

Starwin

uSat Fixed (Manual) Terminal User Manual

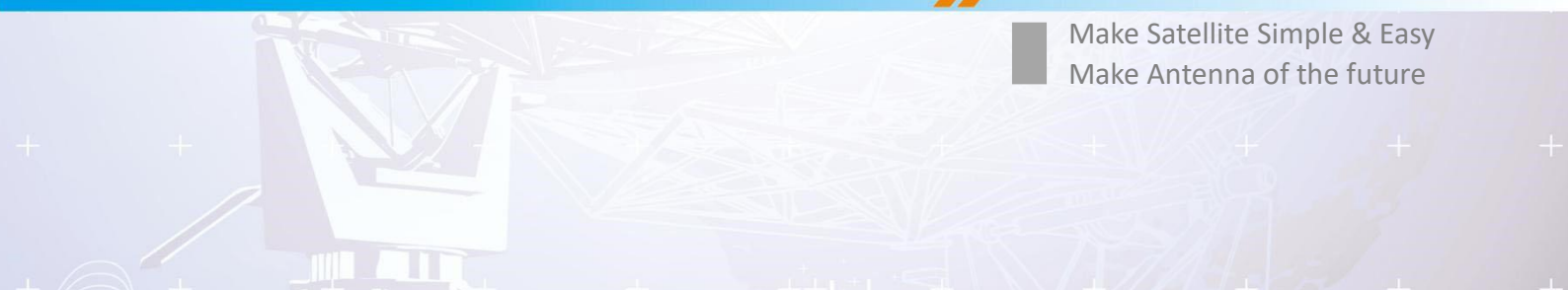
Name: Flat Panel Integrated Satellite Communication Terminal

Model Number: FL30F-M



FL30F-M uSat Flat Terminal

Make Satellite Simple & Easy
Make Antenna of the future



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Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Safety Considerations

For the following safety considerations, "Instrument" means the 'uSat Flat Terminal' units, components and their cables.

It is necessary to read the instructions carefully before using the uSat flat portable terminal. The terminal usage shall be carried out in accordance with the described steps and methods to ensure the safety and accuracy of equipment operation.

Radio

The instrument transmits radio energy during normal operation. To avoid possible harmful exposure, to this energy, do not stand or work for extended periods of time in front of its antenna. The long-term characteristics or the possible physiological effects of Radio Frequency Electromagnetic fields have not been yet fully investigated.

Caution

1. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.
2. Before connecting this instrument to a power source, make sure that the voltage of the power source matches the requirements of the instrument.

Disposal of Electronic and Electrical Waste

Pursuant to the WEEE EU Directive electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

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Instructions

The uSat Terminal is a full satellite earth station system for communication in Ku-band. The satellite parameters shall be selected only according to the specific user conditions required.

The China Starwin uSat Terminal User Manual provides operational instructions, for the device, which are standard for applications in Ku-band. However, the specific modem and antenna electrical performance parameters need to be taken in account. This manual is intended for technicians responsible for the installing, setting up and operating of the uSat Terminal and for system administrators who are responsible for managing the system.

Safety Alert Messages

Safety alert messages call attention to potential safety hazards and tell you how to avoid them. These messages are identified by the signal words DANGER, WARNING, or NOTICE, as illustrated below. To avoid possible property damage, personal injury, or in some cases possible death, read and comply with all safety alert messages.



DANGER: Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE: It is used for advisory messages concerning possible property damage, product damage or malfunction, data loss, or other unwanted results – but not personal injury.



Indicates a safety message that concerns a potentially hazardous situation in which you could fall.



Indicates a safety message that concerns a potential electric shock hazard.

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1 Introducing the uSat Flat-Panel FL30F-M Fixed Terminal

FL30F-M series integrated satellite communication terminal has completely changed the standard parabolic form used for satellite communication for a long time, and is the real next generation of satellite communication terminal. FL30F-M integrated satellite broadband portable terminal adopts advanced high gain horn waveguide array antenna and integrates necessary components of satellite communication: Antenna system, RF unit, Servo system, Satellite modem, Wireless router and Power supply system, which makes FL30F-M completely separated from the traditional Parabolic form, with a simpler appearance and structure, and more convenient for transportation and operation.

FL30F-M fixed integrated satellite broadband terminal can be flexibly installed on the wall, column and other buildings or fixed with triangular support according to the situation of the site. It can be installed and debugged by one person without building a special antenna foundation.

The fixed satellite broadband terminal is suitable for government agencies, enterprises and industry applications. In the blind area of communication coverage, permanent or semi permanent communication blind compensation is carried out; It is used to establish a variety of data transmission channels such as IoT (Internet of things), sensors, field monitoring, etc., so as to reduce the dependence on ground network access services.



Figure 1-1 FL30F-M

2 Technical Specification

Antenna		
Model No.		FL30F-M
Antenna Type		Horn waveguide array antenna
Equivalent to parabolic antenna size		0.3m
RF Performance		
Frequency Range	Tx	14.00~14.50 GHz
	Rx	10.70~12.75 GHz
Polarization		Linear Horizontal / Vertical
Rx Gain		31.2dBi(in range of ±10 degree) 3.11dBi(out range of ±10 degree)
Tx Gain		33.11dBi(in range of ±10 degree) 3.11dBi(out range of ±10 degree)
G/T		10dB/K, 25° Elevation
EIRP		44 dBW (16W BUC)
First Sidelobe		≤ -14dB
Power And RF Performance		
DC Power Supply		DC24V ±5% (With AC Adapter)
Typical Satellite Modem		Select small-size Modems according to customer requirements, such as IQ200, UHP210/220, etc.
Typical BUC		16W
Power Consumption	16W BUC	150W
Mechanical Performance		
Satellite Acquisition		Manually pointing to satellite, level error<0.2°
Azimuth Range		±70°, fine adjustment ±5°
Elevation Range		10°~ 90° continues, fine adjustment ±5°
Polarization		±70°
Terminal Dimensions (Exclude mounting bracket)		L 15.2 × W 13.8 × H 2.4 in. L 385× W 350× H 60 mm
Terminal Weight		6 kg; 13.2 lbs.
Environmental Performance		
Operational Wind		20.5m/s (74km/h)
Operational Temperature		-25°C to +50°C
Ingress Protection		IP66
Humidity		0 ~ 95%
Interfaces		
Power		DC Power waterproof aviation connector
LAN		1× RJ45 10/100/1000
Other Function		
Wireless Router		IEEE 802.11b/g/n at 2.4GHz

	Access number: 30 Coverage (Unobstructed):50~100m
Bluetooth Device	V4.2
GNSS Device Supports	GPS/ BeiDou-2

3 Packing List

Internal Packing of Terminal As Follows:

- ❖ Waveguide array antenna (Equivalent aperture 0.30 m, including LNB and BUC modules)
- ❖ Modem module (When the Modem is built in)
- ❖ GPS module
- ❖ Display module
- ❖ ACU module
- ❖ Power module
- ❖ WiFi module

The basic configuration can be designed according to user requirements.

3.1 Unpacking and Inspection

When you receive the system containers, unpack and inspect the components and hardware to ensure that all parts have been received in good condition.

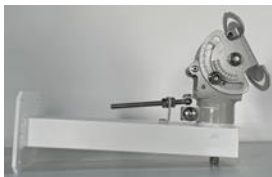
3.2 Freight Damage

If any parts appear to have been damaged in transit, immediately contact the freight carrier.

3.3 Material-Missing or Damaged

If any parts appear to be missing or damaged, but not as a result of handling in transit, contact your dealer or distributor.

3.4 Basic External Configuration of uSat Terminal

Item	Photo	Part Name	Quantity	Remarks
01		uSat Ku-band Fixed Flat Terminal	1	Standard
02		Bracket	1	Standard
03		Screw	1	Standard
04		Network Cable – 10m CAT5 with two RJ-45 jacks (Waterproof at the Terminal side)	1	Standard
05		24V Power Cable -10m	1	Standard

4 Description of Fixed Terminal

4.1 Terminal Structure Diagram

The dimension drawing of the uSat Flat Terminal (Unit: mm), as shown in Figure 4-1.

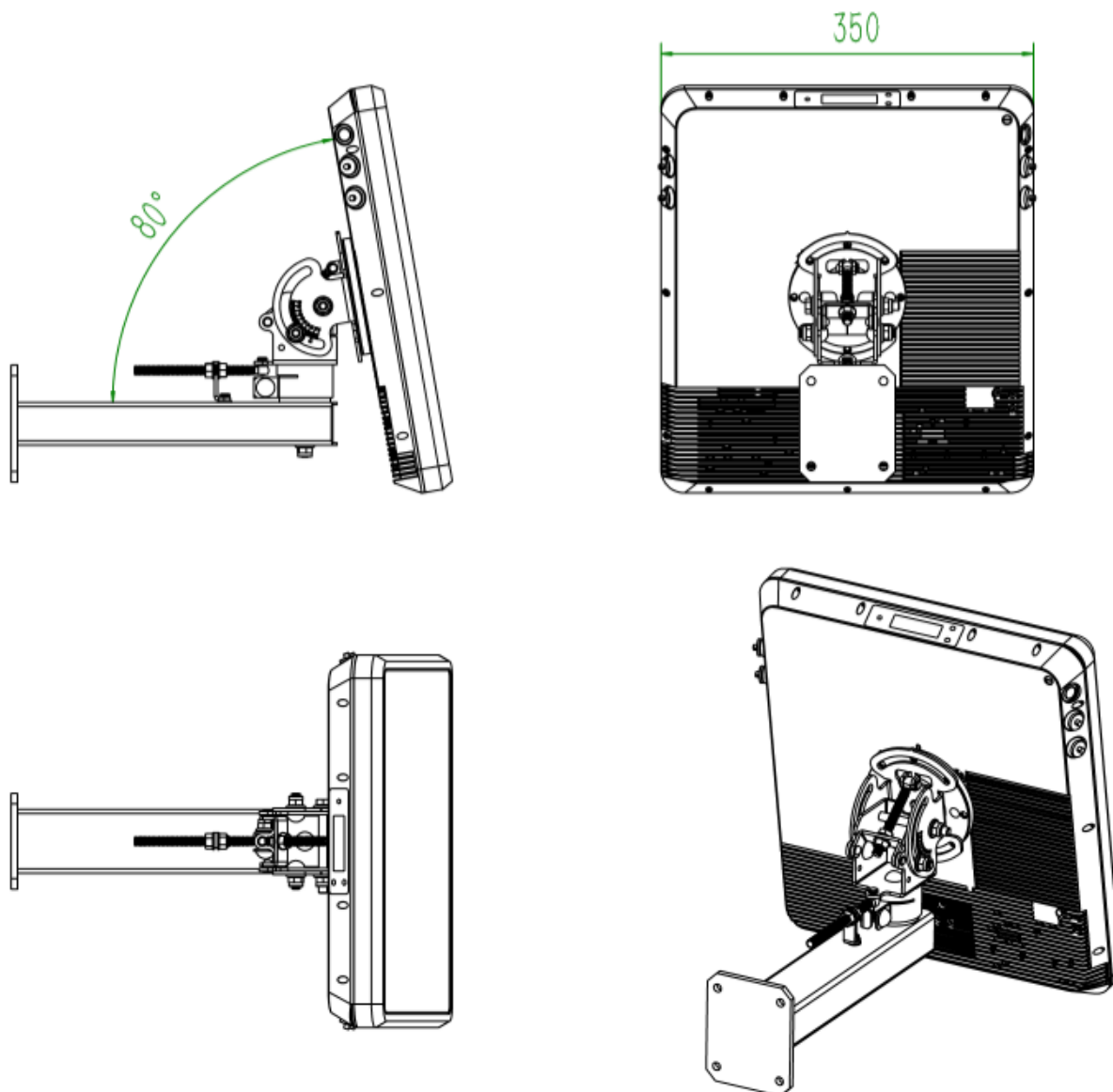
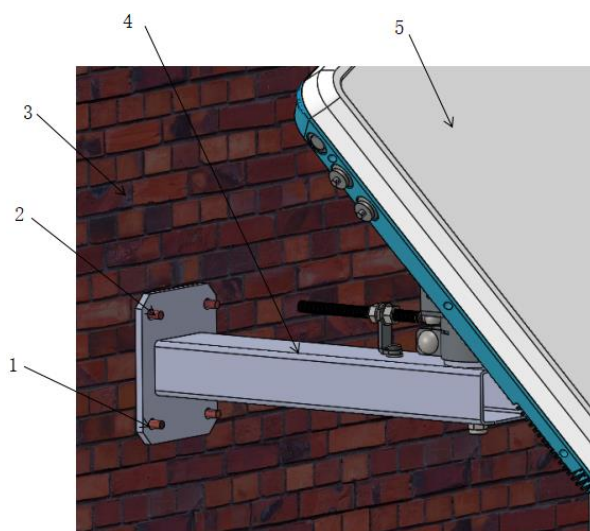


Figure 4-1 Outline and Dimension Drawing

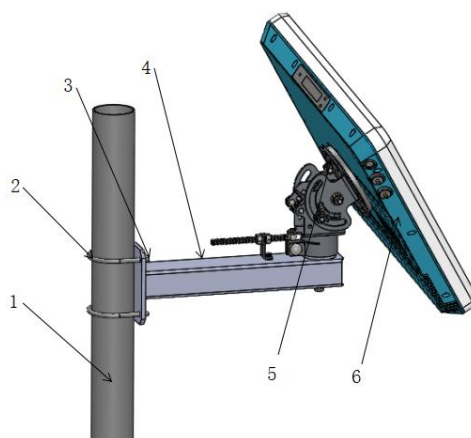
4.2 Terminal Installation Methods

1. The Terminal can be wall mounted (as shown in Figure 4-2) and hoop mounted (as shown in Figure 4-3) on the pole.



Item	Description	Quantity
1	Prevailing torque type hexagon nuts with flange (with non-metallic insert) M6	4
2	Expansion Bolt	4
3	Wall	1
4	Bracket Assembly	1
5	Terminal Assembly	1

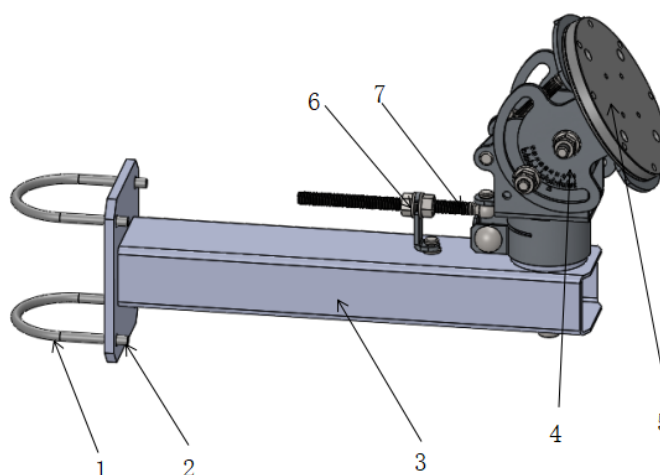
Figure 4-2 Wall Mount



Item	Description	Quantity
1	Pole Mount Support	1
2	U Bolt	2
3	Prevailing torque type hexagon nuts with flange (with non-metallic insert) M6	4
4	Bracket Assembly	1
5	Hexagon Bolts With Flange-Enlarge series B M6×12	4
6	Terminal Assembly	1

Figure 4-3 Pole Mount

2. The bracket installation diagram is shown in Figure 4-4, and the installation hole position is shown in Figure 4-5.



Item	Description	Quantity
1	U Bolt	2
2	Prevailing torque type hexagon nuts with flange (with non-metallic insert) M6	4
3	Bracket Assembly-Cross bar	1
4	Bracket Assembly-Elevation Bracket	1
5	Bracket Assembly-Polarization Bracket	1
6	Prevailing torque type hexagon nuts with flange (with non-metallic insert) M6	4
7	Bracket Assembly-Azimuth Bracket	1

Figure 4-4 Installation of bracket

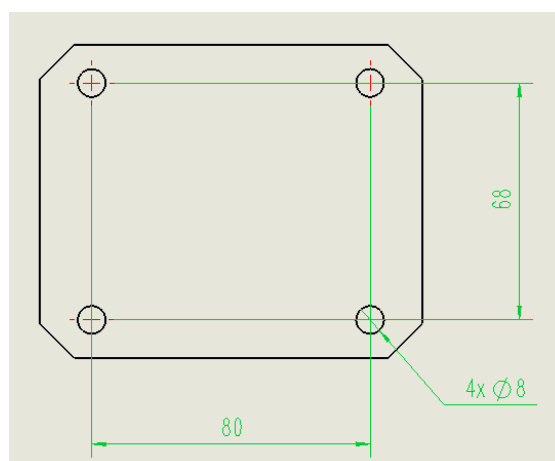


Figure 4-5 Mounting Hole Drawing

Hoop type installation: The outer diameter of the vertical pole is 3.5-5.5 inches (89-140mm), and the wall thickness is ≥ 2 mm.



DANGER

(1) The power supply requirement is 85-264VAC 50 / 60Hz

- (2) If you work on a roof, tower or other high structure or use a ladder or scaffold to access the work site, follow these precautions to prevent personal injury or death:
- ❖ Walk only on sound roof structures.
 - ❖ Ensure that the antenna assembly and installation surface are structurally sound so that they can support all loads (equipment weight, ice, and wind).
 - ❖ Use safety equipment (for example, a lifeline) appropriate for the work location.
 - ❖ Follow all manufacturer safety precautions for all safety and other equipment used.
 - ❖ Perform as many procedures as possible on the ground.



- (3) Do not work in high wind or rain; or if a storm, lightning, or other adverse weather conditions are either present or approaching.
- (4) Do not connect the other side of the power cable to the power source until the terminal installation completion.

4.3 Terminal Wireless Access Details

- ❖ **Terminal Serial No (S/N):**
PMXXXXXXXXXX (XXXX is the number of the following device)
- ❖ **MODEM:IQ200 (Take the IQ200 as example)**
IP:192.168.0.1
User: admin Password: iDirect
- ❖ **Wi-Fi Router:**
SSID: HILINK-XXX
Default IP Address: 192.168.16.254
User Name: admin Password: admin
- ❖ **Bluetooth:**
Device Name: uSATXXXX
- ❖ **Polarization:**
Tx(H); Rx(V)

5 Terminal Installation, Initialization and Alignment

5.1 Terminal Installation

1. Fix the bracket on the Terminal firstly, and do not tighten the screws, as shown in Figure 5-1.

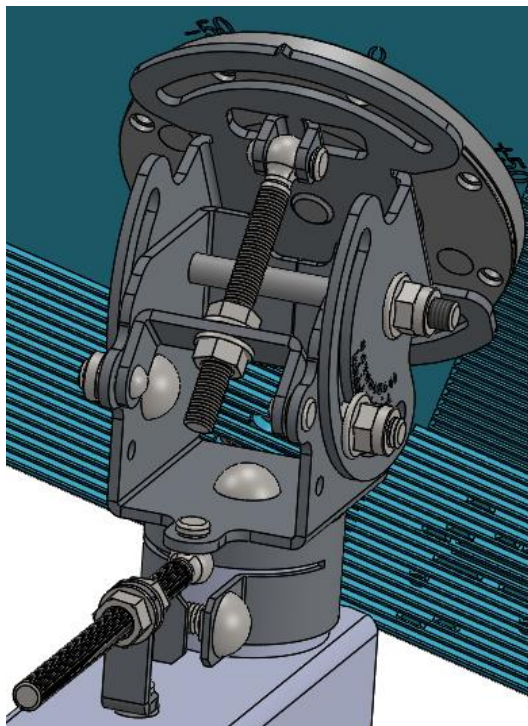


Figure 5-1 Fix the bracket on the Terminal

2. The bracket is fixed on the wall with expansion screw, as shown in Figure 5-2.

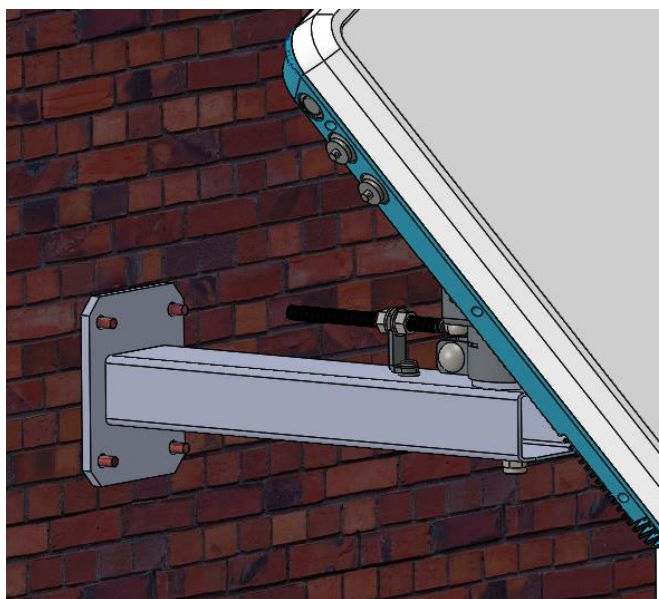


Figure 5-2 The bracket is fixed on the wall

**DANGER**

Do not connect the other side of the power cable to the power source until the terminal installation completion.

3. Connect the power cable to the power debugging interface of the Fixed Terminal. The power requirement is 100-240VAC 50/60Hz, as shown in Figure 5-3.

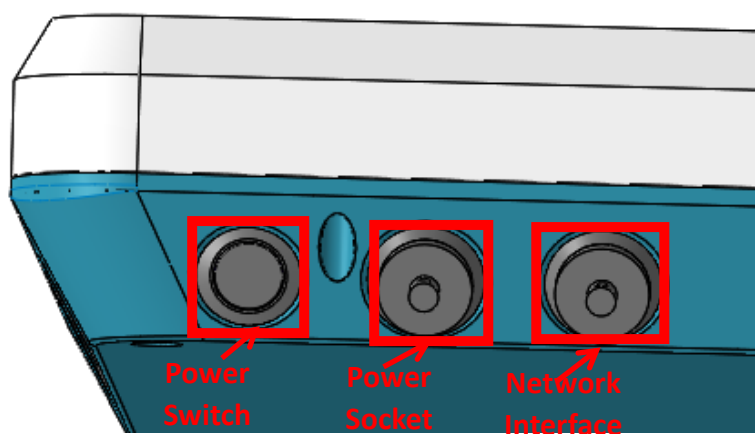


Figure 5-3 Power Switch/Power Socket/Network Interface

**NOTICE**

Direction to the satellite must be clean from obstacles during the terminal operation.

5.2 Terminal Initialization

1. Connect the Power cable to the Power Source. Upon connection, the display will show the Logo, as shown in Figure 5-4.



Figure 5-4 LOGO



DANGER

The standard requirements to Power Source are 100-240VAC 50/60Hz. (Or 24V + 5% DC, according to configuration for selection)

2. When the Terminal is powered on, the Terminal will display with indicator and abbreviated text. The display icon description of system initialization is shown in Table 5-1. The first three items are main power supply detection, general power supply, LNB power supply and BUC power supply. As shown in Figure 5-7, the power quantity is displayed; when the self-test passes, it will be displayed as shown in Figure 5-8.

Table 5-1 System Initialization Icon Description

Indication					
Indicator Flashes	General Power Supply is in process of detection	LNB Power Supply is in process of detection	BUC Power Supply is in process of detection	GNSS signal is in process of detection	Attitude is in process of detection
Indication					
Indicator Lights Continuously	General Power Supply is detected	LNB Power Supply is detected	BUC Power Supply is detected	GNSS signal is acquired	Attitude is detected

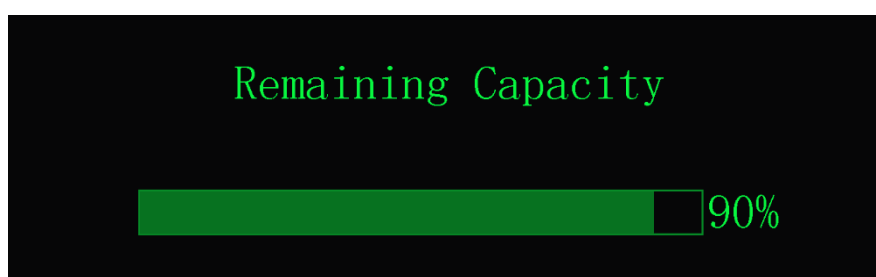


Figure 5-5 Battery Indicator

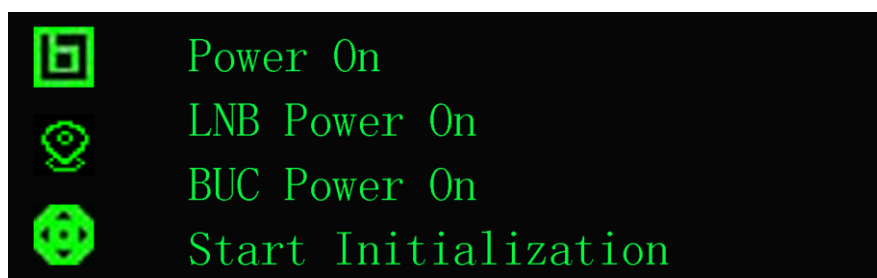


Figure 5-6 Detection Process

3. The GNSS signals acquisition process is displayed as shown in figures 5-8 and 5-9 (Lng is abbreviation of Longitude, Lat is abbreviation of Latitude).

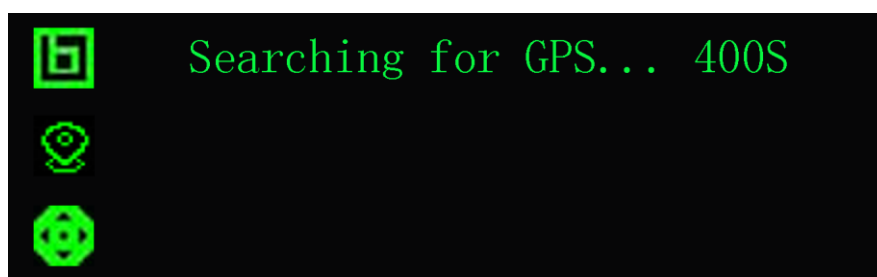


Figure 5-7 GNSS signals acquisition

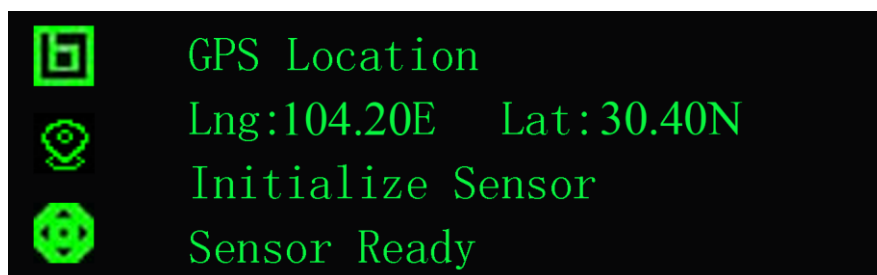


Figure 5-8 GNSS Signal Acquisition Successful

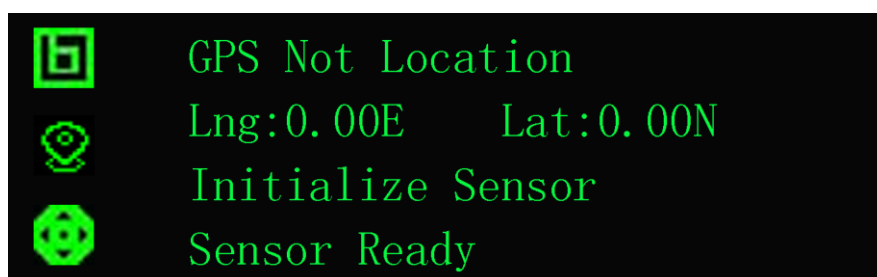


Figure 5-9 GNSS Signal Acquisition Failure

4. Currently selected satellite information, including satellite parameters as shown in Figure 5-10, currently selected working mode as shown in Figure 5-11, satellite beacon frequency and LNB Local Oscillator frequency as shown in Figure 5-12, and current version information as shown in Figure 5-13.

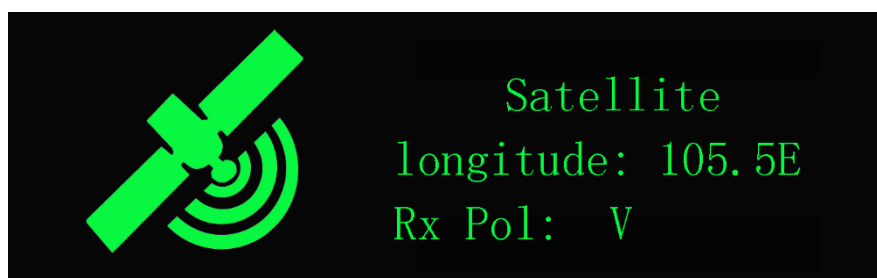


Figure 5-10 Satellite Name

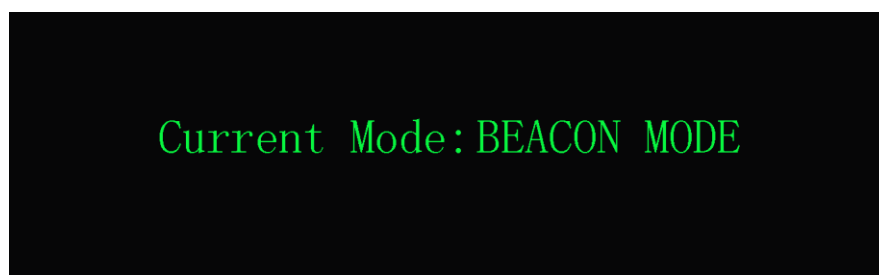


Figure 5-11 Satellite Information

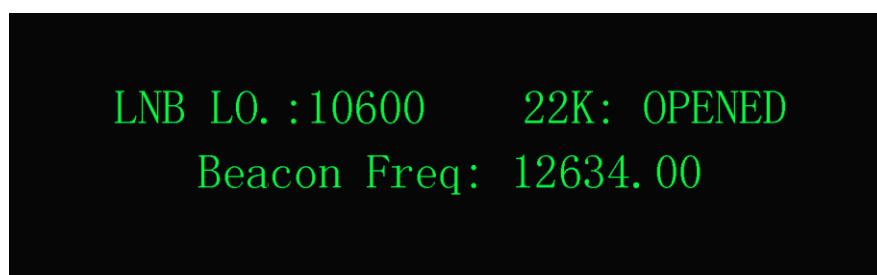


Figure 5-12 Beacon Frequency and LNB LO.

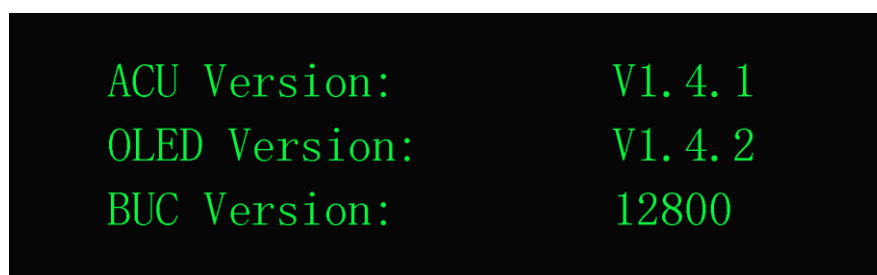


Figure 5-13 Version Information

**NOTICE**

- (1) When the Terminal is used for the initial time, the 'App' for Terminal Control should be used first, to set up the satellite related parameters. Please see the operational instructions in section 7.
- (2) The 'App' for Terminal Control should also be used if it is necessary to select a different satellite. Please see the operational instructions in section 7.

5. When the Terminal is ready to align with the satellite, as shown in Figure 5-14.

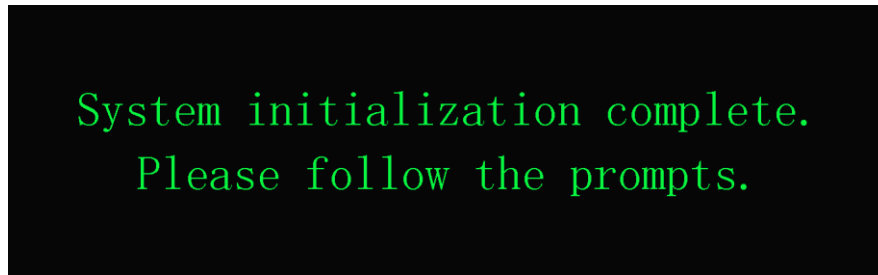


Figure 5-14 The Prompt of Alignment

5.2 Terminal Alignment



NOTICE

Rotate the adjustment knobs slowly during the antenna pointing.

1. According to the satellite direction, adjust the antenna elevation, polarization and azimuth to align the satellite. In the adjustment process, you can refer to the prompt information shown in Figure 5-15.

EL.	POL.	SQ.
Ref:50.77	42.00	0.00
Cur:0.00	0.00	0.00

Figure 5-15 The Prompt of Alignment

2. Elevation coarse adjustment: Press the elevation coarse adjustment button with the right middle finger, press the handle with the index finger, and lift the panel upward with the left hand, that is, release the fixed lock between the Terminal panel and the base frame, and adjust the elevation adjustment mechanism to make the current elevation angle consistent with the reference elevation angle, as shown in figure 5-16.

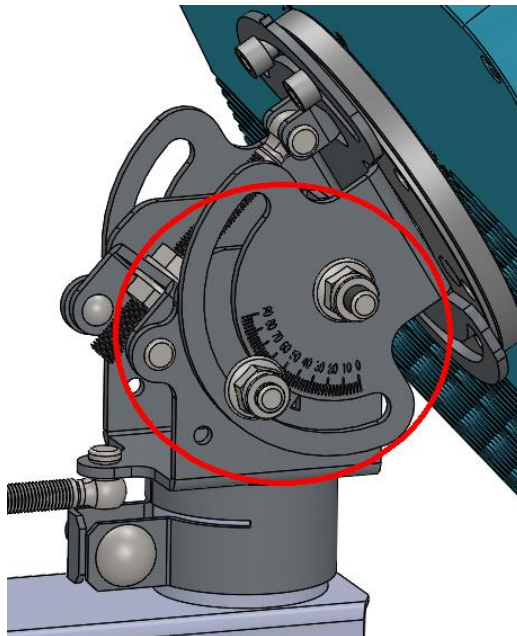


Figure 5-16 Elevation adjustment button

3. Polarization adjustment: The user rotates the Terminal panel according to the demand to make the current polarization angle consistent with the reference polarization angle. As shown in figure 5-17.

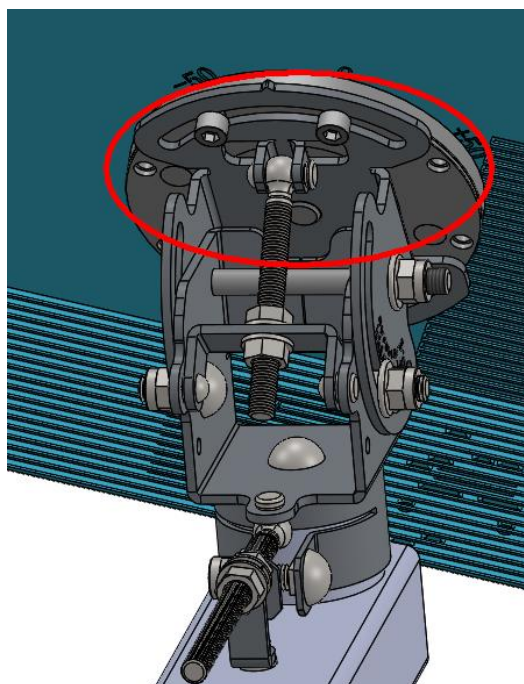


Figure 5-17 Polarization Adjustment

4. Coarse adjustment of azimuth: The whole Terminal is directly rotated during the coarse adjustment of azimuth to ensure that the elevation angle remains unchanged as far as possible until the signal quality appears, that is to say, to find the approximate position of the satellite.

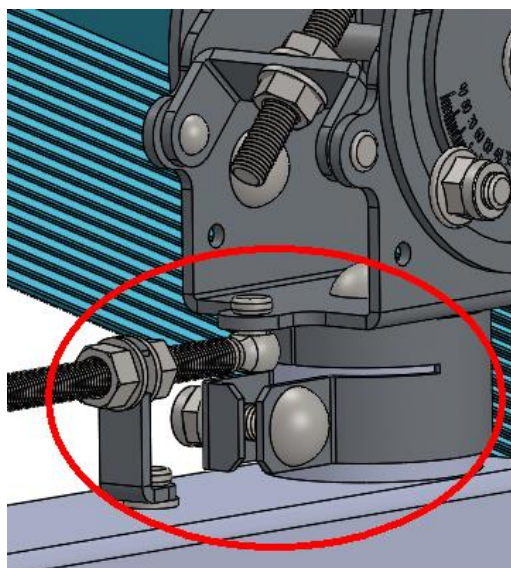


Figure 5-18 Azimuth Adjustment

5. The screen appears as shown in Figure 5-19. According to the signal quality shown on the display, the elevation, azimuth and polarization can be adjusted manually to find a better signal value. Then tighten the set screw.

EL.	POL.	SQ.
Ref:50.77	42.00	0.00
Cur:0.00	0.00	0.00

Figure 5-19 Signal Quality

Current Mode: BEACON MODE	
MAX SQ: 7.1	LOCKED: 
CUR SQ: 6.9	SQ PCT: 97%

Figure 5-20 Signal Quality Display

Satellite search complete.
Attempting to enter network.

Figure 5-21 Prompt for Satellite Completion

**NOTICE**

Rotate the adjustment knobs slowly during the antenna pointing.

- After use, press the power On/Off button again, and the OLED display will display the prompt information as shown in Figure 5-22. After the terminal is powered off, unplug the power cord and RJ45 network cable.

Shutting Down
Please don' t move to shake

Figure 5-22 Power Off Prompts

7. Other functions of LED display

(1) LED state:

- ❖ OLED normal display, the LED flashing frequency is 1 second, two flashes at one time;
- ❖ OLED Hibernation mode, the LED flashing frequency is 3 second, two flashes at one time;
- ❖ Press the touch any key, LED flash fast, when the OLED enter the Hibernation mode, can make the screen light up.

(2) Use of infrared keys:

- a. There are two infrared keys on the right side of OLED screen, which are arranged vertically. The upper key is the main key to control the main interface, and the lower key is the sub key to control the sub interface.
- b. The switch between the main and sub interfaces is realized by press and hold the corresponding key, that is, press and hold the main key can switch from the sub interface to the main interface, or switch in each sub interface of the main interface, and press and hold the sub key can switch from the main interface to the sub interface, or switch in each sub interface of the sub interface.
- c. The function of sub interface (such as BUC on/off) is realized by pressing the main and sub keys at the same time.

Infrared Keys	Name	Sub Interface 1	Sub Interface 2
Upper Key	Main Key/Main Interface	Alignment Interface	Information Interface
Lower Key	Sub Key/Sub Interface	BUC Control Interface	Beam Switch Interface

Table 5-2 Key Function

(3) Information Interface

Press and hold the sub key to enter the sub interface. If it is not in the information interface, continue to long press the main key to switch to the information interface. The information interface contains battery power information, as shown in Figure 5-23, version information 5-24, currently selected working mode 5-25, satellite parameter 5-26 and signal quality prompt 5-27.

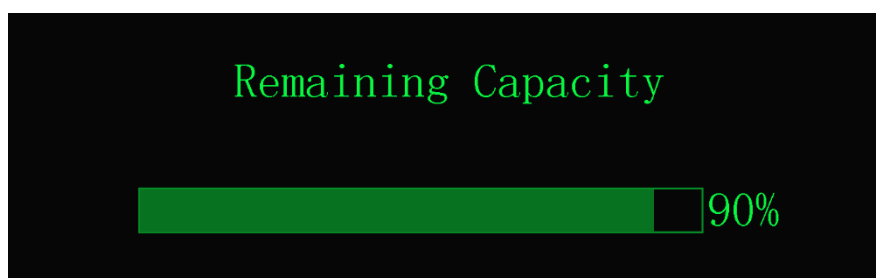


Figure 5-23 Battery Information

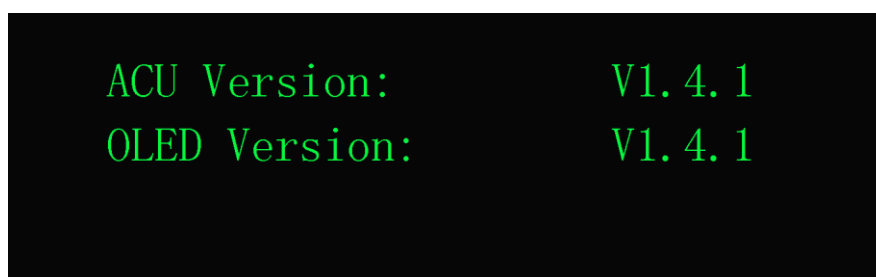
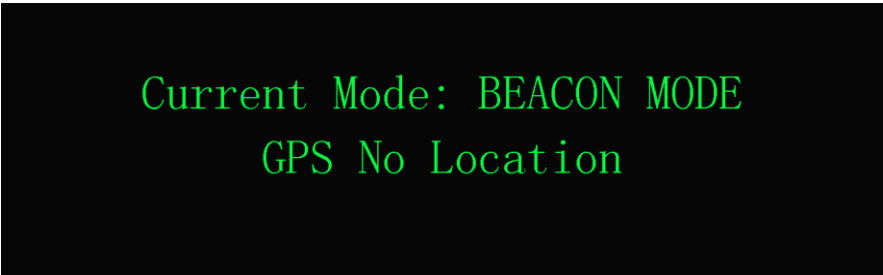


Figure 5-24 Version Information

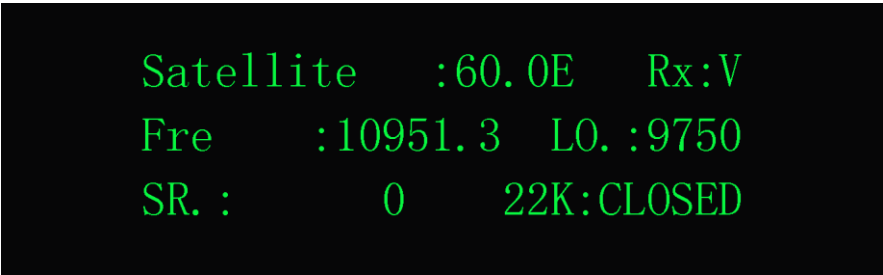


```

Current Mode: BEACON MODE
GPS No Location

```

Figure 5-25 Current Working Mode

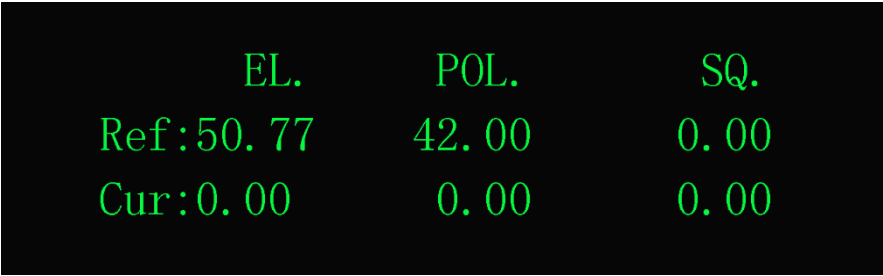


```

Satellite :60.0E Rx:V
Fre :10951.3 LO.:9750
SR.: 0 22K:CLOSED

```

Figure 5-26 Satellite Parameter

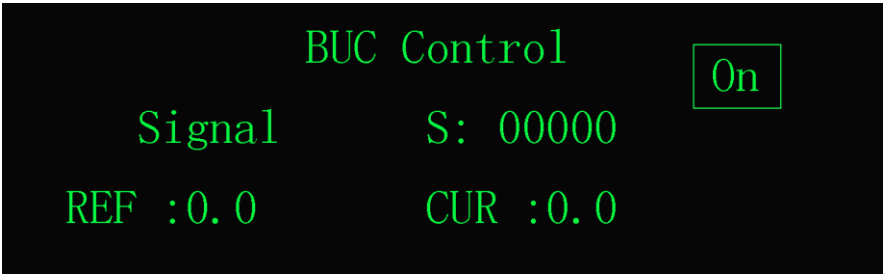


EL.	POL.	SQ.
Ref:50.77	42.00	0.00
Cur:0.00	0.00	0.00

Figure 5-27 Signal Quality Prompt

(4) BUC Control

Press and hold the sub key to enter the sub interface. If it is not in the BUC control interface, continue to press the sub key to switch to the BUC control interface. At the same time, press and hold the main and secondary keys to send BUC on or off commands, as shown in Figure 5-28 and Figure 5-29.



```

          BUC Control
Signal      S: 00000
REF :0.0    CUR :0.0
          On

```

Figure 5-28 BUC Control Switch On

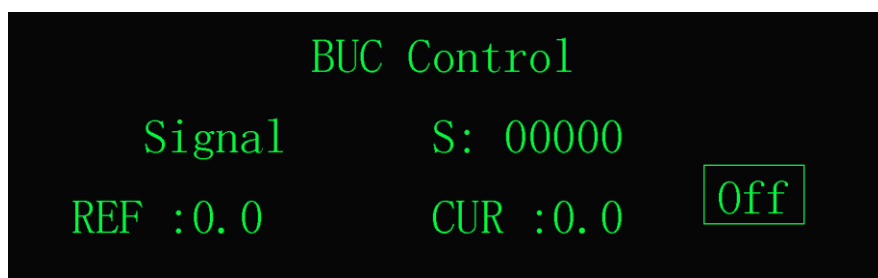


Figure 5-29 BUC Control Switch Off

(5) Beam Switch

Press and hold the sub key to enter the sub interface. If it is not in the beam switching interface, continue to press the sub key to switch to the beam switching interface. At the same time, press and hold the main and sub keys to send the beam switching command, as shown in Figure 5-30 and Figure 5-31.

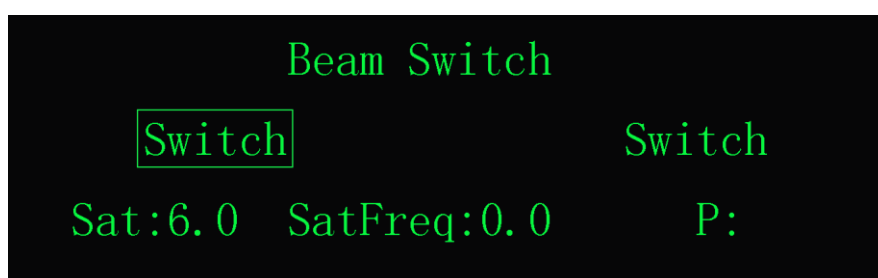


Figure 5-30 Beam Switch Start

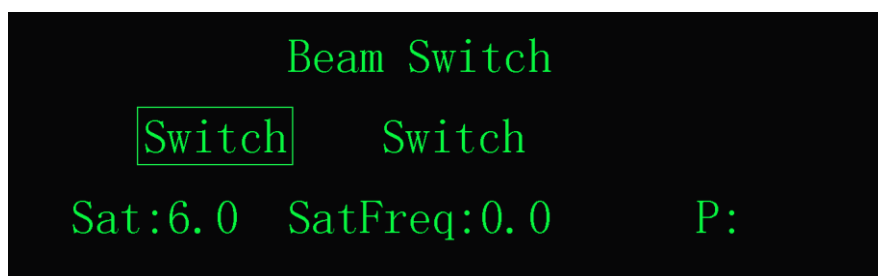


Figure 5-31 Beam Switch Success

6 Modem Status Indication

Note: Take the IQ200 Modem As example:

1. The Modem Status indication is shown in Figure 6-1.

POWER	STATUS	TX	RX	NET
Ready: 		Not Ready: 		

Figure 6-1 Modem Status Indicator Icon

2. The Modem status indication is shown in Table 6-1 and Figure 6-2.

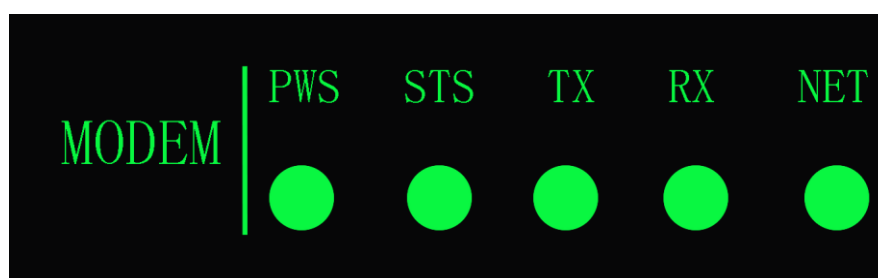


Figure 6-2 Modem Status

Indication	PWS	Tx	Rx	STA	NET
Indicator flashes	The modem Powering Status is NOT COMPLETED	The modem TX Status is OFF	The modem RX Status is NOT LOCKED	The modem LINK Status is CONNECTING	The modem NET Status is CONNECTING
Indicator lights continuously	The modem Powering Status is COMPLETED	The modem TX Status is ON	The modem RX Status is LOCKED	The modem LINK Status is CONNECTED	The modem NET Status is CONNECTED

Table 6-1 Modem Status

3. The modem's receive signal quality indication is shown on Figure 6-3.

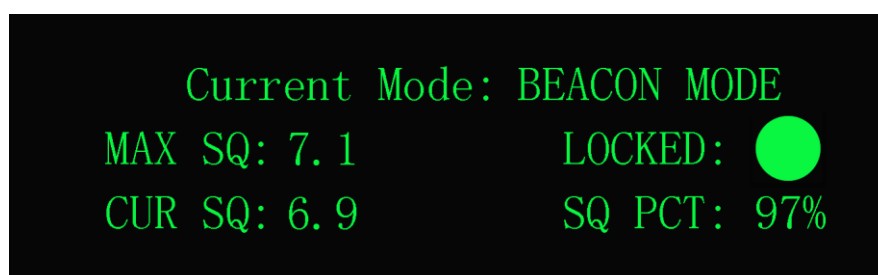


Figure 6-3 Signal Quality Indication



NOTICE

If necessary, perform additional alignment to get better signal quality values.

7 Application ('App') for Terminal Control

The User name and password of iOS is same with Android platform

User: admin Password: starwin

Download Android App from website <http://www.starwincom.com/Support>

iOS App searches "*steerwin*" in Apple store for download

When APP prompts you to get location permissions, give APP location permission.

1. Choose the language, as shown in Figure 7-1.



Figure 7-1



Figure 7-2

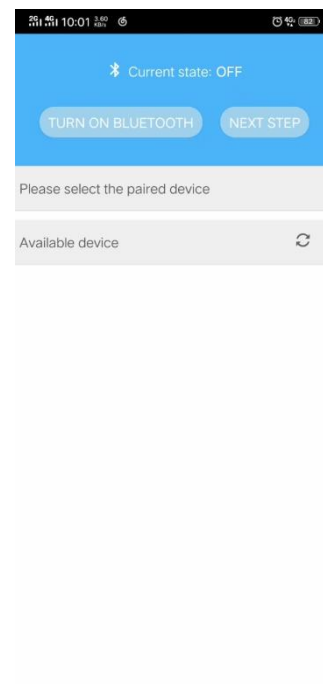


Figure 7-3

2. The APP prompts you for a username and password.
User Name: admin
Password: starwin
If necessary, please check "Save Password", as shown in Figure 7-2.

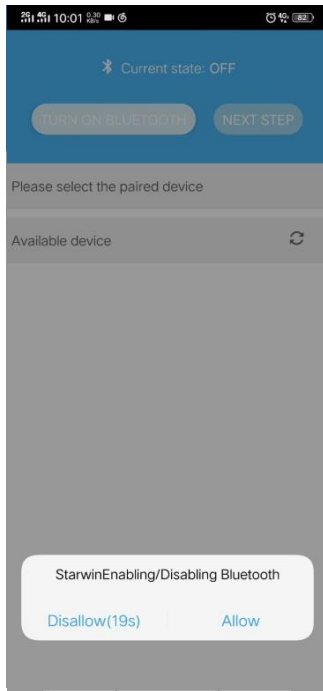


Figure 7-4

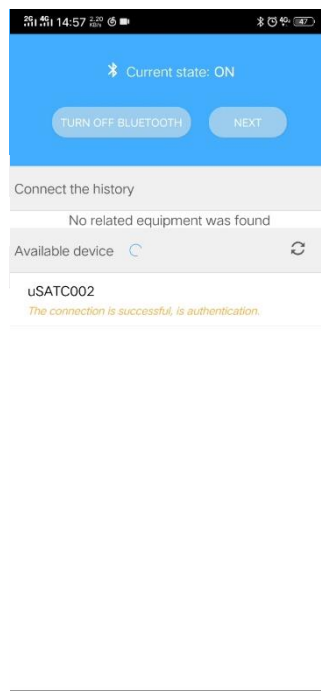


Figure 7-5

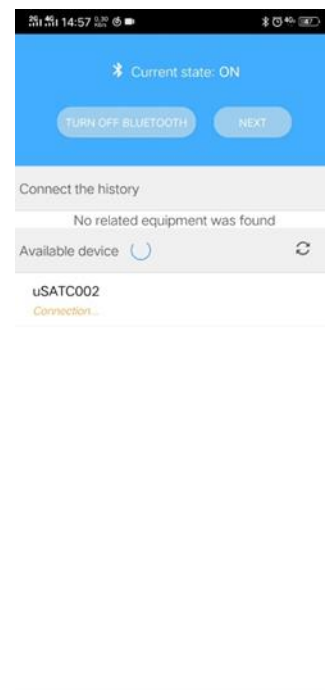


Figure 7-6

3. If you have already turned on the Bluetooth, please jump to the fourth step;

If you do not turn on Bluetooth, please click "TURN ON BLUETOOTH" and allow APP to open Bluetooth, as shown in Figures 7-3 and 7-4.

4. Click on the refresh icon  behind the title "Available device". Search for new Bluetooth devices (uSATxxxx, xxxx is numbers), then click the Bluetooth device name you want to connect, at this point, the APP needs to be authorized by the Terminal, as shown in Figure 7-6, when the Terminal receives the request information of Bluetooth, the buzzer will give sound prompt at the frequency of 1 second (30 seconds will timeout), and only sound prompt will be given on other pages (such as GPS search page). You need to click the touch button on the OLED display screen of the Terminal (as shown in Figure 7-8).

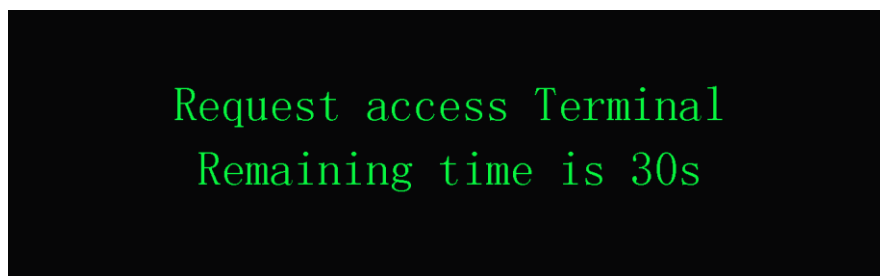


Figure 7-8 The touch button on OLED display screen

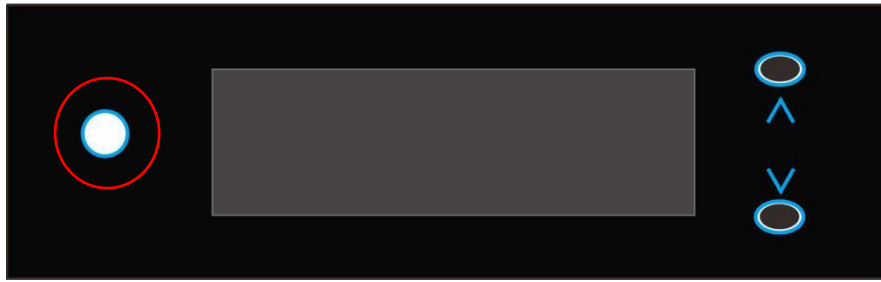


Figure 7-8 The touch button on OLED display screen

If the touch button does not click during the timeout (30 seconds), the authorization fails. APP will prompt "The connection is failed, please click retry", as shown in Figure 7-9.

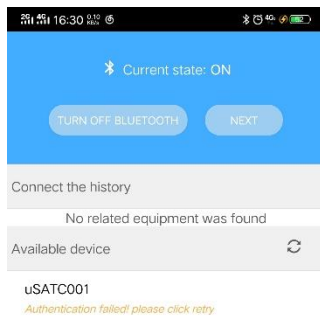


Figure 7-9

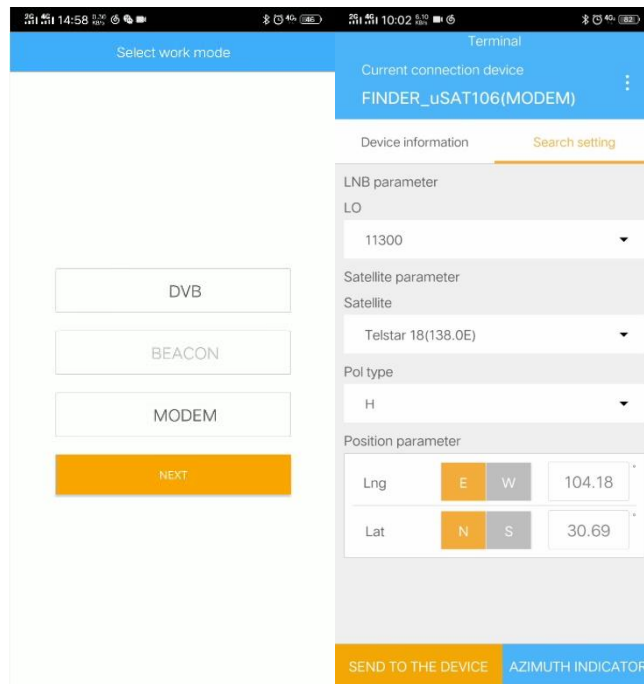


Figure 7-10

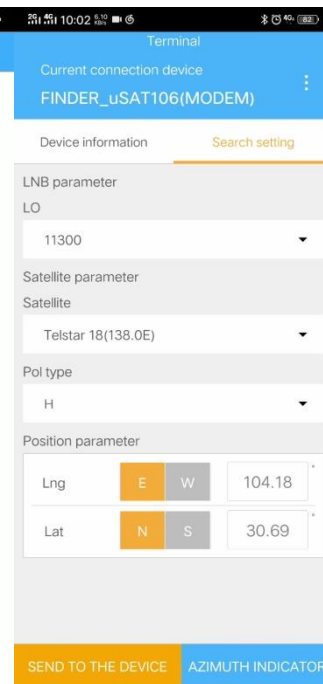


Figure 7-11

5. After the authorization is successful, select the device that needs to be connected in the list and click "NEXT", as shown in Figure 7-8.
6. Selecting the work mode, the device will be fed back to APP according to the mode that it can support. APP provides the mode of choice, as shown in Figure 7-10.

Select which mode you want to work, such as Beacon and then enter the main interface, as shown in Figure 7-11.

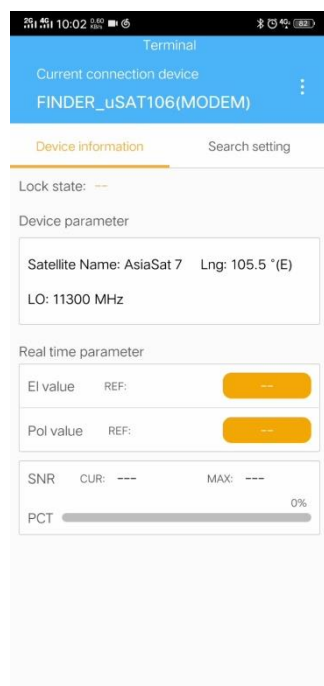


Figure 7-12

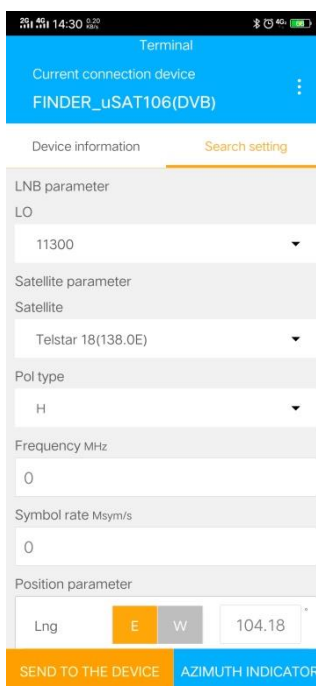


Figure 7-13

7. The main interface is divided into two main functions.

Device Information: The current parameter configuration of the device, the display of device attitude, as well as the real time and maximum values of the signal quality obtained under the current mode, as shown in Figure 7-12.

Search Setting: Local oscillator selection list, satellite selection list, polarization selection list, beacon frequency input box (DVB mode), as shown in Figure 7-13 DVB mode, and location parameters, after set up the satellite-searching parameters in this interface, click "SEND TO THE DEVICE", then confirm the parameters are correct, click "OK", the parameters can be sent to the device, and then according to the APP prompt, you can choose to reconnect the device or cancel, as shown in Figures 7-14 to 7-17, if canceled, the interface will return to Bluetooth device list interface as shown in Figure 7-9.

Note: FL30 series products do not support DVB mode.

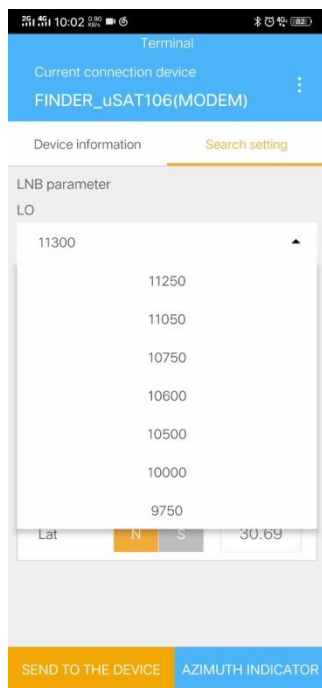


Figure 7-14

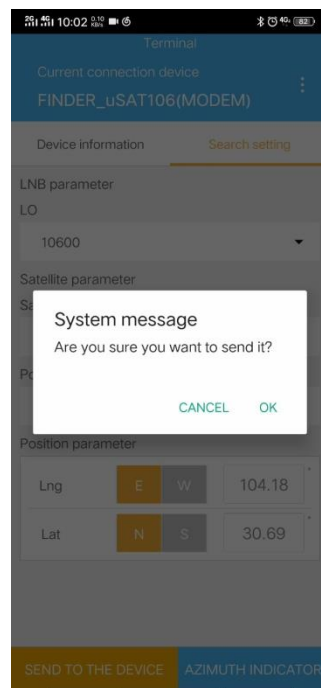


Figure 7-15

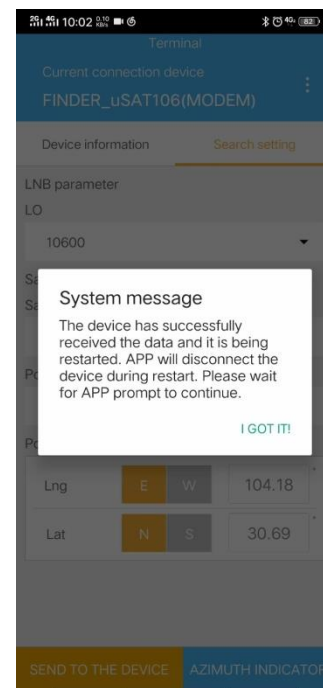


Figure 7-16

8. If you need to disconnect, click the three dots on the upper right corner and select "Disconnect device", then click the "Ok", as shown in Figure 7-18.
9. **Adding Satellite:** Click on the three dots in the upper right corner, then click "Management Center", "Satellite management" in turn, APP has built in the frequently-used satellite,

If there are target satellite, you just check the circle front the satellite, as shown in Figure 7-18.

If there are not the target satellite, click the "+" on the upper right corner to enter the satellite add interface, as shown in Figure 7-19, enter the satellite name and satellite longitude, click "SAVE" to complete the addition, then return to the previous step, check the newly added satellite and it will appear in the satellite selection list, as shown in Figure 7-21.

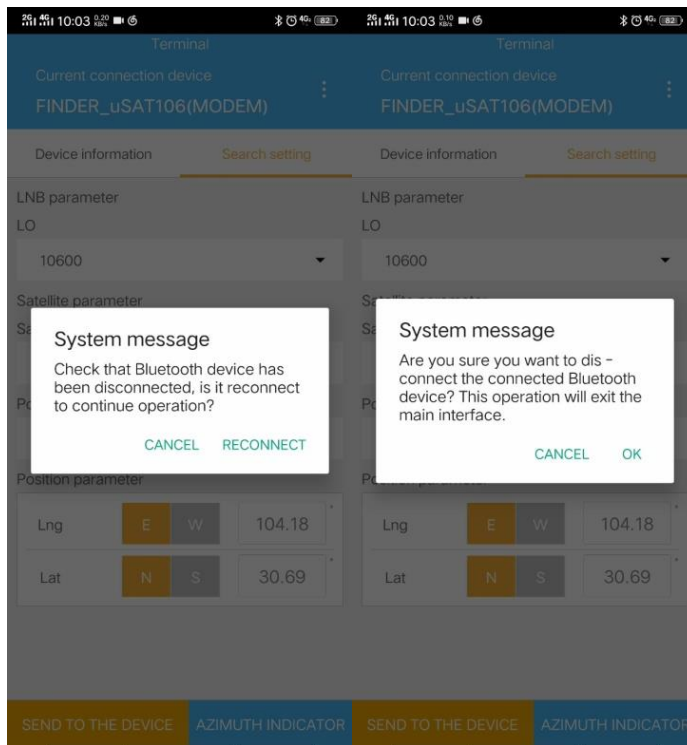


Figure 7-17

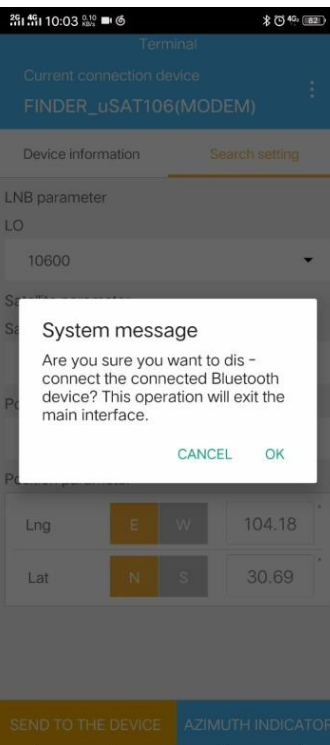


Figure 7-18

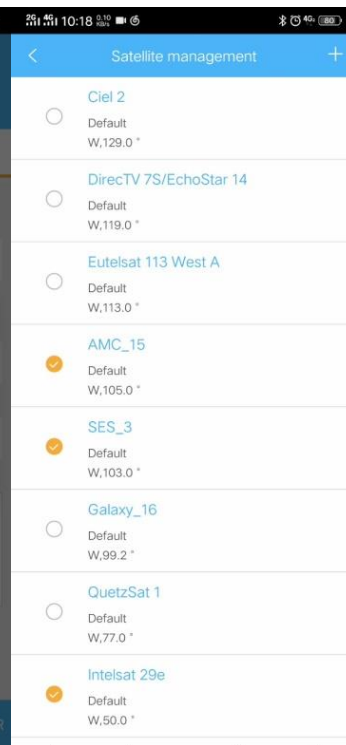


Figure 7-19

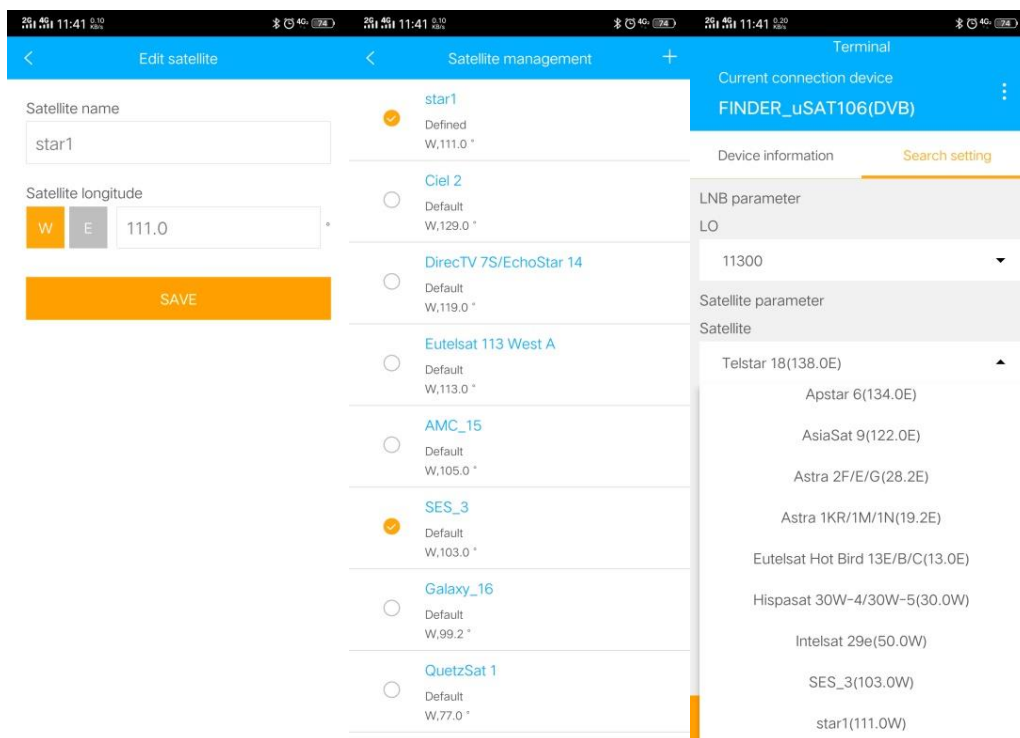


Figure 7-20

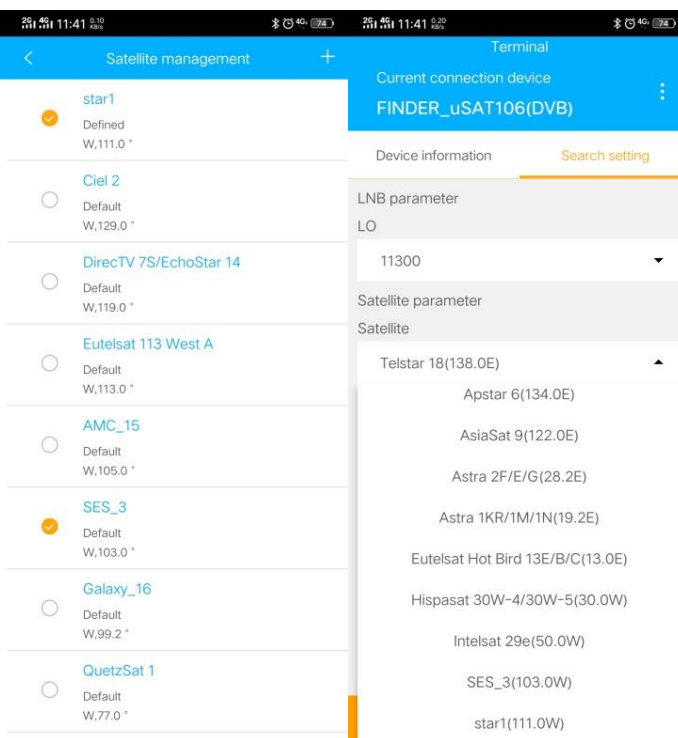


Figure 7-21

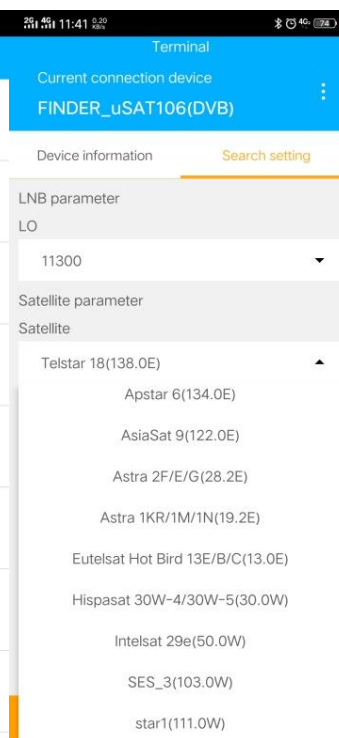


Figure 7-22

8 Troubleshooting and Maintenance

9.1 Troubleshooting

Item	Problem and Indication	Corrective Action
01	Display does not work	Verify the power connection
02	Antenna does not work	Press the “POWER ON/OFF” button Or reconnect the power
03	No GNSS signals acquisition	Verify the terminal is under the open sky/has an unobstructed view. Reboot
04	Terminal can not lock the satellite	Check whether the antenna's approximate orientation is correct, Terminal configuration parameters, and Modem configuration parameters are correct
05	Terminal aligns to another satellite	Verify the satellite data entered via the ‘App’ for Terminal Control
06	Display switches off after the completion of alignment	Press down the “Icon” button (On the screen) for 3 seconds to activate the screen
07	The display indicates the terminal is in normal operational state but there is no data transfer	Verify that LAN or Wi-Fi are properly connected
08	Low signal quality	The elevation and azimuth angle of the antenna body are adjusted by adjusting the elevation and azimuth knobs, and the antenna polarization angle is adjusted by rotating the antenna body in the polarization direction

9.2 Maintenance

The FL30P-M uSat Terminal parameters and performance can remain stable and provide normal operation for at least 10 years under a regular maintenance schedule. The periodical maintenance work includes:

1. Antenna system - it is highly recommended that a comprehensive examination of the entire system is completed, periodically, along with a thorough check of all the adjustment mechanisms.
2. Antenna mechanisms – it is recommended that a daily check is made of the adjustment mechanisms and any necessary lubricant is added, to prevent wear of the worms and gears.
3. Visual verification of terminal protective casing surface damages. If there is a damage, the special spray (NOT included in the standard system configuration) should be applied.
4. Check that all the screw fastenings are tight.
5. Close check of the antenna to look for any damage or cracks.
6. Regular cleaning of the terminal and antenna radome surfaces. Remove all dust, dirt, condensed salt and other contamination that may harm the signal quality and the terminal’s performance.

9 Technical Service Contact Information

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10 Production Spec

Product Name:	Flat Panel Integrated Satellite Communication Terminal
Model No.:	FL30F-M
Software	XY-PB-FL30-202111
Hardware	XY-PB-FL30-V2.02
Wi-Fi Specification:	802.11b/g/n Transmit / Receive: 2412~2462MHz
Bluetooth Version:	V4.2 (Single mode only for BLE) Transmit / Receive: 2402~2480MHz
Satellite Specification:	Transmit: 14.00~14.50GHz Receive: 10.70~12.75GHz
GNSS Specification:	GPS, BDS

Statement: There are no restrictions of use in Member States.

EU declaration of conformity

China Starwin Science & Technology Co., Ltd hereby declares that the device is in compliance with the essential requirements and other relevant requirements of RED Directive 2014/53/EU.

Technical Service Contact Information

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FCC Statement

The device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



Danger: FCC Radio Frequency Exposure Information

In order to comply with RF exposure requirements, antennas must be installed to ensure a minimum separation distance of 1702cm (antenna main beam) and 56cm (out range of +/-10 degrees off-axis) and must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with accepted multi-transmitter product procedures.

Safety Considerations

For the following safety considerations, "Instrument" means the 'satellite terminal Flat Terminal' units,

components and their cables.

It is necessary to read the instructions carefully before using the satellite terminal flat portable terminal. The terminal usage shall be carried out in accordance with the described steps and methods to ensure the safety and accuracy of equipment operation.

Radio

The instrument transmits radio energy during normal operation. To avoid possible harmful exposure, to this energy, do not stand or work for extended periods of time in front of its antenna. The long-term characteristics or the possible physiological effects of Radio Frequency Electromagnetic fields have not been yet fully investigated.

Caution

1. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.
2. Before connecting this instrument to a power source, make sure that the voltage of the power source matches the requirements of the instrument.