



Quick Installation

Maritime VSAT P6A/P6/P6E/P6+E









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## 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 -10°~115°.	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(	)

#### 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

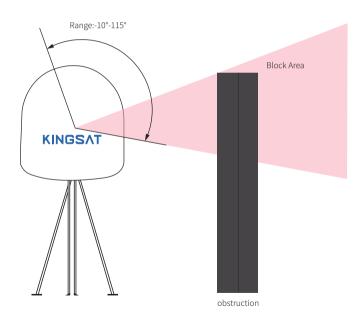
#### Part-1 Antenna Installation Site (ADU Preparation)



Step 2. Check if any obstructions exist with EL range -10°~115°.

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.

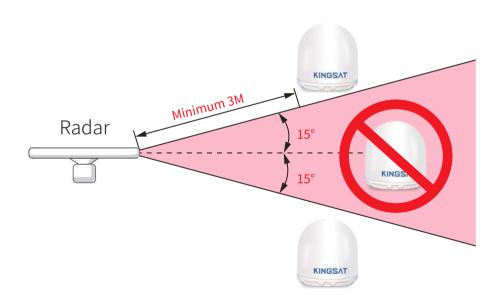


#### Part-1 Antenna Installation Site (ADU Preparation)



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).



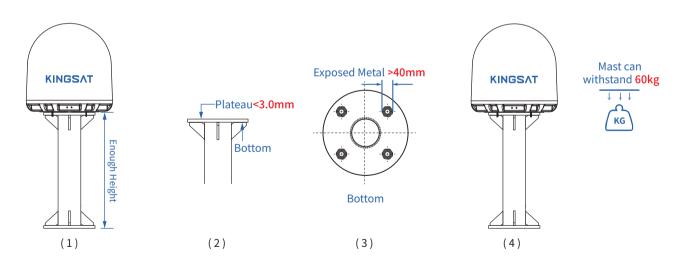
#### Part-1 Antenna Installation Site (ADU Preparation)



**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, fixed hole  $\pm 20$ mm is exposed metal.
- (4) High solidness, it can withstand 60kg.



## Part-1 Antenna Installation Site (ADU Preparation)



#### Installation Site Selection and Case Analysis

The following installation cases are the optimal sites.















#### Part-1 Antenna Installation Site (ADU Preparation)



#### Installation Site Selection and Case Analysis

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









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



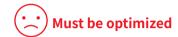


#### Part-1 Antenna Installation Site (ADU Preparation)



#### Installation Site Selection and Case Analysis

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















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.

## Part-1 Antenna Installation Site (ADU Preparation)



**Step 5.1** Unpack carton and take out the antenna.



#### Part-1 Antenna Installation Site (ADU Preparation)



Step 5.2 Remove radome. Then remove ALL red fixing bolts and brackets of safe delivery purpose.

P6/P6E/P6+E
Fixing bolts and brackets position



P6A Fixing bolts position



#### Part-1 Antenna Installation Site (ADU Preparation)



**Step 6.**Check Material List in the carton.





#### Part-1 Antenna Installation Site (ADU Preparation)



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

- 2 \* 15 meter coaxial cable (RG6 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











RG6 coaxial cable

RG179 coaxial cable

Network cable

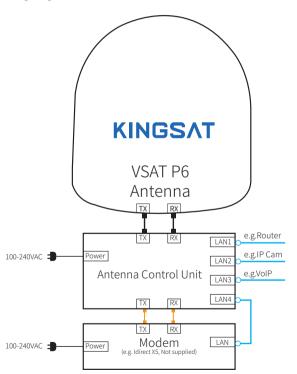
Waterproof tape

N-F type connecting converter

#### Part-1 Antenna Installation Site (ADU Preparation)



Step 8. Check connecting diagram.



coaxial cable 15M with RG6
 coaxial cable 1M with RG179
 network cable with RJ45 plugs

- ▶ If the default coaxial cable 15m with RG6 can not meet requirement, 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 750hm, attenuation of cable is under 20dB at 2.5GHz.

#### Part-2 ACU and Modem (BDU Preparation)



**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

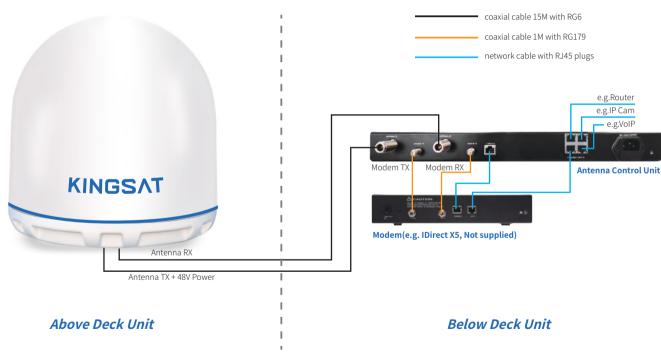
#### Rear Panel of ACU



#### Part-2 ACU and Modem (BDU Preparation)



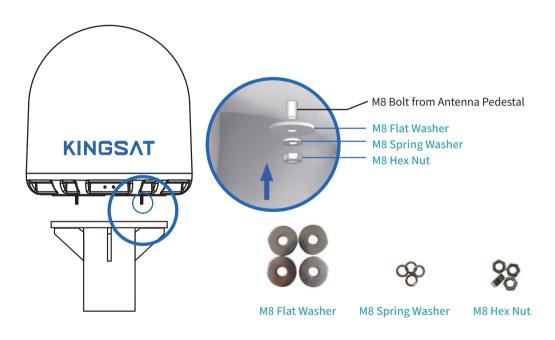
**Step 10.**Check connections of ACU, Modem and Switch.



#### **Step 1 Mounting Antenna**



Mounting antenna with below accessories on the pedestal of mast.



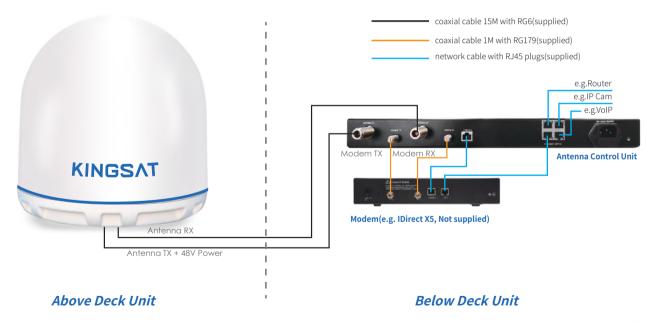
#### **Step 2 Connection Diagram**



Prepare cables and make sure connections as below diagram.

#### Supplied cables

- 2 \* 15 meter coaxial cable (RG6 black color)
- 2 \* 1 meter coaxial cable (RG179 gold color)
- 2 \* 0.4 meter network cable with RJ45 plugs



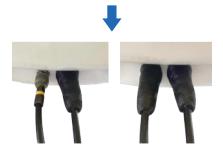
## **Step 3 Confirm All Connections**



Review all connections.



Antenna connections



Connectors should be sealed with waterproof tape



**ACU** connections



Modem connections

#### **Step 4 ACU Setting Procedure**



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



- 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

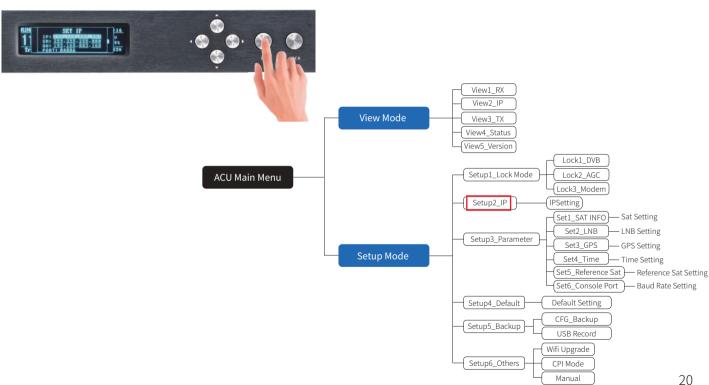
After reconnect and check, then restart system.



# Installation **Step 5 ACU IP Setting**



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.



#### **Step 6 Web Interface Login**



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 EARDATEK

#### 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.

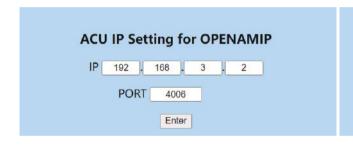


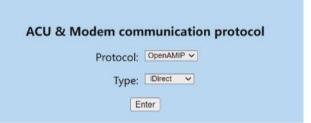
# Quick Installation Guide with Web Interface EARDATEK

### 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 EXRDATER



#### 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 EARDATEK

#### 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.



#### Quick Installation Guide with Web Interface EARDATEK www.eardatek.com

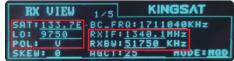
#### Step5.Wait for tracking

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 EARDATEK

#### 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.



#### **Step 7 Antenna Operating Status**



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.



**OPENAMIP** icon









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.

#### **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.

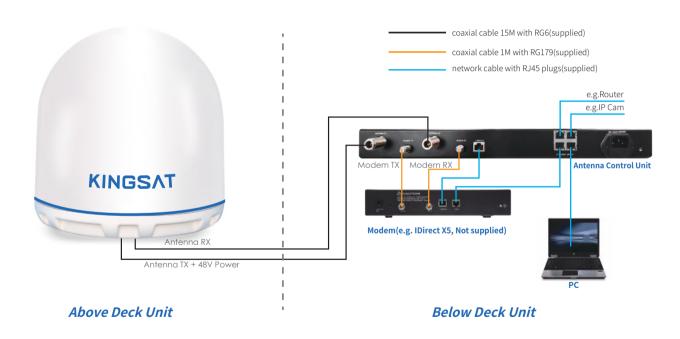
**Status: In Network**, means now modem already in the network.



#### **Step 9 Testing Internet Link**



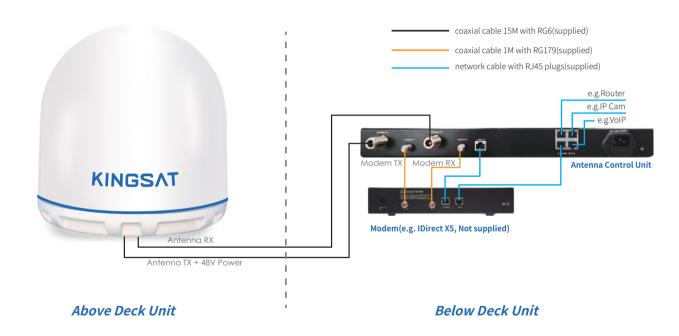
Connect to the PC and test whether the Internet link is connected successfully.



#### **Step 10 Setting Done and Surf Internet**



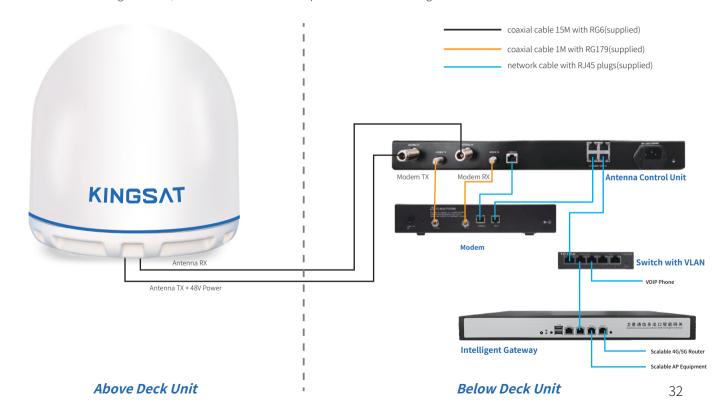
Now you can connect all IP devices to LAN ports of ACU ,then surf internet.



#### **Step 10 Setting Done and Surf Internet**



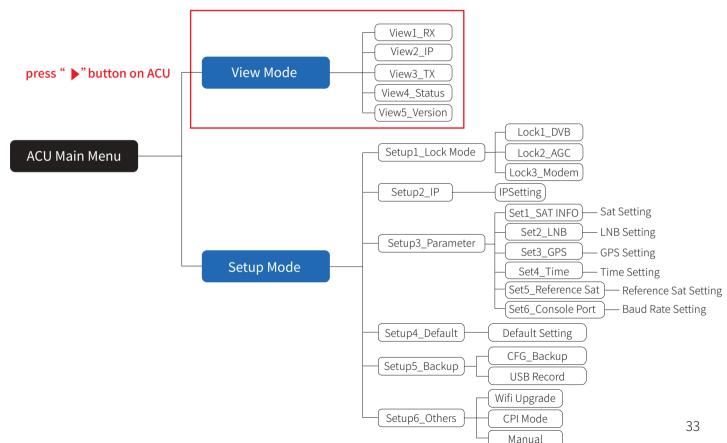
Connect as shown in the figure below, if user needs to access VOIP phones with VLAN settings.



## **Appendix 1**

## Antenna Status Monitor- View Mode of ACU

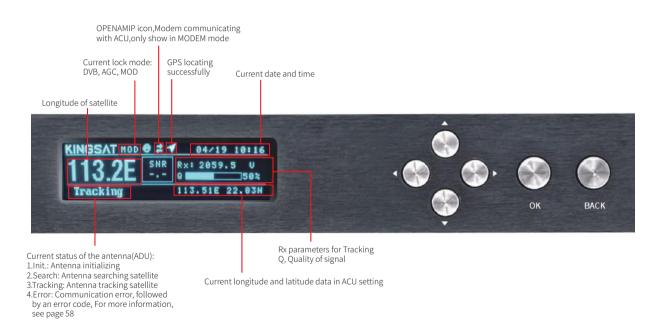




### Antenna Status Monitor- View Mode of ACU



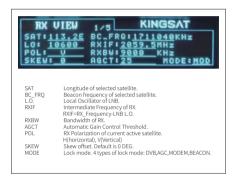
### Main display description:

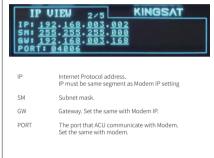


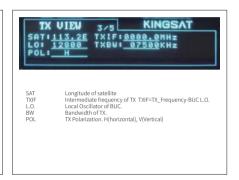
### Antenna Status Monitor- View Mode of ACU



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





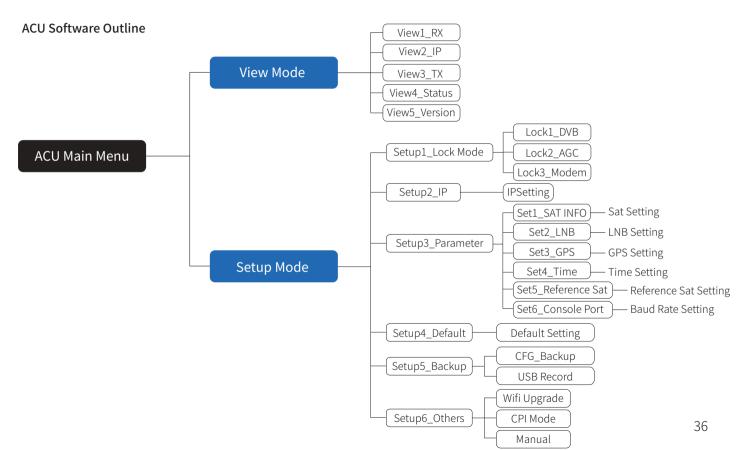






### Antenna Status Monitor- View Mode of ACU





# Appendix 2 Web Interface Home page



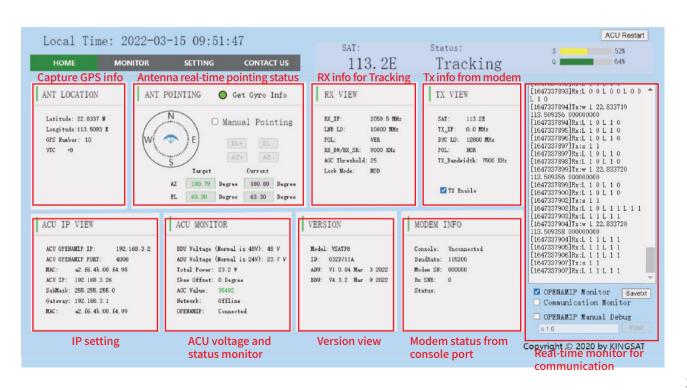
All antenna parameters are shown on this page. Real-time status is monitored.



# **Appendix 2**Web Interface Home page



Sub-pages info indicate different parameters.



# **Appendix 2**Sub-page Ant Location



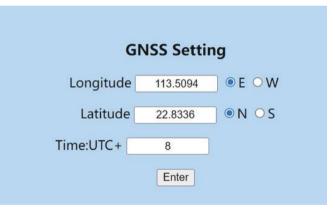
#### **ANT LOCATION**

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.





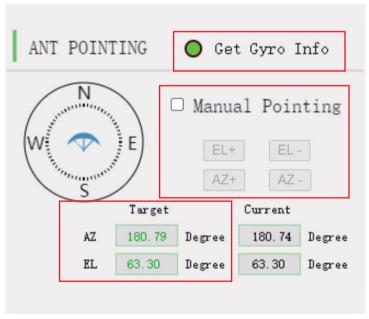
#### Another way for checking

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



# **Appendix 2**Sub-page Ant Pointing





#### ANT POINTING

#### Gvro 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



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 ( $\pm$ 20%difference) as real symbolRate, this figure will effect Signal Quality figure.

#### Another way for checking

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





#### 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.





# **Appendix 2**Sub-page IP info

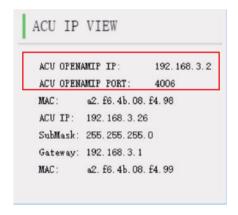


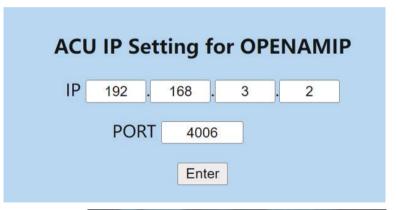
#### **ACU IP VIEW**

#### 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 IP Setting for OPENAMIP**.





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



# **Appendix 2**Sub-page Monitor page



### ACU MONITOR

BDU Voltage (Normal is 48V): 48 V

ADU Voltage (Normal is 24V): 23.7 V

Total Power: 22.9 W

Skew Offset: O Degree

AGC Value: 35249

Network: Offline

OPENAMIP: Connected



#### **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

#### Total Power:

There is one power detector in ACU. All system power consumption is real-time decreated

When Searching and Tracking, only  $\ensuremath{\mathsf{Rx}}$  Link working, total power is about

#### 30-40Watt.

TX working with BUC, total power is about 80-110Watt.

Skew Offset: mostly for CPI setting.

**AGC Value:** this figure effect Signal Strength.

Network: it shows network from MODEM online or not.

**OPENAMIP:** it shows OPENAMIP protocol get through between ACU and MODEM or not.

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

# **Appendix 2**Sub-page Version page



### VERSION

Model: VSATP8

ID: 032D711A

ADU: V1.0.04 Mar 3 2022

BDU: V4.3.2 Mar 9 2022

#### **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



# MODEM INFO Console: Connected BaudRate: 115200 Modem SN: 014135 Rx SNR: 8.3

Status: In Network

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.

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



# **Appendix 2**BDU upgrade with Web Interface



### **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



#### **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.

Other Function Setting						
WIFI Module Enable*						
* for ADU firmware upgrade						
CPI Test Enable						
Skew Offset	0	Degree				
+ -						
Enter						

# **Appendix 2**Web Interface Setting page--Rx setting



#### **Rx parameters Setting**

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

RX Parameters Setting						
Sat Longitude	138.0	● E ○ W				
RX Intermediate Freq	2121	MHz				
LNB	10600	MHz				
Bandwidth/SymbolRate	43200	KHz				
Polarization	● Vertical ○ F	lorizontal				
AGC Threshold	25					
Enter						

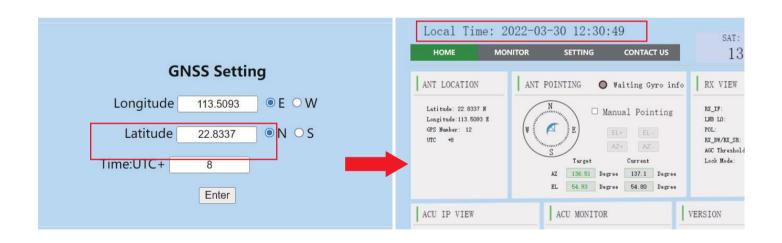


### Web Interface Setting page--GNSS setting

#### **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



#### **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.



### TVRO mode with Web Interface



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

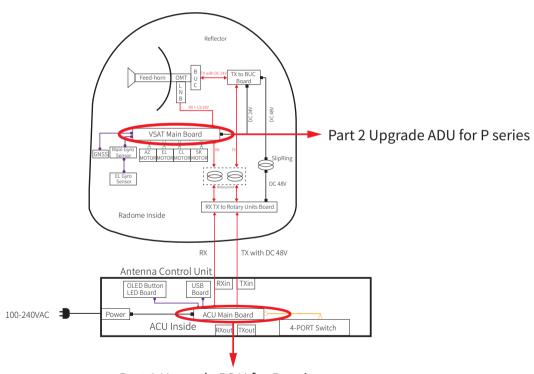
In TVRO mode with web interface, you can not modify any setting, only can view.

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.

Inb type:     LINEAR     BDU voltage:     48     Number:     12       Inb LO:     10600     LNB voltage:     13     Model:     VSATP6+       Polar:     VER     STB voltage:     0     ID:     032D711A       Prequency:     12561     AGC:     36694     ADU Version:     V4. 0. 02 Nov 19 202       Symbolrate:     12400     QU:     81     BDU Version:     V4. 3. 5 Mar 29 202	Lnb type:         LINEAR         BDU voltage:         48         Number:         12           Lnb L0:         10600         LNB voltage:         13         Model:         VSATP6+           Polar:         VER         STB voltage:         0         ID:         032D711A	Number: 12 Model: VSATP6+
Inb LO:     10600     LNB voltage:     13     Model:     VSATP6+       Polar:     VER     STB voltage:     0     ID:     032D711A       Prequency:     12561     AGC:     36694     ADU Version:     V4. 0. 02 Nov 19 202       Symbolrate:     12400     QU:     81     BDU Version:     V4. 3. 5 Mar 29 202	Lnb LO:         10600         LNB voltage:         13         Model:         VSATP6+           Polar:         VER         STB voltage:         0         ID:         032D711A	Model: VSATP6+
Polar:         VER         STB voltage:         0         ID:         032D711A           Grequency:         12561         AGC:         36694         ADU Version:         V4.0.02 Nov 19 202           Symbolrate:         12400         QU:         81         BDU Version:         V4.3.5 Mar 29 202	Polar: VER STB voltage: 0 ID: 032D711A	
Frequency:         12561         AGC:         36694         ADU Version:         V4.0.02 Nov 19 202           Symbolrate:         12400         QU:         81         BDU Version:         V4.3.5 Mar 29 202		TD ACCOUNTS A
Symbolrate: 12400 QU: 81 BDU Version: V4.3.5 Mar 29 202		ID: 032D/11A
	Frequency: 12561 AGC: 36694 ADU Version: V4.0.02 No	ADU Version: V4.0.02 Nov 19 2
'one: 22K	Symbolrate: 12400 QU: 81 BDU Version: V4.3.5 Ma	BDU Version: V4.3.5 Mar 29 2
	Tone: 22K	





Part 1 Upgrade BDU for P series



### Part 1 Upgrade BDU for P series

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.





### Part 2 Upgrade ADU for P series

1.Download and install app "RemoteWriter" on one Android phone from official distributor.



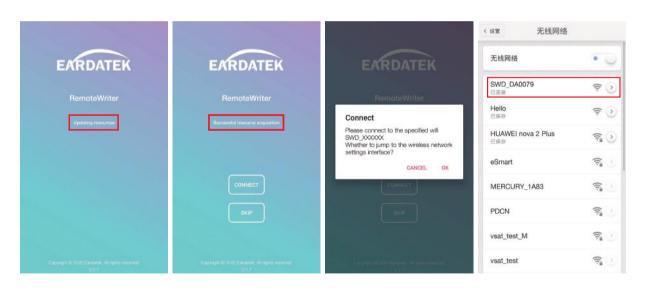
2.At Setup Mode, select<6. SET OTHERS> then turn on WIFI.





### Part 2 Upgrade ADU for P series

- 3. Open the Android phone application "Remote Writer", make sure there is a network connection (4G/wifi), wait for a few seconds, from "Updating Resources" until "Successful Resource Acquisition" is displayed. The download of the latest firmware from the server is complete.
- 4. Click "Connect" to Device, it shows that wifi needs to be connected "SWD\_XXXXXX", jump to the phone settings, connect to this wifi.





### Part 2 Upgrade ADU for P series

- 5. Return to the "Remote Writer" application, enter the firmware list, and confirm the firmware version of the current device.
- 6. Select the appropriate firmware version and click the up icon \(\bar{\gamma}\) to upgrade.
- 7. The upgrade is complete, and confirm whether the version is the selected upgrade version.



# **Appendix 4**Troubleshooting Guide---Error Code



#### **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.
- 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.
- 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.

### Troubleshooting Guide---Error Code



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

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.

**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



### Troubleshooting Guide---Error Code



**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.

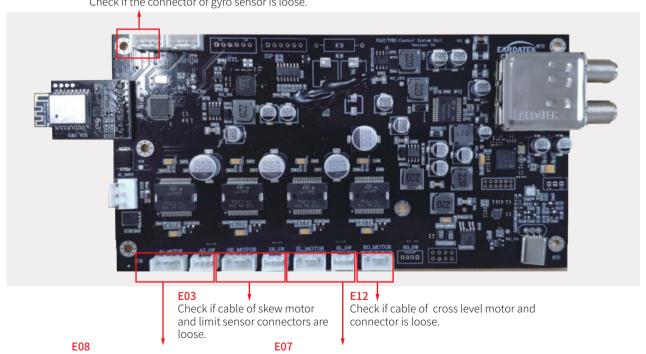


### Troubleshooting Guide---Error Code



E06

Check if the connector of gyro sensor is loose.

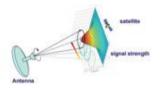


Check if cable of azimuth motor and limit sensor connectors are loose. Check if cable of elevation motor and limit sensor connectors are loose.

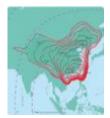
# **Appendix 4**Troubleshooting Guide---Failure Cause



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.)



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



**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.



**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.





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



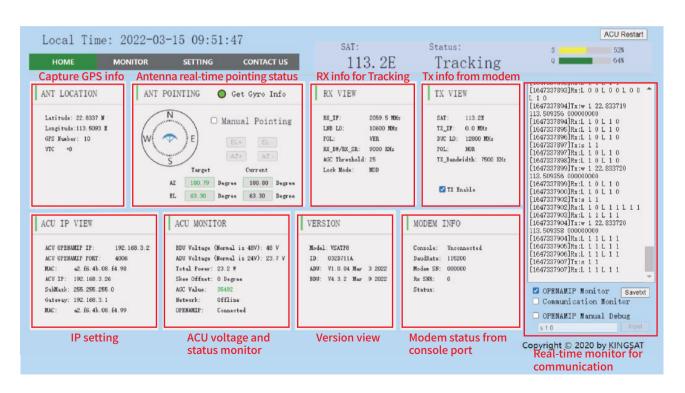
Connect laptop to ACU ethernet port. Make Sure laptop IP and ACU IP in same segment, then go to Browser, input ACU IP. USER: KINGSAT. Password:1234

192.168.3.2/home.html			
Г			]
	ļ	User login	
	user	KINGSAT	
	pword		
		Sign in	
L			

### Troubleshooting Guide---Web Interface



Sub-pages info indicate different parameters.



### Troubleshooting Guide---Web Interface



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.



### Troubleshooting Guide---Web Interface



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.

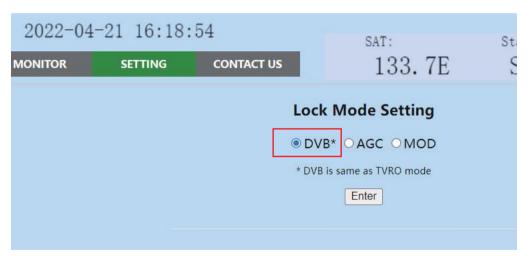


# **Appendix 4**Troubleshooting Guide---TVRO Mode



### TVRO mode for verify hardware

Go to SETTING Page---Lock Mode Setting, select DVB, then Enter to SAVE. Now antenna changes to TVRO mode.

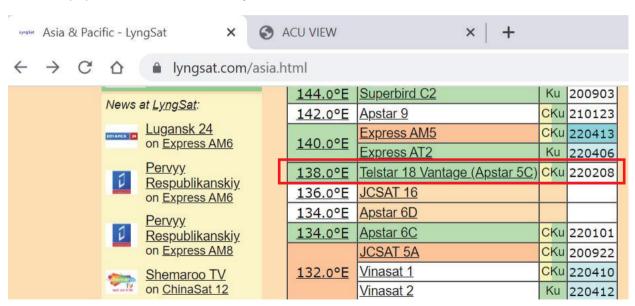


### Troubleshooting Guide---TVRO Mode



### TVRO mode for verify hardware

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



### Troubleshooting Guide---TVRO Mode



#### 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

### Troubleshooting Guide---TVRO Mode



#### TVRO mode for verify hardware

Now go to SETTING page ---- we can input parameters, then press Enter to SAVE.

**DVB** carrier

**RX\_IF 2121** 

LO 10600

**POLV** 

SymbolRate 43200

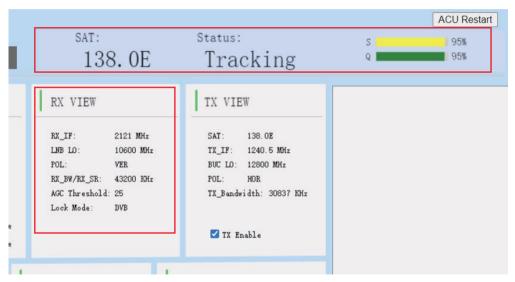
RX Parameters Setting					
	Sat Longitude	138.0	● E ○ W		
	RX Intermediate Freq	2121	MHz		
	LNB	10600	MHz		
	Bandwidth/SymbolRate	43200	KHz		
	Polarization	<ul><li>Vertical</li></ul>	○ Horizontal		
	AGC Threshold	25			
	Enter				

### Troubleshooting Guide---TVRO Mode



#### TVRO mode for verify hardware

Back to HOME page, you can check RX parameter is correct or not, then check antenna status, check if it can track this satellite.



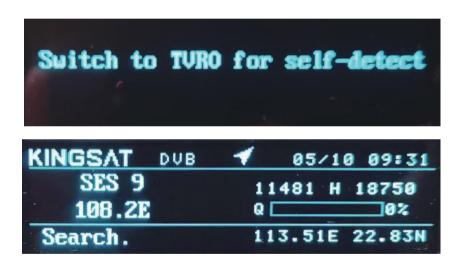
If show Tracking ,means Antenna hardware is ok without any problem. Use this DVB mode to fast verify hardward.

## **Appendix 4**Troubleshooting Guide---TVRO Mode



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.

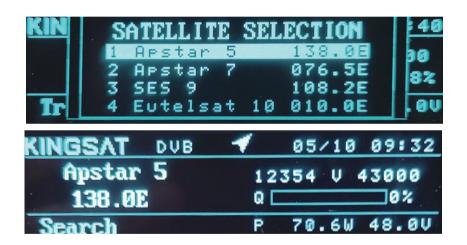


## **Appendix 4**Troubleshooting Guide----TVRO Mode



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

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



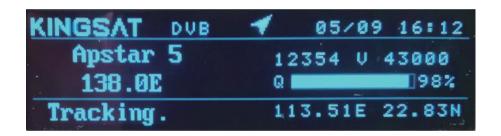
## **Appendix 4**Troubleshooting Guide----TVRO Mode



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.



### Troubleshooting Guide---Manual Mode



#### Manual Test

Download and install app "Dish Align" or similar SAT finder application. Then follow below steps.











Step 1. Positioning



Step 2. Select the target satellite



Step 3. Move the phone 360° t o find the strongest signal



Step 4. Confirm whether the automatic alignment direction of the antenna and the pointing direction of the SAT finder application are consistent

## **Appendix 4**Troubleshooting Guide---Manual Mode



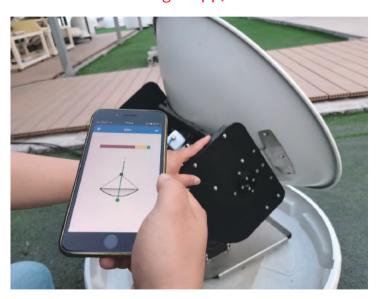
#### Manual Test

If the direction of antenna pointing is not matched with "Dish Align" app, how can we do?

The possible reason:

- 1. The antenna locks the wrong satellite by mistake;
- 2. The antenna is faulty and does not work properly.

If this happens, you can try to set the ACU to Manual mode for verification.



### Troubleshooting Guide---Manual Mode



#### Manual Test





Step1. Set ACU to Manual Test mode

Setup Mode--6. Set others--Manual ON



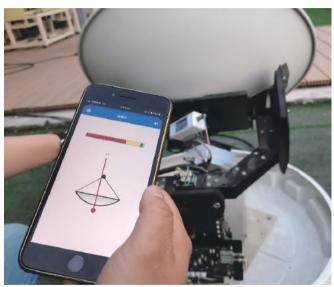
Step2. Moving the antenna by hand, better only move the azimuth direction because AZ and SK angel already fixed by initialization.

## **Appendix 4**Troubleshooting Guide---Manual Mode



#### Manual Test





Step3. Stop antenna at the position indicated by Dish Align to check if the VSAT terminal can setup the link. Signal quality of ACU and access of MODEM can help to understand how is pointing.

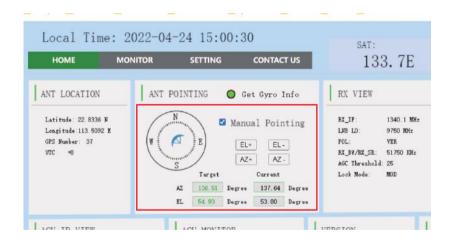
### Troubleshooting Guide---Manual Mode



#### 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°.



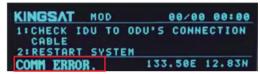
### Troubleshooting Guide---FQ&A



#### FQ&A

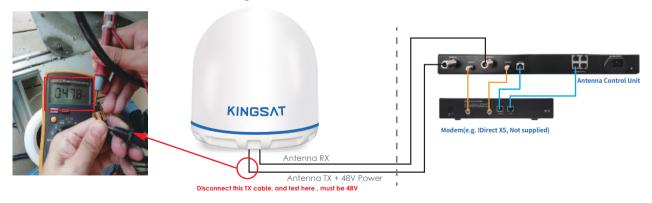
The status keeps showing Init or COMM ERROR, what should I do?





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.



## **Appendix 4**Troubleshooting Guide---FQ&A



#### FQ&A

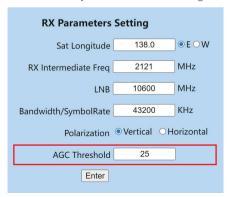
The status shows Loss, what should we do?



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



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

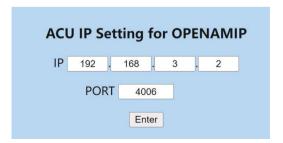


Now ACU can NOT communicate with MODEM correctly.

1)Check ACU connect to Modem or not.

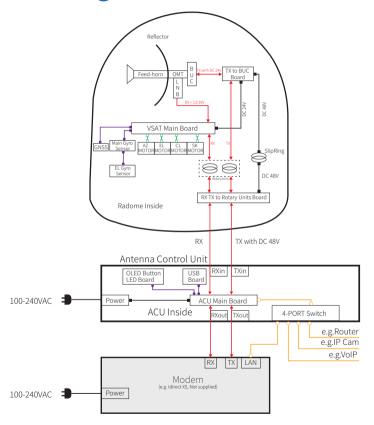
2)Check ACU IP and PORT setting. Go to SETTING Page, also check MODEM configuration file (opt. file),check carefully ACU IP and Modem IP.





### Block Diagram Inside Radome



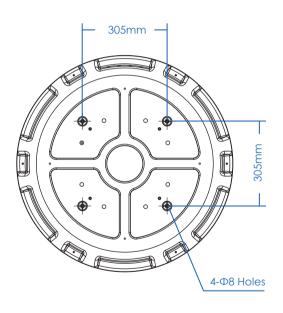




## **Appendix 6**Radome Dimension







# **Appendix 7**Specification-P6A



Mechanical Specification					
Dish Diameter:	64 cm(25")				
Weight: 35k	G(77lbs) (including ACU, LNB and 6W BUC)				
Radom Size:	78 X 80 cm (31" X 31.5")				
Radom Material:	ASA				
Antenna Stabilization					
Operating Platform:	2-Axis + Auto Skew				
Azimuth Range:	0° to 690°				
Elevation Range:	0° to 95°				
Skew Range:	Automatic, 0° to 240°				
Position Acquisition: Builtin GNSS (GPS/Glonass/Galileo/Beidou)					
Ship Motion Support:	Roll: ± 20° @8~12 sec				
	Pitch: ± 10° @6~12 sec				
	Yaw: ± 8° @15~20 sec				
Tracking Accuracy:	Automatic tracking level $\leq$ 1.0dB (R.M.S)				
Working Environmen	ıt .				
Operating Temperatur	re: -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 Specific	ation
Rx Frequency:	10.70 ~ 12.75 GHz
Rx Gain:	36dBi@12.5GHz
Tx Frequency:	13.75 ~ 14.5 GHz
Tx Gain:	37.2dBi@14.25 GHz
G/T:	15.0dB/K (Clear Sky, 30° Elevation)
POL:	Cross-pol only
Cross Pol Isolation:	≥30 dB
LNB:	Universal, PLL LNB
BUC:	6W (3W/4W option)
Antenna Control U	nit
Dimensions (WxDxH	): 48.2 X 30 X 4.5 cm
Weight:	3.55 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)

## **Appendix 7**Specification-P6/P6E/P6+E



Mechanical Specification				
Dish Diameter:	64 cm(25")			
Weight: 40K	G(88lbs) (including ACU, LNB and 6W BUC)			
Radom Size:	78 X 80 cm (31" X 31.5")			
Radom Material:	ASA			
Antenna Stabilizatio	n			
Operating Platform:	3-Axis + Auto Skew			
Azimuth Range:	P6/P6E: 0° to 690°/ P6+E: Unlimited			
Elevation Range:	-10° to 115°			
Cross Level Range:	± 30°			
Skew Range:	Automatic, 0° to 240°			
Position Acquisition:	P6: Free Gyro P6E/P6+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 $\leq$ 1.0dB (R.M.S)			
<b>Working Environme</b>	nt			
Operating Temperatur	re: -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 Specific	ation			
Rx Frequency:	10.70 ~ 12.75 GHz			
Rx Gain:	36dBi@12.5GHz			
Tx Frequency:	13.75 ~ 14.5 GHz			
Tx Gain:	37.2dBi@14.25 GHz			
G/T:	15.0dB/K (Clear Sky, 30° Elevation)			
POL:	Cross-pol only			
Cross Pol Isolation:	≥30 dB			
LNB:	Universal, PLL LNB			
BUC:	6W (3W/4W option)			
Antenna Control Unit				
Dimensions (WxDxH)	: 48.2 X 30 X 4.5 cm			
Weight:	3.55 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)			

