KINGSAT
Maritime Antennas

Quick Installation

Maritime VSAT P10/P10E/P10+E

Standard Version 3.0

KINGSAT
www.kingsat-tech.com

Contents

Preparation for Installation

KINGSAT
www.kingsat-tech.com

Antenna First Installation Checklist

For the first installation, please follow the steps below. Check each step to ensure that the antenna is installed and used correctly.Each step after well done with mark " √ ".

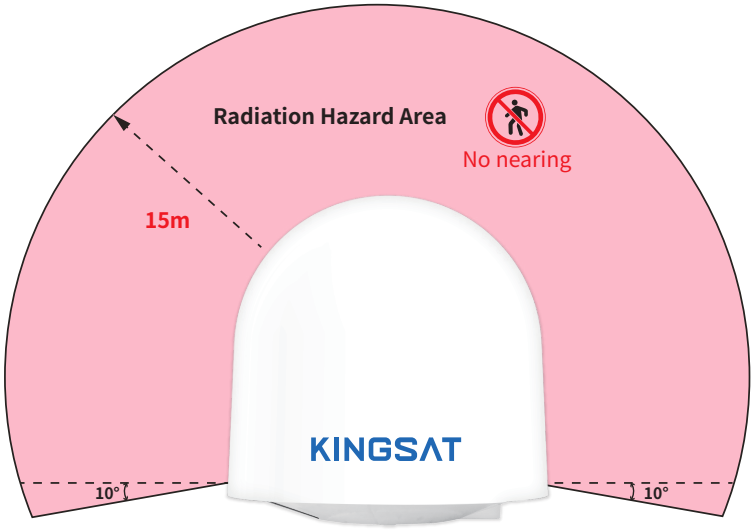
Part1 Antenna Installation Site (Above Deck Unit Preparation)			
1	Attention: Keep safe distance for radiation hazard.	Page 2	Done( )
2	Check if any obstructions exist with EL range -15°~120°.	Page 3	Done( )
3	Check mounting mast site .	Page 4	Done( )
4	Check physical solidness of mast.	Page 5	Done( )
5	Unpack carton and remove radome.	Page 9	Done( )
6	Check materials list in the carton.	Page 12	Done( )
7	Check connecting cables.	Page 13	Done( )
8	Check connecting diagram.	Page 14	Done( )
Part2 ACU and Modem (Below Deck Unit Preparation)			
9	Check ACU.	Page 15	Done( )
10	Check connections of ACU , Modem and Switch.	Page 16	Done( )

Preparation for Installation

KINGSAT
www.kingsat-tech.com

Part-1 Antenna Installation Site (ADU Preparation)

Step 1. Attention: When VSAT working especially transmitting signal, make sure 100% keep safe distance (**15m** far from ADU) for radiation hazard.



Safety Warning when antenna working

Preparation for Installation

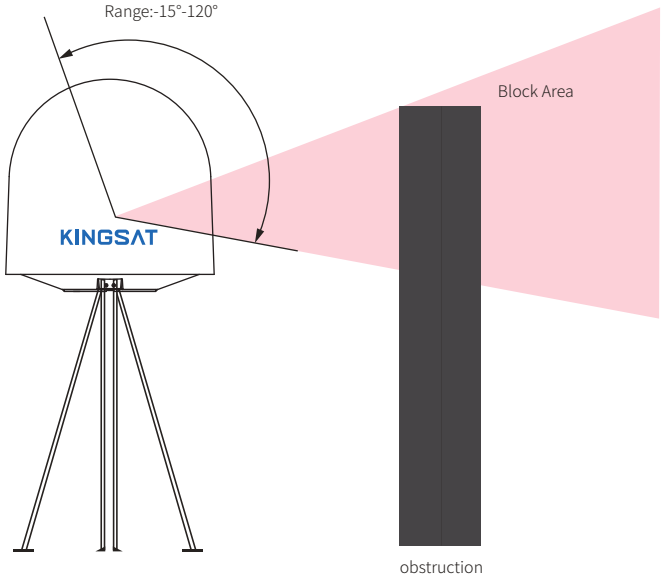
Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Step 2. Check if any obstructions exist with EL range **-15°~120°**.

Make sure antenna is free of obstructions ,it can transmit and receive the satellite signal fully.

The optimized site is that 360° free of obstruction when pointing to sky.



Preparation for Installation

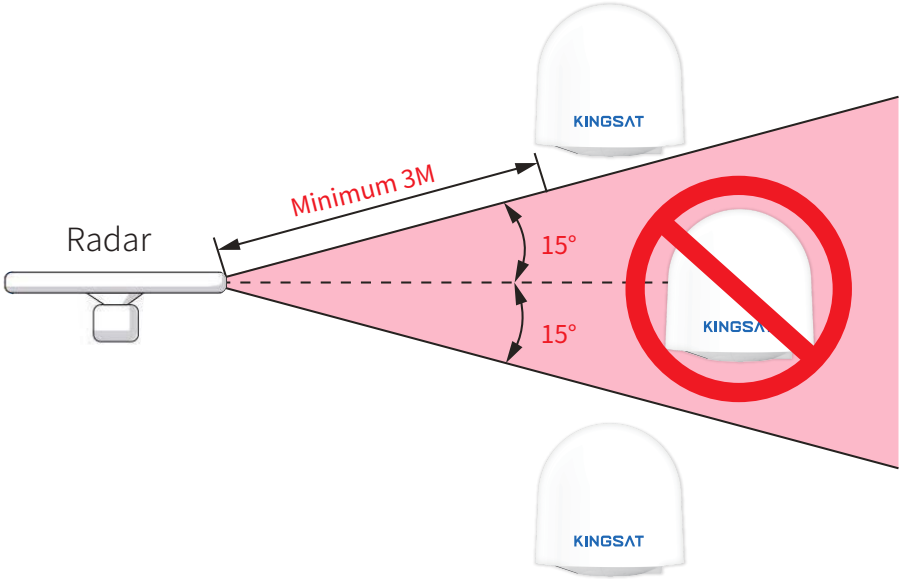
Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Step 3. Check mounting mast site. The optimized site has

(1)Minimum vibration (better far from engine)

(2)Keep safe distance to Radar or other RF transmitter (aviod fan beam **±15°**of Radar, keep distance to Radar **minimum 3m**).



Preparation for Installation

KINGSAT
www.kingsat-tech.com

Part-1 Antenna Installation Site (ADU Preparation)

Step 4.Check physical solidness of mast.

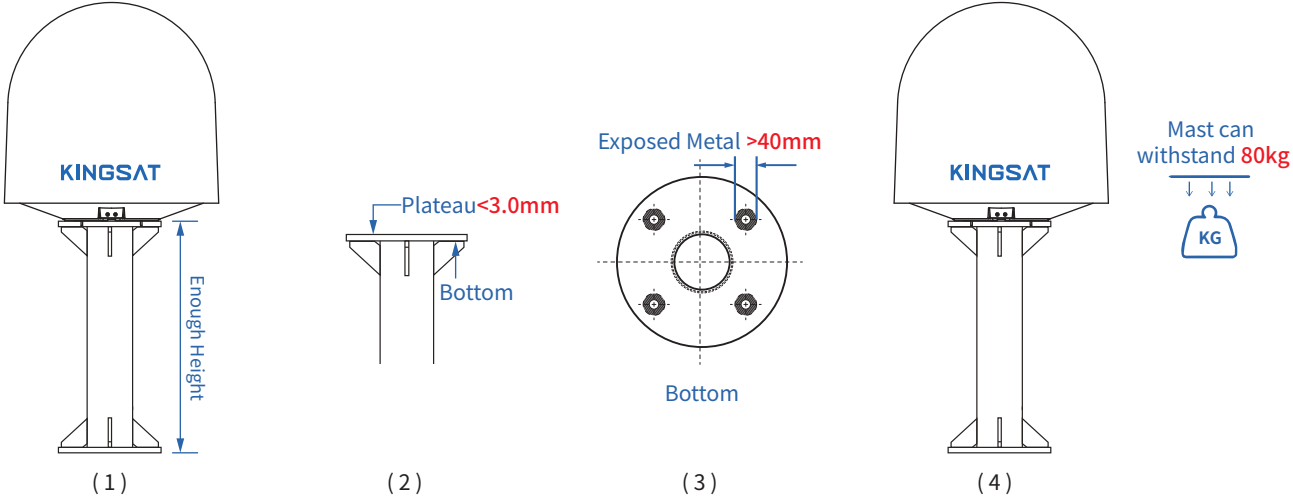
Make sure the mast has

(1)Enough height ,must be free of obstructions.

(2)Good flatness, plateau is below **3.0 mm**.

(3)Good grounding, exposed metal is above **40mm**.

(4)High solidness, it can withstand **80kg**.



(1) (2) (3) (4)

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

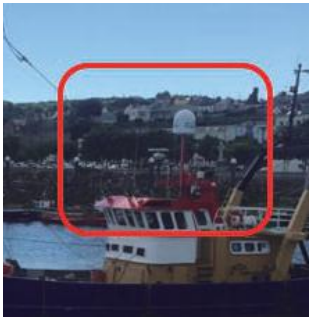
KINGSAT
www.kingsat-tech.com

Installation Site Selection and Case Analysis

The following installation cases are the optimal sites.

The optimal sites






Preparation for Installation

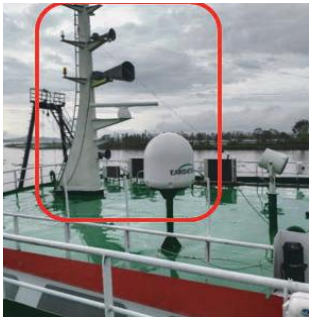
Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Installation Site Selection and Case Analysis

The following installation cases **are not the optimal sites and can be optimized.**

Can be optimized



Too close to the mast, the antenna may be obstructed at mast direction.

Too close to the funnel, the radome is easy to get dust, then it will decrease RF performance of antenna.

Preparation for Installation

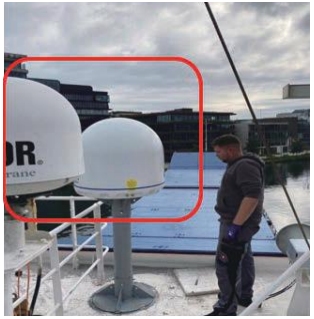
KINGSAT
www.kingsat-tech.com

Part-1 Antenna Installation Site (ADU Preparation)

Installation Site Selection and Case Analysis

The following installation cases **are not the optimal sites and must be optimized.**

Must be optimized



Too close to the mast, antenna can not get 360° free view to sky. The site needs to be re-selected, must be far away from obstructions while the height of mounting bracket should be made as high as possible.

Preparation for Installation

KINGSAT
www.kingsat-tech.com

Part-1 Antenna Installation Site (ADU Preparation)

Step 5.1: Unpack carton and take out the accessories.Remove the fixing screw on the radome bracket that secures the antenna to the pallet using a wrench.

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

Step 5.2: The antenna comes with the lifting straps pre-mounted from the factory. Take out the shackle from the bottom of the lifting straps and unscrew it.

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Step 5.3 Remove radome. Then remove **4 red fixing bolts** of safe delivery purpose. After that, fix the radome with bolts, put back the lifting straps, and tighten up the shackle.

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Step 6. Check Material List in the carton.

KINGSAT

Material Checklist of KINGSAT P8/P8+

(Standard DC Version)

No.	Material	Quantity	Picture	Factory check	User Check
1	User Manual for Quick Installation	1			
2	Antenna (ADU)	1			
3	ACU	1			
4	ACU wall mounting bracket	2			
5	10m Coaxial Cable(RG11)	2			
6	0.8m RF Cable(RG179)	2			
7	0.4 m Network Cable	2			
8	DC Power Supply Cable	1			
9	N-F converter	4			
10	5mm Hex Key	1			
11	6mm Hex Key	1			
12	14mm L Spanner	1			
13	M12 Hex Nut	4			
14	M12 Spring Washer	4			
15	M12 Flat Washer	4			
16	M5*8 combined screw	4			
17	Spare Connectors for Coaxial Cable	4			
18	USB flash disk	1			
19	Plastic Tape	1			
	Total:	41PCS	Checked By:		

Preparation for Installation

KINGSAT
www.kingsat-tech.com

Part-1 Antenna Installation Site (ADU Preparation)

Step 7. Check connecting cables. We supply below accessories for each unit of antenna.

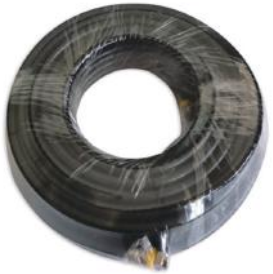
2 * 30 meter coaxial cable（RG11 black color）

2 * 1 meter coaxial cable（RG179 gold color）

2 * 0.4 meter network cable

4 * N-F type connecting converter

1 * 5 meter waterproof tape



RG11 coaxial cable

RG179 coaxial cable

Network cable

Waterproof tape

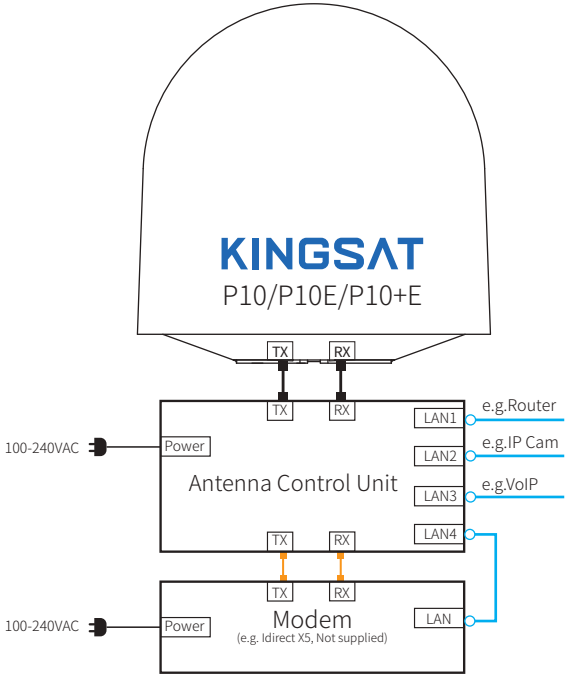
N-F type connecting converter

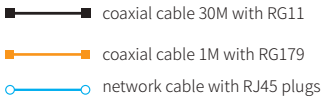
Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

KINGSAT
www.kingsat-tech.com

Step 8. Check connecting diagram.





▸We recommend cable type according to cable length, as follows:
-within 20m: RG6
-within 50m: RG11
-within 100m: LMR400
-within 200m: LMR600
NOTE: Impedance of cable is 50ohm, attenuation of cable is under 20dB at 2.5GHz.

Preparation for Installation

Part-2 ACU and Modem (BDU Preparation)

KINGSAT
www.kingsat-tech.com

Step 9. Check ACU. Check each port of rear panel connection.

Front Panel of ACU

USB port,for upgrading firmware of ACU and debug

Indicators, show antenna running status

256x64 OLED display, shows all status and setting of antenna

Buttons for ACU operation

Rear Panel of ACU

Connect to Antenna(ADU)

Connect to Modem

Connect to Modem Console

Connect to Modem & other IP device

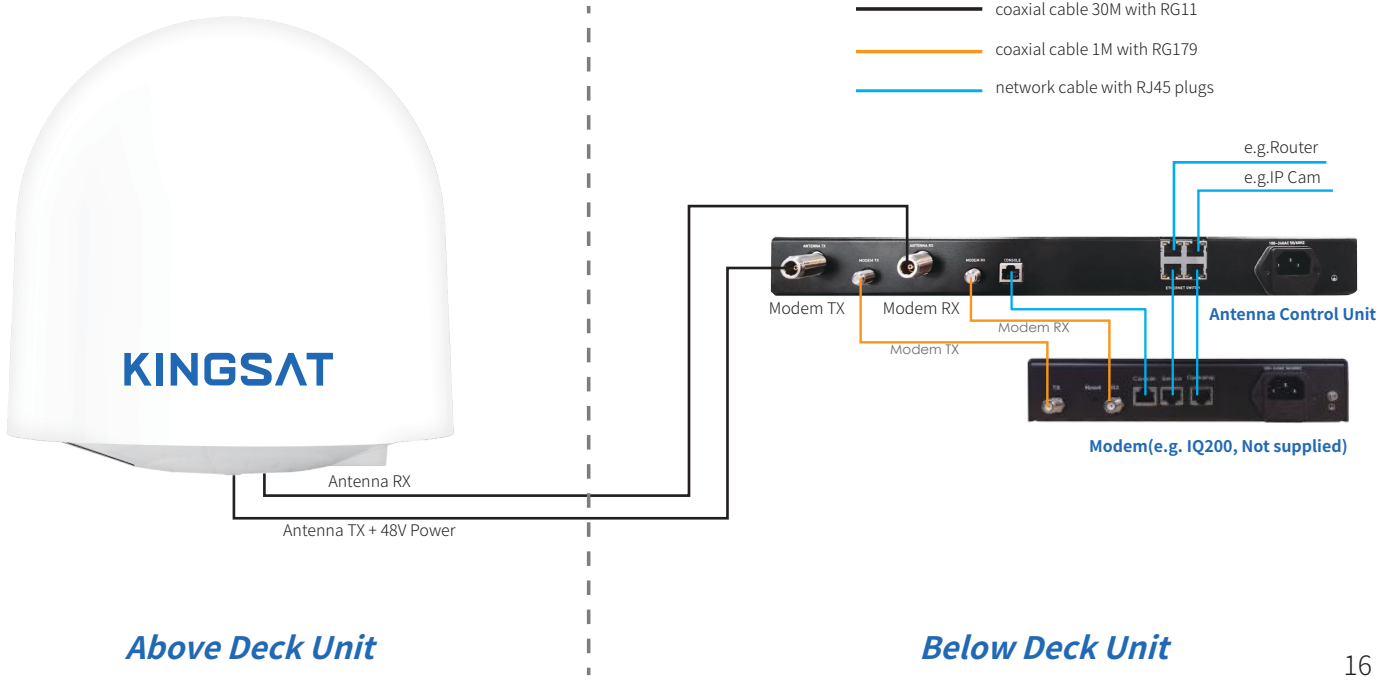
Ground Stud, must be well Grounding. For safety and ESD protection.

Preparation for Installation

Part-2 ACU and Modem (BDU Preparation)

KINGSAT
www.kingsat-tech.com

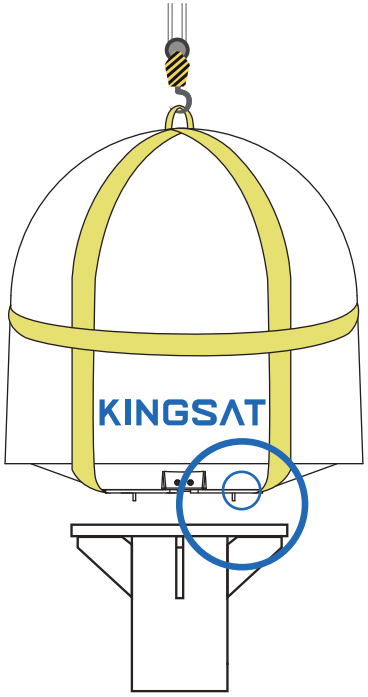
Step 10. Check connections of ACU , Modem and Switch.

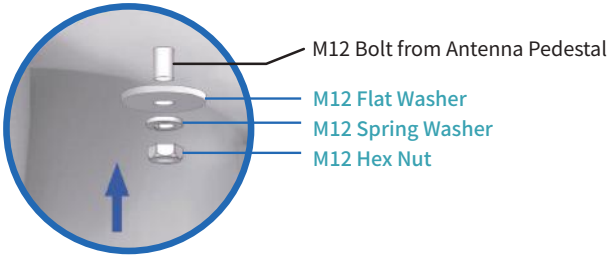


Installation

Step 1 Mounting Antenna

Check the condition of the lifting strap and that the shackle is tightened up. Lift the antenna above the mast using a crane and carefully put the antenna down on the mast. Mounting antenna with below accessories.





M12 Flat Washer

M12 Spring Washer

M12 Hex Nut

Installation

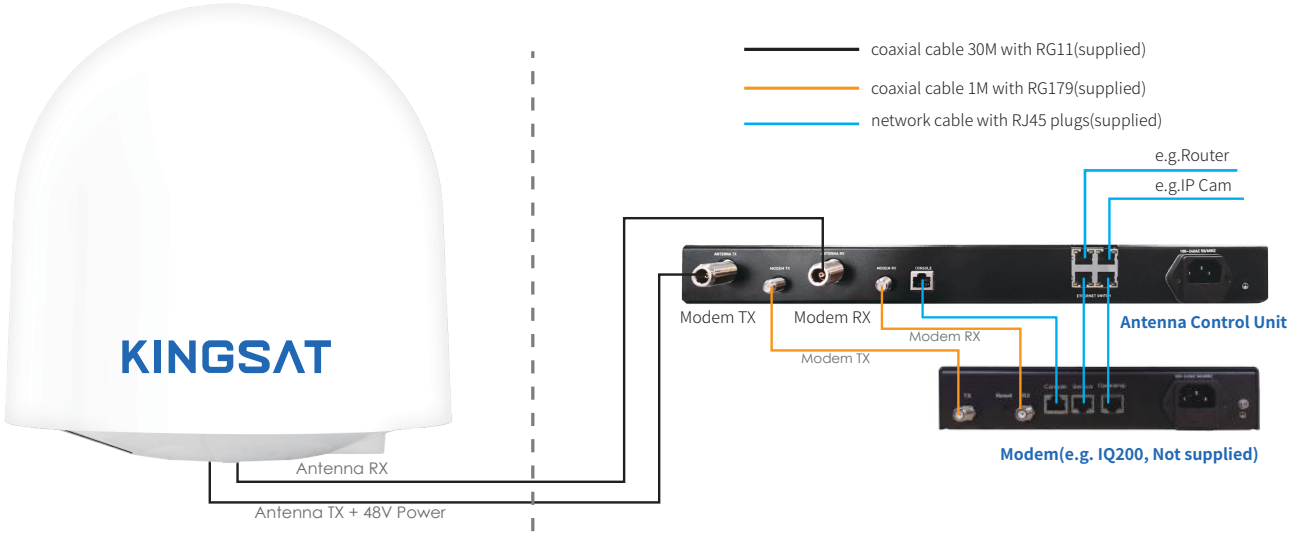
Step 2 Connection Diagram

Scan QR code to
watch video guideline

KINGSAT
www.kingsat-tech.com

Prepare cables and make sure connections as below diagram.

Supplied cables
- 2 * 30 meter coaxial cable（RG11 black color）
- 2 * 1 meter coaxial cable（RG179 gold color）
- 2 * 0.4 meter network cable with RJ45 plugs



Above Deck Unit

Below Deck Unit

Installation

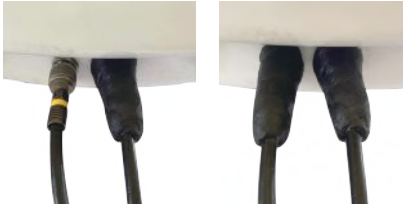
Step 3 Confirm All Connections

KINGSAT
www.kingsat-tech.com

Review all connections.

Antenna connections

ACU connections



Connectors should be sealed with waterproof tape

Modem connections

Installation

Step 4 ACU Setting Procedure

Turn on power of the ACU. ACU starts to initialize.

Scan QR code to watch video guideline

KINGSAT
www.kingsat-tech.com

- Error may happen as below shows. This means ACU can not communicate with antenna correctly.
  Please check below cables connection
  1) whether TX and RX coaxial cables are connected correctly
  2)whether F-N connectors are tight enough
  After reconnect and check, then restart system.

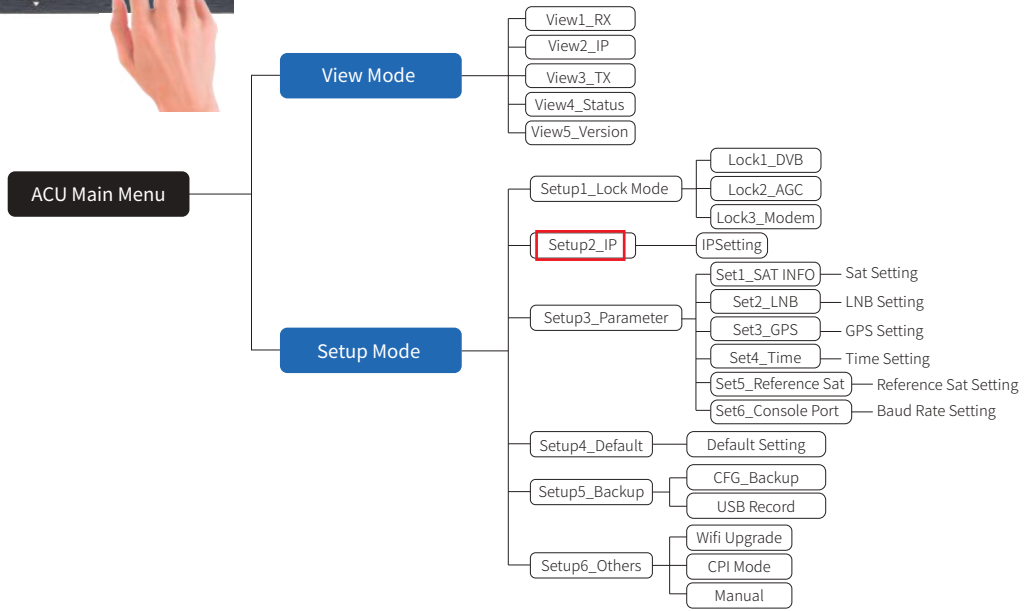
Installation

Step 5 ACU IP Setting

Scan QR code to
watch video guideline

KINGSAT
www.kingsat-tech.com

Press “OK” to set **IP address** and **PORT** **same as MODEM OpenAMIP setting,** “GW” is same as MODEM IP.Press “OK” and “BACK” to save setting .



Installation

Step 6 Web Interface Login

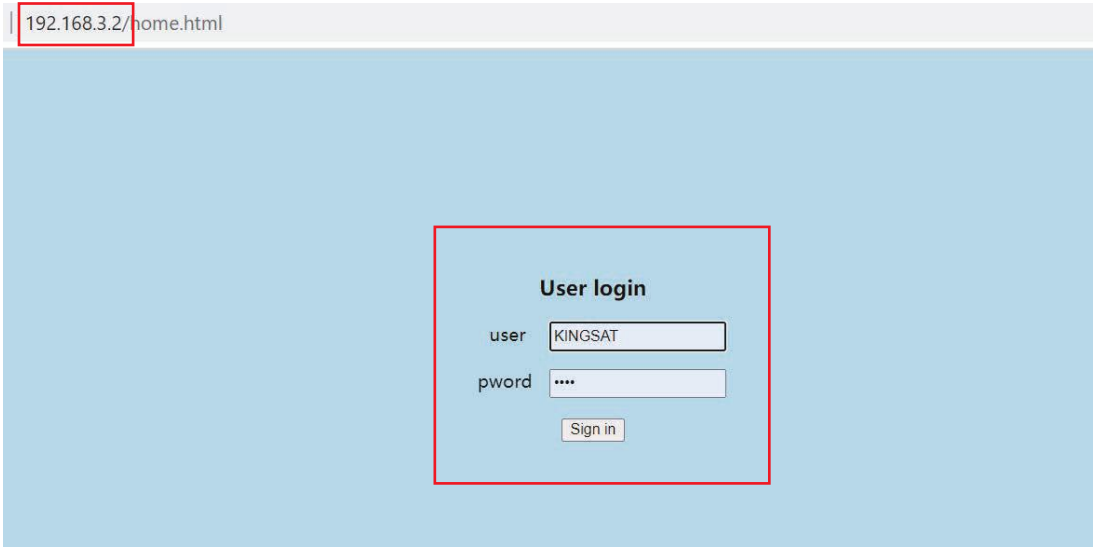
Scan QR code to watch video guideline

KINGSAT
www.kingsat-tech.com

Connect laptop to ACU ethernet port. **Make Sure laptop IP and ACU IP in same segment** , then go to Browser, input ACU IP.

USER: KINGSAT, Password:1234

Now plz follow below guide "Quick Installation Guide with Web Interface"

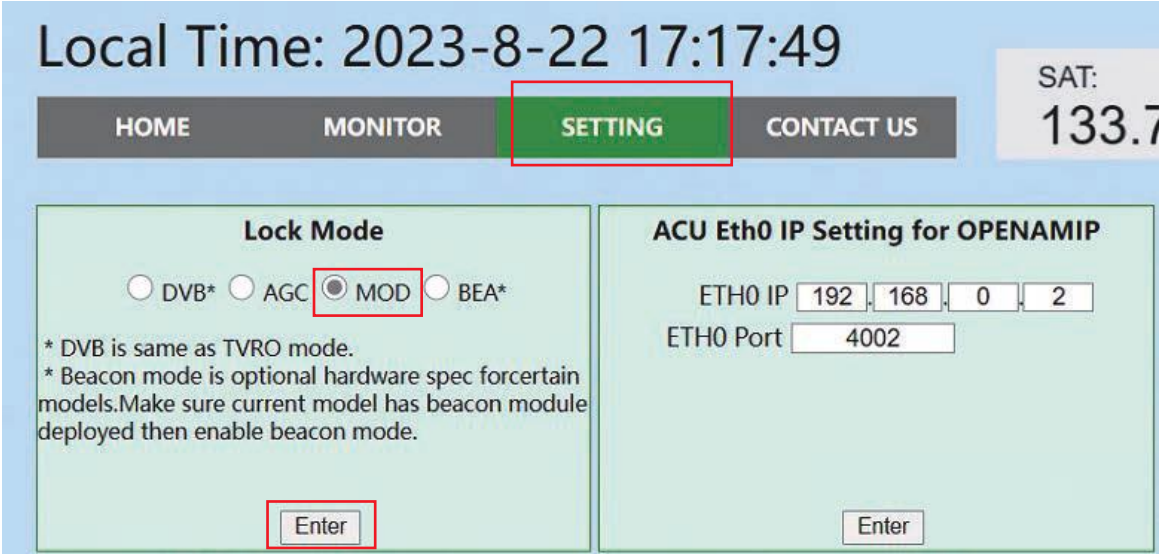


Quick Installation Guide with Web Interface

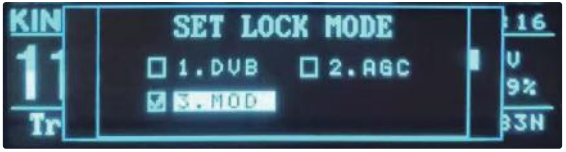
KINGSAT
www.kingsat-tech.com

Step1.Setup Lock mode in SETTING page

Go to SETTING page, select MOD mode (MODEM mode) in Lock Mode Setting , press Enter to SAVE.



Another way for setting Lock mode，go to ACU , Press ok---Set Lock Mode，then BACK and SAVE.



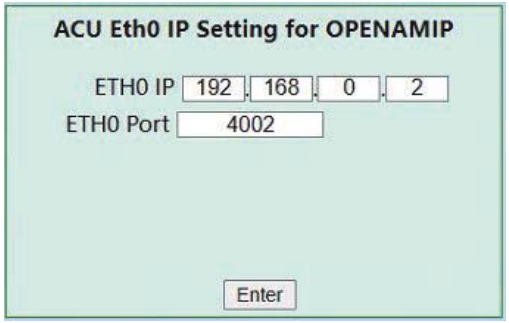
Quick Installation Guide with Web Interface

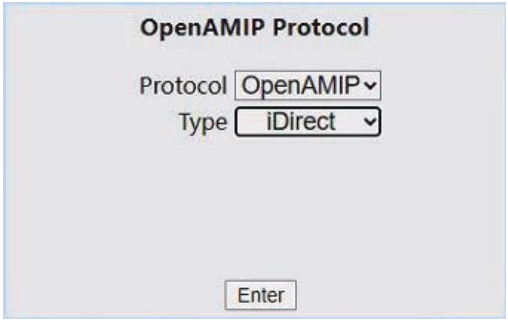
KINGSAT
www.kingsat-tech.com

Step 2.IP Setting and Protocol setting

In SETTING page, set **ACU IP** address and **PORT** same as MODEM OpenAMIP setting, press **Enter** to Save.

Plz select the correct communication protocol, default is **OPENAMIP-iDirect**, press **Enter** to Save.





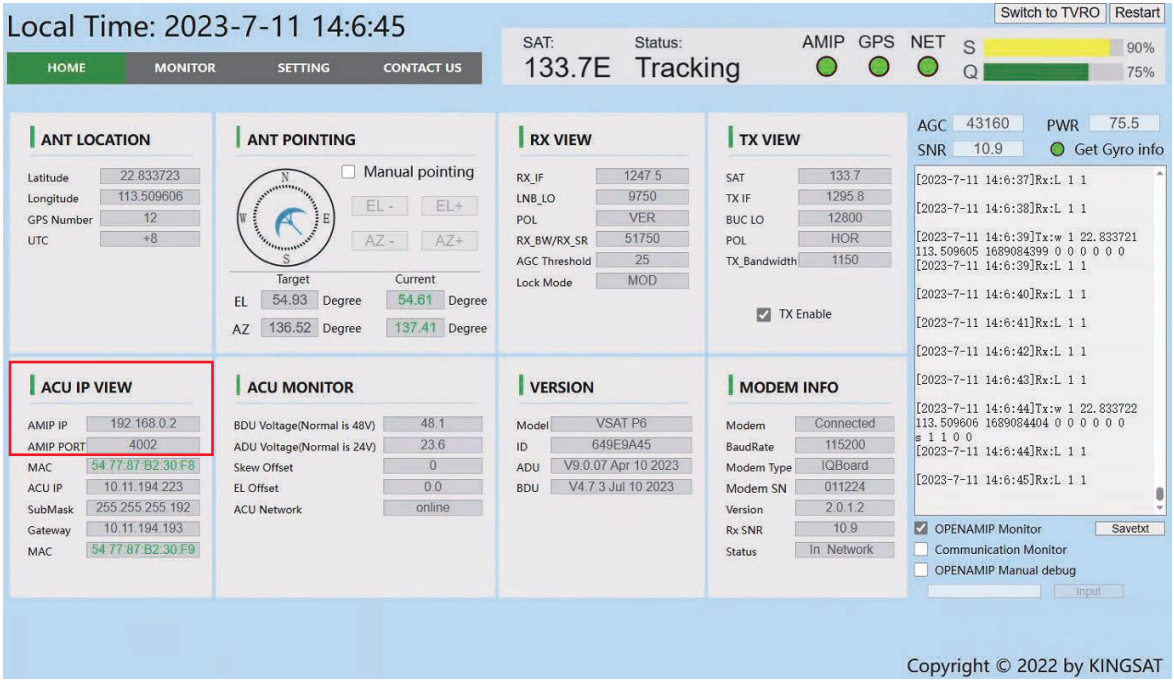
Another way for setting IP, go to ACU , Press ok---Set IP, modify IP,SM(SubMask) , GW(Gateway) Port, then BACK and SAVE.

Quick Installation Guide with Web Interface

KINGSAT
www.kingsat-tech.com

Step 3. Confirm IP Setting

Back to HOME page, check **ACU IP VIEW**, confirm **ACU OPENAMIP IP** and **PORT** is same as setting.



Quick Installation Guide with Web Interface

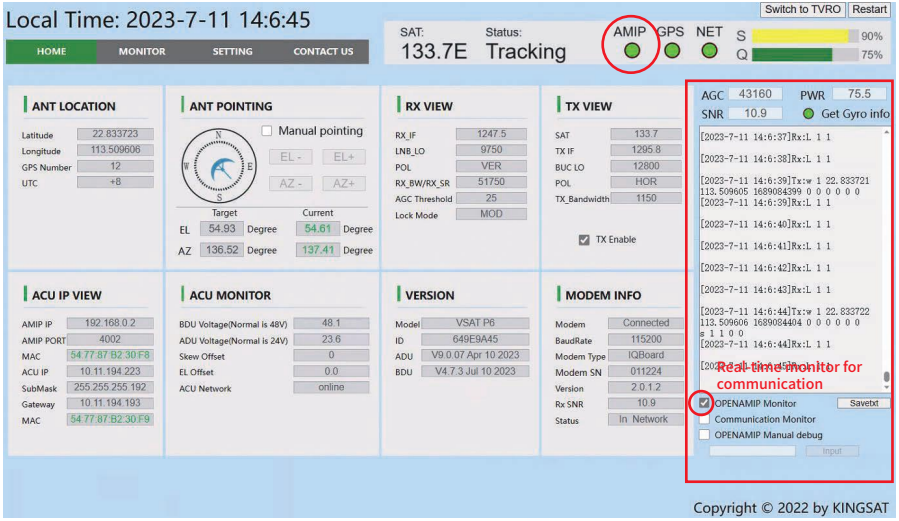
KINGSAT
www.kingsat-tech.com

Step 4.Check OPENAMIP working or not

If ACU IP and modem IP is setting done correctly , ACU and MODEM will start to communicate by OPENAMIP protocol.

Plz check HOME page, you can see **OPENAMIP: connected**.

Enable OPENAMIP monitor window, it will output some real-time commands between ACU and MODEM.

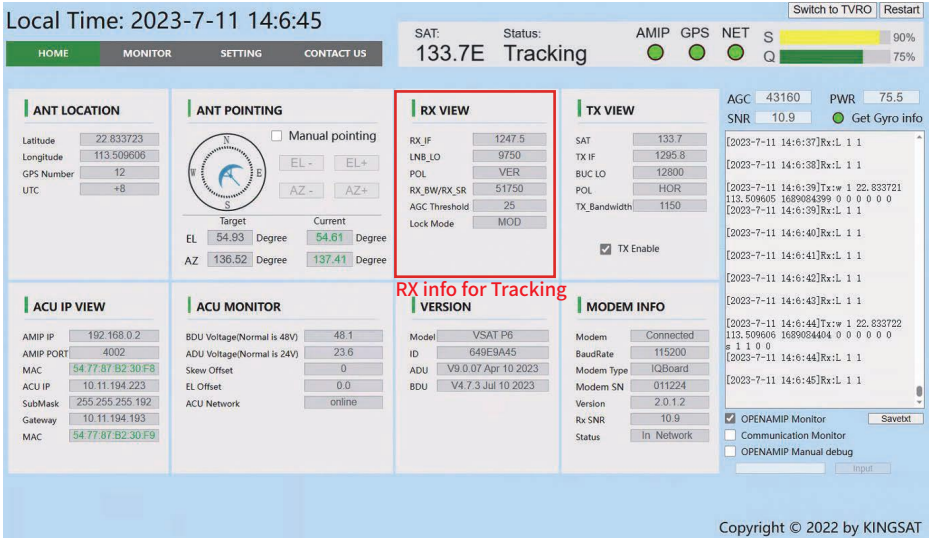


At same time, plz check ACU display shows OPENAMIP icon blinking.

Step5.Wait for tracking

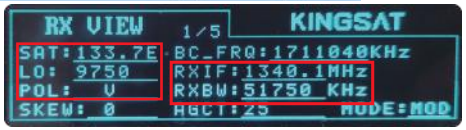
Double check RX parameters as below, this parameters are all from MODEM by OPENAMIP, antenna is using this parameter to lock the signal from target satellite.

Just wait for tracking.



Check ACU side, press Right button, check RX VIEW page.

Check whether all Rx parameters are correct or not.



Quick Installation Guide with Web Interface

KINGSAT
www.kingsat-tech.com

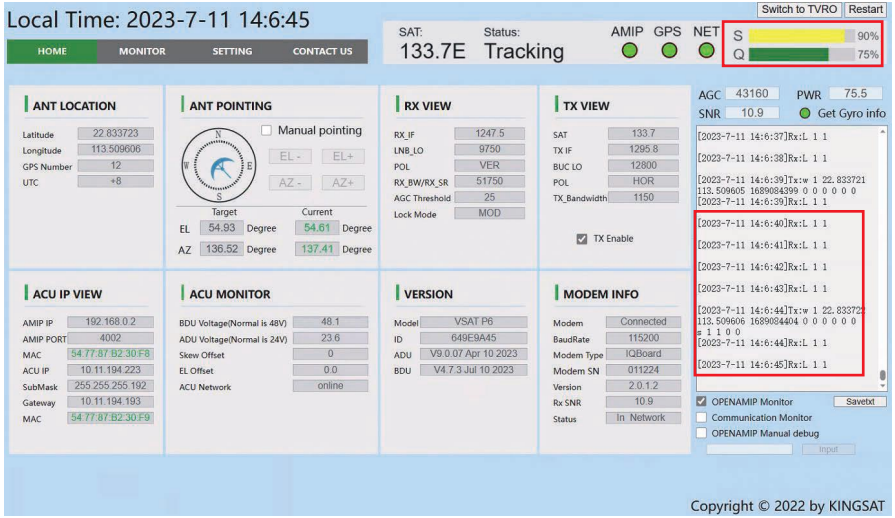
Step6. Tracking status

If everything is done correctly, you can check monitor window if ACU will receive **L10** then **L11** command from modem. If yes, antenna will show tracking when L10 and L11 come out.

Now check signal Quality ---Q,

if **Q is more than 30%**, it means **stable signal**, antenna keeps tracking.

If **Q is less than 30%**, it may be **weak signal**, or have blockage. Antenna may move.



Check ACU side, it also shows S and Q as the same as Web Interface.

Installation

Step 7 Antenna Operating Status

Scan QR code to watch video guideline

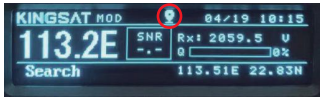
KINGSAT
www.kingsat-tech.com

After initialization,

1) **GPS icon appears**, antenna receives longitude and latitude from GPS module.

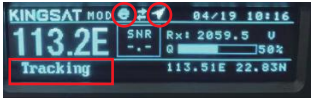
2) **OPENAMIP icon shows blinking** , it means OPENAMIP protocol is working correctly between ACU and MODEM.

1.Power on and initial



2.Receive GPS info

3.ACU and MODEM communicates by OPENAMIP protocol



4.Tracking, get gyro info and access the network.

Installation

Step 8 Tracking Satellite

When the antenna lock the satellite successfully, ACU shows **"TRACKING"**. Now VSAT antenna is working correctly. Then MODEM starts to setup the link. Wait for MODEM to access the network.

Press UP button to display all MODEM status information.(now only support X5 X7 IQ200).

Check RX SNR and Status.

SNR < 4 , means weak signal, can not setup stable link

SNR>6, means signal is ok, can setup stable link

SNR>10, means good signal.

Status: In Network,means now modem already in the network.

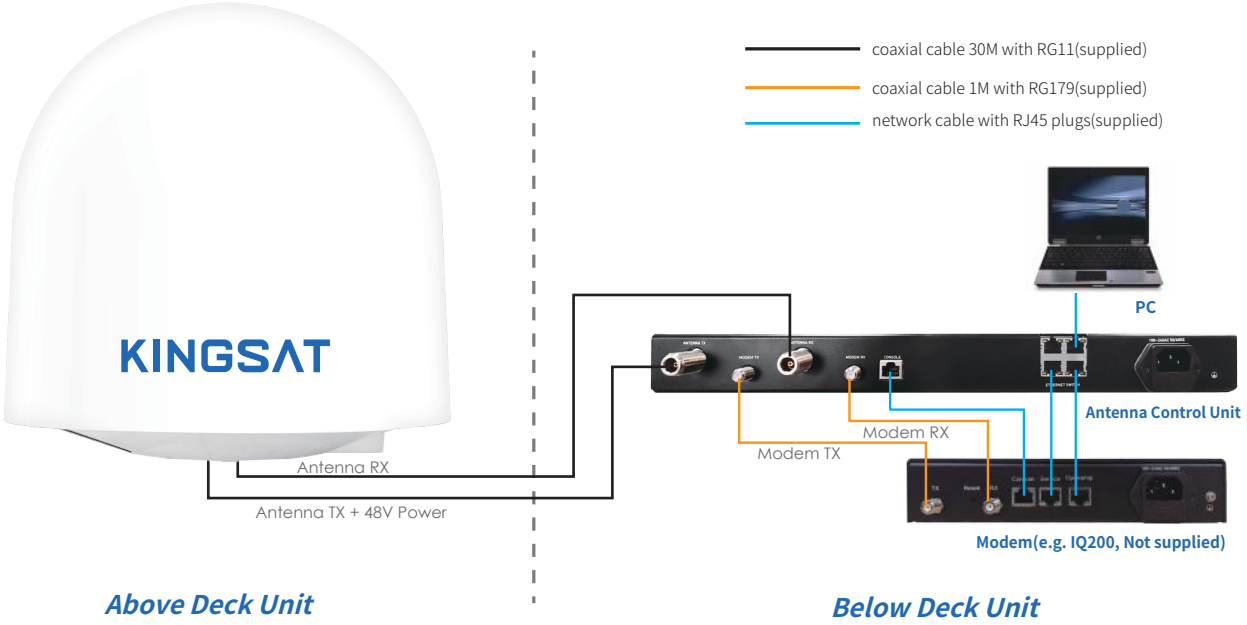
Installation

Step 9 Testing Internet Link

Connect to the PC and test whether the Internet link is connected successfully.

Scan QR code to watch video guideline

KINGSAT
www.kingsat-tech.com

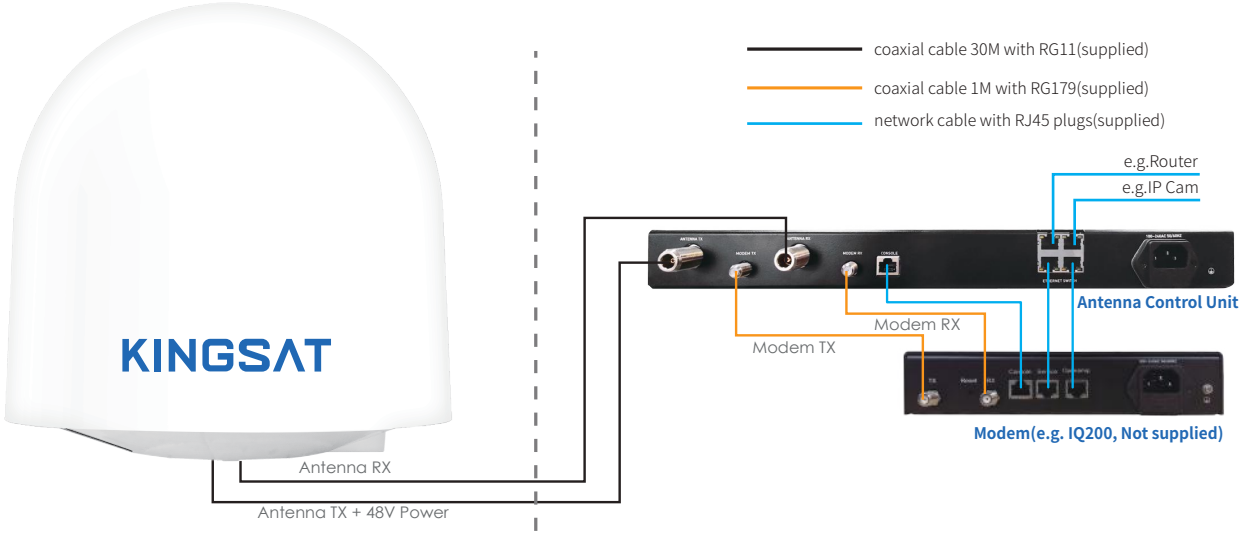


Installation

Step 10 Setting Done and Surf Internet

KINGSAT
www.kingsat-tech.com

Now you can connect all IP devices to LAN ports of ACU ,then surf internet.

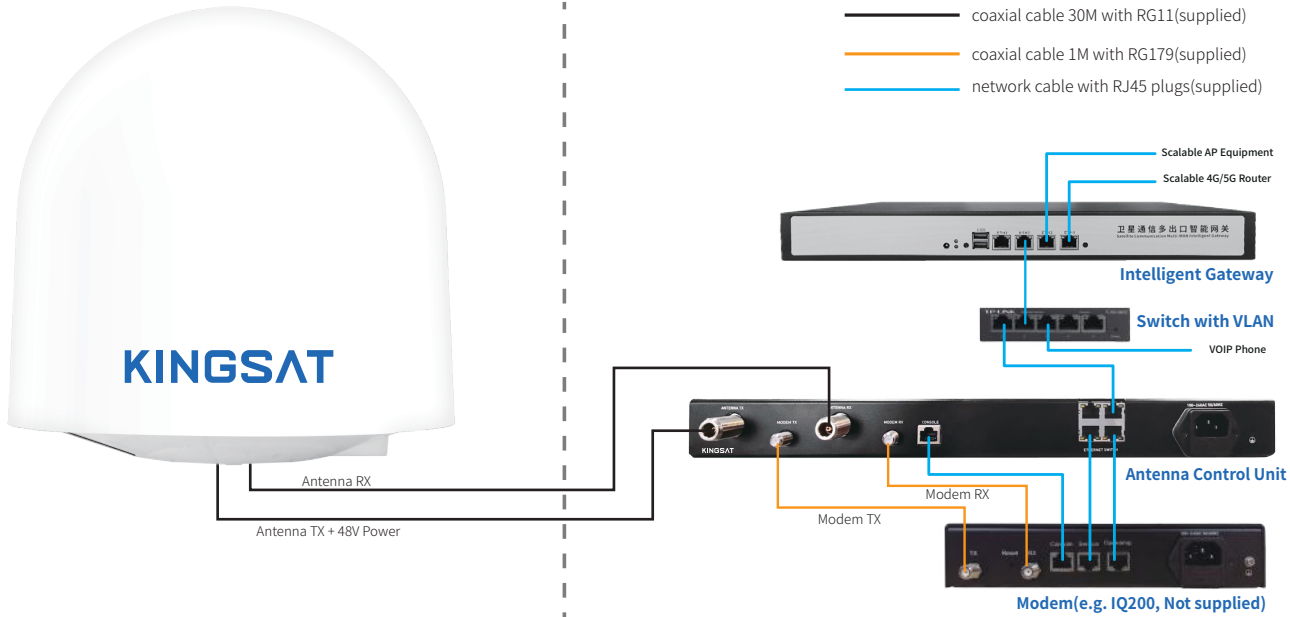


Installation

Step 10 Setting Done and Surf Internet

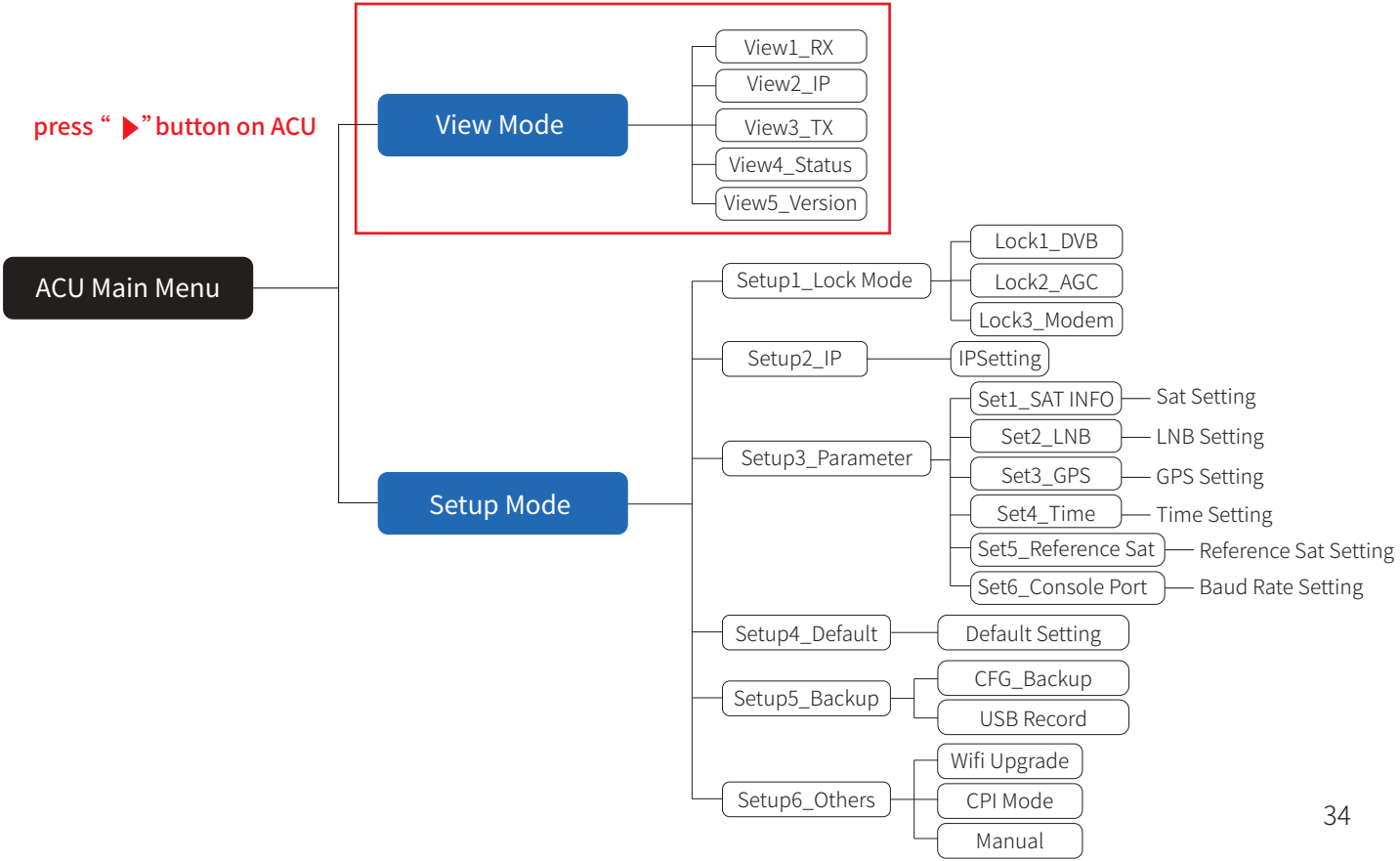
KINGSAT
www.kingsat-tech.com

Connect as shown in the figure below, if user needs to access VOIP phones with VLAN settings.



Appendix 1
Antenna Status Monitor- View Mode of ACU

KINGSAT
www.kingsat-tech.com



Appendix 1
Antenna Status Monitor- View Mode of ACU

KINGSAT
www.kingsat-tech.com

Main display description:

OPENAMIP icon,Modem communicating with ACU,only show in MODEM mode

Current lock mode: DVB, AGC, MOD

GPS locating successfully

Current date and time

Longitude of satellite

Current status of the antenna(ADU):
1.Init.: Antenna initializing
2.Search: Antenna searching satellite
3.Tracking: Antenna tracking satellite
4.Loss: Signal loss, quick troubleshooting
see page 80
5.Error: Communication error, followed by an error code, For more information,
see page 58

Rx parameters for Tracking
Q, Quality of signal

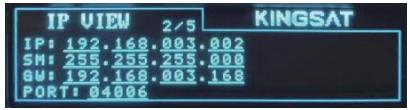
Current longitude and latitude data in ACU setting

Appendix 1
Antenna Status Monitor- View Mode of ACU

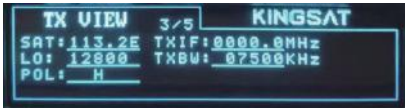
KINGSAT
www.kingsat-tech.com

View display description:Press the right button of the ACU to display the following pages page by page.

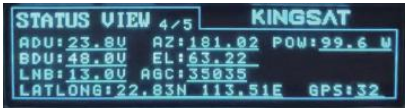
SAT	Longitude of selected satellite.
BC_FRQ	Beacon frequency of selected satellite.
L.O.	Local Oscillator of LNB.
RXIF	Intermediate Frequency of RX. RXIF=RX_Frequency-LNB L.O.
RXBW	Bandwidth of RX.
AGCT	Automatic Gain Control Threshold.
POL	RX Polarization of current active satellite. H(horizontal), V(Vertical)
SKEW	Skew offset. Default is 0 DEG.
MODE	Lock mode. 4 types of lock mode: DVB,AGC,MODEM,BEACON.



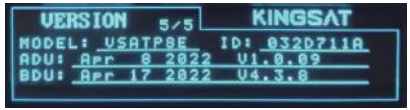
IP	Internet Protocol address. IP must be same segment as Modem IP setting
SM	Subnet mask.
GW	Gateway. Set the same with Modem IP.
PORT	The port that ACU communicate with Modem. Set the same with modem.



SAT	Longitude of satellite
TXIF	Intermediate frequency of TX TXIF=TX_Frequency-BUC L.O.
L.O.	Local Oscillator of BUC.
BW	Bandwidth of TX.
POL	TX Polarization. H(horizontal), V(Vertical)



ADU	Voltage of Above Deck Unit(Antenna) Normal value is around 24V.
BDU	Voltage of Below Deck Unit(ACU). Normal value is around 48V.
LNB	Voltage of LNB. 13V(RX polarization: Vertical), 18V(RX polarization: Horizontal)
AZ	Azimuth angle of ADU
EL	Elevation angle of ADU
LATLONG	Latitude and Longitude of current location
GPS	Quantity of GNSS satellites which capture signal
POW	Total power consumption

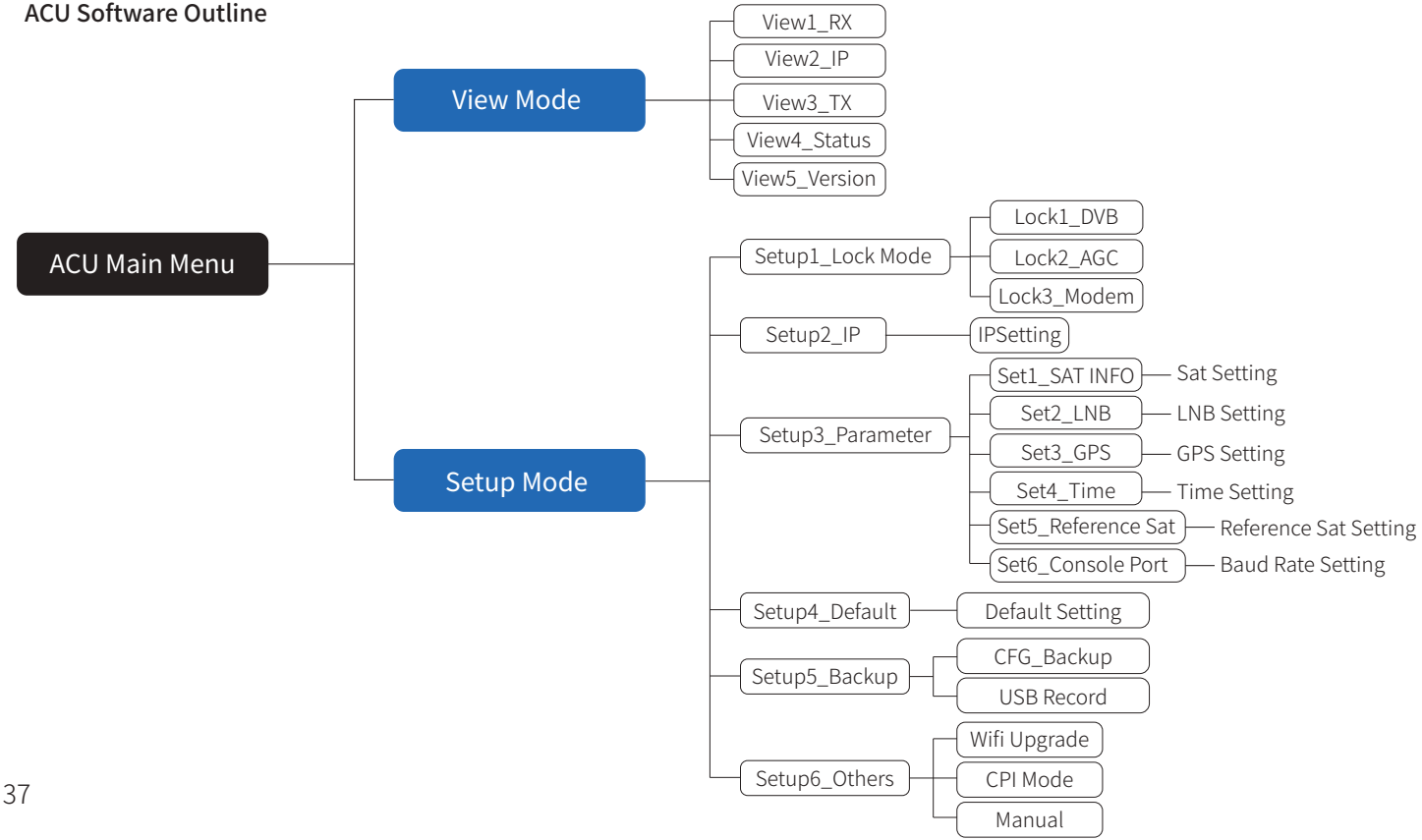


MODEL	Antenna model name
ID	Unique Identification of the ACU
ADU	Current software version of Antenna mainboard
BDU	Current firmware version of ACU

Appendix 1
Antenna Status Monitor- View Mode of ACU

KINGSAT
www.kingsat-tech.com

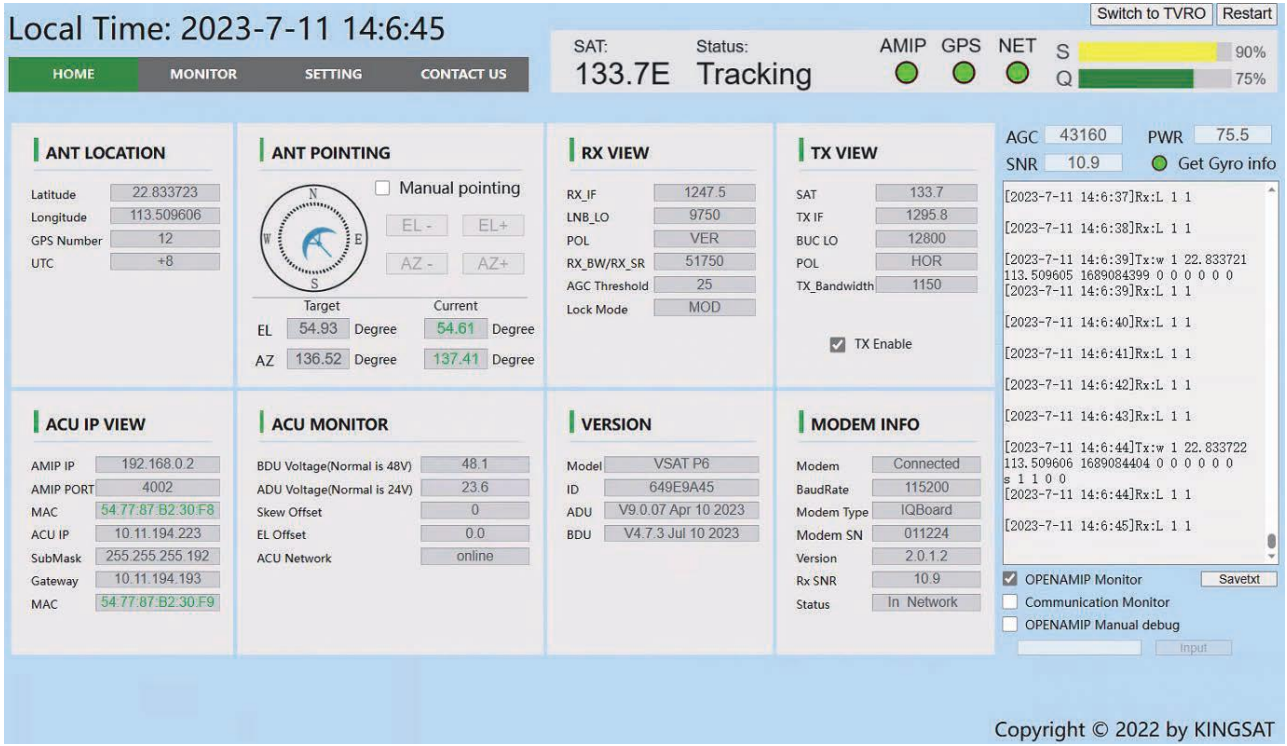
ACU Software Outline



Appendix 2
Web Interface Home page

KINGSAT
www.kingsat-tech.com

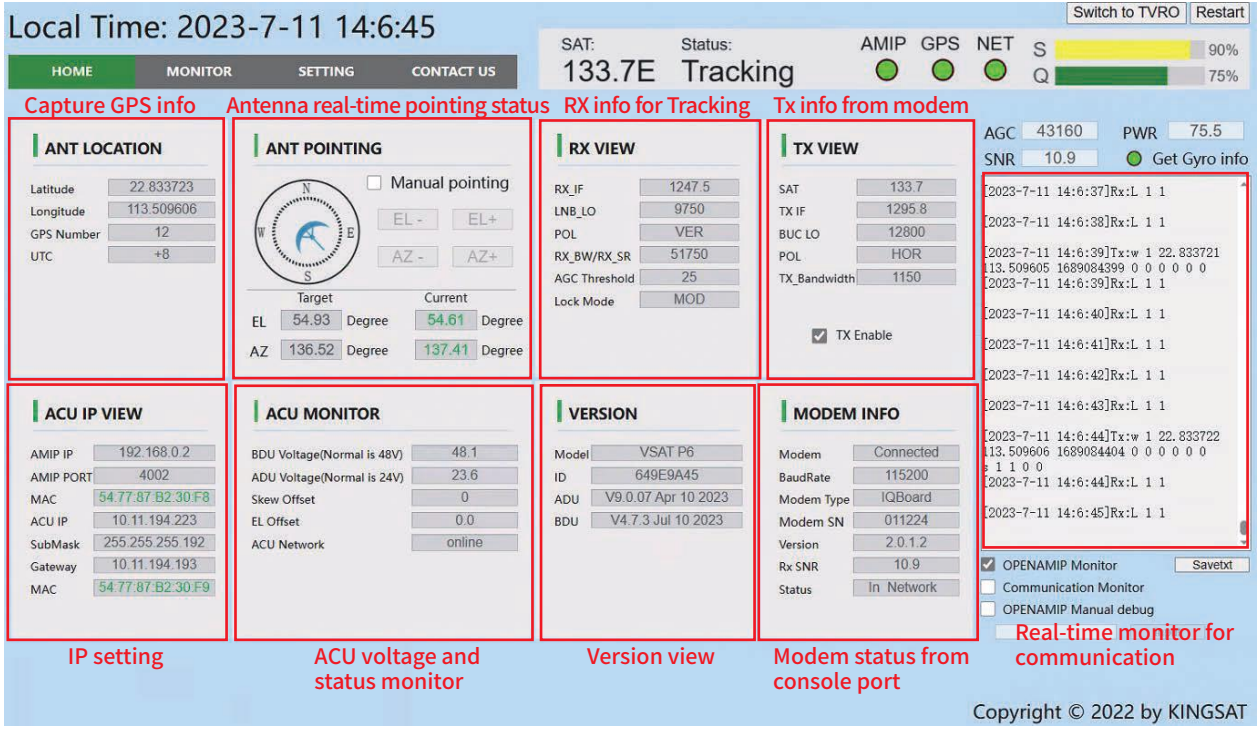
All antenna parameters are shown on this page. Real-time status is monitored.



Appendix 2
Web Interface Home page

KINGSAT
www.kingsat-tech.com

Sub-pages info indicate different parameters.



Appendix 2
Sub-page Ant Location

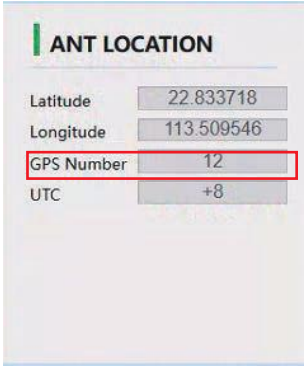
KINGSAT
www.kingsat-tech.com

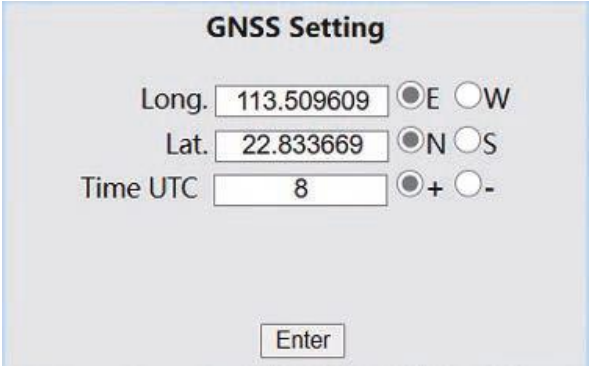
ANT LOCATION

This page shows Antenna location which is got from GNSS module inside antenna.

GPS number indicates GNSS satllites number which GNSS module can receive signal at current location. Time Zone setting , go to SETTING --GNSS Setting, GNSS parameters can be setup by manual if needed.

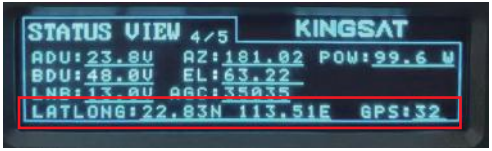
If it is P6E/P6+E with builtin gyro, the normal number of GNSS satellites should be around 30; If P6/P6A is normal and the number of GNSS satellites obtained is less than 10, it indicates that the antenna obstruction is more severe.



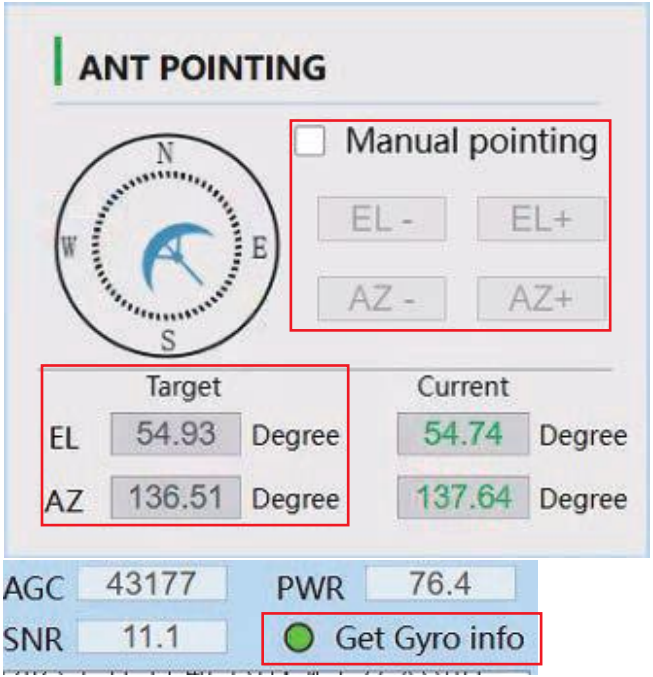


Another way for checking

Check ACU side, press Right button 5 times, you can check GNSS info.



Appendix 2
Sub-page Ant Pointing



ANT POINTING

Gyro info:

Green light indicates Get Gyro info, Gray light indicates Waiting for Gyro info .

1)**Free Gyro Version:** Get gyro info from first tracking, antenna will setup coordinate based on first tracking. This is fake Gyro info.

2)**Builtin Gyro Version:** Antenna get gyro info from dual GPS module directly.This is real Gyro info.

Manual Pointing Function

Enable Manual Pointing, antenna will erase gyro info ,motors of AZ and EL will stop. AZ and EL motors will move by manual, enter EL+ -or AZ+-, each step is 0.5 degree

Target AZ & EL:

Based on your GNSS location and target satellite, antenna will automatically calculate the Target AZ and EL angle. Current AZ and EL is monitored by MEMS sensor.

Appendix 2
Sub-page Rx Tx page

KINGSAT
www.kingsat-tech.com

Lock Mode:

Make sure Lock mode is MOD

AGC_Threshold:

Keep default setting. It will effect antenna sensitivity of tracking. Range is 0-255, the bigger figure will make antenna move faster, and decrease sensitivity of weak signal.

Rx parameters:

All Rx parameters are from MODEM. Antenna will use this parameters for tracking.

Make sure RX_IF LO, POL must be 100% matched with opt. file setting, Rx_BW/Rx_SR must be similar figure (±20%difference) as real symbolRate, this figure will effect Signal Quality figure.

Tx parameters:

All Tx parameters are from MODEM.It will not effect antenna tracking. But you can check and confirm Tx link is well configured or not.

Tx Enable function:

It is swtich to enable or disable Tx link by ACU. We can use this function to verify BUC working or not.

Another way for checking

Check ACU side, press Right button，check RX VIEW and TX VIEW page.

Appendix 2
Sub-page IP info

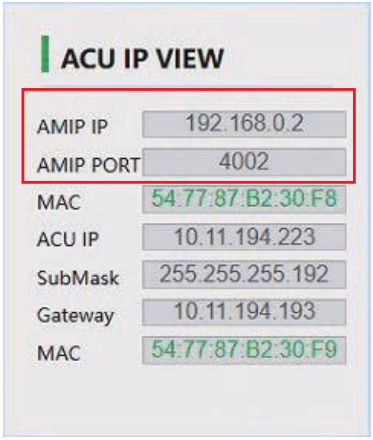
KINGSAT
www.kingsat-tech.com

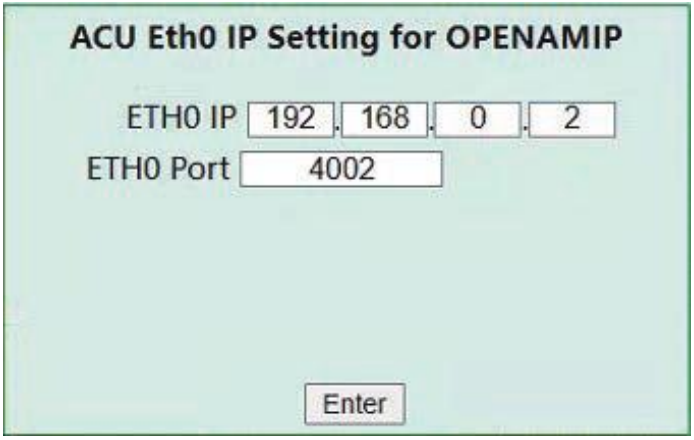
ACU IP VIEW

Make sure OpenAMIP IP and PORT match with opt. file of MODEM.

Correct IP and PORT setting is the first step for ACU to communicate with MODEM.

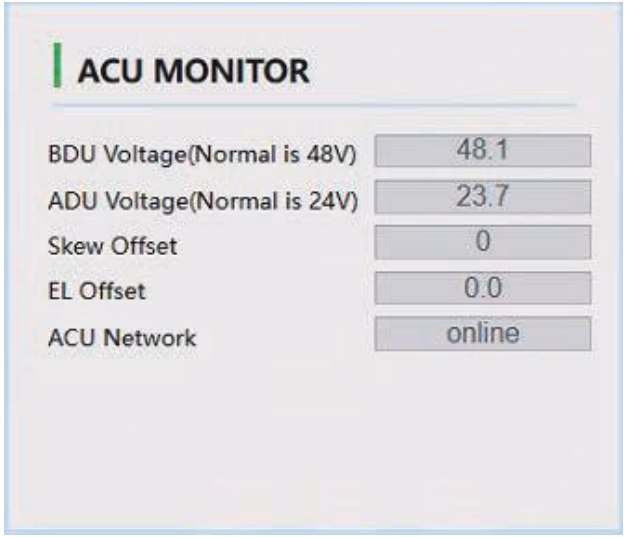
IP setting , go to **SETTING --ACU Eth0 IP Setting for OPENAMIP**.





Check ACU side, press Right button, check IP VIEW page.

Appendix 2
Sub-page Monitor page



ACU MONITOR

BDU Voltage:

This is ACU output vlotage to ADU. Normal is DC 48V.

ADU Voltage:

This is inside antenna power supply. From ACU, it is 48V. There is one DC-DC module inside antenna(48V-->24V). All antenna power supply with 24V from this DC-DC module.

Skew Offset: mostly for CPI setting.

EL Offset:Pitch direction offset angle for debugging

ACU Network: it shows network from MODEM online or not.

Check ACU side, press Right button, check Status VIEW page.

Appendix 2
Sub-page Version page

VERSION

ADU Version:

Above Deck unit, means antenna mainboard firmware version.

BDU Version:

Below Deck unit, means ACU firmware version.

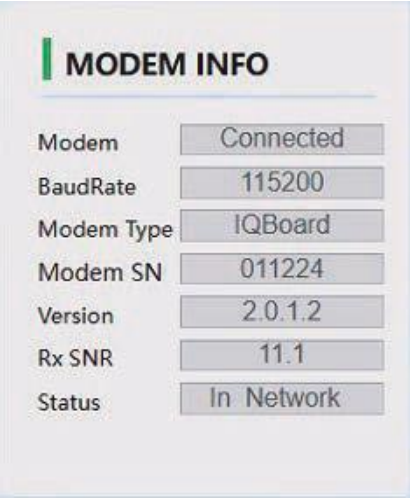
ID:

this is unique ID for each antenna.

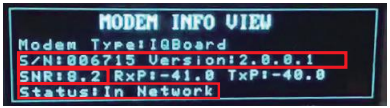
Check ACU side, press Right button, check VERSION page.

Appendix 2
Sub-page MODEM info page

KINGSAT
www.kingsat-tech.com

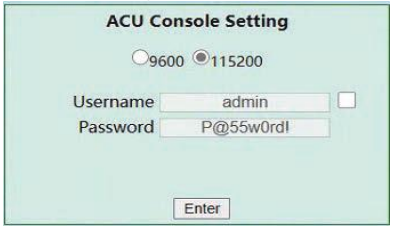


ACU side,press UP button to display all MODEM status information.



MODEM INFO (now only support X5 X7 IQ200)

If ACU console port connect to modem console port correctly.Console BaudRate setting.



Console Port Setting

iDirect IQ200 115200

iDirect X5 X7 9600

After console is connected, ACU can read all modem real-time status directly ,like modem S/N, RX_SNR, Status.

S/N,Modem serial number of the MODEM.

SNR , RX SNR.

SNR < 4 , means weak signal, can not setup stable link

SNR>6, means signal is ok, can setup stable link

SNR>10, means good signal.

Status:the current state of MODEM,

IN_NETWORK works on behalf of MODEM and can access the Internet.

IN_ACQUISITION represents the acquisition network, which is the link-up process, the antenna is aligned, and Rx and Tx are ok.

WAITING_FOR_ACQUISITION the antenna is aligned, Rx is OK, and Tx is ready to start establishing a link.

DETECTED stands for Rx ok.

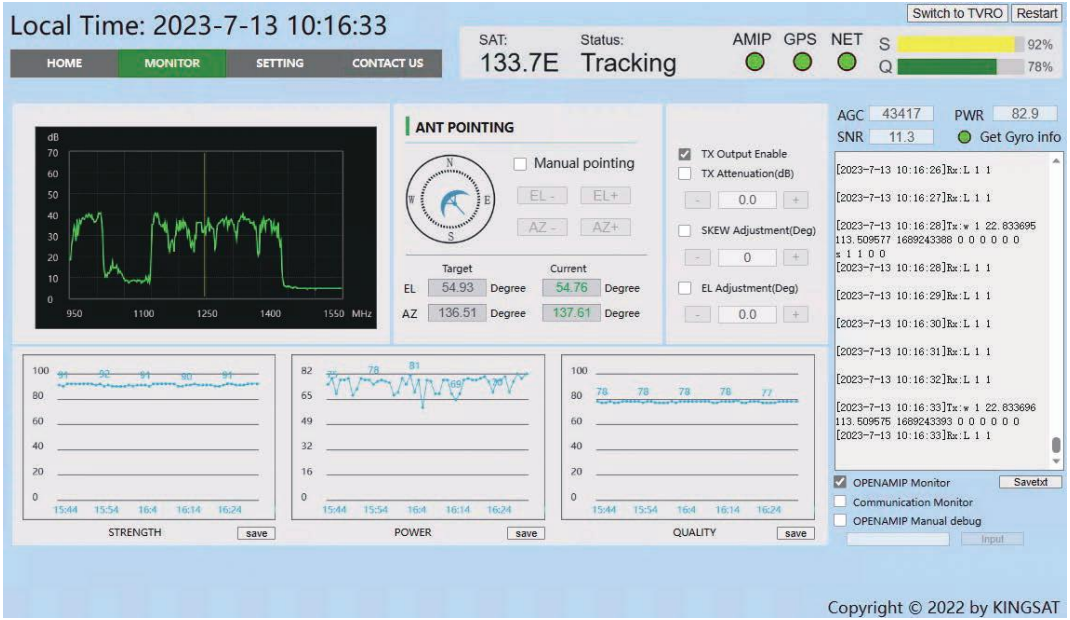
WAITING_FOR_RX_LOCK the antenna Rx has not locked the star successfully, MODEM is waiting for the antenna to be aligned with the satellite.

WRONG_NETWORK on behalf of MODEM does not have authorized access to the primary station. Plz call for NOC with help.

RECOVERY_STACK on behalf of MODEM can not access the Internet. Plz call for NOC with help.

Appendix 2
MONITOR page

KINGSAT
www.kingsat-tech.com



Spectrum scanning image

Real time scanning of RX receiving intermediate frequency signal carrier.

antenna pointing

You can view the current antenna target angle and actual pointing angle.

STRENGTH,POWER , QUALITY

Real time feedback on the current antenna received signal strength, power consumption, and signal quality values.

The spectrum scan image can also be displayed on the ACU display panel.On the main interface,press the "right" button once to enter the "**RX VIEW**" interface,and then press the "down" button again to display it.

Appendix 2
BDU upgrade with Web Interface

KINGSAT
www.kingsat-tech.com

Scan QR code to
watch video guideline

ACU Firmware Upgrade

You can upgrade ACU firmware with web Interface Setting page.

Select the upgrade **.bin file**, then press **Upgrade**, then ACU side will receive the .bin file and start to upgrade. it will take about 20s.

After upgrade, go to **HOME** page to check **BDU version**.

Appendix 2
CPI test with Web Interface

KINGSAT
www.kingsat-tech.com

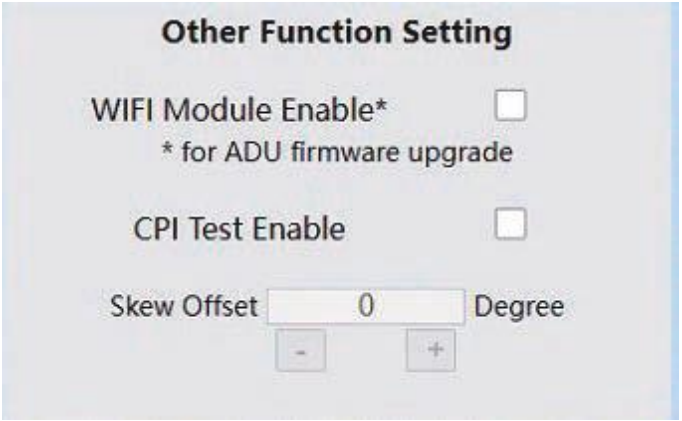
CPI Test

According to NOC requirement, if they need to test CPI so you must **Enbale CPI test**.

You can operate antenna skew offset clockwise or counterclockwise with **Skew Offset** Setting. Set the degree of Skew offset then **Enter** to Save.

NOC will require the antenna polarization clockwise (CW) to rotate the antenna 1°, 2° or counterclockwise (CCW) to rotate skew offset 1°, 2° to read the CPI value ,at same time you can modify Skew offset to 1,2 or -1,-2.

In the end, NOC will provide the value of CPI to determine whether the antenna meets the standard while you need to save the matched skew offset setting.

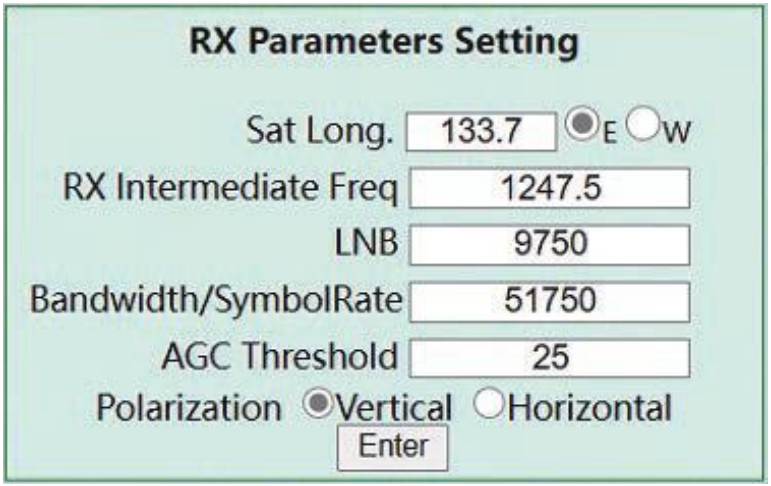


Appendix 2
Web Interface Setting page--Rx setting

KINGSAT
www.kingsat-tech.com

Rx parameters Setting

Modify Rx parameters by manual at this page. This Rx parameters are the one which antenna using for tracking.



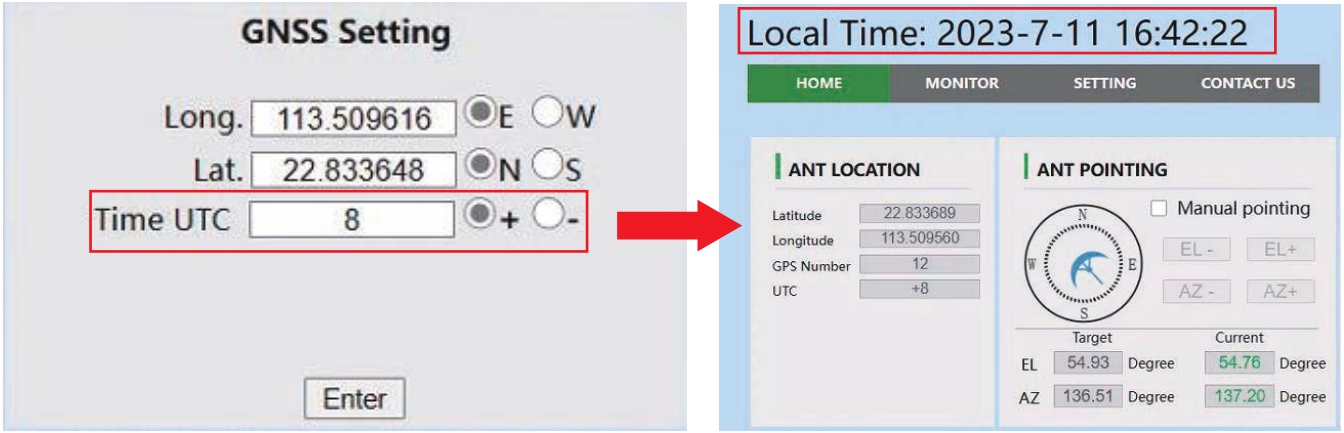
Appendix 2
Web Interface Setting page--GNSS setting

KINGSAT
www.kingsat-tech.com

GNSS Setting

Firstly set the correct **Time zone**, then local time will be updated.

If GNSS module get damaged or output wrong Longitude and Latitude, modify it by manual then press **Enter** to SAVE.



Appendix 2
EL Adjustment with Web Interface

KINGSAT
www.kingsat-tech.com

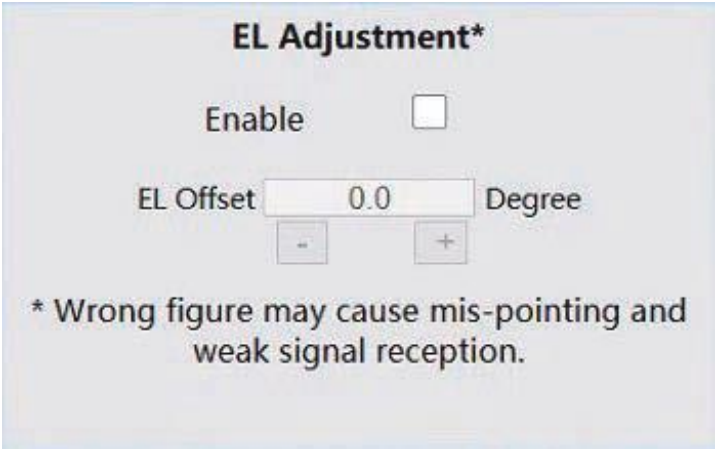
EL Adjustment

Elevation sensor adjustment

If needed, make elevation adjustment with **EL Offset**.

This setting must be followed by KINGSAT technical team instruciton.

Default is disable .

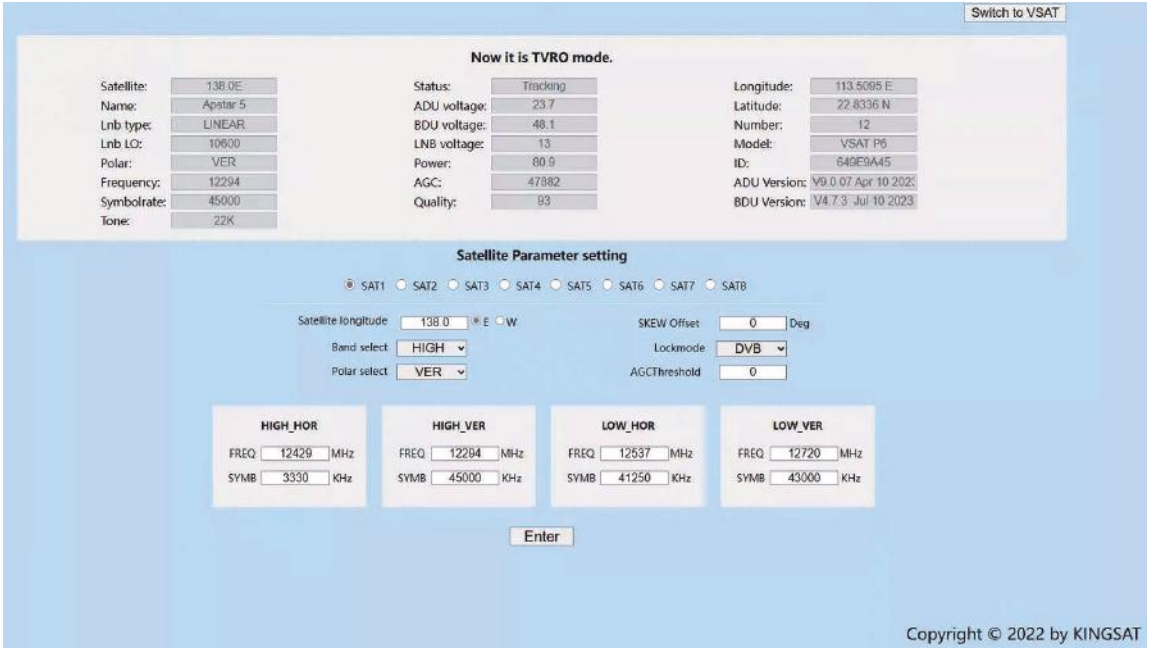


Appendix 2
TVRO mode with Web Interface

KINGSAT
www.kingsat-tech.com

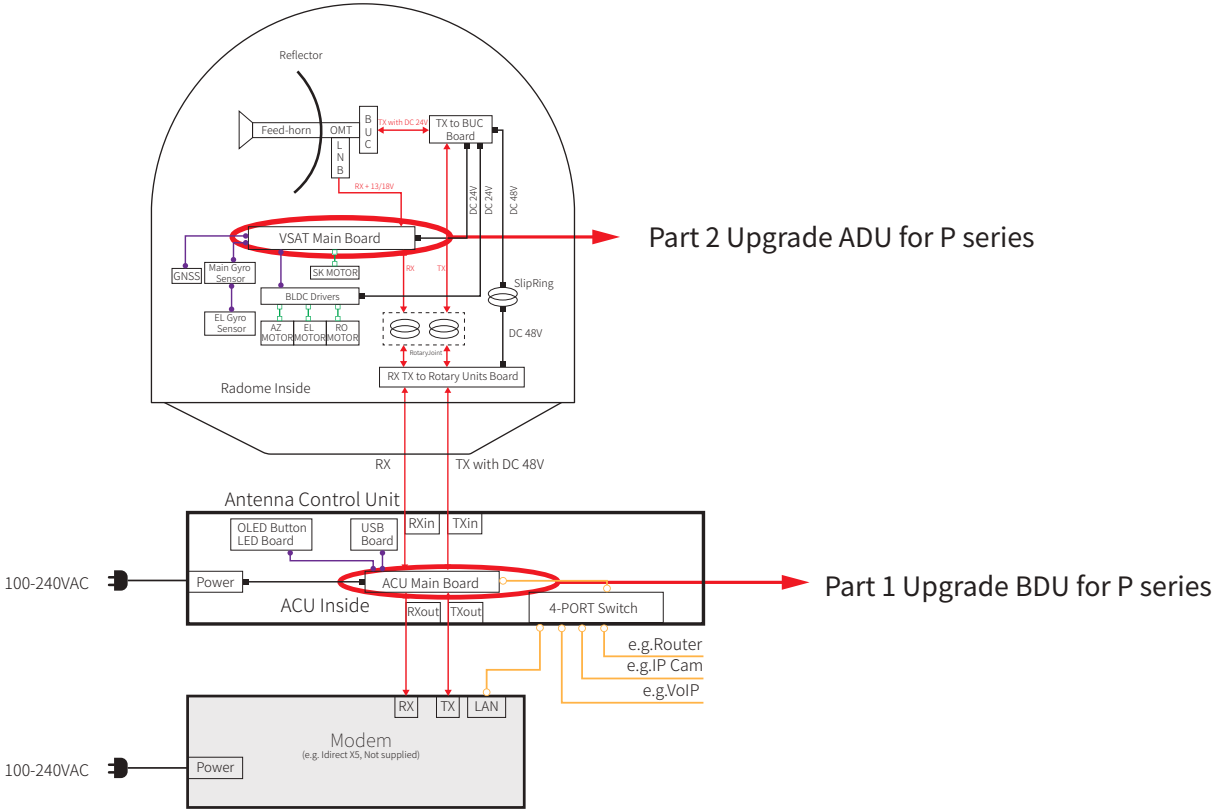
If antenna is in TVRO mode, web interface only show antenna status as below.

In TVRO mode with web interface , you can not modify any setting, only can view.If you want to change sat parameters, you need to operate with ACU panel button. Press Switch to VSAT button, antenna will come back VSAT mode.



Appendix 3
Upgrade

KINGSAT
www.kingsat-tech.com



Appendix 3
Upgrade

KINGSAT
www.kingsat-tech.com

Scan QR code to
watch video guideline

Upgrade Method 1

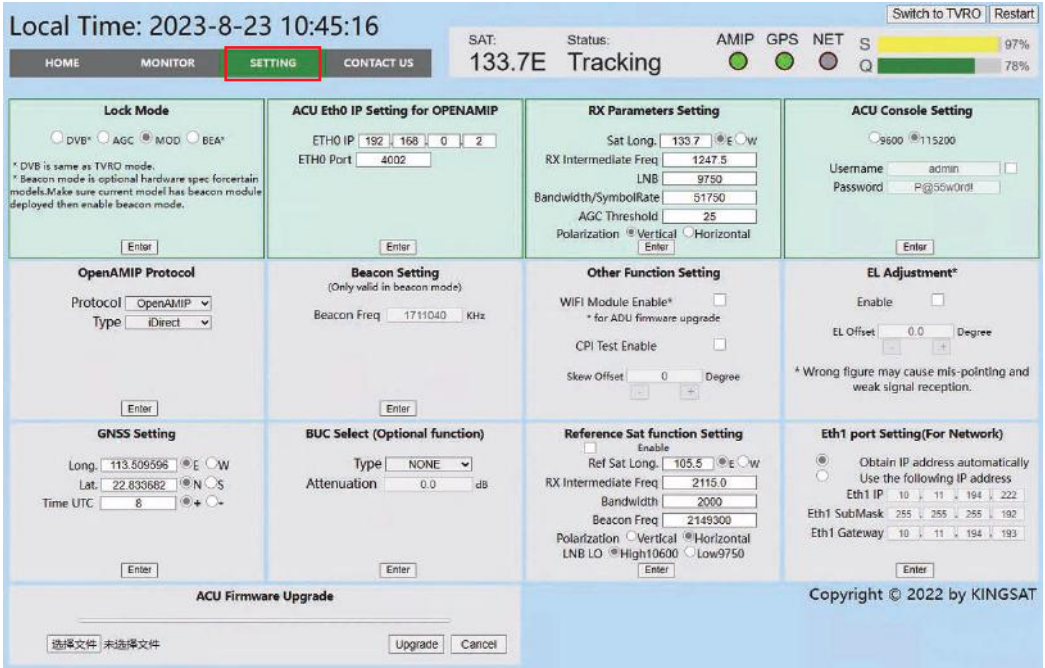
Normally latest version of ACU firmware is needed, plz follow below steps to upgrade it.
Step 1. Get the up-to-date firmware from KINGSAT or official distributor.
Step 2. Copy the firmware to USB flash disk and ensure it is at root directory;
Step 3. Power off ACU and insert USB to the port on ACU front panel;
Step 4. Press ”BACK” then press “Power”, don’ t release buttons until the display is lightened.
Step 5. Press “OK” and wait for upgrade(see below display);
Step 6. Done. System restart.

Appendix 3
Part 1 Upgrade BDU for P series

KINGSAT
www.kingsat-tech.com

Upgrade Method 2

1. Obtain the latest firmware version of ACU from the original factory or agent and copy and save it locally on the laptop;
2. Log in to the Webpage for your laptop and select the ACU firmware to upgrade from the ACU Firmware Upgrade section under the SETTING page. After the upgrade is completed, confirm whether it is the upgraded version.



Appendix 3
Part 2 Upgrade ADU for P series

KINGSAT
www.kingsat-tech.com

Upgrade Method 1

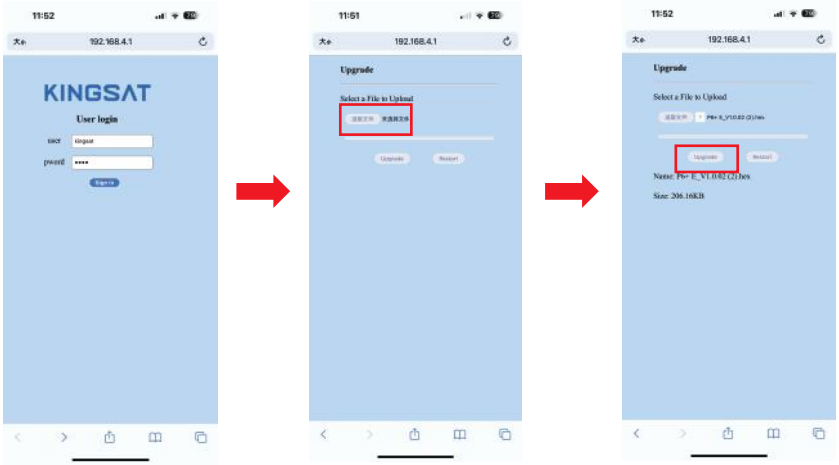
1.Obtain the latest firmware version of the antenna motherboard from the device manufacturer or agent (note: the firmware format is. hex);
2.Save the latest firmware locally on the phone;
3.Turn on the ACU, place the phone close to the ACU and turn on the wifi function. Connect the wifi with the SSID being "KST_ACU ID number";
4.Enter the website address "192.168.5.1" in the mobile browser and enter the KINGSAT login interface. Enter the username Kingsat and password 1234 to log in;
5.On the UPGRADE interface, the current antenna firmware version will be displayed. Click to select a file to save the antenna firmware locally on the phone, and then click Upgrade. Wait for the antenna firmware to upload successfully, and ACU will automatically upgrade the antenna mainboard. After the upgrade is completed, confirm whether it is the upgraded version.

Appendix 3
Part 2 Upgrade ADU for P series

KINGSAT
www.kingsat-tech.com

Upgrade Method 2

1.Obtain the latest firmware version of the antenna motherboard from the device manufacturer or agent (note: the firmware format is. hex);
2.Save the latest firmware locally on the phone;
3.Turn on the antenna controller ACU and select Setup mode-6 Set Others Wi Fi On, that is, turn on the antenna motherboard Wi Fi upgrade module switch;
4.Close the phone to the antenna end of the outdoor unit, turn on the wifi function, and connect to the wifi with SSID "KST19216841";
5.Enter the website address "192.168.4.1" in the mobile browser and enter the KINGSAT login interface. Enter the username Kingsat and password 1234 to log in;
6.Click to select the file and save the antenna firmware locally on the phone, then click Upgrade and wait for the antenna firmware to be successfully upgraded. After the upgrade is completed, confirm whether it is the upgraded version.



Appendix 3
Part 2 Upgrade ADU for P series

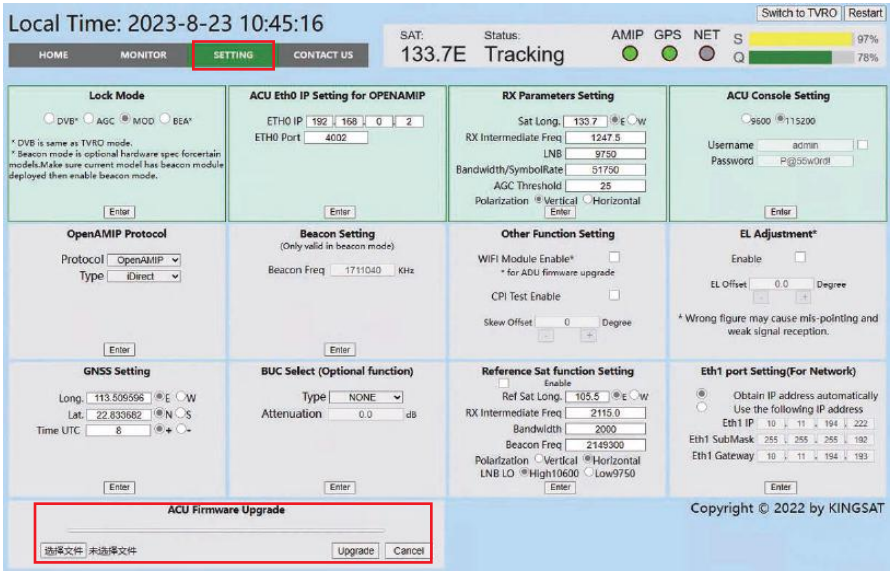
KINGSAT
www.kingsat-tech.com

Upgrade Method 3

1.Obtain the latest firmware version of the antenna motherboard from the original factory or agent and copy it locally on the computer (note: the firmware format is. bin);

2.If the firmware format of the antenna motherboard is. hex, you need to contact the original engineer of KINGSAT to convert the antenna firmware format to. bin;

3.Log in to the Webpage for your laptop and select the antenna motherboard firmware that needs to be upgraded from the ACU Firmware Upgrade under the SETTING page. After the upgrade is completed, confirm whether it is the upgraded version.



Appendix 4
Troubleshooting Guide---Error Code

KINGSAT
www.kingsat-tech.com

Error Code and Solutions

E01. The initialization of antenna mainboard failed, please check connections of Tx and Rx cables and N-F connectors also check the antenna mainboard.

E02. The detection of antenna power failed, please check connections of Tx and Rx cables and N-F connectors.

E03. The detection of Skew motor failed, please check antenna mainboard, SK connector and Skew motor.

E04. The detection of antenna tuner failed, please check tuner on mainboard, cable connection from LNB to Tuner.

E05. The detection of LNB failed, please check LNB and cable connection from LNB to Tuner.

E06. The detection of Gyro sensors failed, please check Gyro sensor and cable connection of sensors.

E07. The detection of EL motor failed, please check the limited sensor, Elevation motor and belt of the EL motor.

E08. The detection of AZ motor failed, please check the limited sensor, Azimuth motor and belt of the AZ motor.

E09. Antenna is interfered and an error is reported. Please check and eliminate surrounding interference sources and restart the ACU.

E11. The detection of beacon circuit failed, please check the beacon circuit on antenna mainboard.

E12. The detection of Cross Level motor failed, please check the limit sensor, Cross Level motor and belt of the Cross Level motor.

E13. The LNB chip on the mainboard has malfunctioned. Please check the LNB circuit and related circuits on the mainboard

E90. The firmware of antenna mainboard may be damaged . Please contact the manufacturer to recovery the firmware.

The parts involved in the above error codes are shown in the figure below.

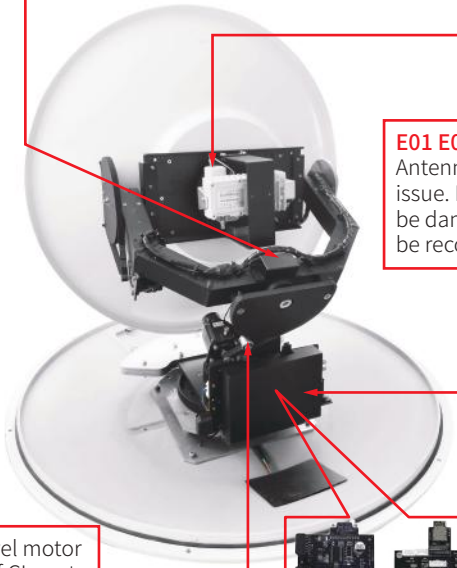
Appendix 4
Troubleshooting Guide---Error Code

KINGSAT
www.kingsat-tech.com

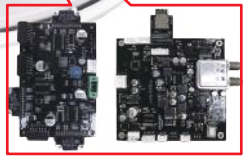
E06 E09 Gyro sensor issue. Check if the connection of sensor is loose. If not, replace the gyro sensor.

E05 Check if the RF cable between LNB and mainboard is loose or broken.If not, replace the LNB.

E07 Elevation motor issue. Check if EL motor is stuck or belt of EL motor is broken.



E01 E02 E11 E04 Antenna mainboard issue. Mainboard may be damaged, should be recovery or replaced.



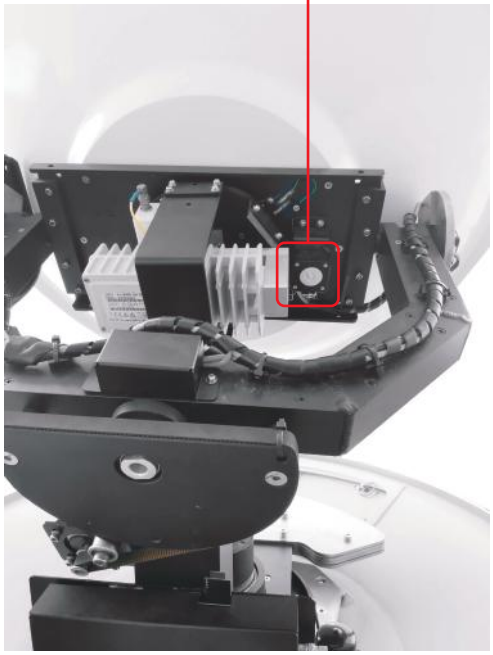
E12 Cross Level motor issue. Check if CL motor is stuck or belt of CL motor is broken.

Appendix 4
Troubleshooting Guide---Error Code

KINGSAT
www.kingsat-tech.com

E08 Azimuth motor issue.
Check if AZ motor is stuck
or belt of AZ motor is broken.

E03 Skew motor issue.
Check if SK motor is stuck, or belt of SK motor is broken or the connector of polarization switch is loose.



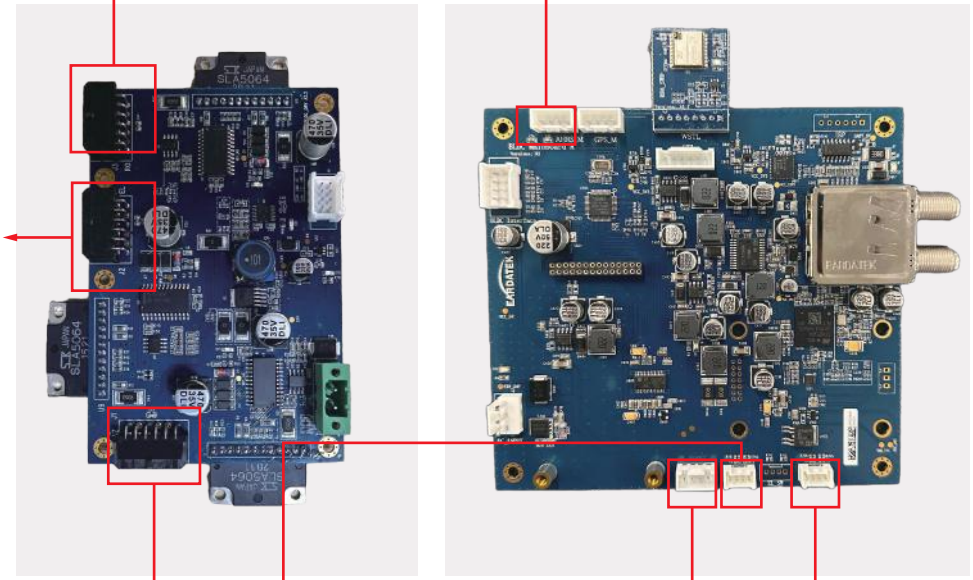
Appendix 4
Troubleshooting Guide---Error Code

KINGSAT
www.kingsat-tech.com

E12
Check if cable of cross level motor and connector is loose.

E06
Check if the connector of gyro sensor is loose.

E07
Check if cable of elevation motor and limit sensor connectors are loose.



E08
Check if cable of azimuth motor and limit sensor connectors are loose.

E03
Check if cable of skew motor and limit sensor connectors are loose.

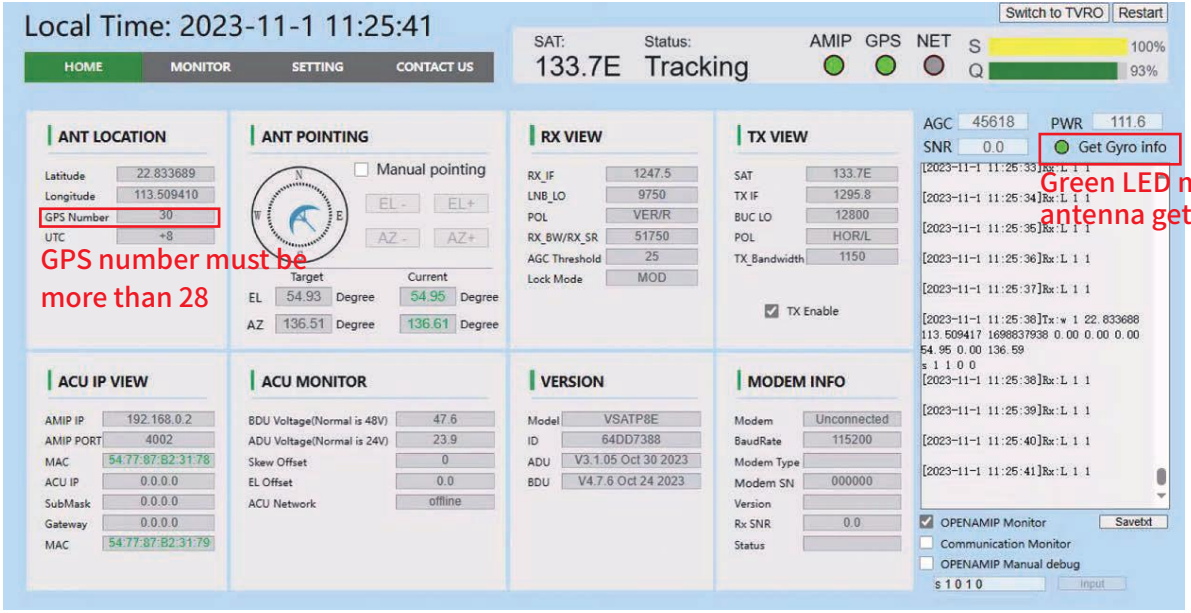
Appendix 4
Troubleshooting Guide---3 Checks for troubleshooting

KINGSAT
www.kingsat-tech.com

CHECK 1. Check Gyro info

Check antenna work correctly or not .

Firstly check Gyro info , if GPS satellites more than 28 , it will get gyro info correctly. Antenna will have coordinate from this gyro info.



Appendix 4
Troubleshooting Guide---3 Checks for troubleshooting

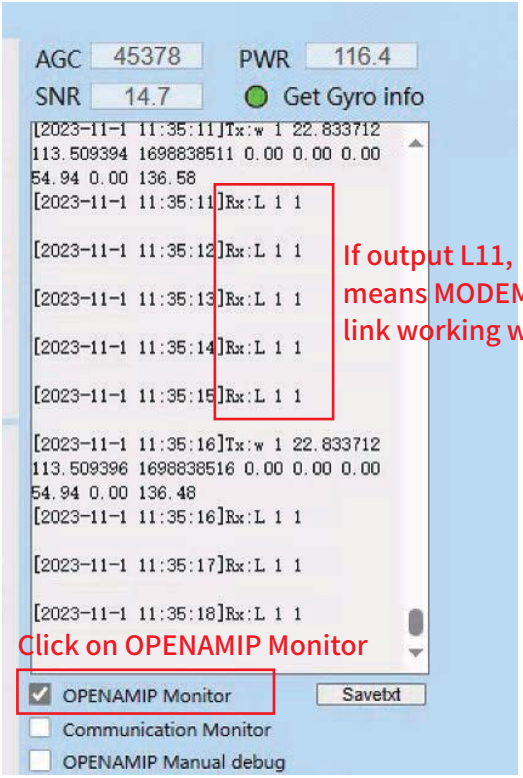
KINGSAT
www.kingsat-tech.com

CHECK 2. Check Openamip command
Click on OPENAMIP monitor windows, check if it is outputting L11 command in this windows.

you need to understand L command which indicates modem real-time status ,

L command for Openamip protocol	
L00	RX not lock, TX not ready
L10	RX lock, TX not ready
L11	RX lock, TX tansmit

When everything is running correctly, There are many L11 output in monitor windows.



Appendix 4

KINGSAT
www.kingsat-tech.com

Troubleshooting Guide---3 Checks for troubleshooting

CHECK 3. Check SNR & Total Power

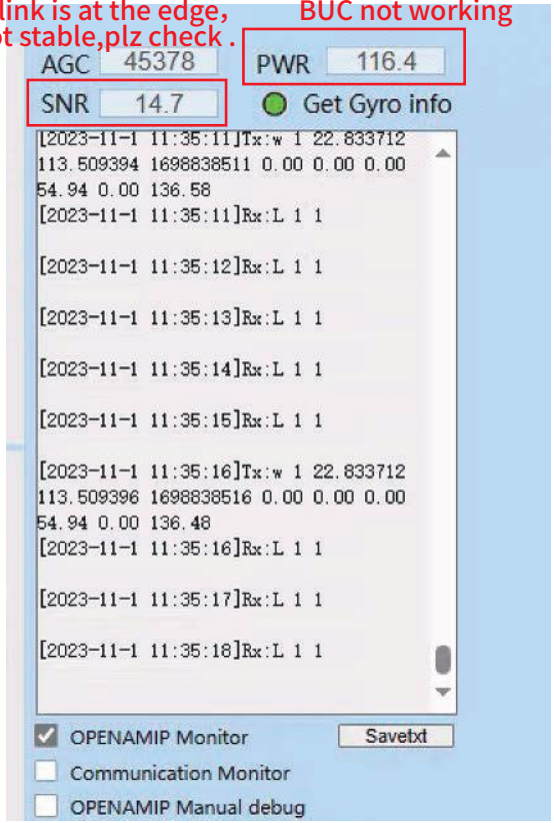
Check SNR and total power.SNR is from modem,
so you have to connect console port , input correct MODEM password,then ACU can read MODEM SNR status.

SNR indicator	
SNR<4	Link can not be setup
SNR>6	Link can be setup
SNR>10	good quality signal

For total power ,
When Rx work , Tx not work, PWR about 40Watt
When RX work, TX work , BUC workig correctly ,
P6 series PWR >60Watt
P8 series PWR >80watt

If SNR>6, link can be setup,
If SNR<6, link is at the edge,
maybe not stable,plz check .

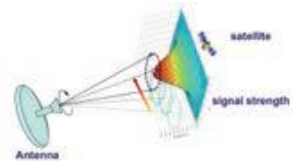
Total PWR <50 watt, Means BUC not working



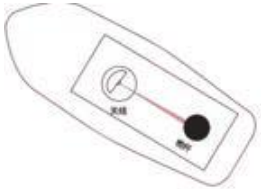
Appendix 4
Troubleshooting Guide---Failure Cause

KINGSAT
www.kingsat-tech.com

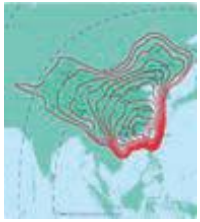
If the SATCOM link broken, it may come from below reasons **(Factors effect link stability)**



A.Hardware issue. The antenna may miss pointing or have tracking error, it may come from wrong configuration of antenna or software issue or some related hardware defective problem (like LNB,BUC,motor, belt, switch ,cable etc.)



B.Installation issue. If the installation site is not optimal, the antenna may be obstructed by the mast, deck house, funnel, boom on dock, tall building or mountain, etc, all this blockage will more or less result in poor reception. TX is more sensitive than RX for blockage.



C.Satellite coverage issue. The antenna cannot work out of the satellite beam range.

D.Hub station service issue. If service under the beam is not available，plz double confirm with NOC.

Appendix 4
Troubleshooting Guide---Failure Cause

If the SATCOM link broken, it may come from below reasons (Factors effect link stability)

E.Interference issue. If not installed with safe distance from RF source like radar ,VHF Tx antenna, GPS , AIS ,etc., VSAT antenna will get bad reception effected by RF interference.

G.Low elevation issue. Because GEO satellites are all over the equator ,when VSAT terminal is in high latitude area, the elevation angle of VSAT pointing is low (maybe less than 20°). In this case, antenna will easily miss pointing with high wave so link may be broken by this reason. In high latitude area, GEO satellite VSAT may not work smoothly.

F.Weather issue. The rain attenuation, caused by rain or thick clouds at the location of the antenna and the hub station, affects the stability of the satellite link.

Appendix 4
Troubleshooting Guide---Web Interface

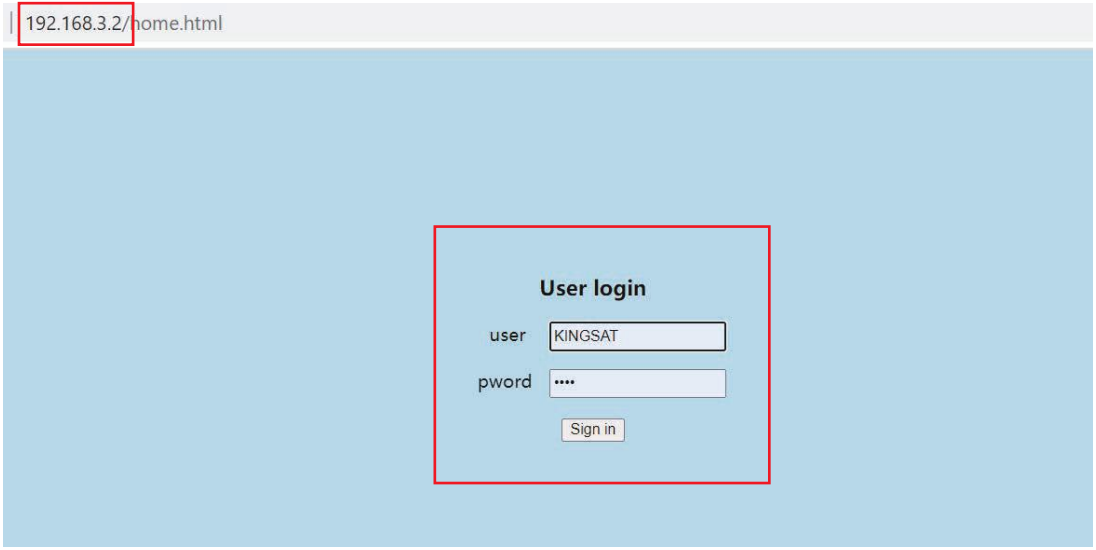
KINGSAT
www.kingsat-tech.com

If Antenna keep seaching for long time, can not track satellite, So plz login Web Interface to make troubleshooting.

Appendix 4
Troubleshooting Guide---Web Interface

KINGSAT
www.kingsat-tech.com

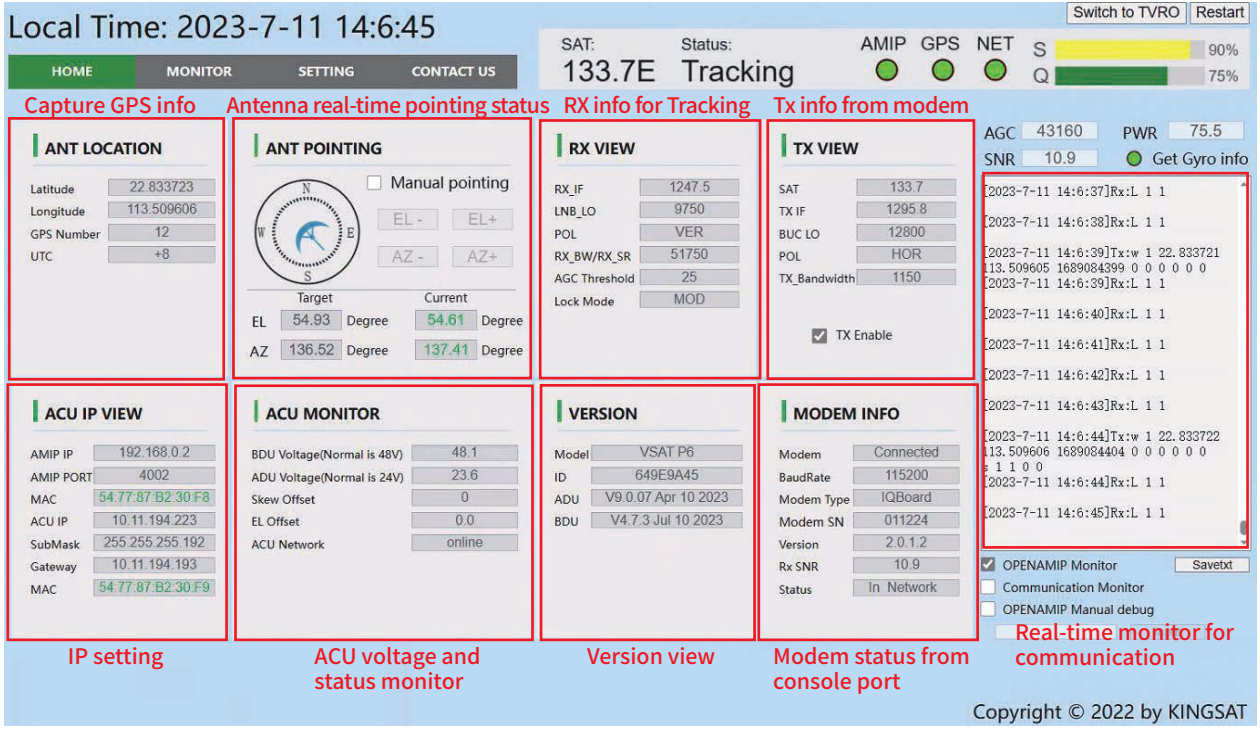
Connect laptop to ACU ethernet port. **Make Sure laptop IP and ACU IP in same segment** , then go to Browser, input ACU IP.
USER: KINGSAT, Password:1234



Appendix 4
Troubleshooting Guide---Web Interface

KINGSAT
www.kingsat-tech.com

Sub-pages info indicate different parameters.



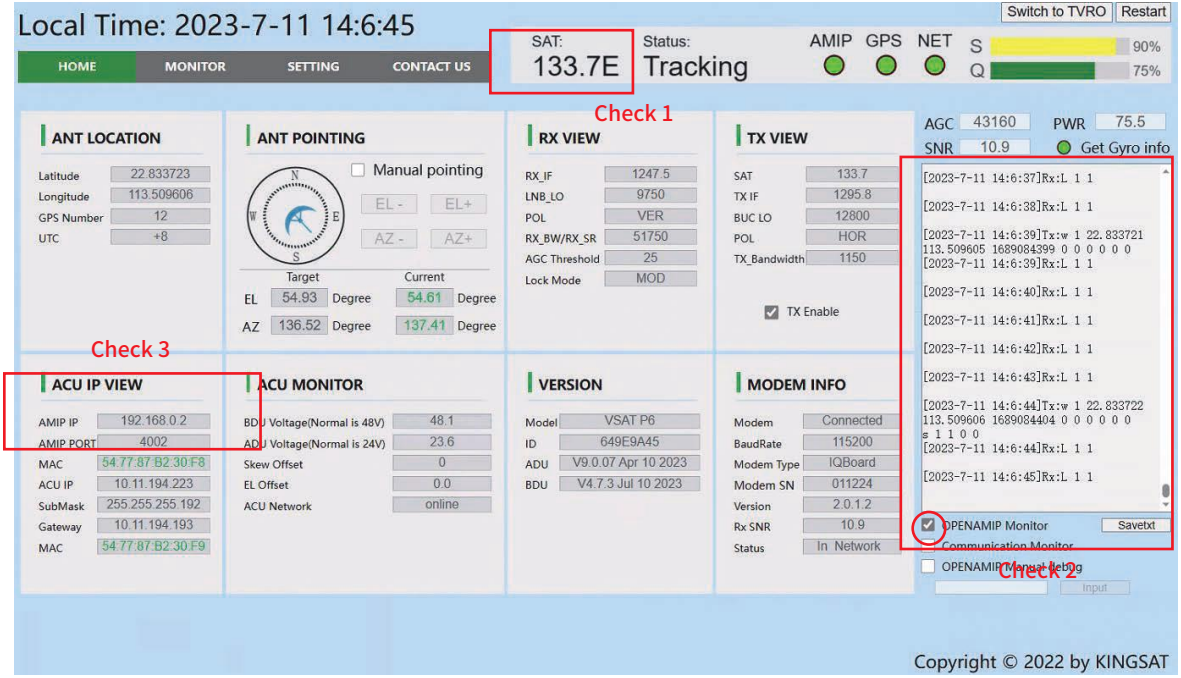
Appendix 4
Troubleshooting Guide---Web Interface

KINGSAT
www.kingsat-tech.com

Check 1 Target satellite is right or not.

Check 2 Click to enable OPENAMIP Monitor, check if any command output in this window .

Check 3 If not, check ACU OPENAMIP IP and PORT is setting correctly or not.

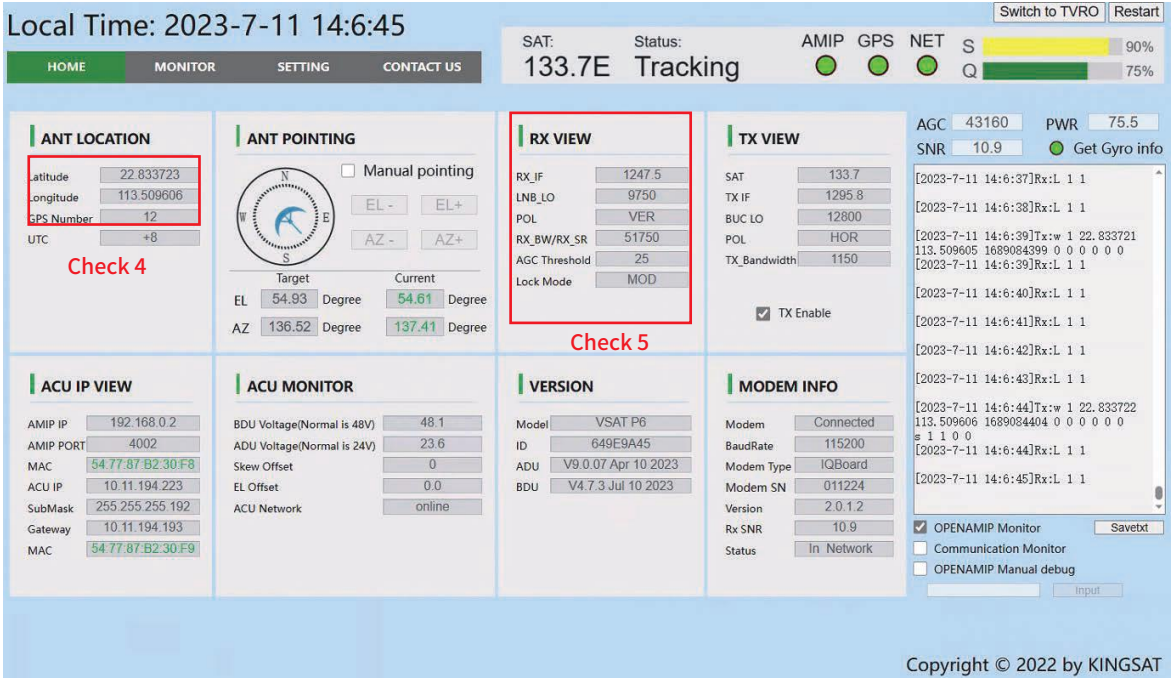


Appendix 4
Troubleshooting Guide---Web Interface

KINGSAT
www.kingsat-tech.com

Check 4 Check GPS info is correct or not.

Check 5 Confirm Lock mode is MOD. Then check RX parameter is matched with modem setting or not. Antenna is using this parameters for tracking, **so here is very important!!!RX_IF, LNB L.O, POL, RX_BW/RX_SR this 4 parameters are all from MODEM.**

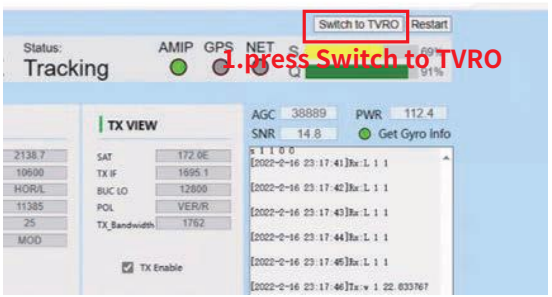


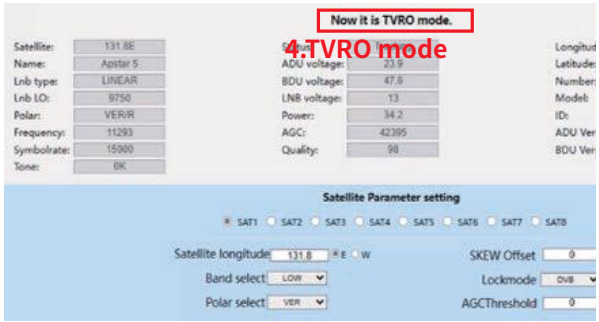
Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware.

Login ACU web interface. Press “Switch to TVRO” button , login TVRO mode.



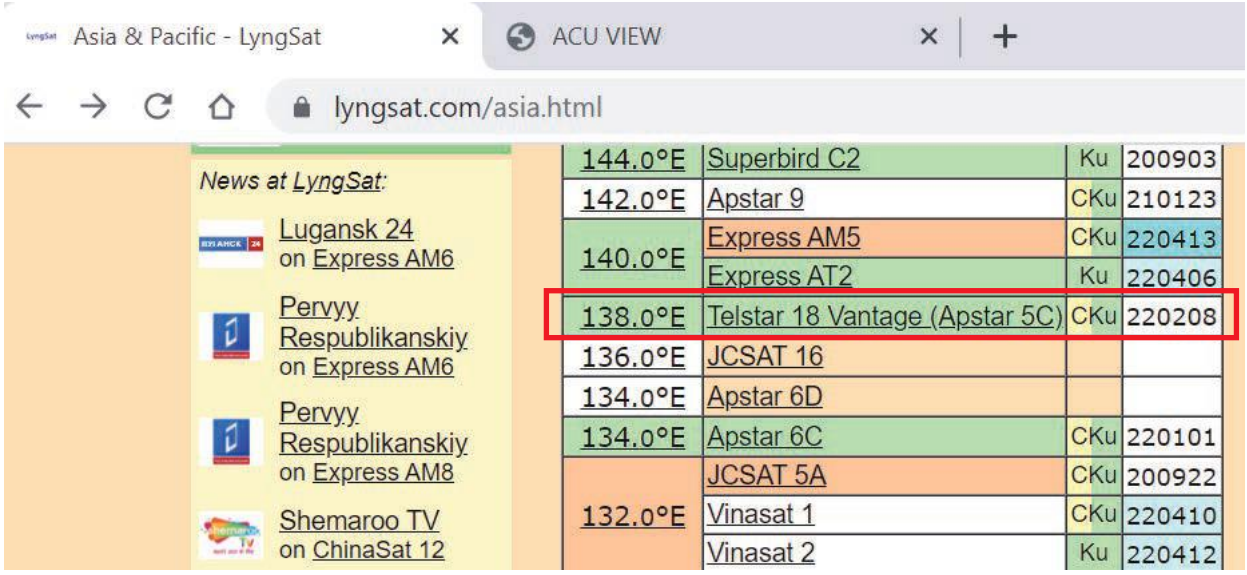


Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware

Go to website www.lyngsat.com
Select one of the popular TV satellite to test at your local area.

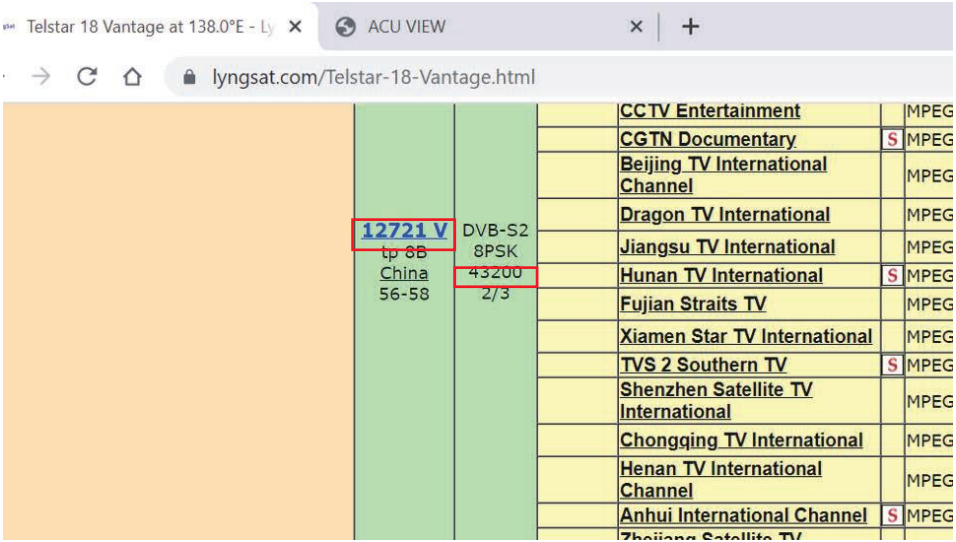


Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware

Choose one TV signal for testing. Plz record the key figure. **Freq , Pol, SymbolRate**, this 3 parameters. e.g. 12721 V 43200



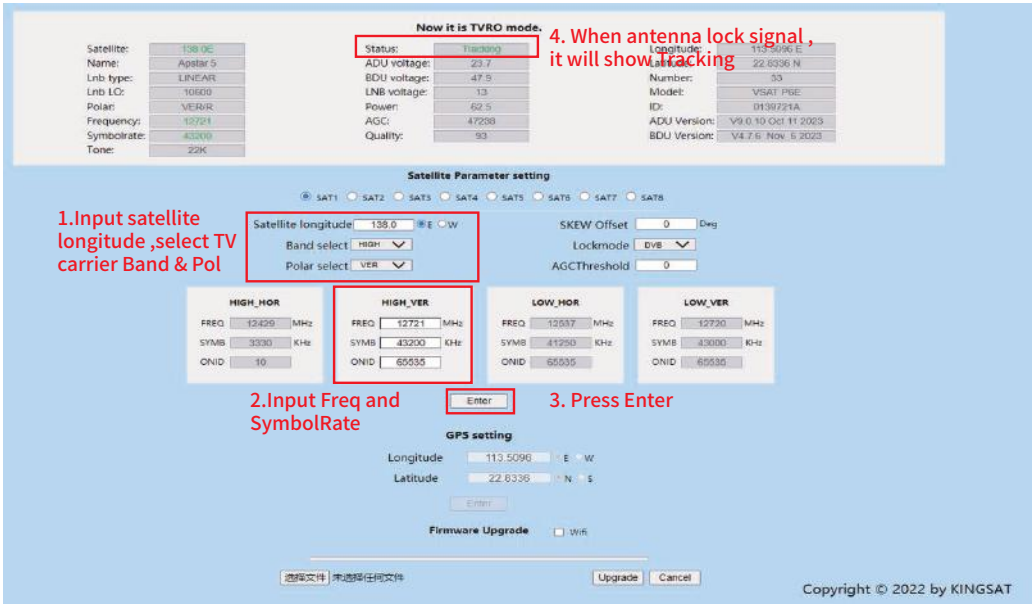
Now this Freq is 12721>11700,
so we need to select **LO 10600**
(Plz note that Freq> 11700, LO is 10600,
Freq <11700 , LO is 9750),
Then now you can make calculation as below
RX_IF 12721-10600=2121
for this DVB carrier info , plz note it
RX_IF 2121
LO 10600
POL V
SymbolRate 43200

Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware

Setup TVRO parameters.



If show Tracking ,means Antenna hardware is ok without any problem.
Use this DVB mode to fast verify hardward.

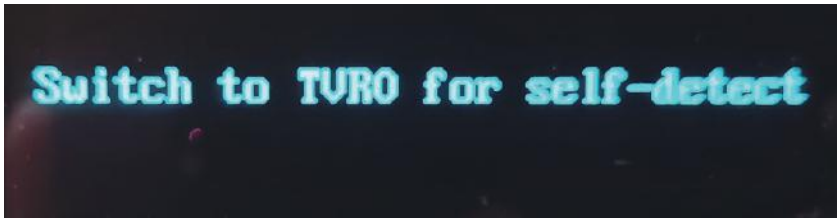
Appendix 4
Troubleshooting Guide---TVRO Mode

Scan QR code to watch video guideline

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware---operation only with ACU ,not Web Interface

Go to ACU side , Press **BACK** button and hold it on **more than 5s**, then VSAT antenna will switch to TVRO mode.

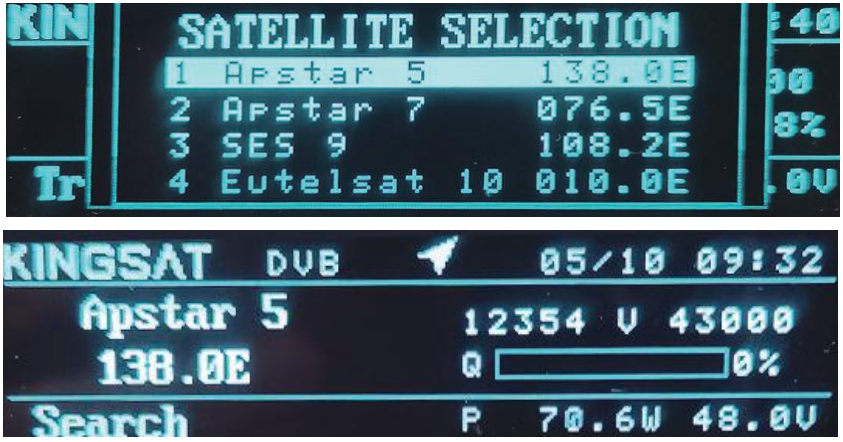


Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware---operation only with ACU ,not Web Interface

Press UP, select your local satellite which is available for signal.We already builtin satellite database inside ACU. you can select or modify it.



Appendix 4
Troubleshooting Guide---TVRO Mode

KINGSAT
www.kingsat-tech.com

TVRO mode for verify hardware---operation only with ACU ,not Web Interface

Wait for Tracking.

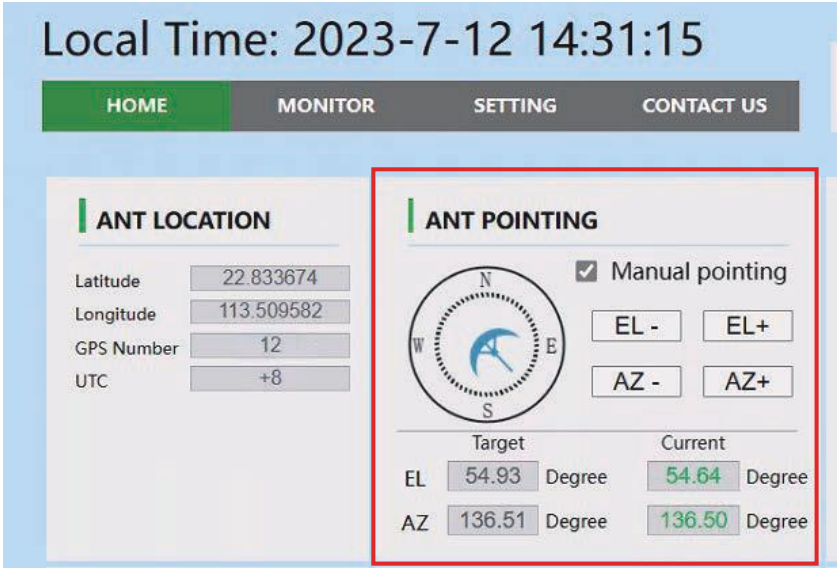
Once Antenna shows Tracking, means antenna hardward is verified without any problem.

Appendix 4
Troubleshooting Guide---Manual Mode

Manual Test with Web Interface

Go to Web Interface of ACU, enable Manual Pointing.

Antenna will move by each click with EL+ EL- , AZ+ AZ-. each click step is 0.5°.

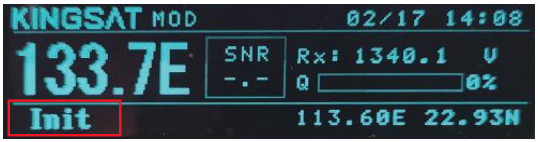


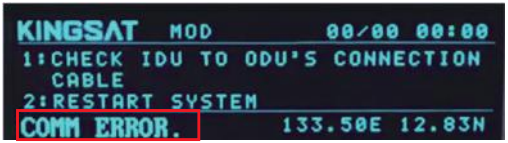
Appendix 4
Troubleshooting Guide---FQ&A

KINGSAT
www.kingsat-tech.com

FQ&A

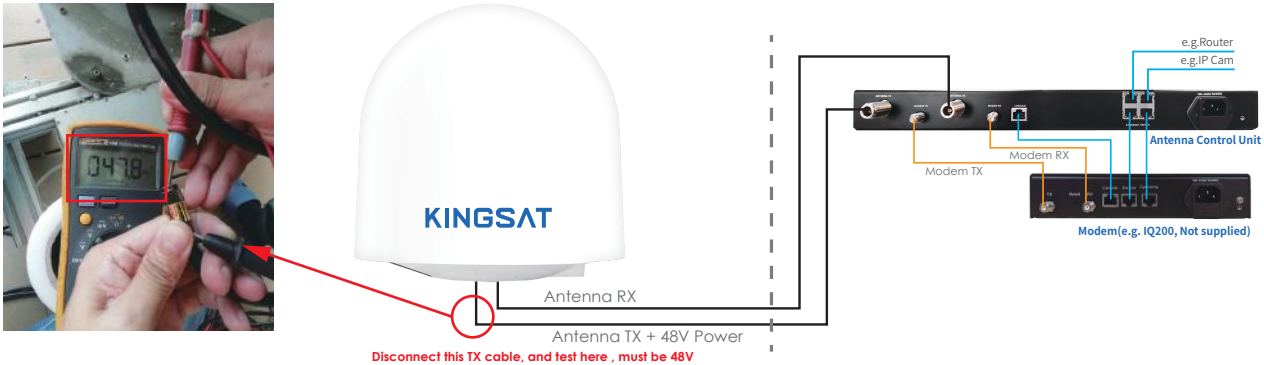
The status keeps showing Init or COMM ERROR, what should I do?





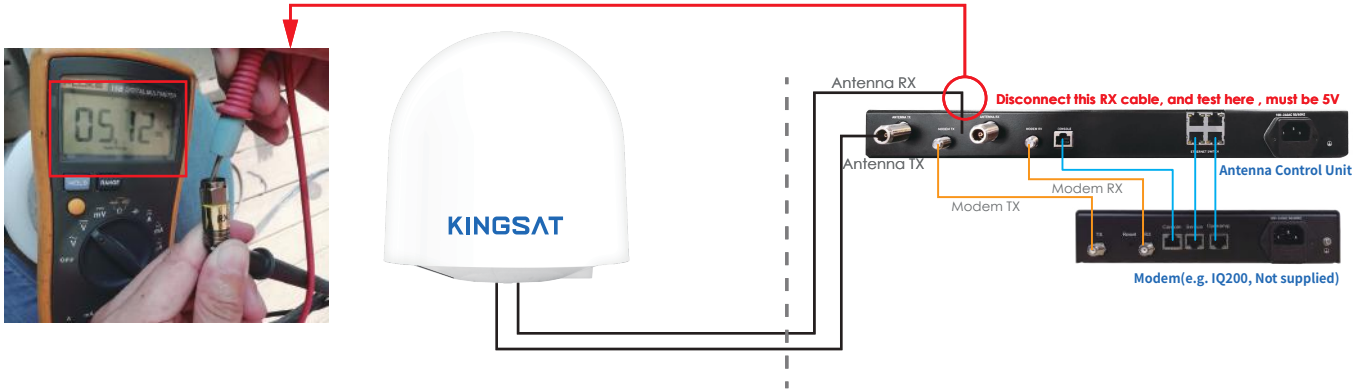
Now problem is from connection between ACU and antenna.

1. Check all cable connectors at ACU side and antenna side.
2. If connector is ok , we can test below TX cable voltage, it must be 48V.



Appendix 4
Troubleshooting Guide---FQ&A

3.Disconnect below RX cable, test voltage, here is Rx cable with control signal, must be 5V.



4. If the voltages of Tx and Rx coaxial cable are normal, but the status still shows Init or COMM ERROR, check the ACU mainboard or the antenna mainboard. Mainboard issues need to contact the manufacturer with help.

Appendix 4
Troubleshooting Guide---FQ&A

KINGSAT
www.kingsat-tech.com

FQ&A

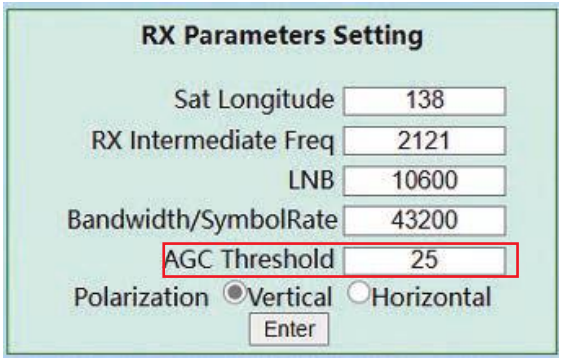
The status shows Loss, what should we do?

This status indicates a loss of signal.

1.Check if any obstacles at antenna pointing range.

2. If without blockage ,check that ACU side setting AGC_T (AGC threshold) setting.

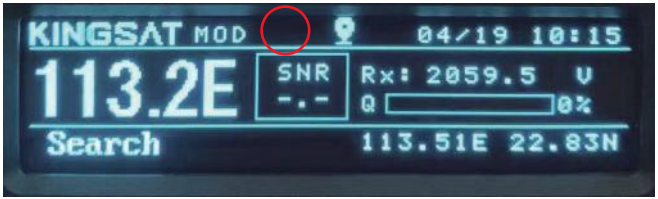
we can login Web Interface of ACU, go to SETTING page, modify RX Parameters Setting---AGC Threshold,then press Enter to save , this figure is from 0-255, the bigger figure will decrease antenna sensitivity. So make it smaller if signal is weak.



Appendix 4
Troubleshooting Guide---FQ&A

KINGSAT
www.kingsat-tech.com

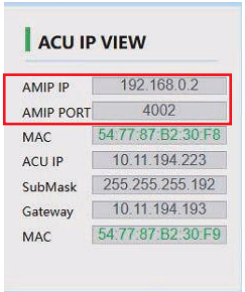
FQ&A
If ACU did not show OPENAMIP icon, what should we do?

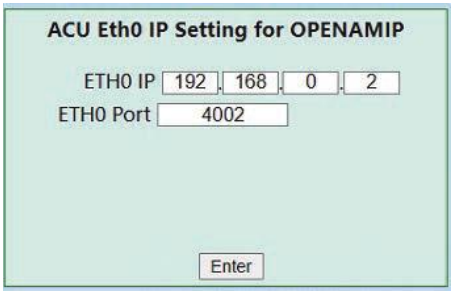


Now ACU can NOT communicate with MODEM correctly .

1)Check ACU connect to Modem or not.

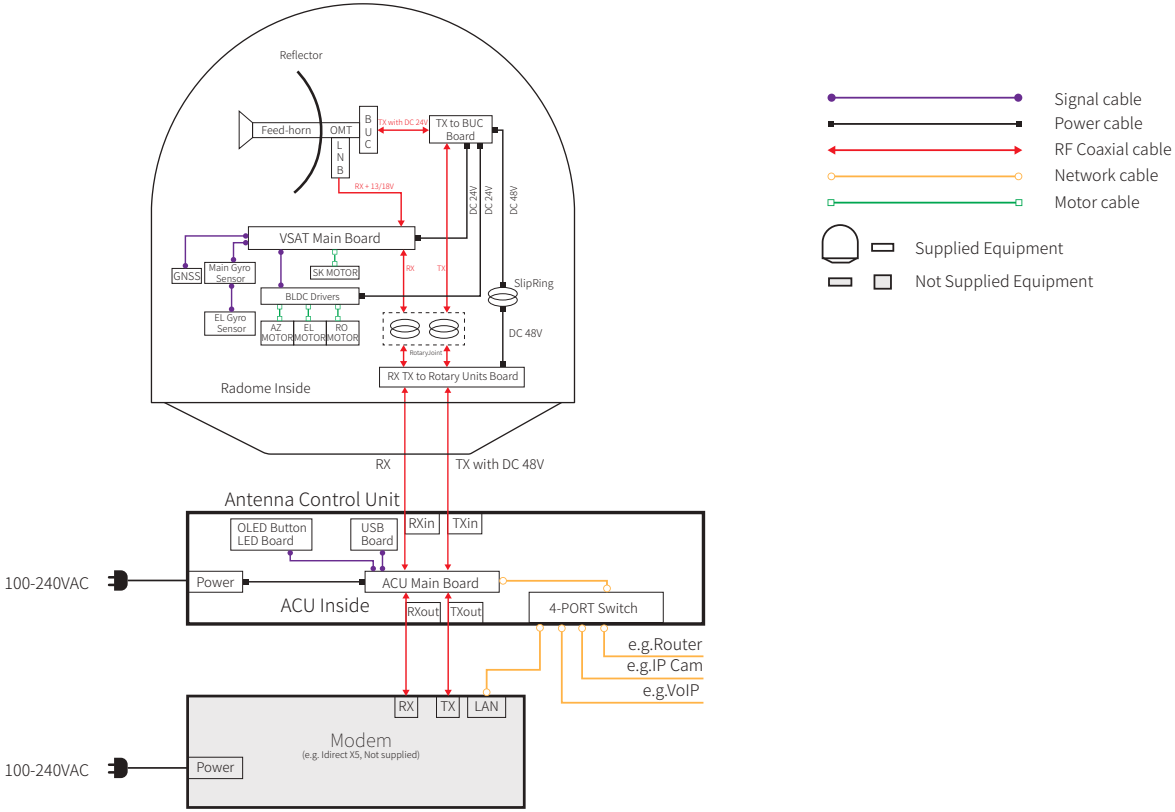
2)Check ACU IP and PORT setting. Go to SETTING Page，also check MODEM configuration file (opt. file),check carefully ACU IP and Modem IP.





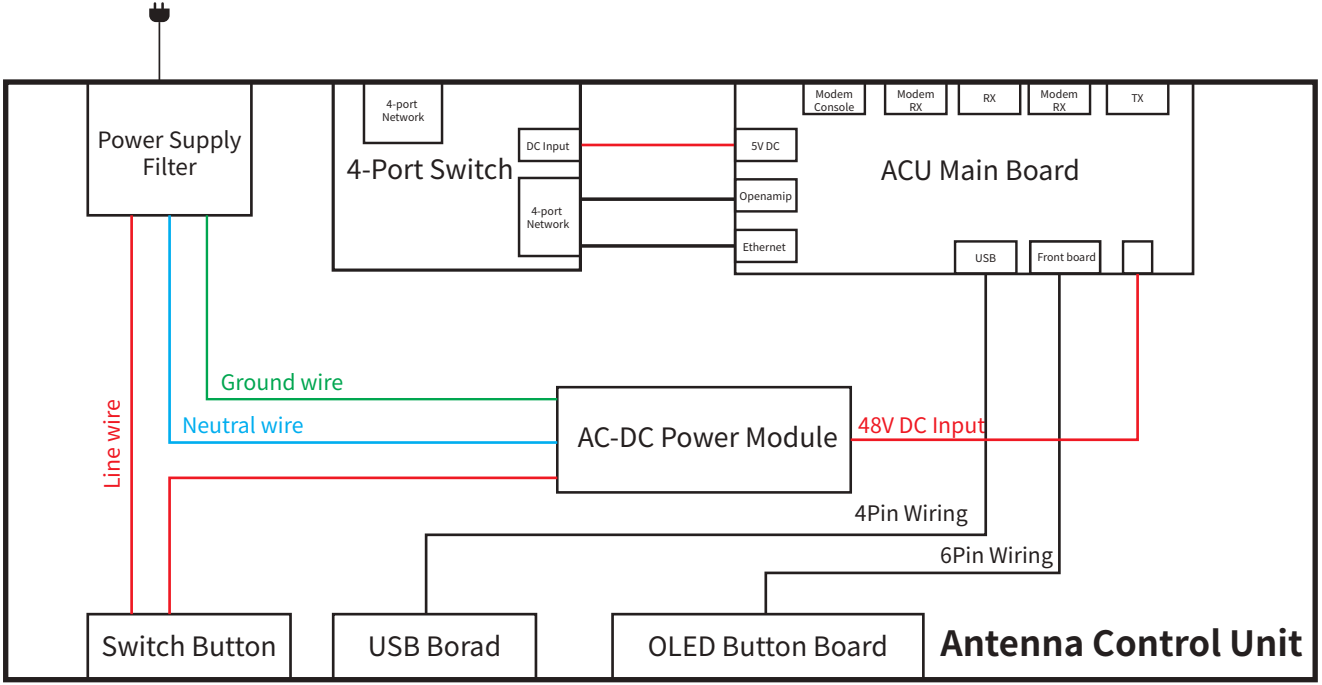
Appendix 5
Block Diagram Inside Radome

KINGSAT
www.kingsat-tech.com

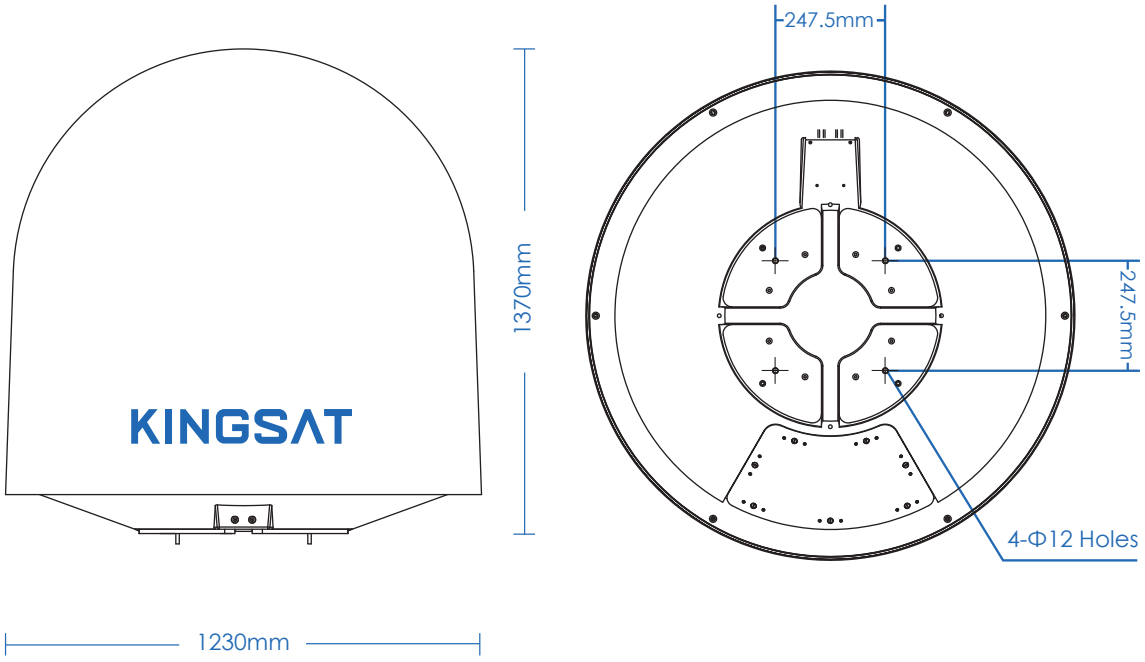


Appendix 6
Internal block diagram of ACU

KINGSAT
www.kingsat-tech.com



Appendix 7
Radome Dimension



Appendix 8
Specification-P10/P10E/P10+E

KINGSAT
www.kingsat-tech.com

Mechanical Specification	
Dish Diameter:	105 cm(41.3")
Weight:	125KG(275lbs) (including ACU, LNB and 6W BUC)
Radom Size:	123 X 137 cm (48.4" X 53.9")
Radom Material:	ASA / Honeycomb FRP
Antenna Stabilization	
Operating Platform:	3-Axis + Auto Skew
Azimuth Range:	P10/P10E:690° / P10+E:Unlimited
Elevation Range:	-20° to 120°
Cross Level Range:	± 35°
Skew Range:	0° to 254°
Position Acquisition:	P10:Free Gyro P10E/P10+E:Builtin Gyro
Ship Motion Support:	Roll: ± 20° @8~12 sec
	Pitch: ± 10° @6~12 sec
	Yaw: ± 8° @15~20 sec
Tracking Accuracy:	Automatic tracking level ⩽ 1.0dB (R.M.S)
Working Environment	
Operating Temperature:	-25 ~ 55°C
Storage Temperature:	-30 ~ 85°C
Humidity:	Up to 100% @ 40°C
Wind Speed:	60m/sec max from any direction
Water Proof:	IP56

Operating Specification	
Rx Frequency:	10.70 ~ 12.75 GHz
Rx Gain:	40.5dBi@12.5GHz
Tx Frequency:	13.75 ~ 14.5 GHz
Tx Gain:	41.6dBi@14.25 GHz
G/T:	19.8dB/K (Clear Sky, 30° Elevation)
POL:	Cross-pol only
Cross Pol Isolation:	⩾30 dB
LNB:	Universal, PLL LNB
BUC:	8W (4W/6W/16W/20W option)
Antenna Control Unit	
Dimensions (WxDxH):	48.2 X 30 X 4.5 cm
Weight:	3 kg
Display:	256 X 64 OLED
Modem Interface:	Ethernet Port/RS-232C
Modem Protocol:	Open AMIP
Power requirement:	100-230VAC 50-60Hz
Modem Support:	IDirect, Gilat, Hughes, UHP, SatPath, Newtec (Other Modems can be required to match)

KINGSAT

Maritime Antennas

Address: Block A, 2 Jisheng Road ., Nansha District,Guangzhou, PRC., 511455 Phone: +86-20-28662868 E-mail: sales@kingsat-tech.com Web: www.kingsat-tech.com www.eardatek.com