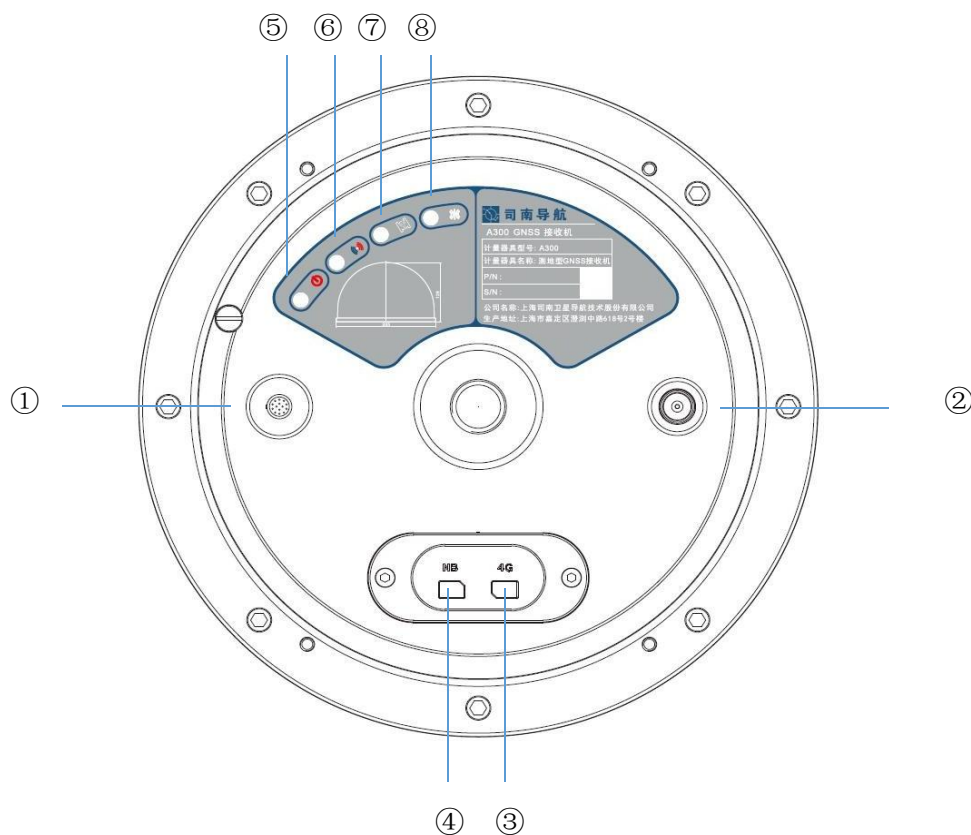


Figure 2. A300L ports and indicators

- ① Data: 14 pin LEMO data port
- ② None
- ③ 4G: SIM card slot
- ④ Reserved
- ⑤  : **Power indicator**, the power indicator lights solid green when the device is powered on normally.
- ⑥  : **4G indicator**, blinks green to indicate a successful 4G connection.
- ⑦  : **Satellite Indicator**: Green flashes (number = satellite count)
- ⑧  : **Differential indicator**: Blinks green when differential data is being transmitted.

1.4 Connection

This section describes the connection method for the A300L. The connections between the accessories and the A300L are illustrated in the figure below.

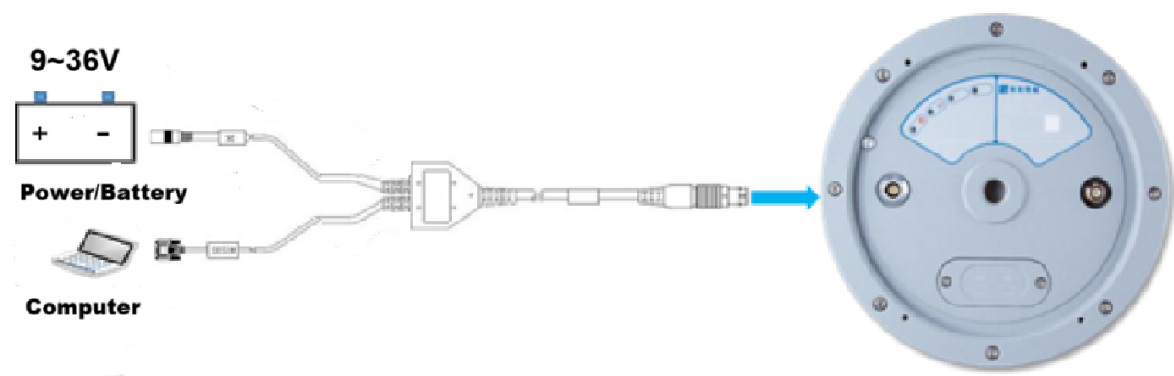


Figure 3. A300L connection

The connection interfaces between the A300L base station and the associated accessories are specified as follows:

(1) Connect the 14-pin data cable: Align the red reference dot on the 14-pin LEMO male connector with the corresponding dot on the A300L LEMO female interface, and engage the connection

(2) Connect the power supply: With the 14-pin data cable properly connected to the A300L, attach the DC round interface on the data cable to an external power supply or battery. The A300L will automatically power up. (Note: The external power supply voltage should be DC 9V–36V.)

(3) Connect to a computer or integrator: With the 14-pin data cable properly connected to the A300L, attach the RS232 interface to monitor the internal GNSS.

2 Installation Instruction

Please read this section thoroughly before installing the A300L GNSS base station to prevent any adverse impact on positioning accuracy.

2.1 Install A300L

Mount the A300L base station on the bracket. During installation, a rigid connection must be established between the A300L and the bracket, ensuring that their relative position remains fixed.

The A300L supports two installation methods:

- **Central mounting:** Secure the unit using the 5/8"-11 female threaded socket located at the center of the chassis;
- **Bottom mounting:** Secure the unit using the four M4 threaded holes positioned along the outer diameter of the base.

Select the method that is most suitable for the site environment.

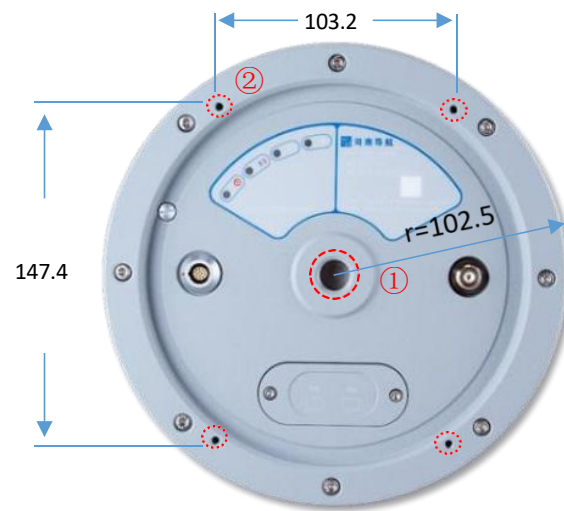


Figure 4. A300L mounting hole positions

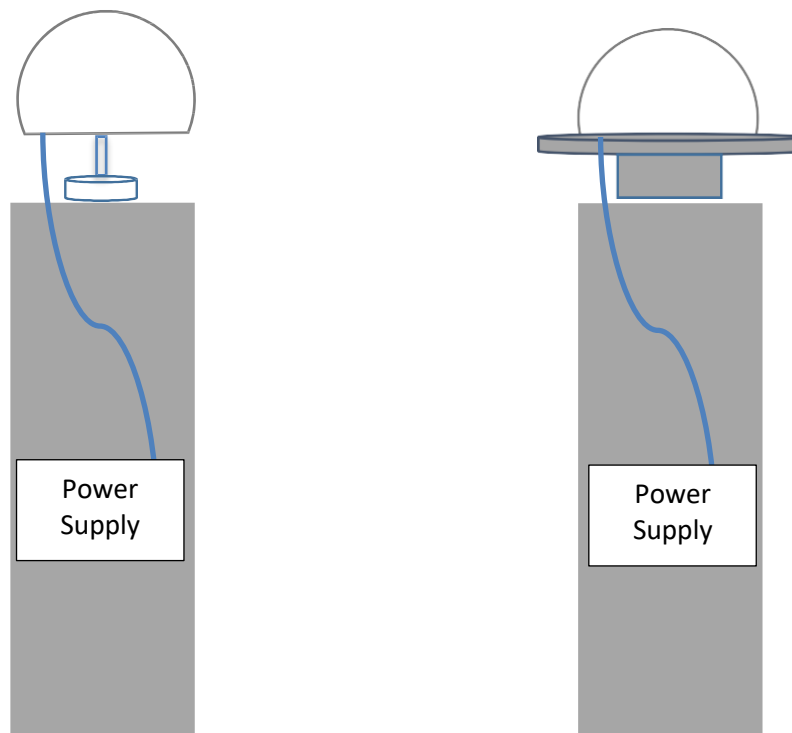


Figure 5. A300L installation diagram

2.2 Indicator Status Checking

Following installation, connect the power supply to the A300L. Ensure proper polarity (positive and negative) to prevent reverse polarity connection. The unit will automatically power on when power is applied. Verify normal base station operation by observing the status LED on the bottom of the unit:

Check that the LED indicator on the bottom is operating properly.

Table 2. Indicator status

LED	Normal status	abnormal
Power	Green	Yellow&Red
4GNetwork	Green&Blink	Yellow
Satellites	Green&Blink	None
Transmission	Green&Blink	Yellow

2.3 Insert SIM Card

The SIM card cover on the A300L base station must be removed and installed during routine operation. When performing cover removal or installation in the field or during production, first engage the screws on both sides to the halfway point before proceeding to fully tighten or fully loosen them.

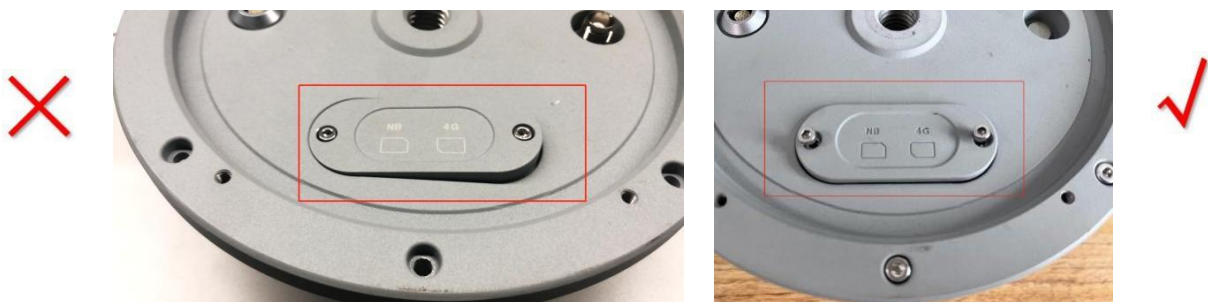




Figure 6. A300L SIM Card Cover: Removal and Installation

3 A300L Configuration

Configuration and management of the A300L base station are accomplished through the Survey Master application.

3.1 Survey Master Configuration

Please download the most recent version of the Survey Master software from the official website, and contact the relevant sales personnel to obtain a registration code.

(Download Link: <https://www.ComNavtech.com/index/list/30/cid/2.html#md>)



Install the software on an Android device (note that iOS and Apple devices are not supported).

Proceed with the following steps to complete registration and begin usage:

1. Run the Survey Master application on the Android phone and select the settings icon located in the upper-left corner.
2. Select **Software Registration > Software Status — Unregistered > Register**.
3. Enter the registration code or scan the provided QR code to finalize registration.

Registration is not required when using a ComNav Android-specific controller device.

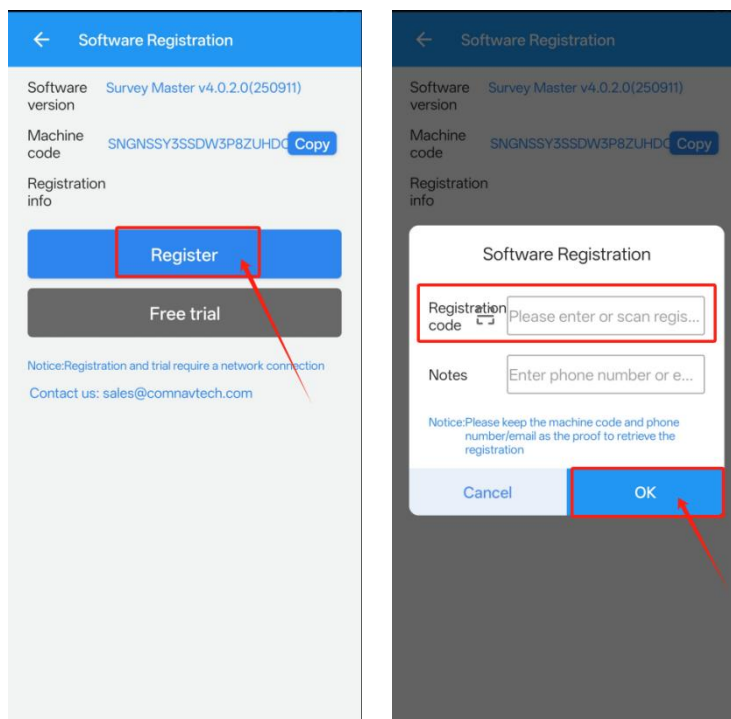
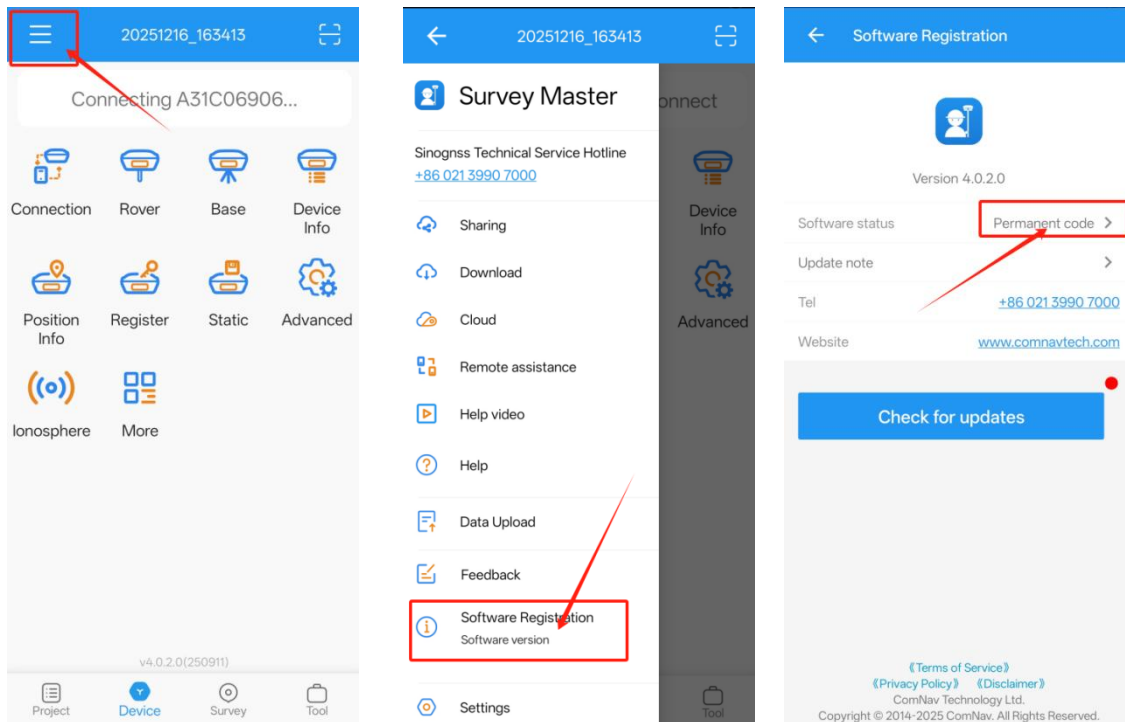
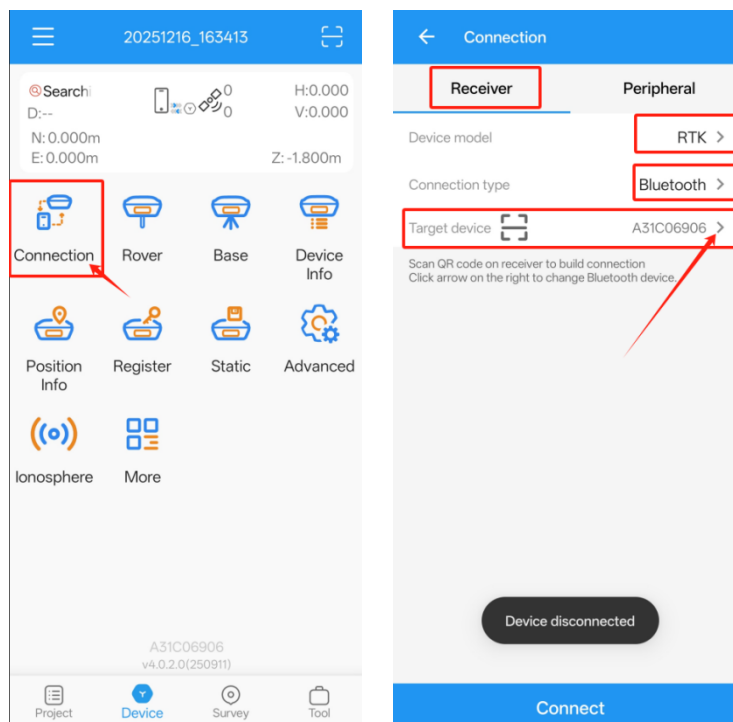


Figure 7. Survey master registration

3.1.1 Bluetooth Connection

1. Power on the A300L, then launch the Survey Master application on the Android phone and select **Connection**.
2. Proceed to **Receiver > Device Model > RTK > Connection Type > Bluetooth > Target Device**, then select **[A31CXXXXXX]**. Note that Bluetooth functionality must be enabled on the controller or Android device prior to this step.
3. Search for available devices: The detected devices will be displayed as illustrated in Figure ①.
4. Establish the connection: Tap the target device from the list to initiate pairing.
5. Verify successful connection: After the connection is established, the application interface will appear as shown in Figure ②.



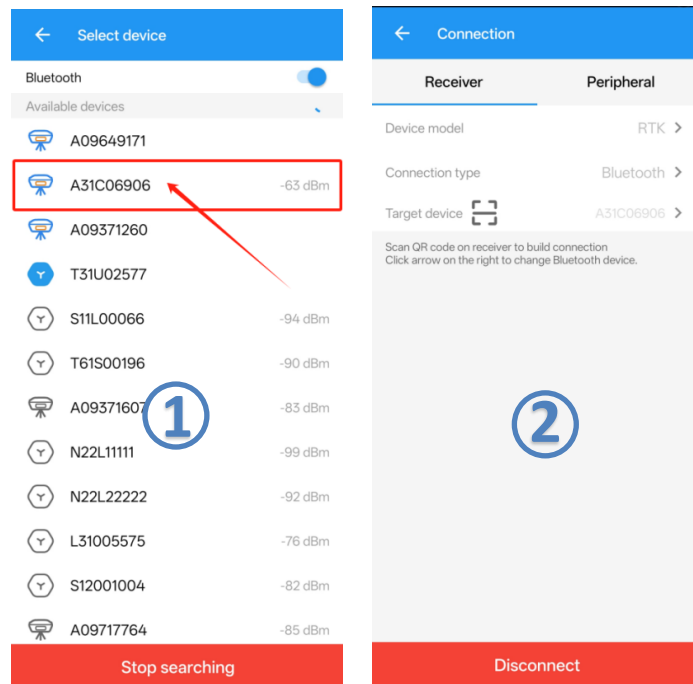


Figure 8. Bluetooth connection

3.1.2 Device Information

1. Navigate to [Device Info] > [Device Info].
2. Verify that the device SN, device model, system firmware, and board firmware are displayed correctly, as shown in the figure.

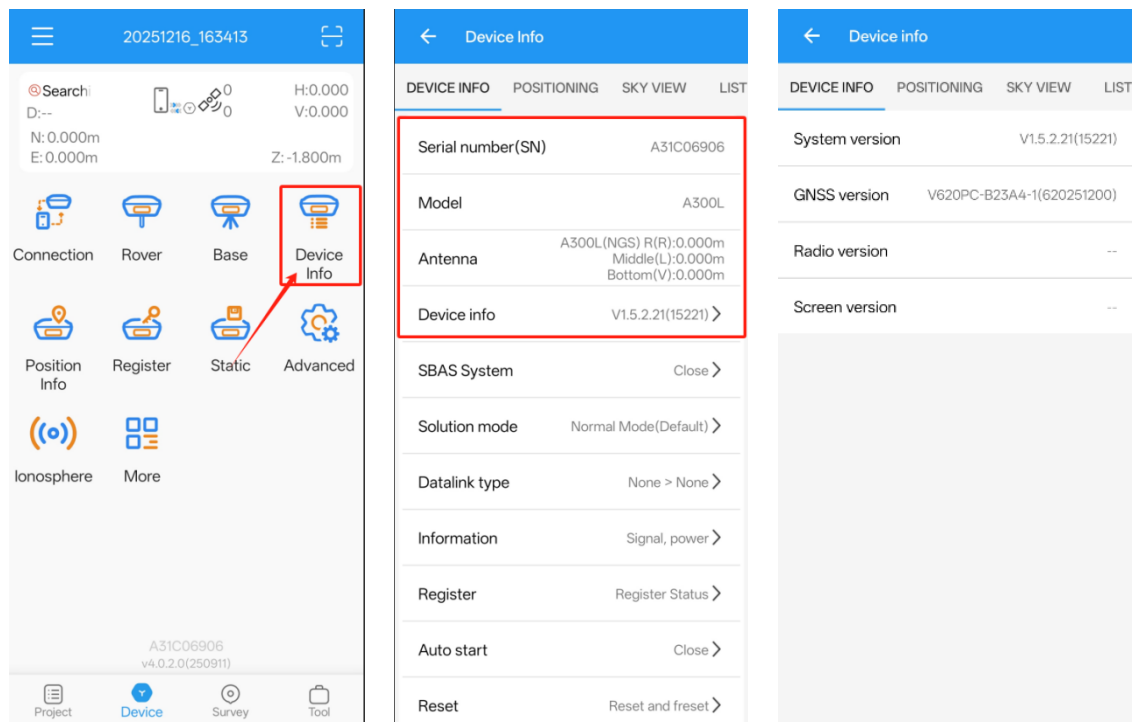


Figure 9. Device information

3.1.3 Satellite information

1. Select **[Satellites]** to display the satellite search status.
2. Verify the satellite quantity, distribution, and signal quality.

Under normal operating conditions, the satellite count shall be 40 or higher, the satellites shall be evenly distributed, and the signal-to-noise ratio shall remain stable.

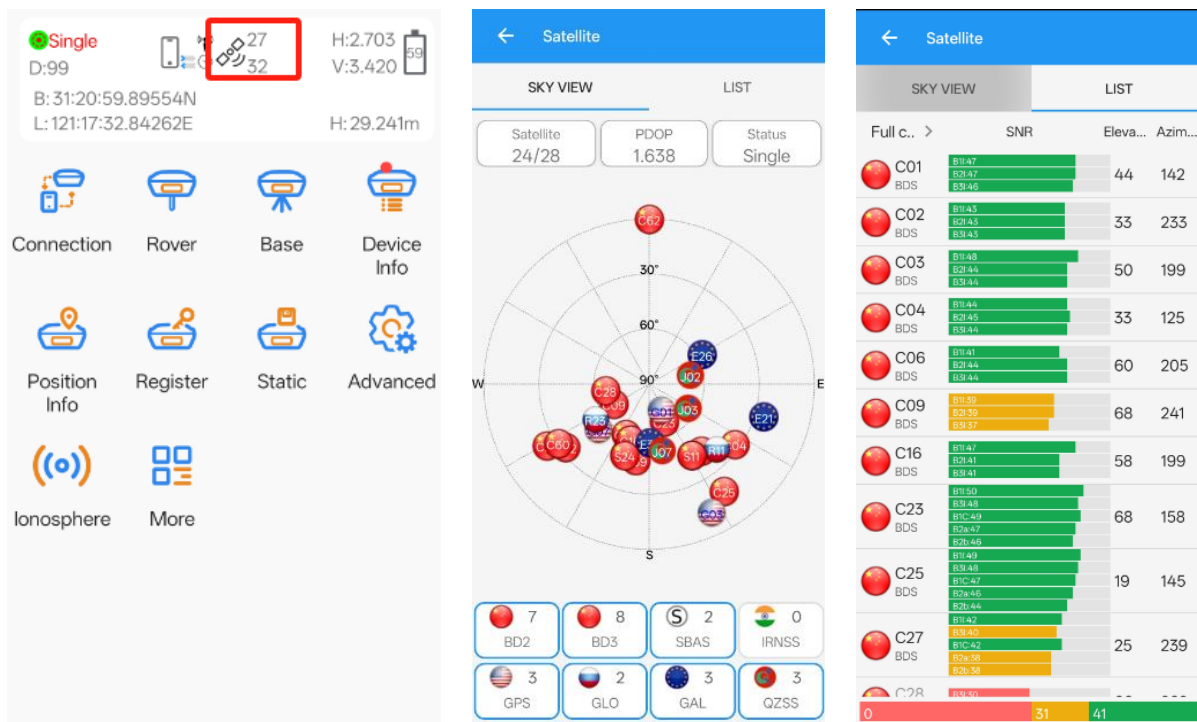


Figure 10. Satellite information

3.1.4 Base Mode

1. Navigate to [Base] > [New].
2. Configure the data link settings: select [Datalink type] > [Internal GSM] and [Protocol] > [CORS].
3. Set the APN. Enter the corresponding operator's [APN name], [Username], and [Password] based on the inserted SIM card to complete the SIM card configuration.
4. Enter the Ntrip server address for base station data upload. ComNav provides free Ntrip base station servers at the following URLs; the username and password can be any value.

Table 3. ComNav Server Address

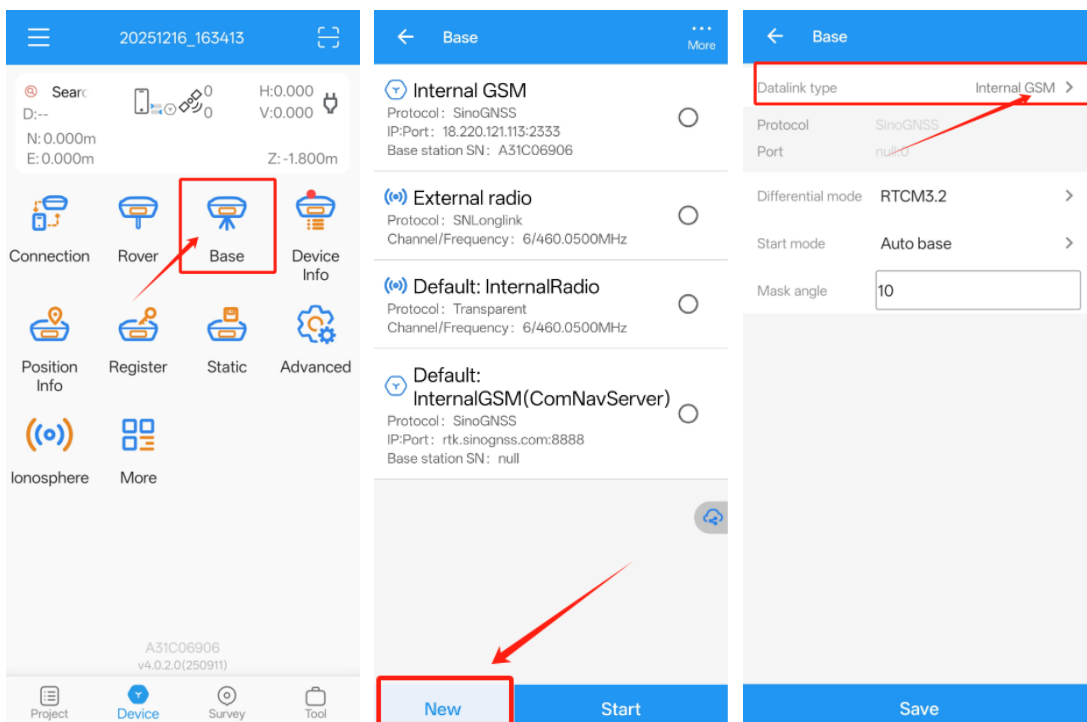
IP	PORT	Username	Password
base.comnavtech.com	8888	/	/

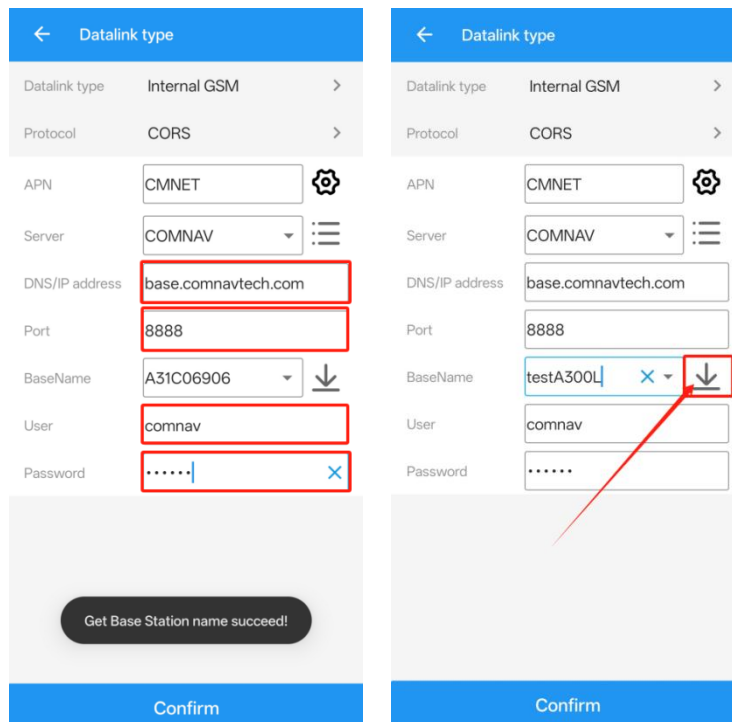
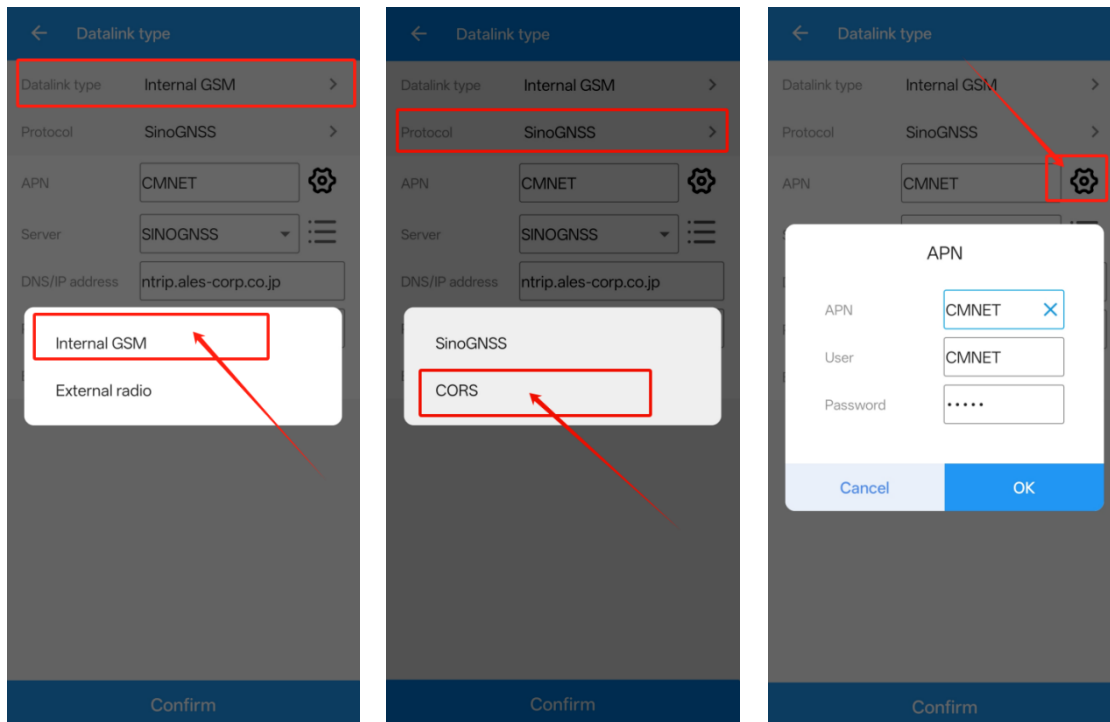
5. Click the **[Base Name]** icon on the right to apply the device SN as the default mount point name, or manually specify the mount point name to be displayed.

6. After configuration is completed, activate the current mode and proceed until **[Base]** appears on the main interface.

7. Base mode has been successfully configured, as shown in Figure ①.

Note: Avoid creating duplicate mount points in the current list, as this may cause operational conflicts.





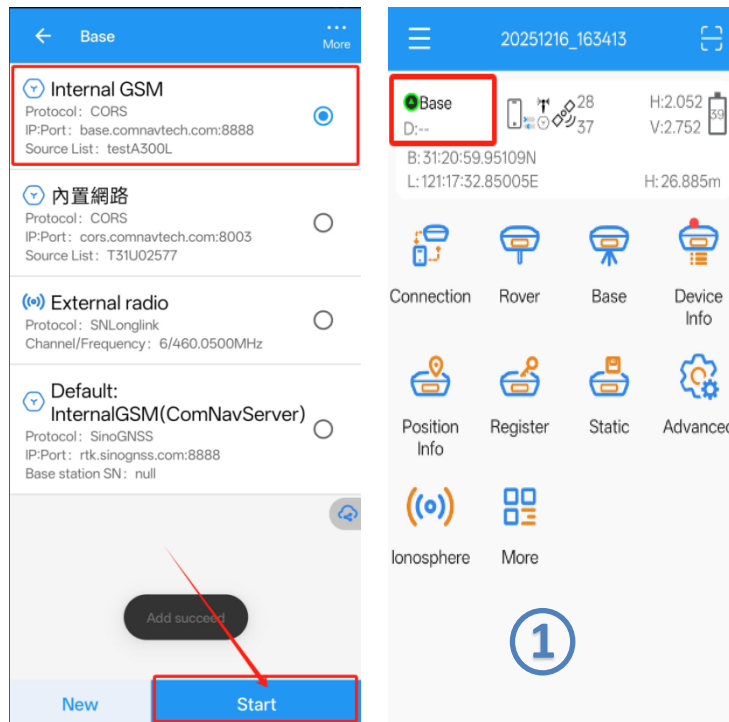


Figure 11. Base mode

3.1.5 Fix position

Base station coordinate positioning can be initiated in either **Auto Base** or **Fix Position** mode, depending on operational requirements.

- **Auto Base** — Also referred to as Single-Point Positioning (SPP). In this mode, the navigation receiver calculates its spatial position (latitude, longitude, and altitude) and time independently using only the received satellite signals.
- **Fix Position** — In this mode, the user manually inputs the base station coordinates (latitude, longitude, height). The actual coordinates of the base station installation location should be predetermined based on the local coordinate system before entry.

The steps for configuring Fix Position are outlined below:

1. Go to [**Start mode**] > [**Fix position**] > [**Save**] > [**Start**].
2. Enter the [**Name**] and [**Code**], select [**WGS84 LatLon**] under [**Display type**], and specify the [**B&L&H**] coordinates.
3. Input the actual installation rod height in the [**H**] field.

- Click **[OK]**. The system will automatically assess whether the entered coordinates differ excessively from the actual location. If the difference exceeds the acceptable tolerance, the system will prohibit starting with the current coordinates.

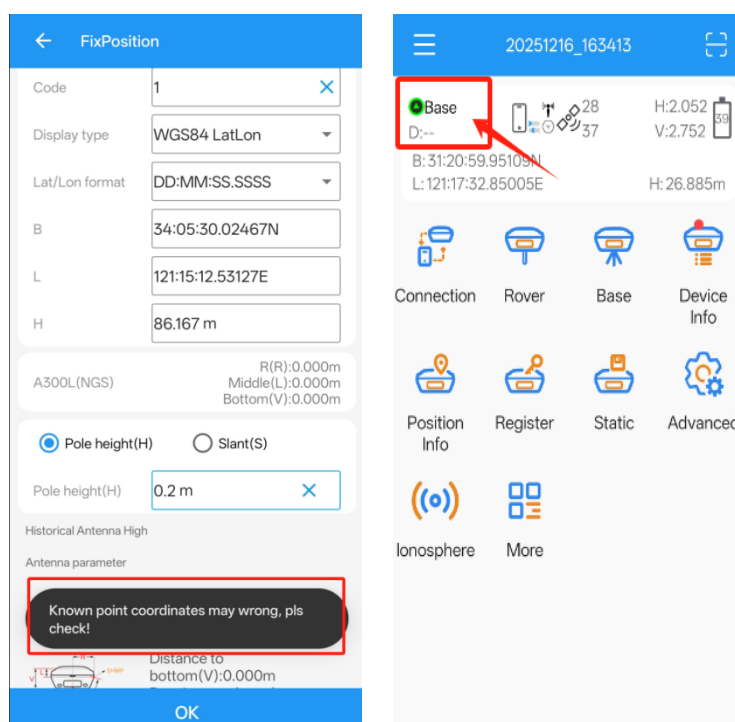
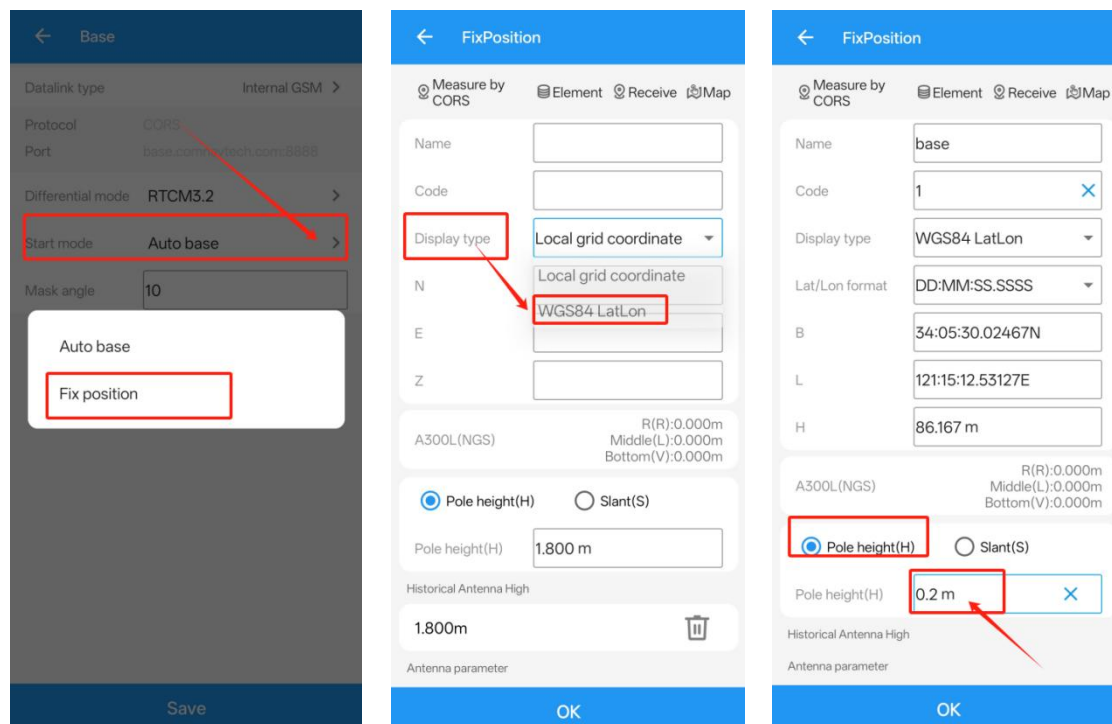


Figure 12. Fix position

3.2 Cloud Configuration

Configuration can be performed online via the ComNav dedicated cloud platform.

- For network APN configuration for internet access, refer to Chapter 4.2.
- For base station mode settings, refer to Chapter 5.2.

4 Serial Port Debugging

In the event of device malfunction or data transmission failure, debugging may be conducted using a debug cable. Debugging primarily encompasses the following two interfaces:

- **RS232**: for communication with the GNSS board
- **USB**: for network connectivity.

4.1 RS232-GNSS Board

1. Use a USB adapter to connect the 9-pin RS232 serial port to the computer.
2. Open the serial port software on the computer. (ComNav offers the CRU software tool for this operation.) Select **[Set Port] > [Serial Port]**, choose the correct **[COM]** port, and ensure the **[Baud Rate]** is set to the default value of 115200.
3. Input the query command [log version] and confirm that the board responds as expected. Refer to the figure below for an example.

Download Link: <https://www.ComNavtech.com/index/list/30/cid/2.html#md>

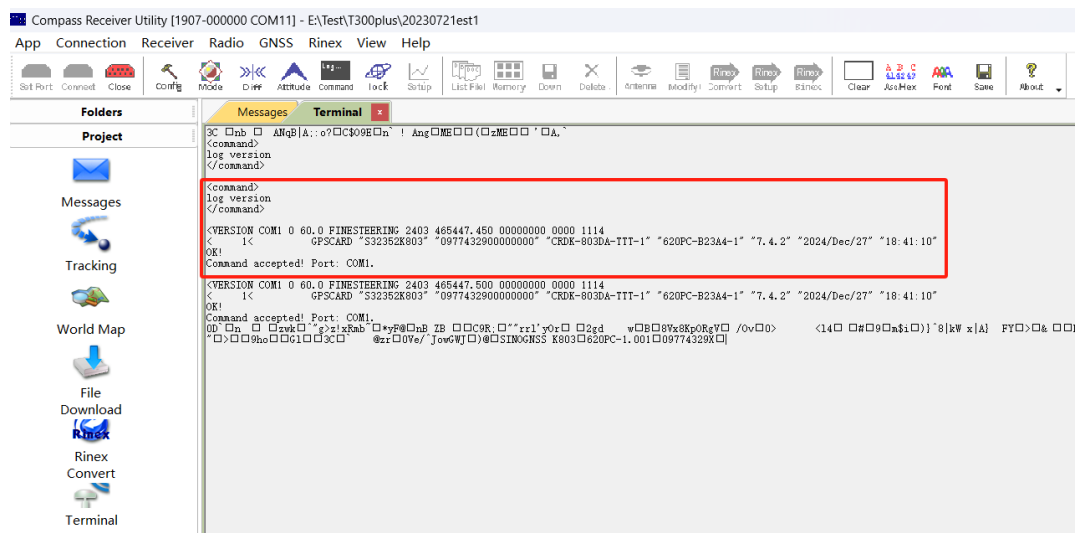


Figure 13. Check GNSS board

Note: The Debug port is designated for R&D back-end debugging only. Do not access or open this port.

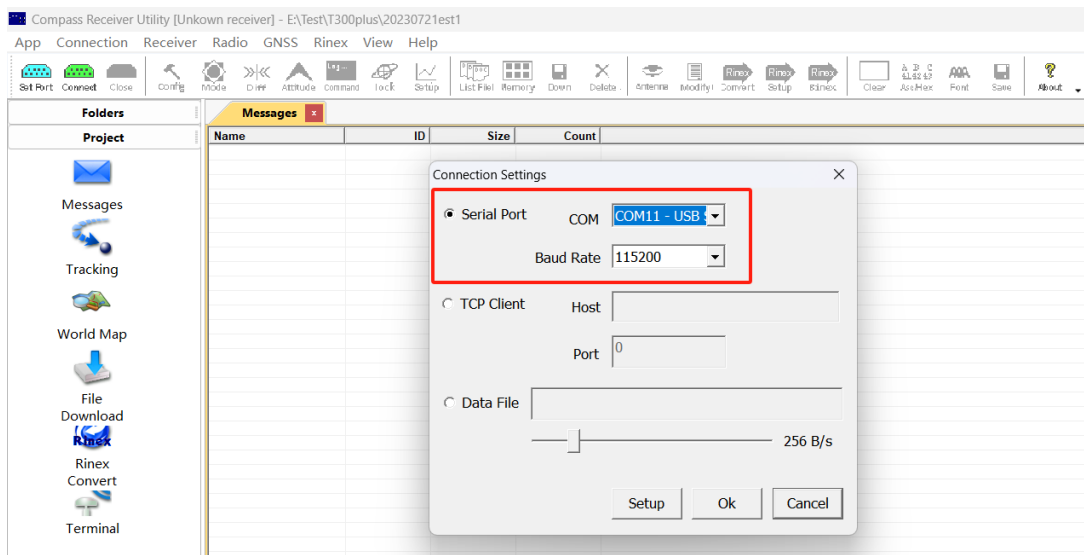
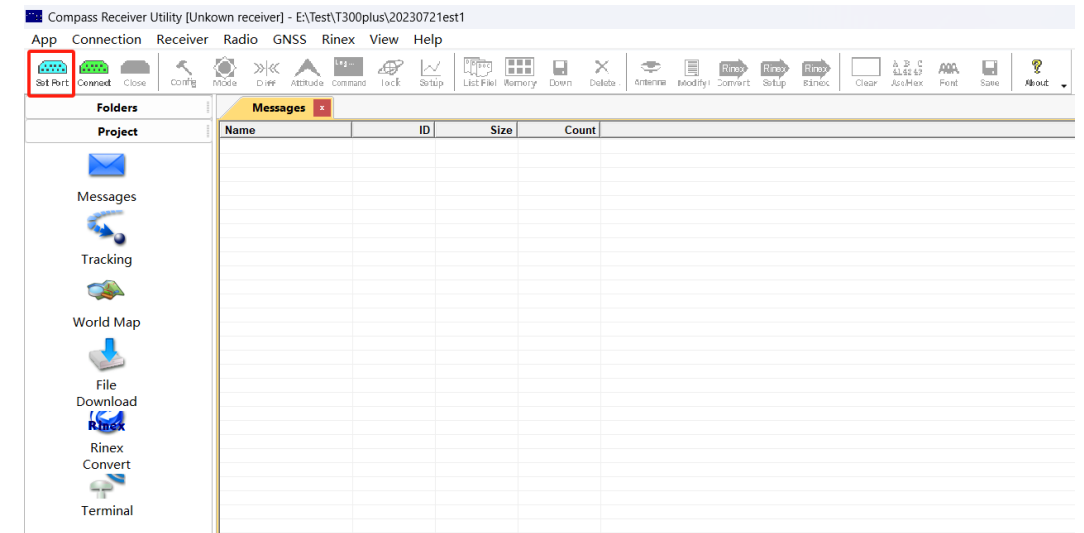
4.2 USB-Network

1. Directly connect the USB port to the computer. Open **Device Manager** and verify the presence of **[Ports] > [Quectel USB AT PORT COMX]**.
2. Open the serial port software on the computer. Select **[Set Port] > [Serial Port]**, choose the correct **[COM]** port, and verify that the **[Baud Rate]** is set to the default value of 115200.
3. Input the commands to query the SIM card status. The corresponding status table is shown below.

Table4. AT Command

Commands	Explanation	Responds
AT+CPIN?	Check if there is a card; "error" means no card, "ok" means card is present.	+CPIN: READY
AT+CSQ	Checking the signal strength, a reading of 20+ is generally considered normal.	+CSQ: 31,99
AT+QICSGP=1,1,"APN","username","password",3	Set APN parameters	
AT+QICSGP=1	Query current APN parameters	+QICSGP:

		1,"CMNET","",",",3
AT+CEREG?	Query current network status. [+CEREG: 0,1] ----- network is normal [+CEREG: 0,3] ----- network is abnormal	+CEREG: 0,1 [+CEREG: 0,3]



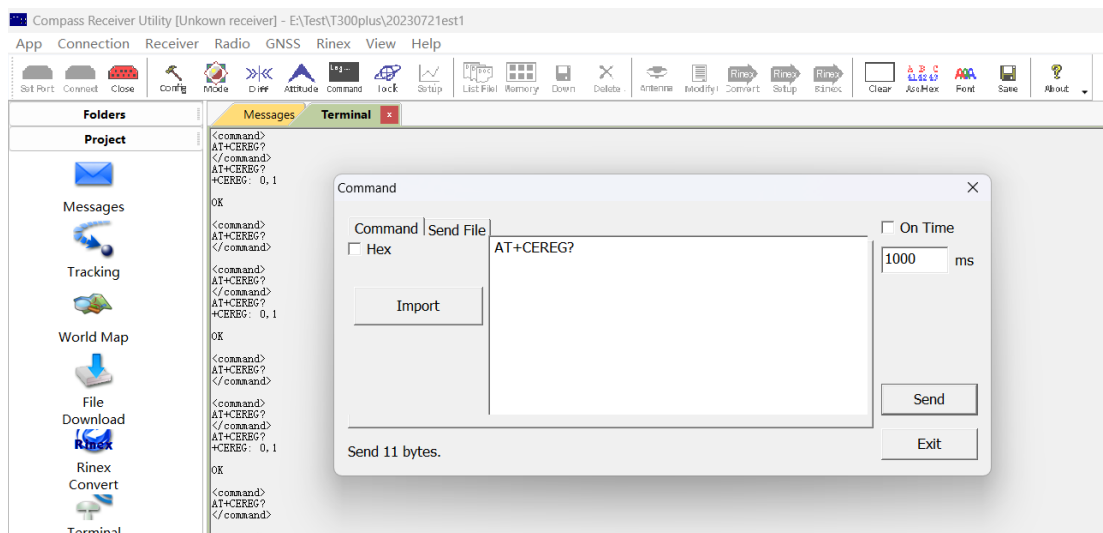


Figure 14. Set Network APN

5 Navigate Cloud

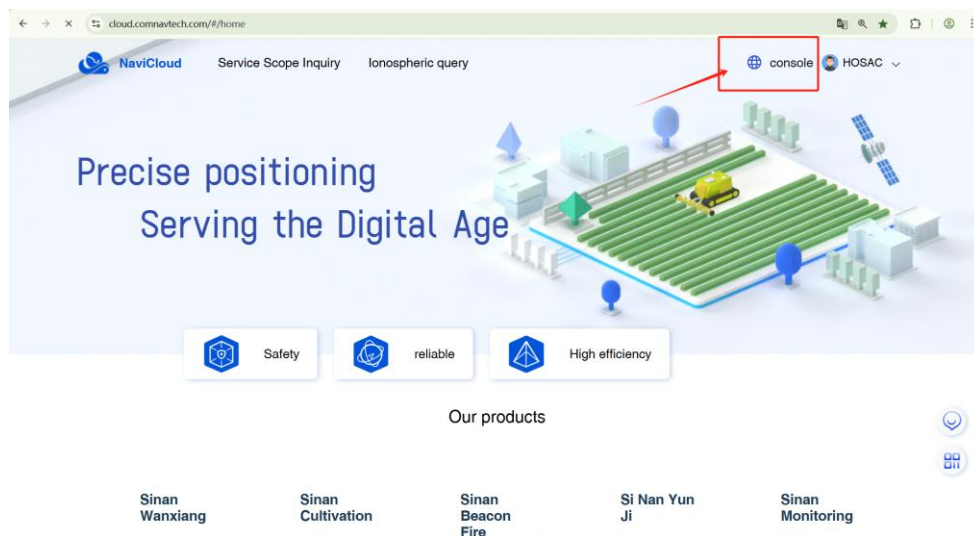
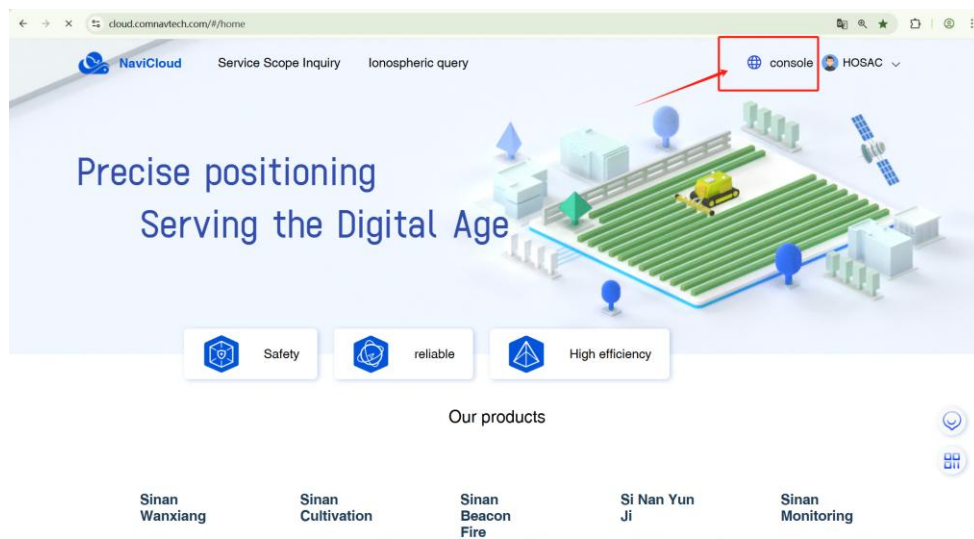
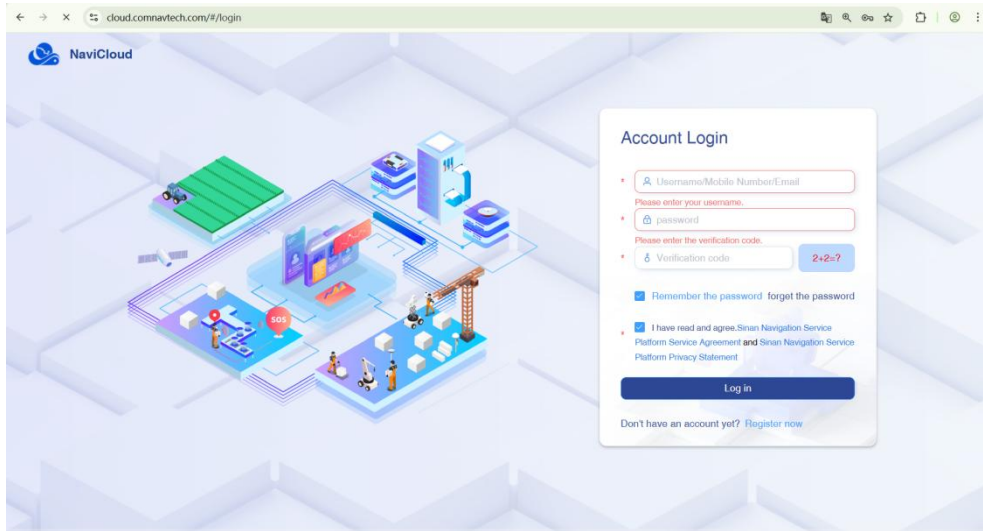
This chapter describes the usage procedure for NaviCloud.

By default, the A300L is capable of transmitting data to the ComNav base station management platform and can be configured and managed remotely via the ComNav Cloud Platform.

5.1 Log in Web

Navigate to the NaviCloud login page by entering the following address in a browser: <https://cloud.ComNavtech.com/#/login>

Click **[Register Now]** to register a new account. Alternatively, log in using a valid account and password obtained from ComNav. After successful login, access the **[CONSOLE]** and select **[Base Station Service]**.



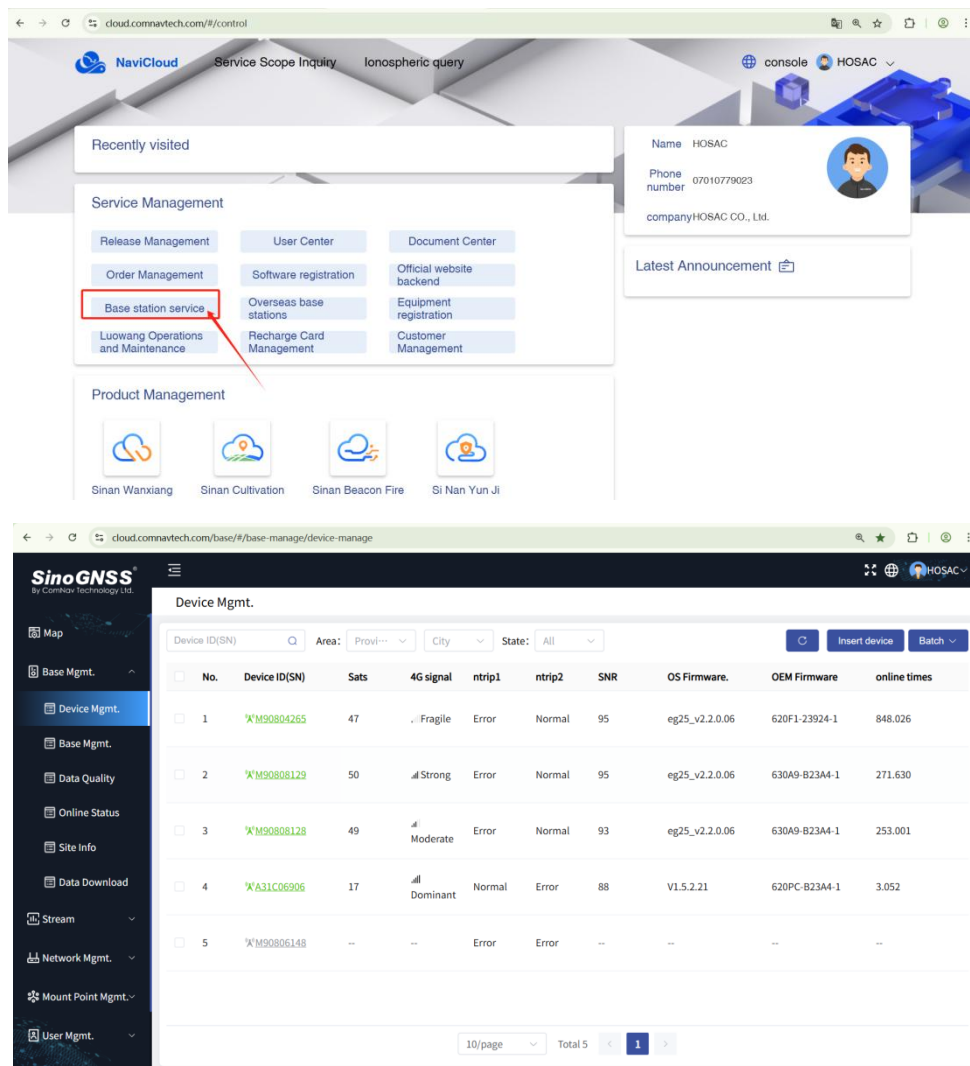


Figure 15. log in ComNav cloud platform

5.2 Configuration

5.2.1 Import Device

1. Navigate to **[Base Mgmt.] > [Device Mgmt.]** in the left sidebar.
2. Select the **[Insert Device]** icon located in the top-right corner.
3. Enter the device's SN (Serial Number), which can be found on the label affixed to the bottom of the device.
4. **Device Offline:** In the event of power failure or loss of network access, the device will appear offline, and the cloud information will be shown in gray.

5. **Device Online:** When the device is online and connected, the cloud information will be displayed in green.

The screenshot shows the SinoGNSS web interface. On the left sidebar, the 'Device Mgmt.' menu item is highlighted with a red box and a red arrow. The main content area is titled 'Device Mgmt.' and contains a table of devices. The table has columns for No., Device ID(SN), Sats, 4G signal, ntrip1, ntrip2, SNR, OS Firmware, OEM Firmware, online times, and Area. Five devices are listed, with their Device IDs highlighted in green. At the bottom right of the table, there are buttons for 'Insert device' and 'Batch'. A pagination bar at the bottom shows '10/page' and 'Total 5'.

No.	Device ID(SN)	Sats	4G signal	ntrip1	ntrip2	SNR	OS Firmware	OEM Firmware	online times	Area
1	*M90804265	47	Weak	Frangible	Error	Normal	95	eg25_v2.2.0.06	620F1-23924-1	848.216
2	*M90808129	51	Strong	Strong	Error	Normal	95	eg25_v2.2.0.06	630A9-B23A4-1	271.820
3	*M90808128	51	Moderate	Moderate	Error	Normal	93	eg25_v2.2.0.06	630A9-B23A4-1	253.191
4	*A31C06906	20	Dominant	Dominant	Normal	Error	88	V1.5.2.21	620PC-B23A4-1	3.243
5	*M90805148	--	--	--	Error	Error	--	--	--	--

This screenshot shows the same SinoGNSS web interface as the previous one, but with an 'Insert device' dialog box open in the center. The dialog box has a title bar 'Insert device' and a text input field labeled '* sn:' with the placeholder text 'Please enter the SN'. Below the input field are 'Cancel' and 'Confirm' buttons. A red box highlights the 'Insert device' button in the top right corner of the main interface, with a red arrow pointing to the dialog box. The background interface is dimmed.

Device Mgmt.

Device ID(SN): Area: Prov: City: State:

No.	Device ID(SN)	Sats	4G signal	ntrip1	ntrip2	SNR	OS Firmware	OEM Firmware	online times	Area
1	M90804265	47	Fragile	Error	Normal	95	eg25_v2.2.0.06	620F1-23924-1	848.216	
2	M90808129	51	Strong	Error	Normal	95	eg25_v2.2.0.06	630A9-B2344-1	271.820	
3	M90808128	51	Moderate	Error	Normal	93	eg25_v2.2.0.06	630A9-B2344-1	253.191	
4	A31C06906	20	Dominant	Normal	Error	88	V1.5.1.21	620PC-B2344-1	3.243	
5	M90806148	--	--	Error	Error	--	--	--	--	

10/page Total 5

Figure 16. Input device

5.2.2 Remote Management

1. Navigate to **[Remote Mgmt.]**.
2. Configure Ntrip to upload correction data to an Ntrip server.

Note: The device supports dual Ntrip, allowing simultaneous data upload to two servers

Device Mgmt.

Device ID(SN): Area: Prov: City: State:

No.	Device ID(SN)	OEM Firmware	online times	Area	Operate
1	M90804265	620F1-23924-1	848.216		Remote Mgmt. Remote Debug Join monitoring Details Stability Unbind Device Site Info
2	M90808129	630A9-B2344-1	271.820		Remote Mgmt. Remote Debug Join monitoring Details Stability Unbind Device Site Info
3	M90808128	630A9-B2344-1	253.191		Remote Mgmt. Remote Debug Join monitoring Details Stability Unbind Device Site Info
4	A31C06906	620PC-B2344-1	3.243		Remote Mgmt. Remote Debug Join monitoring Details Stability Unbind Device Site Info
5	M90806148	--	--		Remote Mgmt. Remote Debug Join monitoring Details Stability Unbind Device Site Info

10/page Total 5

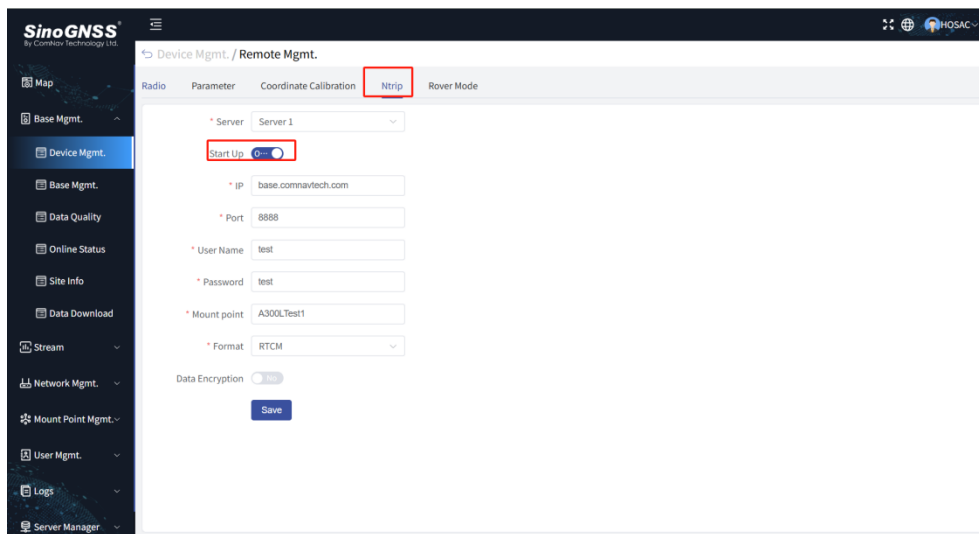


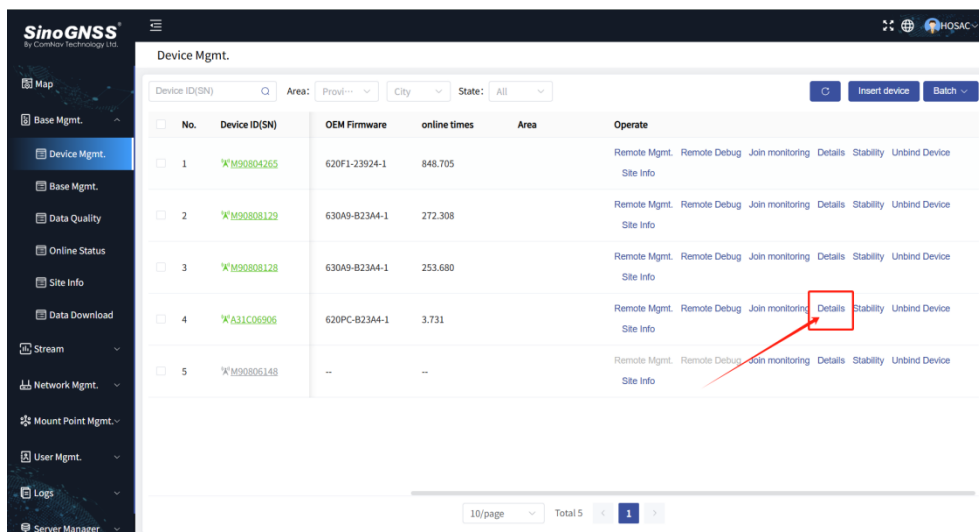
Figure 17. Configure remotely

5.3 Observation

5.3.1 Details

Click **[Details]** to access the device configuration information. This includes:

Satellite count, Signal-to-noise ratio (SNR), Network status, Firmware version, VoltageAdditional parameters as applicable



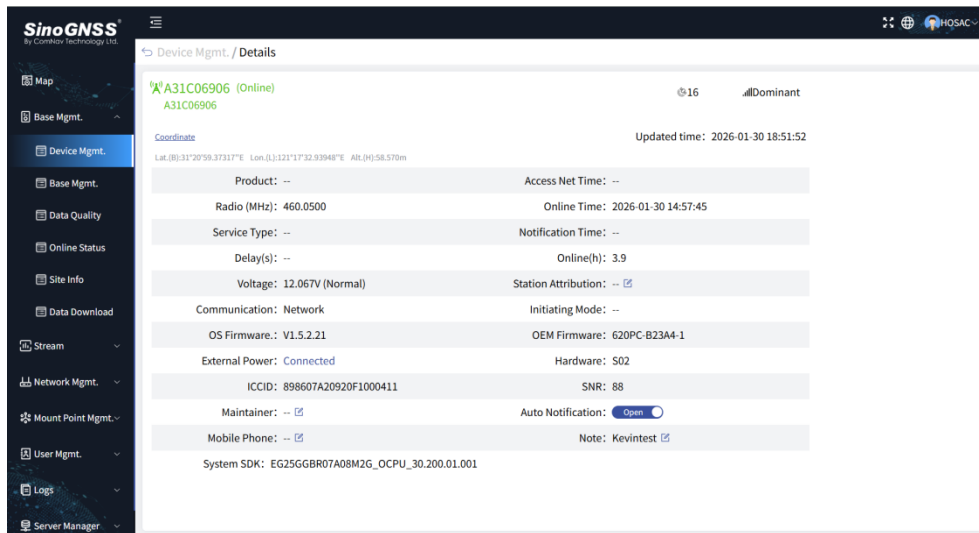


Figure 18. device details

6 Product Specification

Table 5. Product specification

A300L RECEIVER SPECIFICATION		
GNSS signal	Channel	1590
	Positioning	GPS: L1C/A, L1C, L2P, L2C, L5
		BDS: B1I, B2I, B3I, B1C, B2a, B2b
		GLONASS: L1, L2, L3
		Galileo: E1, E5a, E5b, E6c, E5 AltBOC
		QZSS: L1C/A, L2C, L5, L1C
		IRNSS: L5
		SBAS: L1C/A
Accuracy	Post Processing	Horizontal 2 mm + 0.5 ppm Vertical 4 mm + 0.5 ppm
	Single Baseline RTK	Horizontal 8 mm + 1 ppm Vertical 15 mm + 1 ppm
	Network RTK	Horizontal 8 mm + 0.5 ppm Vertical 15 mm + 0.5 ppm
	DGPS	< 0.4m RMS
	Standalone	1m 3D RMS
	SBAS	Horizontal 0.5 RMS Vertical 0.8 RMS
Data rate	Survey & Positioning	60s, 15s, 1Hz, 2Hz, 5Hz, 10Hz
Output data format	NMEA-0183	GPGGA
	ComNav binary format: *.CNB	ComNav customize
	RTCM3.X	1005, 1007, 1012, 1019, 1020, 1033, 1042, 1045, 1074, 1084, 1094, 1230
Memory	Memory	8G
	Storage format	RTCM3.X
	Data retrieval	APP setting and USB download

A300L RECEIVER SPECIFICATION		
Wireless communication	4G	4G worldwide network
	Bluetooth	4.1/2.1+EDR 2.4GHz
Protocol	Network	Ntrip
	Serial port	RS232, RS485
	USB	USB2.0
	14-pin LEMO data interface	DC power supply round head interface * 1
		RS232 DB9 interface * 1
		RS485 DB9 interface * 1 (Reserved)
		USB interface * 1
		Switch interface * 1 (Reserved)
	SIM slot card	Nano SIM slot card interface (4G)
Electrical characteristics	Supply voltage	9V~36VDC
	Power consumption	< 2W
	Indicator light	Power light * 1, satellite light * 1, 4G light * 1, differential light * 1
Physical parameters	Material	Aluminum alloy base + fiberglass cover
	Size	φ 205mm×126.5mm
	Weight	≤1.5kg
Environmental requirements	Working temperature	-40℃ ~ +70℃
	Storage temperature	-55℃ ~ +85℃
	Working humidity	100% relative humidity non-condensing
	MTBF (Mean time between failures)	≥50000h
	Fall	1-meter free fall resistance
	Degree of protection	IP68

7 Troubleshooting

If any of the issues outlined in this section occur during operation of the A300L GNSS base station, refer to the corresponding troubleshooting methods below. Should the problem remain unresolved, please contact our technical support team without delay.

1. The device cannot be started

Troubleshooting Steps:

1. Check whether the power supply voltage is normal. If a power supply fault is identified, disconnect the power source and replace it with a properly functioning power supply prior to further use.
 2. Confirm that the power cord is correctly and securely connected.
 3. Measure the voltage at the connector using a multimeter, and inspect the connecting cable for any damage. Replace the cable if a fault is detected.
 4. If the issue persists after excluding the above potential causes, the device may be defective. In this case, please contact our technical support team.
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2. No response from serial port

Troubleshooting Steps:

1. Confirm that the serial port number and baud rate are correctly configured. Consult the communication protocol to ensure accurate serial port settings.
2. Inspect the data cable for any signs of damage.
3. Verify that the serial driver has been properly installed.
4. Ensure the data cable is connected reliably and securely.

3. Abnormal positioning

Troubleshooting Steps:

1. Inspect the base station for any obstructions.
 2. Ensure that all communication system equipment connections are secure and reliable.
 3. Verify that there is no RF interference affecting the survey antenna frequency.
 4. Confirm that the base station coordinates accurately reflect the actual installation location.
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4. 4G offline

Troubleshooting Steps:

1. Verify whether the 4G SIM card account has sufficient credit or is past due.
2. Confirm that the device is receiving normal power supply.
3. If the operator's network is unstable in the area, replace the 4G SIM card with one from an alternative operator.

8 Precautions

Important Safety and Handling Instructions

1. **Do not disassemble** any components of the system equipment. In the event of a malfunction, carefully record the relevant information and contact our technical support team promptly.
2. **Verify operating voltage** for each device in the system. Use only the standard power adapter and data cable supplied by ComNav to prevent equipment damage.
3. **Check power cord polarity** when making connections. Ensure the positive and negative terminals are not reversed.
4. **Follow installation procedures** strictly as described in the installation manual. Confirm that all connectors are securely fastened.
5. **Replace damaged cables or accessories** immediately. Do not continue to use damaged components, as this may cause further damage.