

KINGSAT

Maritime Antennas

Quick Installation

Maritime VSAT P10/P10E/P10+E



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Preparation for Installation

Antenna First Installation Checklist

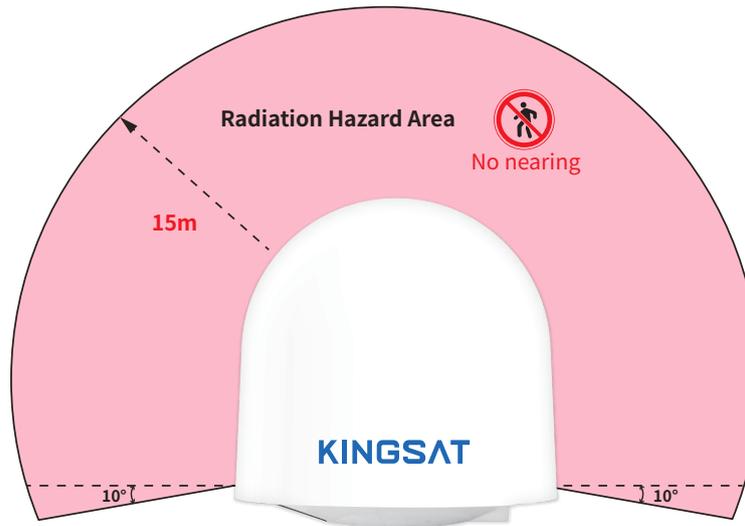
For the first installation, please follow the steps below. Check each step to ensure that the antenna is installed and used correctly. Each step after well done with mark " ✓ ".

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

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

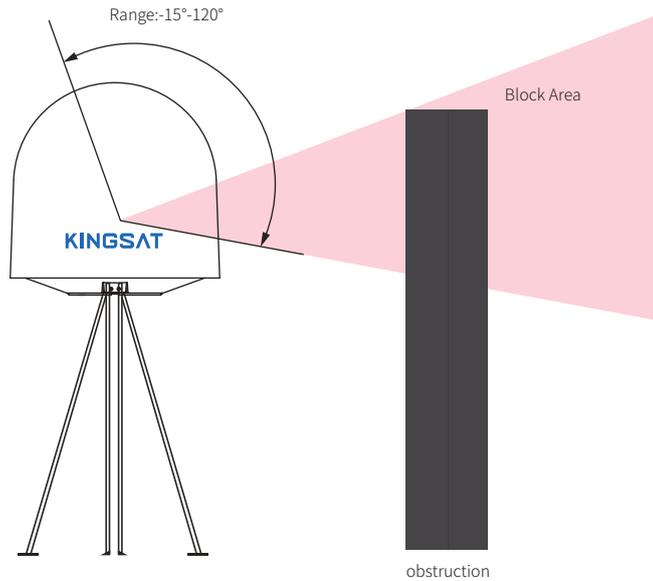
Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

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.

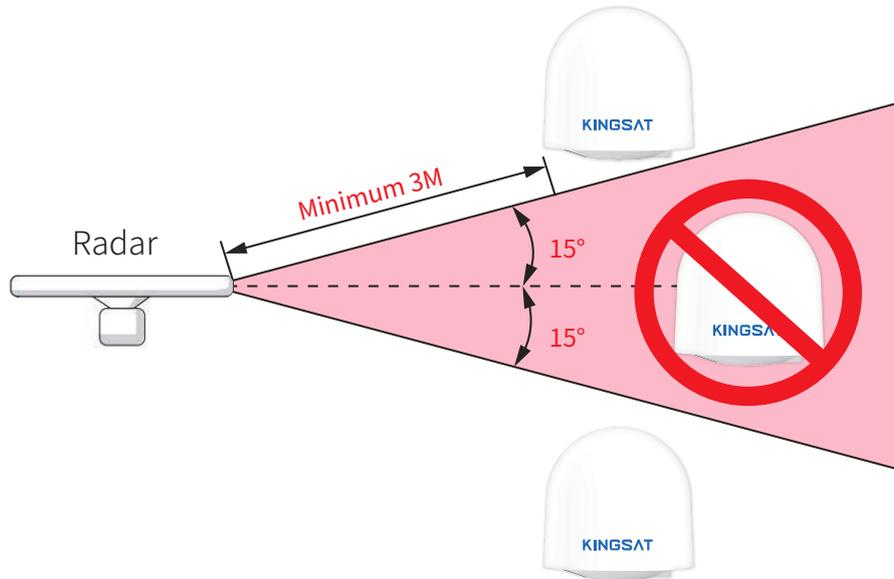


Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

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 (avoid fan beam $\pm 15^\circ$ of Radar, keep distance to Radar **minimum 3m**).



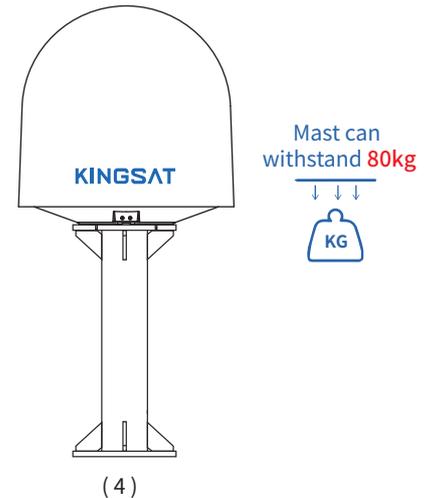
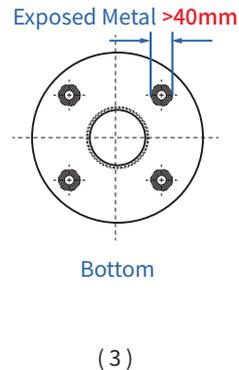
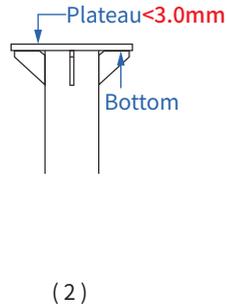
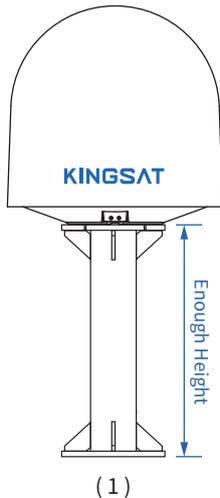
Preparation for Installation

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**.

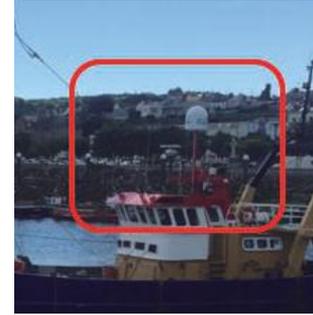


Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

Installation Site Selection and Case Analysis

The following installation cases are the optimal sites.



Preparation for Installation

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.



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

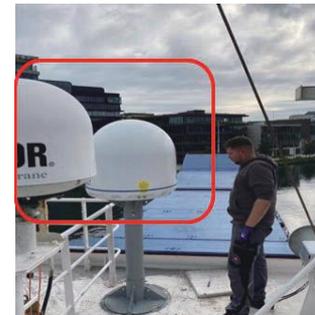
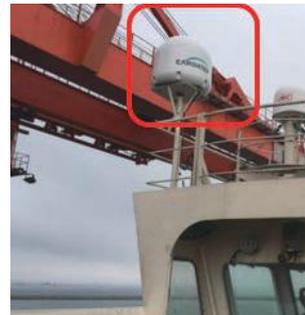
Preparation for Installation

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

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)

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)

Step 6. Check Material List in the carton.



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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	ADU	1			
4	ADU wall mounting bracket	2			
5	10x Coaxial Cable (RG214)	2			
6	10m 1/2" Coaxial Cable (RG75)	2			
7	1/4" 6- Network Cable	2			
8	DC Power Supply Cable	1			
9	W-F converter	4			
10	Hex Hex Key	1			
11	Star Hex Key	1			
12	Hex W. Spanner	1			
13	M1.2 Hex Nut	4			
14	M1.2 Spring Washer	4			
15	M1.2 Flat Washer	4			
16	M3*8 combined screws	4			
17	Splice Connectors for Coaxial Cable	4			
18	USB Mesh stick	1			
19	Mesh: Tape	1			
Total:		41PCS	Checked By:		

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

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

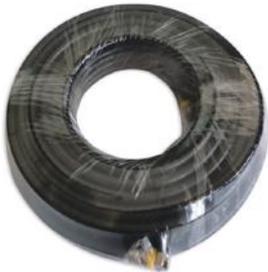
2 * 30 meter coaxial cable (RG11 black color)

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

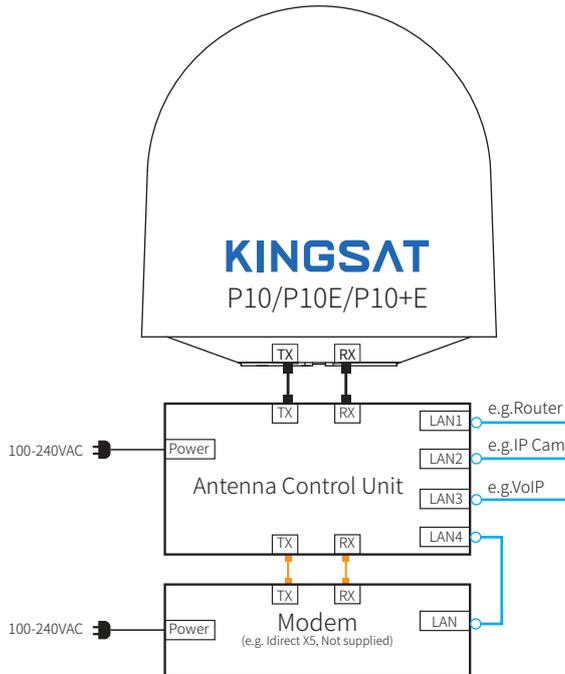


N-F type connecting converter

Preparation for Installation

Part-1 Antenna Installation Site (ADU Preparation)

Step 8. Check connecting diagram.



- coaxial cable 30M with RG11
- coaxial cable 1M with RG179
- network cable with RJ45 plugs

►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)

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

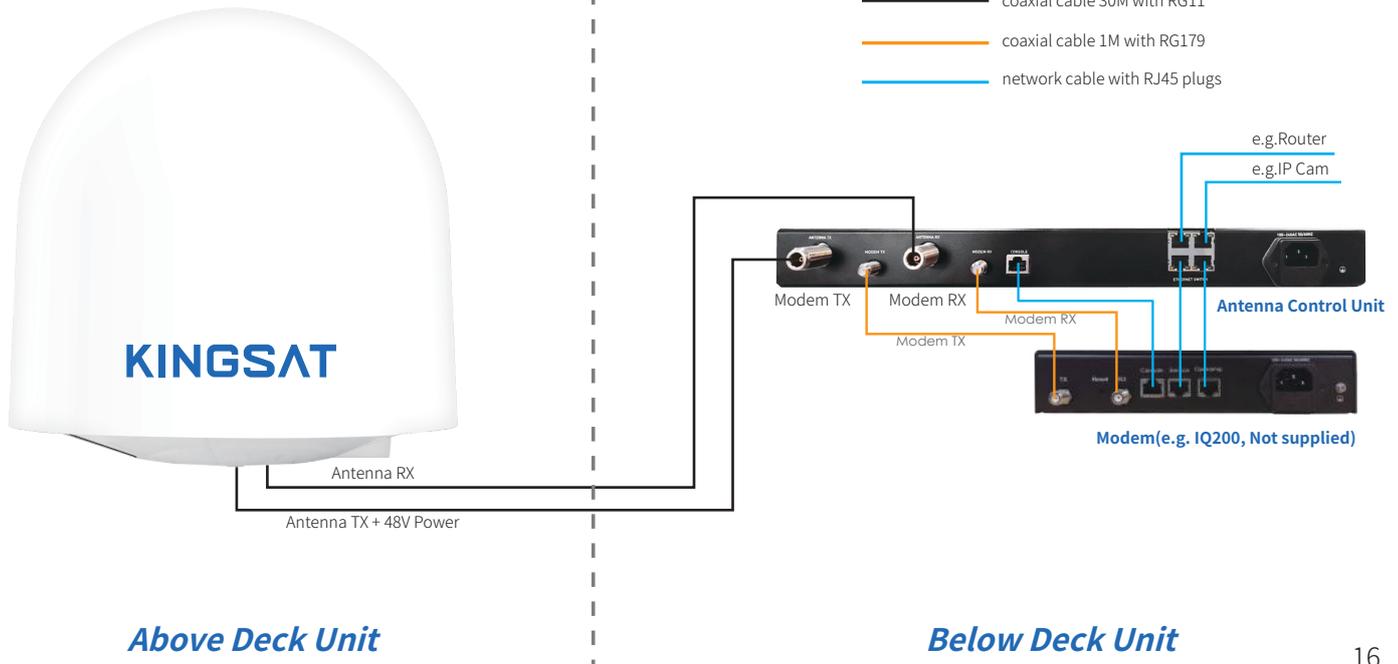
Connect to Modem & other IP device

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

Preparation for Installation

Part-2 ACU and Modem (BDU Preparation)

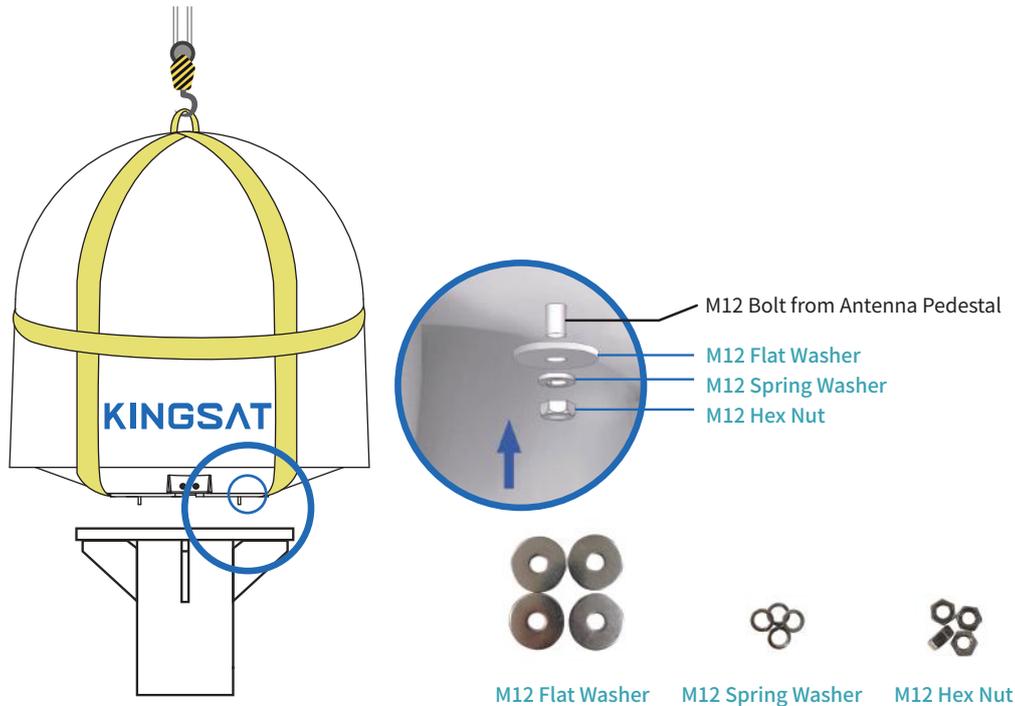
Step 10. Check connections of ACU , Modem and Switch.



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.



Installation

Step 2 Connection Diagram

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

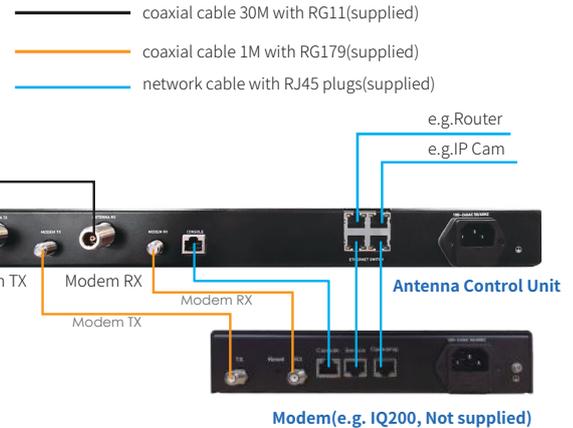


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Above Deck Unit



Below Deck Unit

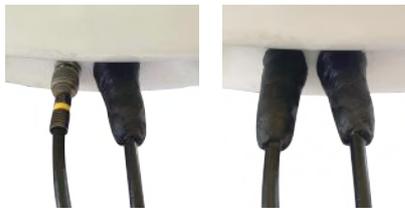
Installation

Step 3 Confirm All Connections

Review all connections.



Antenna connections



Connectors should be sealed with waterproof tape



ACU connections



Modem connections

Installation

Step 4 ACU Setting Procedure



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

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► 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.



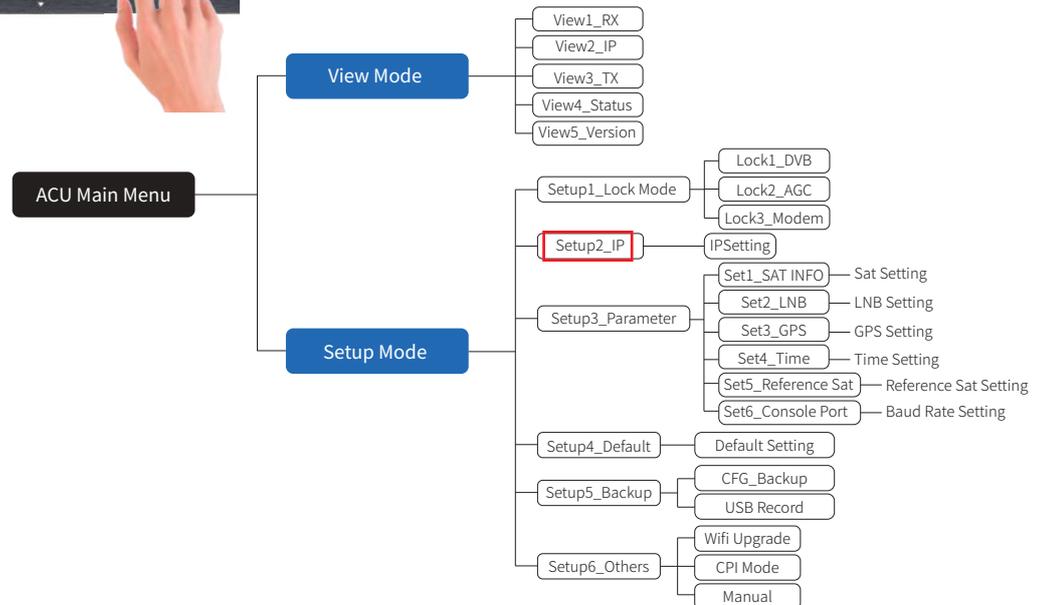
Installation

Step 5 ACU IP Setting



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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



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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”

A screenshot of a web browser window. The address bar shows '192.168.3.2/home.html' with the IP address '192.168.3.2' highlighted by a red box. The main content area has a light blue background and contains a 'User login' form. The form is enclosed in a red rectangular border and includes a title 'User login', a 'user' field with the value 'KINGSAT', a 'pword' field with four dots, and a 'Sign in' button.

192.168.3.2/home.html

User login

user

pword

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.

Local Time: 2023-8-22 17:17:49

SAT: 133.7

HOME MONITOR **SETTING** CONTACT US

Lock Mode

DVB* AGC MOD BEA*

* DVB is same as TVRO mode.
* Beacon mode is optional hardware spec for certain models. Make sure current model has beacon module deployed then enable beacon mode.

Enter

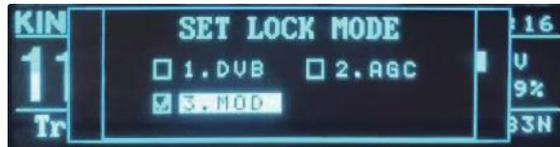
ACU Eth0 IP Setting for OPENAMIP

ETH0 IP

ETH0 Port

Enter

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.

ACU Eth0 IP Setting for OPENAMIP

ETH0 IP

ETH0 Port

OpenAMIP Protocol

Protocol

Type

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

Step 3. Confirm IP Setting

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

The screenshot displays the Kingsat web interface with the following details:

- Local Time:** 2023-7-11 14:6:45
- SAT:** 133.7E
- Status:** Tracking
- AMIP:** 90%
- GPS:** 75%
- NET:** S
- Switch to TVRO:** Restart

The interface is divided into several sections:

- ANT LOCATION:** Latitude: 22.833723, Longitude: 113.509606, GPS Number: 12, UTC: +8
- ANT POINTING:** Manual pointing (unchecked), EL: 54.93 (Target) / 54.61 (Current) Degree, AZ: 136.52 (Target) / 137.41 (Current) Degree
- RX VIEW:** RX_IF: 1247.5, LNB_LO: 9750, POL: VER, RX_BW/RX_SR: 51750, AGC Threshold: 25, Lock Mode: MOD
- TX VIEW:** SAT: 133.7, TX IF: 1295.8, BUC LO: 12800, POL: HOR, TX_Bandwidth: 1150, TX Enable (checked)
- ACU IP VIEW (highlighted):** AMIP IP: 192.168.0.2, AMIP PORT: 4002, MAC: 54.77.87.B2.30.F8, ACU IP: 10.11.194.223, SubMask: 255.255.255.192, Gateway: 10.11.194.193, MAC: 54.77.87.B2.30.F9
- ACU MONITOR:** BDU Voltage (Normal is 48V): 48.1, ADU Voltage (Normal is 24V): 23.6, Skew Offset: 0, EL Offset: 0.0, ACU Network: online
- VERSION:** Model: VSAT P6, ID: 649E9A45, ADU: V9.0.07 Apr 10 2023, BDU: V4.7.3 Jul 10 2023
- MODEM INFO:** Modem: Connected, BaudRate: 115200, Modem Type: IQBoard, Modem SN: 011224, Version: 2.0.1.2, Rx SNR: 10.9, Status: In Network

On the right side, there is a log window showing transmission logs and a control panel with the following options:

- AGC: 43160, PWR: 75.5, SNR: 10.9, Get Gyro info
- Log entries: [2023-7-11 14:6:37]Rx:L 1 1, [2023-7-11 14:6:38]Rx:L 1 1, [2023-7-11 14:6:39]Tx:w 1 22.833721 113.509605 1689084399 0 0 0 0 0, [2023-7-11 14:6:39]Rx:L 1 1, [2023-7-11 14:6:40]Rx:L 1 1, [2023-7-11 14:6:41]Rx:L 1 1, [2023-7-11 14:6:42]Rx:L 1 1, [2023-7-11 14:6:43]Rx:L 1 1, [2023-7-11 14:6:44]Tx:w 1 22.833722 113.509606 1689084404 0 0 0 0 0, [2023-7-11 14:6:44]Rx:L 1 1, [2023-7-11 14:6:45]Rx:L 1 1
- Control panel: OPENAMIP Monitor (Savebtn), Communication Monitor, OPENAMIP Manual debug (Input)

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.

Local Time: 2023-7-11 14:6:45

SAT: 133.7E Status: Tracking AMIP GPS NET S Q 90% 75%

HOME MONITOR SETTING CONTACT US

ANT LOCATION
Latitude: 22.833723
Longitude: 113.506906
GPS Number: 12
UTC: +8

ANT POINTING Manual pointing
EL: 54.93 Degree Current: 54.61 Degree
AZ: 136.52 Degree Current: 137.41 Degree

RX VIEW
RX_IF: 1247.5
LNB_LO: 9750
POL: VER
RX_BW/RX_SR: 51750
AGC Threshold: 25
Lock Mode: MOD

TX VIEW
SAT: 133.7
TX_IF: 1295.8
BUC_LO: 12600
POL: HOR
TX_Bandwidth: 1150
 TX Enable

AGC: 43160 PWR: 75.5
SNR: 10.9 Get Gyro info

ACU IP VIEW
AMIP IP: 192.168.0.2
AMIP PORT: 4002
MAC: 54:77:87:B2:30:F9
ACU IP: 10.11.194.223
SubMask: 255.255.255.192
Gateway: 10.11.194.193
MAC: 54:77:87:B2:30:F9

ACU MONITOR
BDU Voltage(Normal is 48V): 48.1
ADU Voltage(Normal is 24V): 23.6
Sleep Offset: 0
EL Offset: 0.0
ACU Network: online

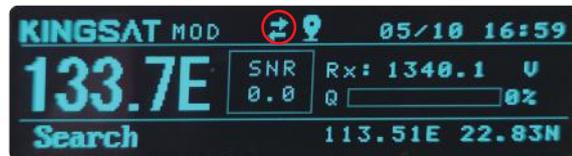
VERSION
Model: VSAT P6
ID: 649E9A45
ADU: V9.0.07 Apr 10 2023
BDU: V4.7.3 Jul 10 2023

MODEM INFO
Modem: Connected
BaudRate: 115200
Modem Type: IGBBoard
Modem SN: 011224
Version: 2.0.1.2
Rx SNR: 10.9
Status: In Network

Real-time monitor for communication
 OPENAMIP Monitor
 Communication Monitor
 OPENAMIP Manual debug
input

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



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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.

The screenshot shows the KINGSAT web interface with the following details:

- Local Time:** 2023-7-11 14:6:45
- SAT:** 133.7E
- Status:** Tracking
- AMIP:**
- GPS:**
- NET:** S
- AGC:** 43160
- PWR:** 75.5
- SNR:** 10.9
- Get Gyro info:**

The interface is divided into several sections:

- ANT LOCATION:** Latitude: 22.833723, Longitude: 113.509606, GPS Number: 12, UTC: +8.
- ANT POINTING:** Manual pointing: . Target EL: 54.93 Degree, Current EL: 54.61 Degree, Target AZ: 136.52 Degree, Current AZ: 137.41 Degree.
- RX VIEW (highlighted in red):** RX_IF: 1247.5, LNB_LO: 9750, POL: VER, RX_BW/RX_SR: 51750, AGC Threshold: 25, Lock Mode: MOD.
- TX VIEW:** SAT: 133.7, TX IF: 1295.8, BUC LO: 12800, POL: HOR, TX_Bandwidth: 1150, TX Enable: .
- ACU IP VIEW:** AMP IP: 192.168.0.2, AMP PORT: 4002, MAC: 54 77 87 B2 30 F8, ACU IP: 10.11.194.223, SubMask: 255.255.255.192, Gateway: 10.11.194.193, MAC: 54 77 87 B2 30 F9.
- ACU MONITOR:** BDU Voltage(Normal is 48V): 48.1, ADU Voltage(Normal is 24V): 23.6, Skew Offset: 0, EL Offset: 0.0, ACU Network: online.
- VERSION:** Model: VSAT P6, ID: 649E9A45, ADU: V9.0.07 Apr 10 2023, BDU: V4.7.3 Jul 10 2023.
- MODEM INFO:** Modem: Connected, BaudRate: 115200, Modem Type: IQBoard, Modem SN: 011224, Version: 2.0.1.2, Rx SNR: 10.9, Status: In Network.

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

Check whether all Rx parameters are correct or not.

The close-up screenshot shows the RX VIEW page with the following parameters:

- SAT:** 133.7E
- BC_FRQ:** 1711040KHz
- LO:** 9750
- RXIF:** 1340.1MHz
- POL:** U
- RXBW:** 51750 KHz
- SKEW:** 0
- HBLI:** 25
- MODE:** MOD

Quick Installation Guide with Web Interface

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.

The screenshot displays the Kingsat web interface for a VSAT P6 modem. The local time is 2023-7-11 14:6:45. The interface is divided into several sections:

- Header:** Shows SAT: 133.7E, Status: Tracking, and signal quality bars for S (90%) and Q (75%).
- ANT LOCATION:** Latitude 22.833723, Longitude 113.509606, GPS Number 12, UTC +8.
- ANT POINTING:** Manual pointing is disabled. Target EL: 54.93 Degree, Current EL: 54.61 Degree. Target AZ: 136.52 Degree, Current AZ: 137.41 Degree.
- RX VIEW:** RX_IF 1247.5, LNB_LO 9750, POL VER, RX_BW/RX_SR 51750, AGC Threshold 25, Lock Mode MOD.
- TX VIEW:** SAT 133.7, TX IF 1295.8, BUC LO 12800, POL FICR, TX Bandwidth 1150, TX Enable checked.
- ACU IP VIEW:** AMIP IP 192.168.0.2, AMIP PORT 4002, MAC 54.77.87.B2.30.F8, ACU IP 10.11.194.223, SubMask 255.255.255.192, Gateway 10.11.194.193, MAC 54.77.87.B2.30.F9.
- ACU MONITOR:** BDU Voltage(Normal is 48V) 48.1, ADU Voltage(Normal is 24V) 23.6, Stew Offset 0, EL Offset 0.0, ACU Network online.
- VERSION:** Model VSAT P6, ID 648E9A45, ADU V9.0.0Y Apr 10 2023, BDU V4.7.3 Jul 10 2023.
- MODEM INFO:** Modem Connected, BaudRate 115200, Modem Type IQBoard, Modem SN G11224, Version 2.0.1.2, Rx SNR 10.9, Status In Network.
- Log:** Shows a series of tracking events with timestamps and Rx/L values.

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



Installation

Step 7 Antenna Operating Status



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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



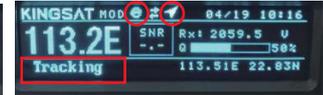
1.Power on and initial



2.Receive GPS info



3.ACU and MODEM communicates by OPENAMIP protocol



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

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.



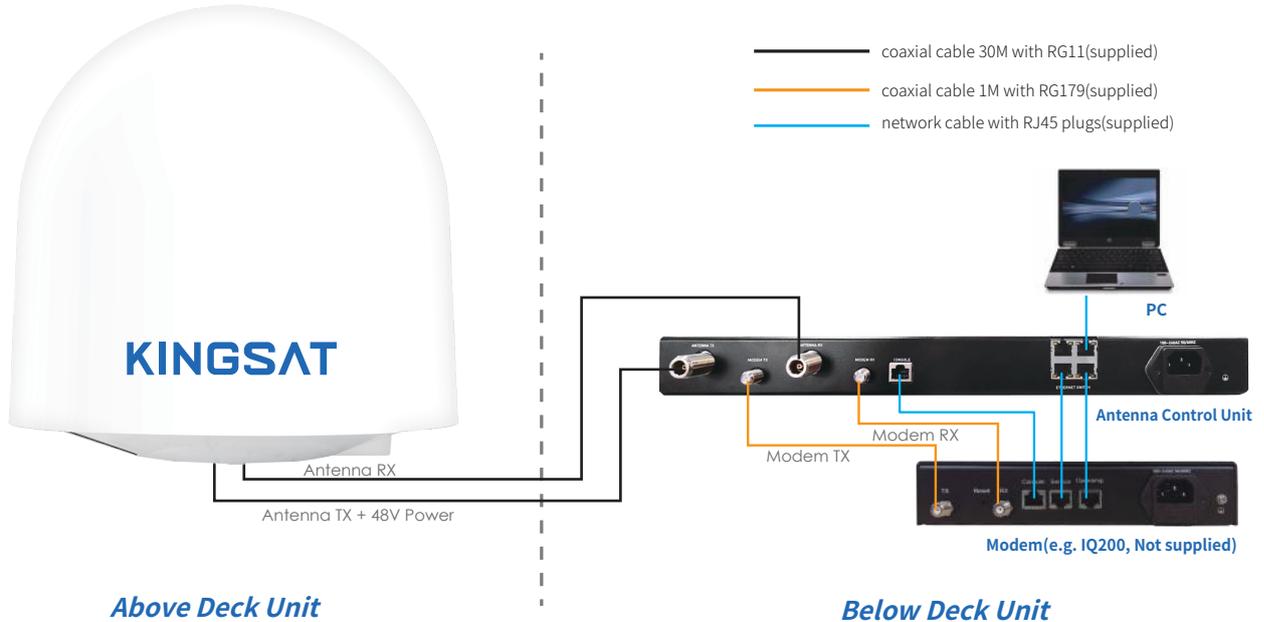
Installation

Step 9 Testing Internet Link

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



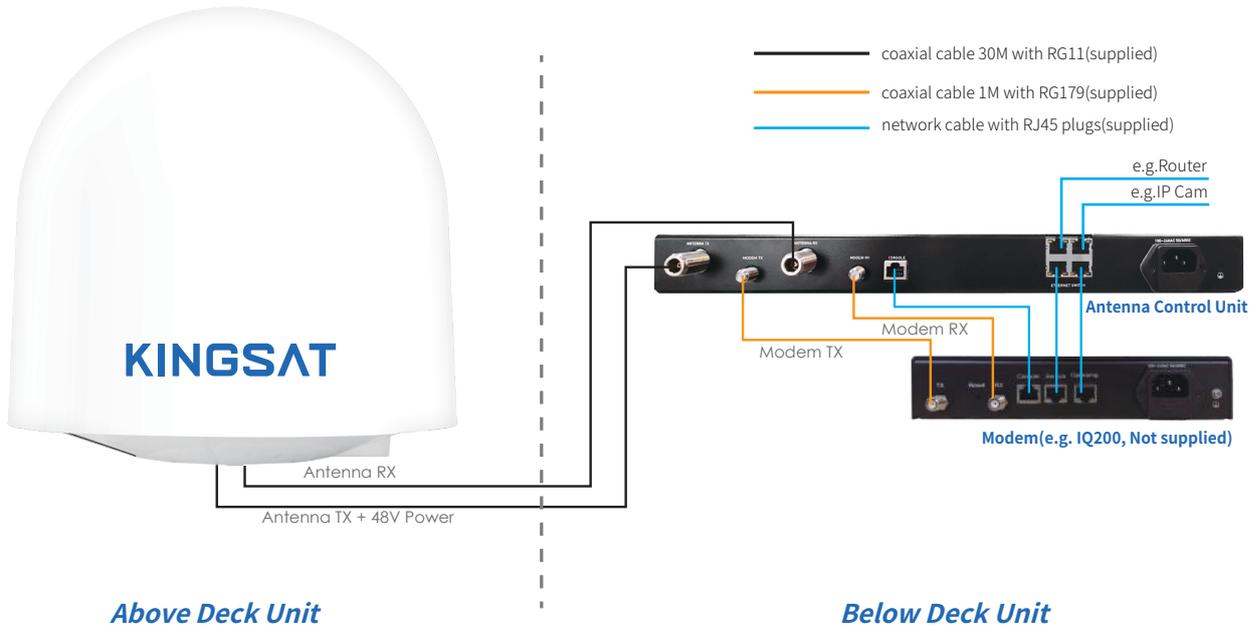
Scan QR code to watch video guideline



Installation

Step 10 Setting Done and Surf Internet

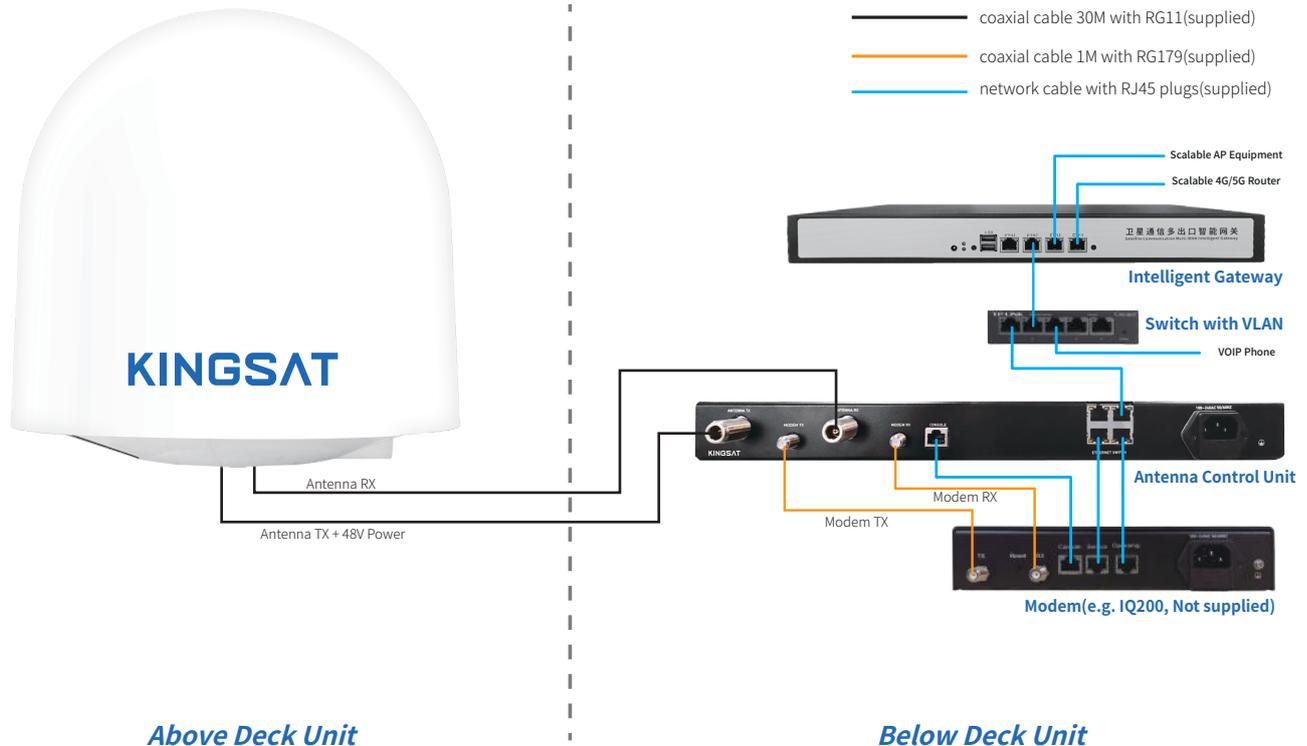
Now you can connect all IP devices to LAN ports of ACU ,then surf internet.



Installation

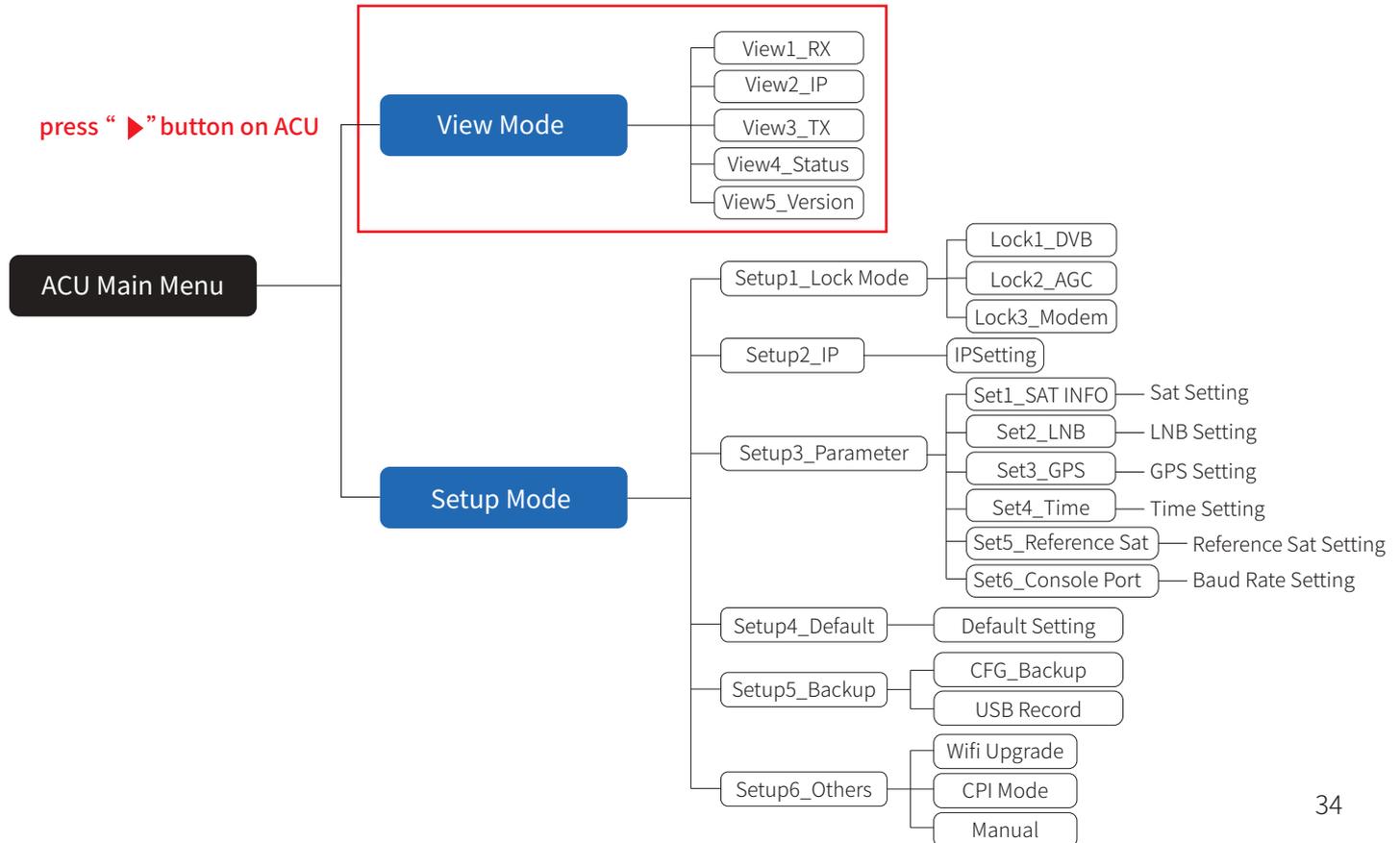
Step 10 Setting Done and Surf Internet

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



Appendix 1

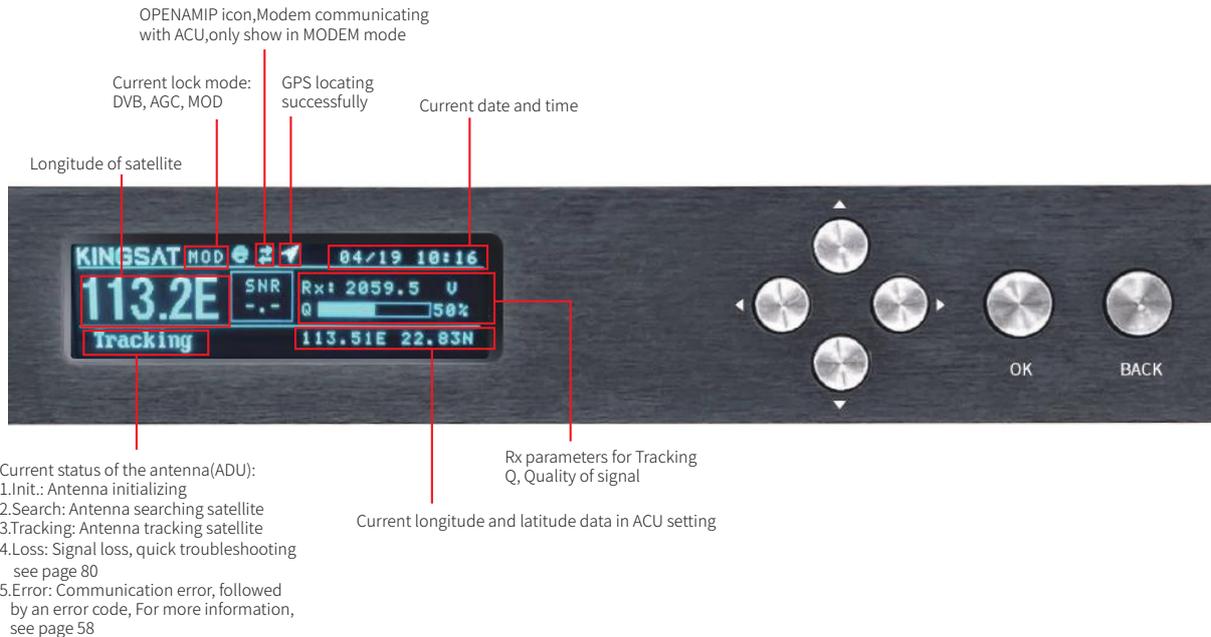
Antenna Status Monitor- View Mode of ACU



Appendix 1

Antenna Status Monitor- View Mode of ACU

Main display description:



Appendix 1

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.

RX VIEW 1/5 KINGSAT

SAT: 113.2E BC_FRQ: 1711040KHz
 LO: 10600 RXIF: 2059.5MHz
 POL: U RXBW: 9000 KHz
 SKEW: 0 AGCT: 25 MODE: MOD

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 VIEW 2/5 KINGSAT

IP: 192.168.003.002
 SM: 255.255.255.000
 GW: 192.168.003.168
 PORT: 04006

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.

TX VIEW 3/5 KINGSAT

SAT: 113.2E TXIF: 0000.0MHz
 LO: 12000 TXBW: 07500KHz
 POL: H

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)

STATUS VIEW 4/5 KINGSAT

ADU: 23.8V AZ: 181.02 POW: 99.6 W
 BDU: 48.0V EL: 63.22
 LNB: 13.0V AGC: 35035
 LATLONG: 22.83N 113.51E GPS: 32

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

VERSION 5/5 KINGSAT

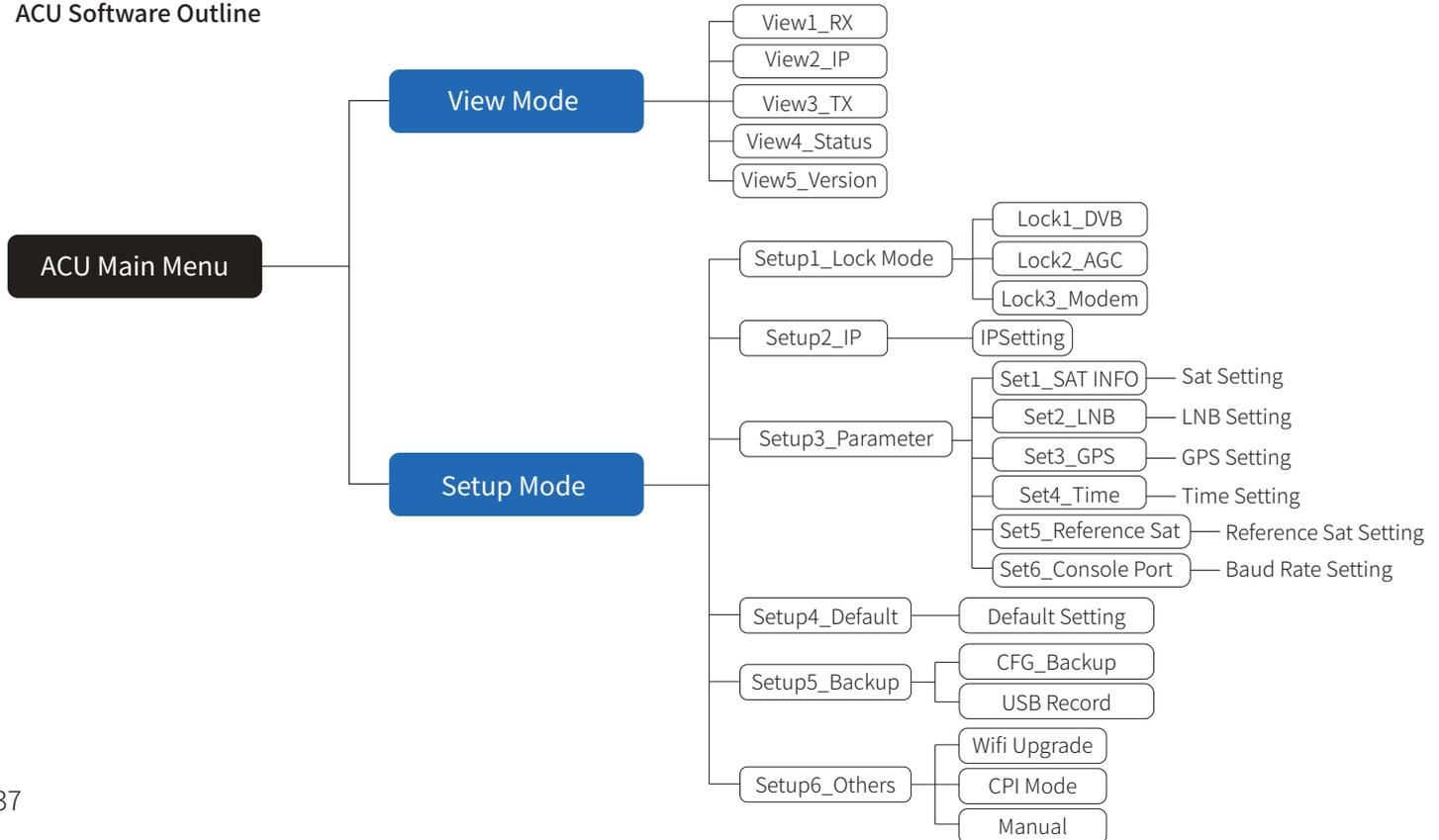
MODEL: USATP9E ID: 03207110
 ADU: Apr 8 2022 V1.0.09
 BDU: Apr 17 2022 V4.3.0

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

ACU Software Outline



Appendix 2

Web Interface Home page

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

Local Time: 2023-7-11 14:6:45 Switch to TVRO Restart

HOME MONITOR SETTING CONTACT US

SAT: 133.7E Status: Tracking AMIP GPS NET S 90% Q 75%

ANT LOCATION

Latitude: 22.833723
Longitude: 113.509606
GPS Number: 12
UTC: +8

ANT POINTING

Manual pointing



Target Current
EL: 54.93 Degree 54.61 Degree
AZ: 136.52 Degree 137.41 Degree

RX VIEW

RX_IF: 1247.5
LNB_LO: 9750
POL: VER
RX_BW/RX_SR: 51750
AGC Threshold: 25
Lock Mode: MOD

TX VIEW

SAT: 133.7
TX IF: 1295.8
BUC LO: 12800
POL: HOR
TX_Bandwidth: 1150

TX Enable

AGC: 43160 PWR: 75.5
SNR: 10.9 Get Gyro info

```

[2023-7-11 14:6:37]Rx:L 1 1
[2023-7-11 14:6:38]Rx:L 1 1
[2023-7-11 14:6:39]Tx:w 1 22.833721
113.509606 1689084399 0 0 0 0 0
[2023-7-11 14:6:39]Rx:L 1 1
[2023-7-11 14:6:40]Rx:L 1 1
[2023-7-11 14:6:41]Rx:L 1 1
[2023-7-11 14:6:42]Rx:L 1 1
[2023-7-11 14:6:43]Rx:L 1 1
[2023-7-11 14:6:44]Tx:w 1 22.833722
113.509606 1689084404 0 0 0 0 0
[2023-7-11 14:6:44]Rx:L 1 1
[2023-7-11 14:6:45]Rx:L 1 1
                    
```

OPENAMIP Monitor
 Communication Monitor
 OPENAMIP Manual debug

ACU IP VIEW

AMIP IP: 192.168.0.2
AMIP PORT: 4002
MAC: 54:77:87:B2:30:F8
ACU IP: 10.11.194.223
SubMask: 255.255.255.192
Gateway: 10.11.194.193
MAC: 54:77:87:B2:30:F9

ACU MONITOR

BDU Voltage(Normal is 48V): 48.1
ADU Voltage(Normal is 24V): 23.6
Skew Offset: 0
EL Offset: 0.0
ACU Network: online

VERSION

Model: VSAT P6
ID: 649E9A45
ADU: V9.0.07 Apr 10 2023
BDU: V4.7.3 Jul 10 2023

MODEM INFO

Modem: Connected
BaudRate: 115200
Modem Type: IQBoard
Modem SN: 011224
Version: 2.0.1.2
Rx SNR: 10.9
Status: In Network

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Appendix 2

Web Interface Home page

Sub-pages info indicate different parameters.

Local Time: 2023-7-11 14:6:45
Switch to TVRO Restart

SAT: 133.7E
Status: Tracking
AMIP
GPS
NET
S 90%
Q 75%

HOME
MONITOR
SETTING
CONTACT US

Capture GPS info
Antenna real-time pointing status
RX info for Tracking
Tx info from modem

ANT LOCATION

Latitude: 22.833723

Longitude: 113.509606

GPS Number: 12

UTC: +8

ANT POINTING

Manual pointing

EL -
EL +

AZ -
AZ +

EL	Target	Current
54.93	Degree	54.61 Degree
136.52	Degree	137.41 Degree

RX VIEW

RX_IF: 1247.5

LNB_LO: 9750

POL: VER

RX_BW/RX_SR: 51750

AGC Threshold: 25

Lock Mode: MOD

TX VIEW

SAT: 133.7

TX IF: 1295.8

BUC LO: 12800

POL: HOR

TX_Bandwidth: 1150

TX Enable

AGC: 43160

SNR: 10.9

PWR: 75.5

Get Gyro info

```

[2023-7-11 14:6:37]Rx:L 1 1
[2023-7-11 14:6:38]Rx:L 1 1
[2023-7-11 14:6:39]Tx:w 1 22.833721
13.509605 1689084399 0 0 0 0 0
[2023-7-11 14:6:39]Rx:L 1 1
[2023-7-11 14:6:40]Rx:L 1 1
[2023-7-11 14:6:41]Rx:L 1 1
[2023-7-11 14:6:42]Rx:L 1 1
[2023-7-11 14:6:43]Rx:L 1 1
[2023-7-11 14:6:44]Tx:w 1 22.833722
13.509606 1689084404 0 0 0 0 0
[2023-7-11 14:6:44]Rx:L 1 1
[2023-7-11 14:6:45]Rx:L 1 1
                
```

ACU IP VIEW

AMIP IP: 192.168.0.2

AMIP PORT: 4002

MAC: 54.77.87.B2.30.F8

ACU IP: 10.11.194.223

SubMask: 255.255.255.192

Gateway: 10.11.194.193

MAC: 54.77.87.B2.30.F9

ACU MONITOR

BDU Voltage(Normal is 48V): 48.1

ADU Voltage(Normal is 24V): 23.6

Skew Offset: 0

EL Offset: 0.0

ACU Network: online

VERSION

Model: VSAT P6

ID: 649E9A45

ADU: V9.0.07 Apr 10 2023

BDU: V4.7.3 Jul 10 2023

MODEM INFO

Modem: Connected

BaudRate: 115200

Modem Type: IQBoard

Modem SN: 011224

Version: 2.0.1.2

Rx SNR: 10.9

Status: In Network

IP setting

ACU voltage and status monitor

Version view

Modem status from console port

Real-time monitor for communication

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Appendix 2

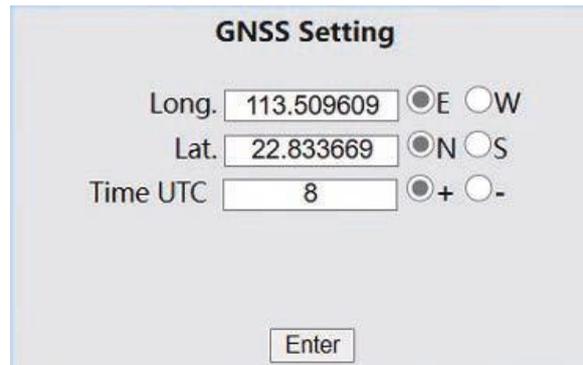
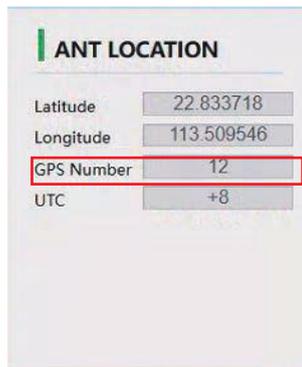
Sub-page Ant Location

ANT LOCATION

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

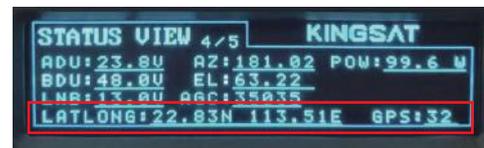
GPS number indicates GNSS satellites number which GNSS module can receive signal at current location. Time Zone setting, go to SETTING --GNSS Setting, GNSS parameters can be setup by manual if needed.

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.



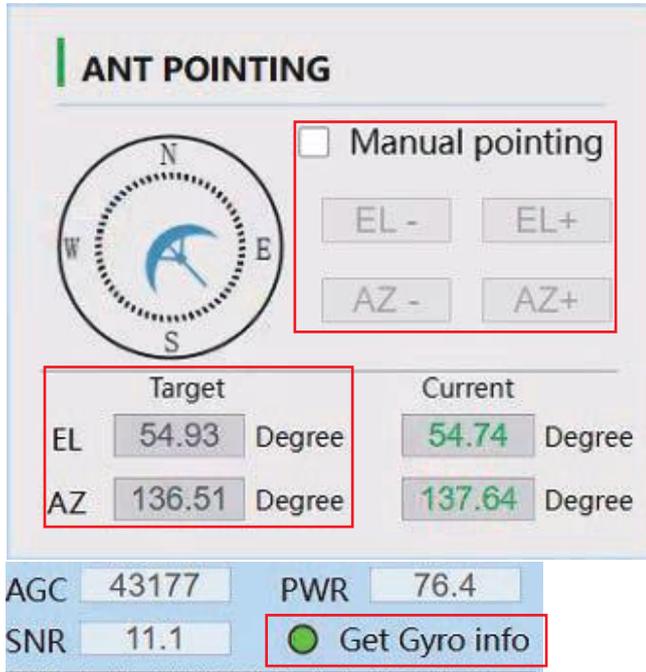
Another way for checking

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)**Built-in 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

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.

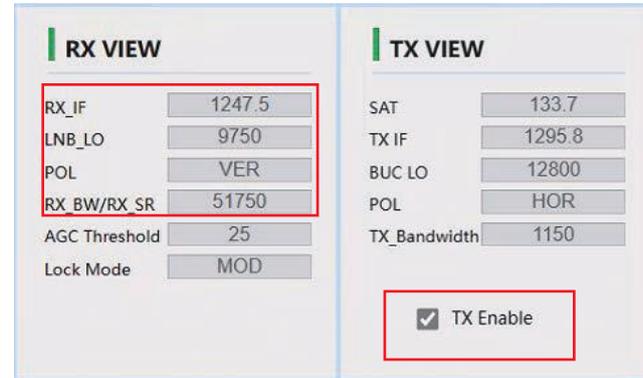
Rx parameters:

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 ($\pm 20\%$ 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 switch 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 Eth0 IP Setting for OPENAMIP](#).

ACU IP VIEW

AMIP IP	192.168.0.2
AMIP PORT	4002
MAC	54:77:87:B2:30:F8
ACU IP	10.11.194.223
SubMask	255.255.255.192
Gateway	10.11.194.193
MAC	54:77:87:B2:30:F9

ACU Eth0 IP Setting for OPENAMIP

ETH0 IP 192 . 168 . 0 . 2

ETH0 Port 4002

Enter

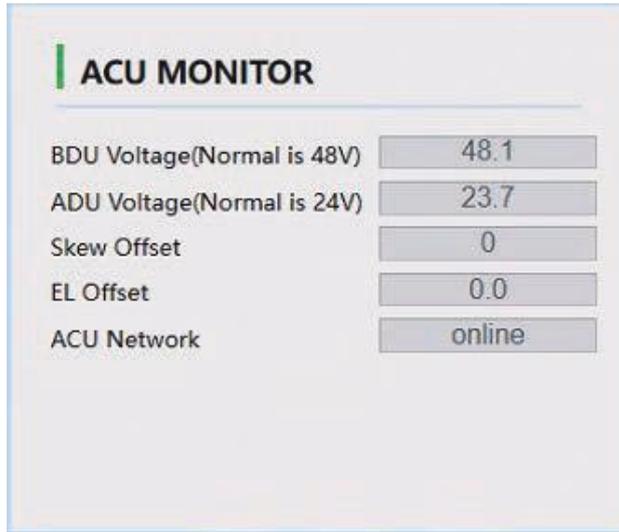
Check ACU side, press Right button, check IP VIEW page.

IP VIEW 2/5 **KINGSAT**

IP: 192.168.003.002
SM: 255.255.255.000
GW: 192.168.003.168
PORT: 04006

Appendix 2

Sub-page Monitor page



ACU MONITOR

BDU Voltage:

This is ACU output voltage 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:

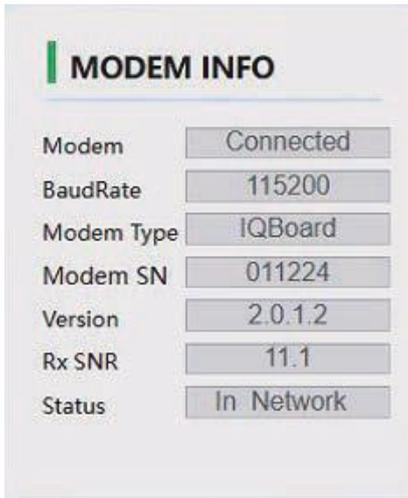
this is **unique ID** for each antenna.



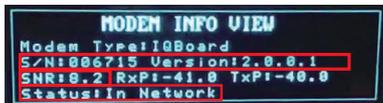
Check ACU side, press Right button, check VERSION page.

Appendix 2

Sub-page MODEM info page



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.

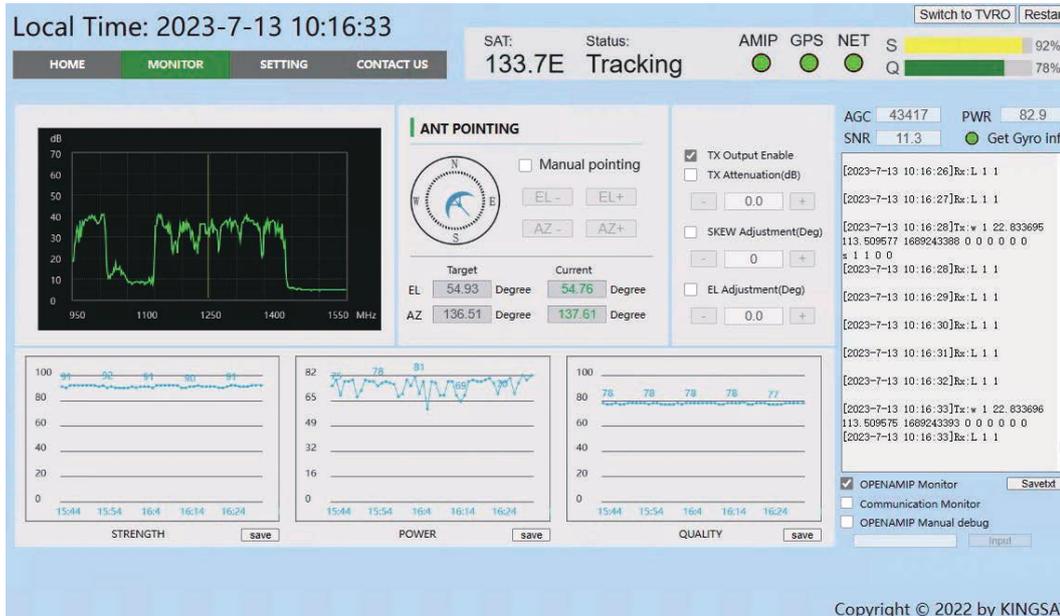
WAITING_FOR_RX_LOCK the antenna Rx has not locked the star successfully, MODEM is waiting for the antenna to be aligned with the satellite.

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



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



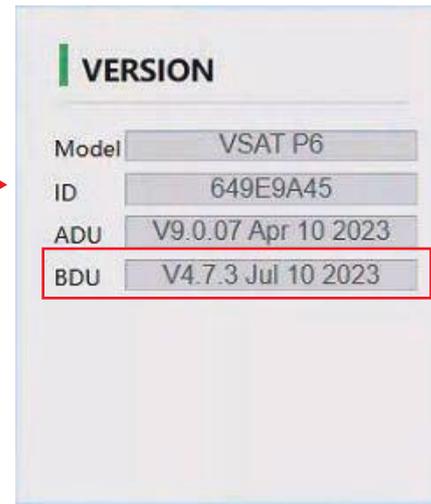
Scan QR code to
watch video guideline

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

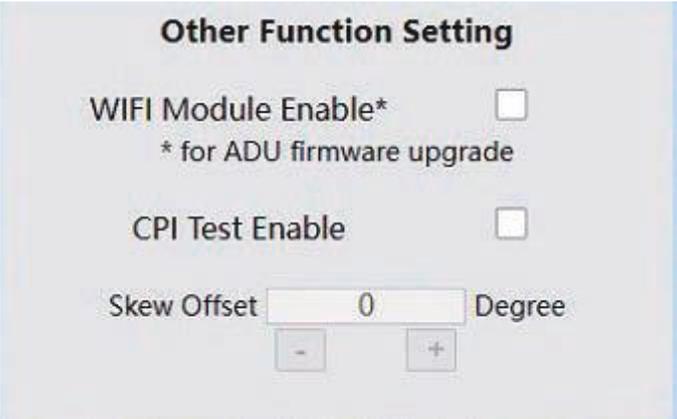
CPI Test

According to NOC requirement, if they need to test CPI so you must **Enable 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 Degree
- +

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 Long. E W

RX Intermediate Freq

LNB

Bandwidth/SymbolRate

AGC Threshold

Polarization Vertical Horizontal

Appendix 2

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.

The image shows two screenshots of the Kingsat web interface. The left screenshot is the 'GNSS Setting' page, where the 'Time UTC' field is set to '8' and is highlighted with a red box. A red arrow points from this field to the right screenshot. The right screenshot is the main dashboard, where the 'Local Time' is displayed as '2023-7-11 16:42:22' and is also highlighted with a red box. The dashboard includes navigation tabs for HOME, MONITOR, SETTING, and CONTACT US. The 'ANT LOCATION' section shows Latitude: 22.833689, Longitude: 113.509560, GPS Number: 12, and UTC: +8. The 'ANT POINTING' section shows a compass rose and manual pointing controls. Below the compass, there are tables for Target and Current values for Elevation (EL) and Azimuth (AZ).

	Target	Current
EL	54.93 Degree	54.76 Degree
AZ	136.51 Degree	137.20 Degree

Appendix 2

EL Adjustment with Web Interface

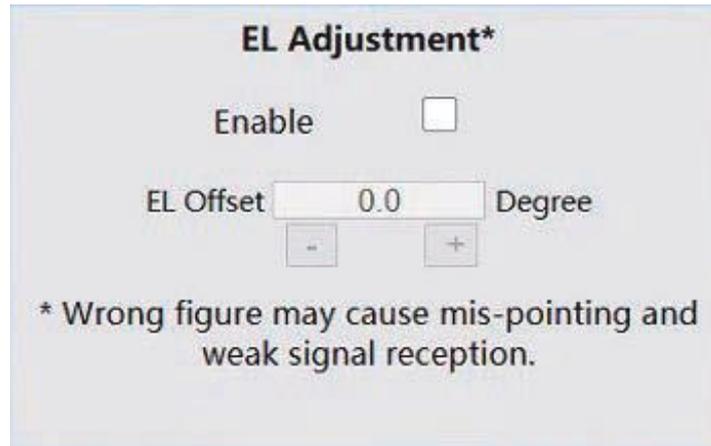
EL Adjustment

Elevation sensor adjustment

If needed, make elevation adjustment with [EL Offset](#).

This setting must be followed by [KINGSAT technical team](#) instruction.

Default is disable .



EL Adjustment*

Enable

EL Offset Degree

* Wrong figure may cause mis-pointing and weak signal reception.

Appendix 2

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.

The screenshot displays the Kingsat web interface in TVRO mode. At the top right, there is a button labeled "Switch to VSAT". The main content area is titled "Now it is TVRO mode." and contains three columns of data:

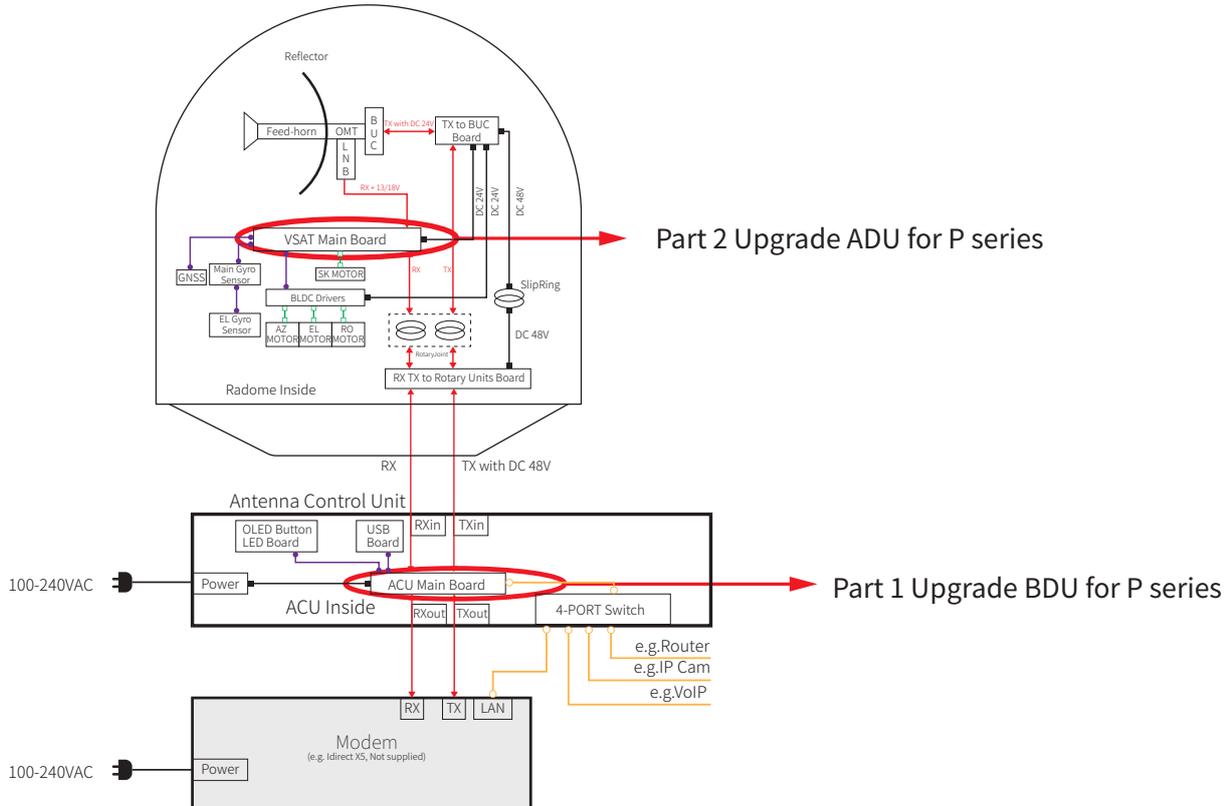
Satellite:	138.0E	Status:	Tracking	Longitude:	113.5066 E
Name:	Apstar 5	ADU voltage:	23.7	Latitude:	22.8336 N
Lnb type:	LINEAR	BDU voltage:	48.1	Number:	12
Lnb LO:	10600	LNB voltage:	13	Model:	VSAT P6
Polar:	VER	Power:	80.9	ID:	646E9A45
Frequency:	12294	AGC:	47882	ADU Version:	V9.0 07 Apr 10 2022
Symbolrate:	45000	Quality:	93	BDU Version:	V4.7.3 Jul 10 2023
Tone:	22K				

Below this, the "Satellite Parameter setting" section is visible, featuring radio buttons for SAT1 through SAT8. The "SAT1" option is selected. Underneath, there are input fields for "Satellite longitude" (138.0), "SKEW Offset" (0), "Band select" (HIGH), "Lockmode" (DVB), "Polar select" (VER), and "AGCThreshold" (0). At the bottom, there are four boxes for frequency and symbol rate settings:

HIGH_HOR	HIGH_VER	LOW_HOR	LOW_VER
FREQ: 12429 MHz SYMB: 3330 KHz	FREQ: 12294 MHz SYMB: 45000 KHz	FREQ: 12637 MHz SYMB: 41250 KHz	FREQ: 12720 MHz SYMB: 43000 KHz

An "Enter" button is located at the bottom center of the settings area. The footer of the interface reads "Copyright © 2022 by KINGSAT".

Appendix 3 Upgrade



Appendix 3

Part 1 Upgrade BDU for P series

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.

Local Time: 2023-8-23 10:45:16

Switch to TVRO Restart

HOME MONITOR **SETTING** CONTACT US

SAT: 133.7E Status: Tracking AMIP GPS NET S 97% 78%

Lock Mode <input type="radio"/> DVB* <input type="radio"/> AGC <input checked="" type="radio"/> MOD <input type="radio"/> BEA* <small>* DVB is same as TVRO mode. * Beacon mode is optional hardware spec for certain models. Make sure current model has beacon module deployed then enable beacon mode.</small> Enter	ACU Eth0 IP Setting for OPENAMIP ETH0 IP: 192 168 0 2 ETH0 Port: 4002 Enter	RX Parameters Setting Sat Long: 133.7 <input type="radio"/> E <input type="radio"/> W RX Intermediate Freq: 1247.5 LNB: 9750 Bandwidth/SymbolRate: 51750 AGC Threshold: 25 Polarization: <input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal Enter	ACU Console Setting <input type="radio"/> 9600 <input checked="" type="radio"/> 115200 Username: admin Password: P@5w0rd! Enter
OpenAMIP Protocol Protocol: OpenAMIP Type: iDirect Enter	Beacon Setting (Only valid in beacon mode) Beacon Freq: 1711040 KHz Enter	Other Function Setting WiFi Module Enable* <input type="checkbox"/> <small>* for ADU firmware upgrade</small> CPI Test Enable <input type="checkbox"/> Skew Offset: 0 Degree Enter	EL Adjustment* Enable <input type="checkbox"/> EL Offset: 0.0 Degree <small>* Wrong figure may cause mis-pointing and weak signal reception.</small>
GNSS Setting Long: 113.509595 <input type="radio"/> E <input type="radio"/> W Lat: 22.833682 <input type="radio"/> N <input type="radio"/> S Time UTC: 8 <input type="radio"/> + <input type="radio"/> - Enter	BUC Select (Optional function) Type: NONE Attenuation: 0.0 dB Enter	Reference Sat function Setting <input type="checkbox"/> Enable Ref Sat Long: 105.5 <input type="radio"/> E <input type="radio"/> W RX Intermediate Freq: 2115.0 Bandwidth: 2000 Beacon Freq: 2149300 Polarization: <input type="radio"/> Vertical <input checked="" type="radio"/> Horizontal LNB LO: <input checked="" type="radio"/> High10600 <input type="radio"/> Low9750 Enter	Eth1 port Setting(For Network) <input checked="" type="radio"/> Obtain IP address automatically <input type="radio"/> Use the following IP address Eth1 IP: 10 11 194 222 Eth1 SubMask: 255 255 255 192 Eth1 Gateway: 10 11 194 193 Enter
ACU Firmware Upgrade 选择文件 未选择文件 Upgrade Cancel		Copyright © 2022 by KINGSAT	

Appendix 3

Part 2 Upgrade ADU for P series

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.

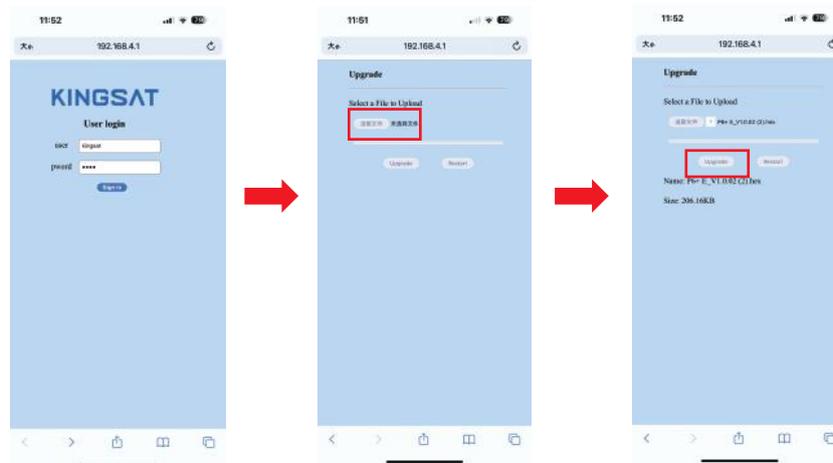


Appendix 3

Part 2 Upgrade ADU for P series

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

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.

Local Time: 2023-8-23 10:45:16

SAT: 133.7E Status: Tracking AMP GPS NET S Q 97% 78%

HOME MONITOR **SETTING** CONTACT US

Switch to TVRO Restart

Lock Mode <input type="radio"/> DVB* <input type="radio"/> AGC <input type="radio"/> M00 <input type="radio"/> BEA* <small>* DVB is same as TVRO mode. * Beacon mode is optional hardware spec for certain models. Make sure current model has beacon module deployed then enable beacon mode.</small> Enter	ACU Eth0 IP Setting for OPENAMIP ETH0 IP: 192.168.0.2 ETH0 Port: 4002 Enter	RX Parameters Setting Sat Long: 133.7 E W RX Intermediate Freq: 1247.5 LNB: 9750 Bandwidth/SymbolRate: 91750 AGC Threshold: 25 Polarization: <input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal Enter	ACU Console Setting -9600 +115200 Username: admin Password: P@ssw0rd! Enter
OpenAMIP Protocol Protocol: OpenAMIP Type: iDirect Enter	Beacon Setting (Only valid in beacon mode) Beacon Freq: 1711040 KHz Enter	Other Function Setting WiFi Module Enable* * for ADU firmware upgrade CPI Test Enable Skew Offset: 0 Degree Enter	EL Adjustment* Enable EL Offset: 0.0 Degree * Wrong figure may cause mis-pointing and weak signal reception. Enter
GNSS Setting Long: 113.509598 E W Lat: 22.833682 N S Time UTC: 8 + - Enter	BUC Select (Optional function) Type: NONE Attenuation: 0.0 dB Enter	Reference Sat Function Setting Enable Ref Sat Long: 105.5 E W RX Intermediate Freq: 2115.0 Bandwidth: 2000 Beacon Freq: 2145300 Polarization: <input type="radio"/> Vertical <input checked="" type="radio"/> Horizontal LNB LO: <input checked="" type="radio"/> High10600 <input type="radio"/> Low9750 Enter	Eth1 port Setting (For Network) <input checked="" type="radio"/> Obtain IP address automatically Use the following IP address Eth1 IP: 10.11.194.222 Eth1 SubMask: 255.255.255.192 Eth1 Gateway: 10.11.194.193 Enter
ACU Firmware Upgrade 选择文件 未选择文件 Upgrade Cancel			

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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.
- 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

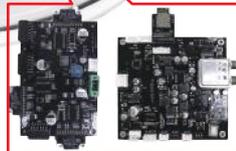
E06 E09 Gyro sensor issue. Check if the connection of sensor is loose. If not, replace the gyro sensor.

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.



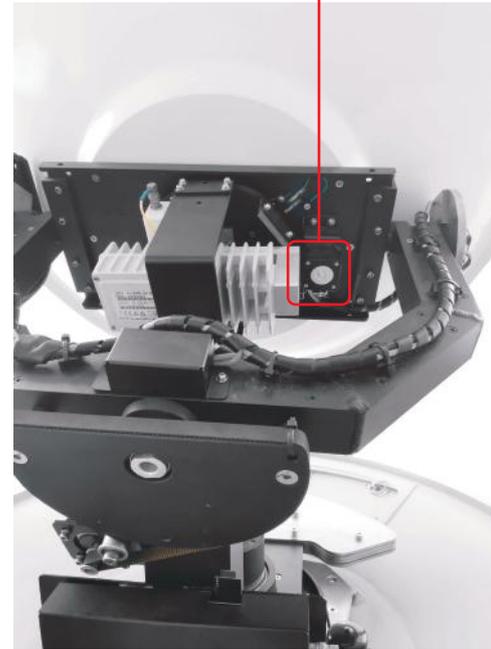
Appendix 4

Troubleshooting Guide---Error Code

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.

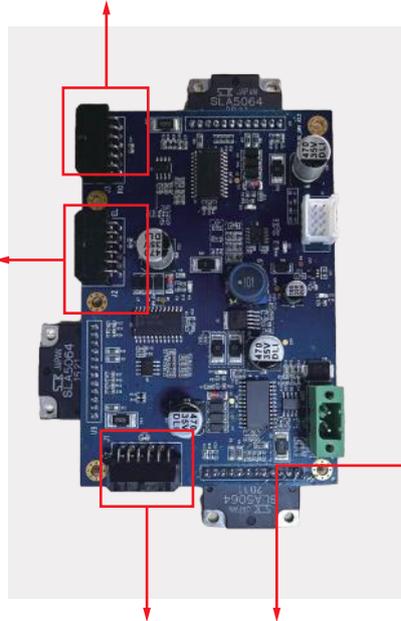


Appendix 4

Troubleshooting Guide---Error Code

E12

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

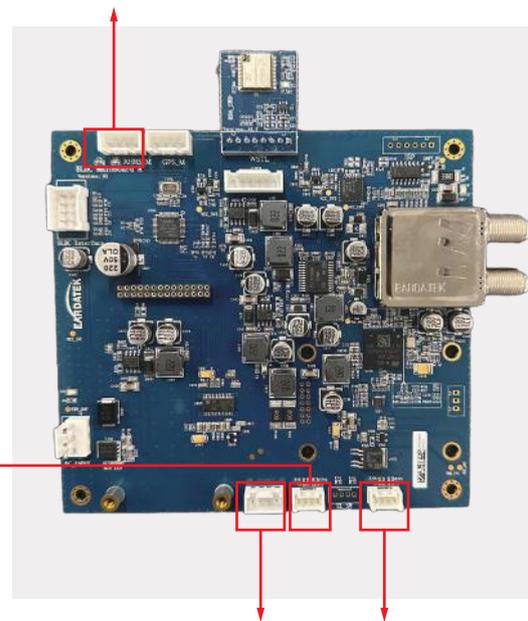


E07

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

E06

Check if the connector of gyro sensor is 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

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.

Local Time: 2023-11-1 11:25:41

SAT: 133.7E Status: Tracking

AMIP GPS NET S 100% Q 93%

Switch to TVRO Restart

HOME MONITOR SETTING CONTACT US

ANT LOCATION

Latitude 22.833689
Longitude 113.509410
GPS Number 30
UTC +8

ANT POINTING

Manual pointing

EL - EL+
AZ - AZ+

Target Current
EL 54.93 Degree 54.95 Degree
AZ 136.51 Degree 136.61 Degree

RX VIEW

RX_IF 1247.5
LNB_LO 9750
POL VER/R
RX_BW/RX_SR 51750
AGC_Threshold 25
Lock Mode MOD

TX VIEW

SAT 133.7E
TX_IF 1295.8
BUC_LO 12800
POL HOR/L
TX_Bandwidth 1150

TX Enable

AGC 45618 PWR 111.6
SNR 0.0

Get Gyro info

ACU IP VIEW

AMIP IP 192.168.0.2
AMIP PORT 4002
MAC 54.77.87.82.31.78
ACU IP 0.0.0.0
SubMask 0.0.0.0
Gateway 0.0.0.0
MAC 54.77.87.82.31.79

ACU MONITOR

BDU Voltage(Normal is 48V) 47.6
ADU Voltage(Normal is 24V) 23.9
Skew Offset 0
EL Offset 0.0
ACU Network offline

VERSION

Model VSATP8E
ID 64DD7388
ADU V3.1.05 Oct 30 2023
BDU V4.7.6 Oct 24 2023

MODEM INFO

Modem Unconnected
BaudRate 115200
Modem Type
Modem SN 000000
Version
Rx SNR 0.0
Status

OPENAMIP Monitor
Communication Monitor
OPENAMIP Manual debug

s 1 0 1 0 input

Green LED means antenna get gyro info.

Appendix 4

Troubleshooting Guide---3 Checks for troubleshooting

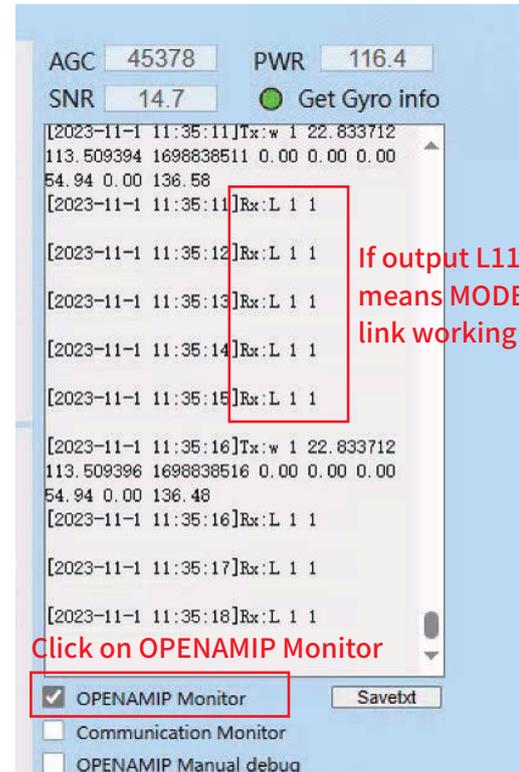
CHECK 2. Check Openamip command

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

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.

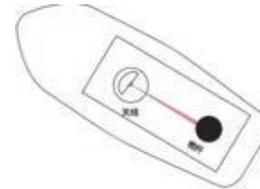
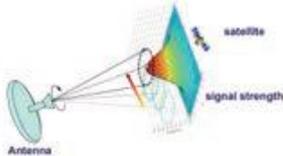
Total PWR <50 watt, Means
BUC not working



Appendix 4

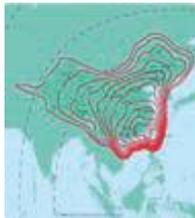
Troubleshooting Guide---Failure Cause

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.

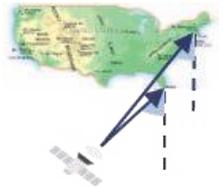
Appendix 4

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

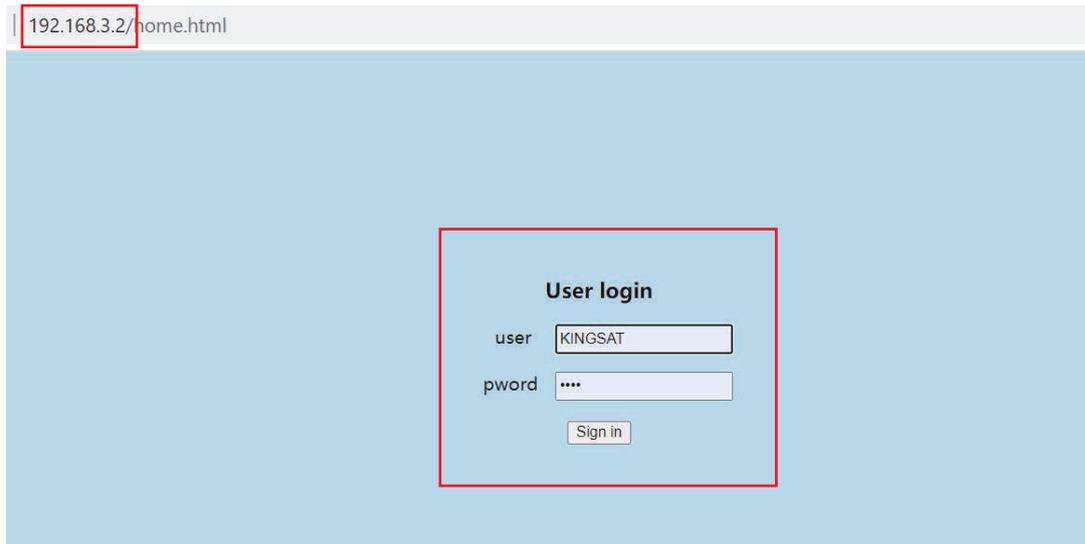
If Antenna keep searching for long time, can not track satellite, So plz login Web Interface to make troubleshooting.



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



The screenshot shows a web browser window with the address bar containing "192.168.3.2/home.html". The main content area has a light blue background and features a "User login" form. The form includes a "user" field with the text "KINGSAT", a "pword" field with four dots, and a "Sign in" button. Red boxes highlight the address bar and the login form.

192.168.3.2/home.html

User login

user

pword

Appendix 4

Troubleshooting Guide---Web Interface

Sub-pages info indicate different parameters.

Local Time: 2023-7-11 14:6:45
Switch to TVRO | Restart

SAT: **133.7E**

Status: **Tracking**

AMIP ●

GPS ●

NET ●

S 90%

Q 75%

Capture GPS info
Antenna real-time pointing status
RX info for Tracking
Tx info from modem

ANT LOCATION

Latitude: 22.833723

Longitude: 113.509606

GPS Number: 12

UTC: +8

ANT POINTING

Manual pointing

EL -
EL +

AZ -
AZ +

EL	Target	Current
54.93	Degree	54.61
AZ	136.52	Degree
		137.41

RX VIEW

RX_IF: 1247.5

LNB_LO: 9750

POL: VER

RX_BW/RX_SR: 51750

AGC Threshold: 25

Lock Mode: MOD

TX VIEW

SAT: 133.7

TX IF: 1295.8

BUC LO: 12800

POL: HOR

TX_Bandwidth: 1150

TX Enable

AGC: 43160

PWR: 75.5

SNR: 10.9

Get Gyro info

```

[2023-7-11 14:6:37]Rx:L 1 1
[2023-7-11 14:6:38]Rx:L 1 1
[2023-7-11 14:6:39]Tx:w 1 22.833721
13.509605 1689084399 0 0 0 0 0
[2023-7-11 14:6:39]Rx:L 1 1
[2023-7-11 14:6:40]Rx:L 1 1
[2023-7-11 14:6:41]Rx:L 1 1
[2023-7-11 14:6:42]Rx:L 1 1
[2023-7-11 14:6:43]Rx:L 1 1
[2023-7-11 14:6:44]Tx:w 1 22.833722
13.509606 1689084404 0 0 0 0 0
[2023-7-11 14:6:44]Rx:L 1 1
[2023-7-11 14:6:45]Rx:L 1 1
                
```

ACU IP VIEW

AMIP IP: 192.168.0.2

AMIP PORT: 4002

MAC: 54.77.87.B2.30.F8

ACU IP: 10.11.194.223

SubMask: 255.255.255.192

Gateway: 10.11.194.193

MAC: 54.77.87.B2.30.F9

ACU MONITOR

BDU Voltage(Normal is 48V): 48.1

ADU Voltage(Normal is 24V): 23.6

Skew Offset: 0

EL Offset: 0.0

ACU Network: online

VERSION

Model: VSAT P6

ID: 649E9A45

ADU: V9.0.07 Apr 10 2023

BDU: V4.7.3 Jul 10 2023

MODEM INFO

Modem: Connected

BaudRate: 115200

Modem Type: IQBoard

Modem SN: 011224

Version: 2.0.1.2

Rx SNR: 10.9

Status: In Network

IP setting

ACU voltage and status monitor

Version view

Modem status from console port

Real-time monitor for communication

OPENAMIP Monitor Savetxt

Communication Monitor

OPENAMIP Manual debug

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Appendix 4

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.

Local Time: 2023-7-11 14:6:45

Switch to TVRO Restart

HOME MONITOR SETTING CONTACT US

SAT: 133.7E Status: Tracking

AMIP GPS NET S 90% Q 75%

Check 1

ANT LOCATION

Latitude: 22.833723
Longitude: 113.509606
GPS Number: 12
UTC: +8

ANT POINTING

Manual pointing

EL - EL+
AZ - AZ+

Target Current
EL 54.93 Degree 54.61 Degree
AZ 136.52 Degree 137.41 Degree

Check 3

ACU IP VIEW

AMIP IP: 192.168.0.2
AMIP PORT: 4002
MAC: 54:77:87:B2:30:F8
ACU IP: 10.11.194.223
SubMask: 255.255.255.192
Gateway: 10.11.194.193
MAC: 54:77:87:B2:30:F9

ACU MONITOR

BDU Voltage(Normal is 48V): 48.1
ADU Voltage(Normal is 24V): 23.6
Skew Offset: 0
EL Offset: 0.0
ACU Network: online

RX VIEW

RX_IF: 1247.5
LNB_LO: 9750
POL: VER
RX_BW/RX_SR: 51750
AGC Threshold: 25
Lock Mode: MOD

TX VIEW

SAT: 133.7
TX IF: 1295.8
BUC LO: 12800
POL: HOR
TX_Bandwidth: 1150

TX Enable

VERSION

Model: VSAT P6
ID: 649E9A45
ADU: V9.0.07 Apr 10 2023
BDU: V4.7.3 Jul 10 2023

MODEM INFO

Modem: Connected
BaudRate: 115200
Modem Type: IQBoard
Modem SN: 011224
Version: 2.0.1.2
Rx SNR: 10.9
Status: In Network

AGC: 43160 PWR: 75.5
SNR: 10.9 Get Gyro info

[2023-7-11 14:6:37]Rx:L 1 1
[2023-7-11 14:6:38]Rx:L 1 1
[2023-7-11 14:6:39]Tx:w 1 22.833721 113.509606 1689084399 0 0 0 0 0
[2023-7-11 14:6:39]Rx:L 1 1
[2023-7-11 14:6:40]Rx:L 1 1
[2023-7-11 14:6:41]Rx:L 1 1
[2023-7-11 14:6:42]Rx:L 1 1
[2023-7-11 14:6:43]Rx:L 1 1
[2023-7-11 14:6:44]Tx:w 1 22.833722 113.509606 1689084404 0 0 0 0 0
[2023-7-11 14:6:44]Rx:L 1 1
[2023-7-11 14:6:45]Rx:L 1 1

OPENAMIP Monitor Savebt
 OPENAMIP Monitor Help

Check 2

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Appendix 4

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.

The screenshot displays the Kingsat web interface with the following sections:

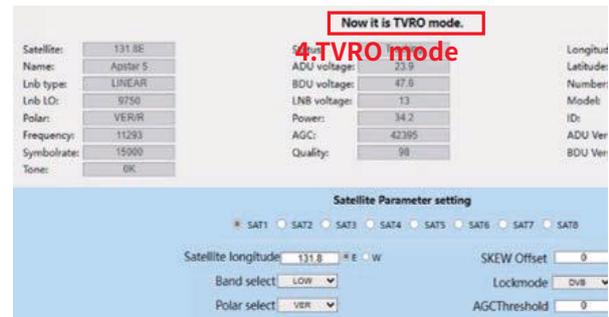
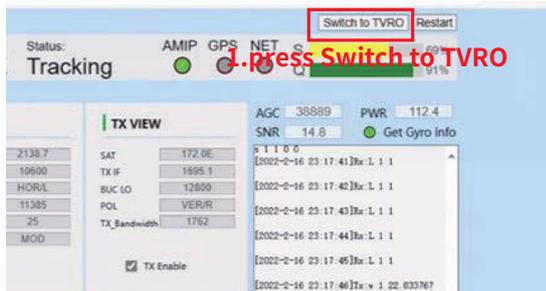
- Local Time:** 2023-7-11 14:6:45
- Navigation:** HOME, MONITOR, SETTING, CONTACT US
- Status Bar:** SAT: 133.7E, Status: Tracking, AMIP, GPS, NET, S (90%), Q (75%)
- ANT LOCATION:** Latitude: 22.833723, Longitude: 113.509606, GPS Number: 12, UTC: +8. **Check 4** is highlighted in red.
- ANT POINTING:** Manual pointing, EL: 54.93 Degree, AZ: 136.52 Degree, Current EL: 54.61 Degree, Current AZ: 137.41 Degree.
- RX VIEW:** RX_IF: 1247.5, LNB_LO: 9750, POL: VER, RX_BW/RX_SR: 51750, AGC Threshold: 25, Lock Mode: MOD. **Check 5** is highlighted in red.
- TX VIEW:** SAT: 133.7, TX IF: 1295.8, BUC LO: 12800, POL: HOR, TX Bandwidth: 1150, TX Enable: checked.
- AGC:** 43160, SNR: 10.9, PWR: 75.5, Get Gyro info: checked.
- ACU IP VIEW:** AMIP IP: 192.168.0.2, AMIP PORT: 4002, MAC: 54:77:87:B2:30:F8, ACU IP: 10.11.194.223, SubMask: 255.255.255.192, Gateway: 10.11.194.193, MAC: 54:77:87:B2:30:F9.
- ACU MONITOR:** BDU Voltage: 48.1V, ADU Voltage: 23.6V, Skew Offset: 0, EL Offset: 0.0, ACU Network: online.
- VERSION:** Model: VSAT P6, ID: 649E9A45, ADU: V9.0.07 Apr 10 2023, BDU: V4.7.3 Jul 10 2023.
- MODEM INFO:** Modem: Connected, BaudRate: 115200, Modem Type: IQBoard, Modem SN: 011224, Version: 2.0.1.2, Rx SNR: 10.9, Status: In Network.
- Log:** [2023-7-11 14:6:37]Rx:L 1 1, [2023-7-11 14:6:38]Rx:L 1 1, [2023-7-11 14:6:39]Tx:w 1 22.833721 113.509606 1689084399 0 0 0 0 0, [2023-7-11 14:6:39]Rx:L 1 1, [2023-7-11 14:6:40]Rx:L 1 1, [2023-7-11 14:6:41]Rx:L 1 1, [2023-7-11 14:6:42]Rx:L 1 1, [2023-7-11 14:6:43]Rx:L 1 1, [2023-7-11 14:6:44]Tx:w 1 22.833722 113.509606 1689084404 0 0 0 0 0, [2023-7-11 14:6:44]Rx:L 1 1, [2023-7-11 14:6:45]Rx:L 1 1.
- Settings:** OPENAMIP Monitor (checked), Communication Monitor, OPENAMIP Manual debug.

Appendix 4

Troubleshooting Guide---TVRO Mode

TVRO mode for verify hardware.

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



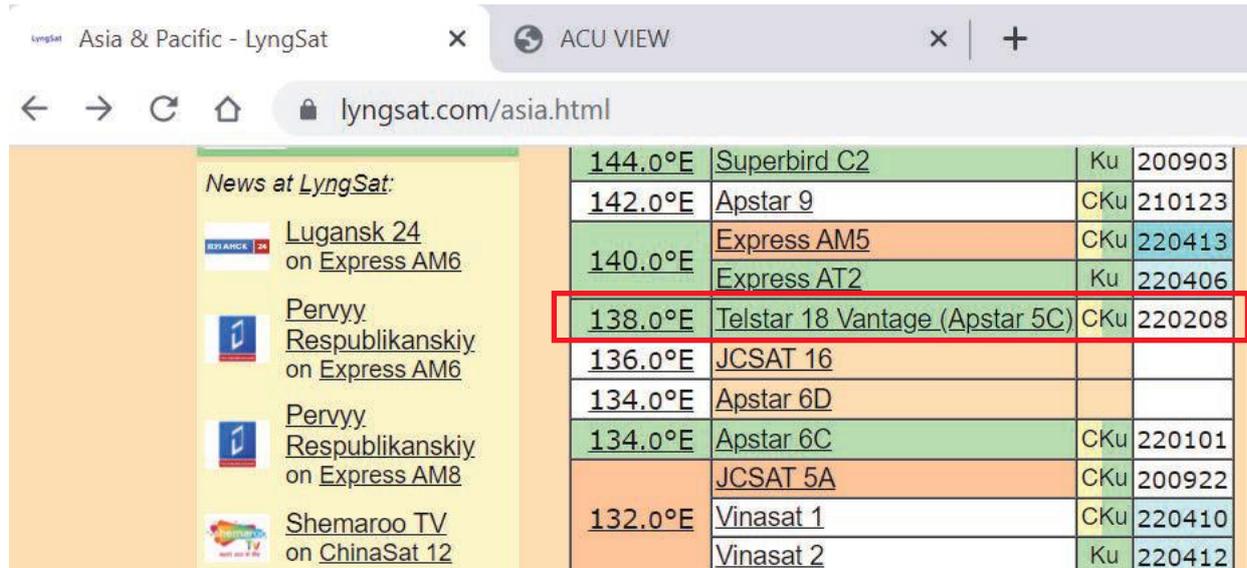
Appendix 4

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.



Asia & Pacific - LyngSat x ACU VIEW x +

← → ↻ 🏠 lyngsat.com/asia.html

News at LyngSat:

-  **Lugansk 24**
on [Express AM6](#)
-  **Pervyy Respublikanskiy**
on [Express AM6](#)
-  **Pervyy Respublikanskiy**
on [Express AM8](#)
-  **Shemaroo TV**
on [ChinaSat 12](#)

144.0°E	Superbird C2	Ku	200903
142.0°E	Apstar 9	CKu	210123
140.0°E	Express AM5	CKu	220413
140.0°E	Express AT2	Ku	220406
138.0°E	Telstar 18 Vantage (Apstar 5C)	CKu	220208
136.0°E	JCSAT 16		
134.0°E	Apstar 6D		
134.0°E	Apstar 6C	CKu	220101
132.0°E	JCSAT 5A	CKu	200922
132.0°E	Vinasat 1	CKu	220410
132.0°E	Vinasat 2	Ku	220412

Appendix 4

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

Frequency	Polarization	Symbol Rate	Channel Name	Modulation
12721 V	DVB-S2	43200	CCTV Entertainment	MPEG
	8PSK		CGTN Documentary	S MPEG
	lp 8B		Beijing TV International Channel	MPEG
	China		Dragon TV International	MPEG
56-58	2/3		Jiangsu TV International	MPEG
			Hunan TV International	S MPEG
			Fujian Straits TV	MPEG
			Xiamen Star TV International	MPEG
			TVS 2 Southern TV	S MPEG
			Shenzhen Satellite TV International	MPEG
			Chongqing TV International	MPEG
			Henan TV International Channel	MPEG
			Anhui International Channel	S MPEG
			Zhejiang Satellite TV	

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

$$\text{RX_IF } 12721 - 10600 = 2121$$

for this DVB carrier info , plz note it

RX_IF 2121

LO 10600

POL V

SymbolRate 43200

Appendix 4

Troubleshooting Guide---TVRO Mode

TVRO mode for verify hardware

Setup TVRO parameters.

Now it is TVRO mode.

Status: Tracking

4. When antenna lock signal, it will show Tracking

Satellite longitude: 138.0 E W

1. Input satellite longitude, select TV carrier Band & Pol

2. Input Freq and SymbolRate

3. Press Enter

4. When antenna lock signal, it will show Tracking

Satellite information:

Satellite:	138.0C
Name:	Apostar 5
Lnb type:	LINEAR
Lnb LCo:	10600
Polar:	VER/R
Frequency:	10721
Symbolrate:	43200
Tone:	22K

Satellite Parameter setting:

SAT1 SAT2 SAT3 SAT4 SAT5 SAT6 SAT7 SAT8

SKEW Offset: 0 Deg

Lockmode: DVB

AGCThreshold: 0

HIGH_HOR: FREQ: 12429 MHz, SYMB: 3330 KHz, ONID: 10

HIGH_VER: FREQ: 12721 MHz, SYMB: 43200 KHz, ONID: 65535

LOW_HOR: FREQ: 12557 MHz, SYMB: 41250 KHz, ONID: 65535

LOW_VER: FREQ: 12730 MHz, SYMB: 43000 KHz, ONID: 65535

GPS setting:

Longitude: 113.5096 E W

Latitude: 22.8336 N S

Firmware Upgrade: W/R

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

Appendix 4

Troubleshooting Guide---TVRO Mode

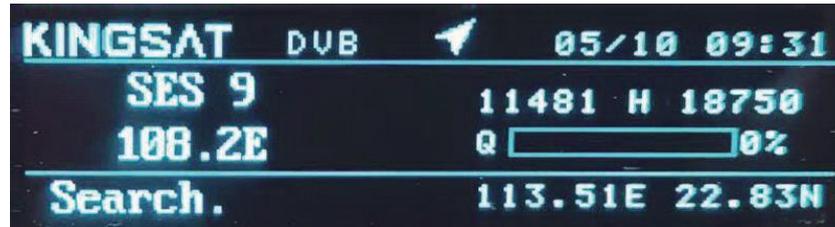
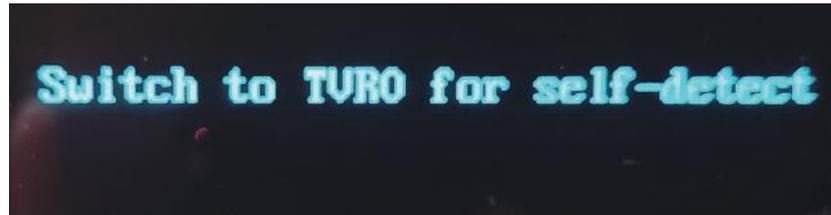


Scan QR code to
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TVRO mode for verify hardware---operation only with ACU ,not Web Interface

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

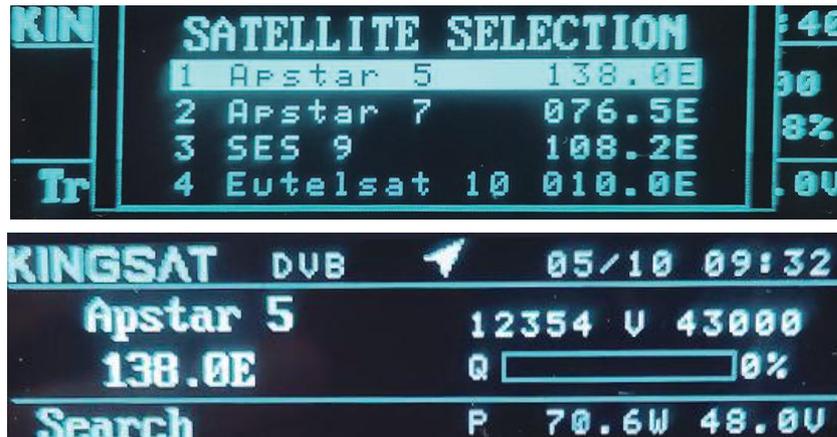


Appendix 4

Troubleshooting Guide---TVRO Mode

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

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



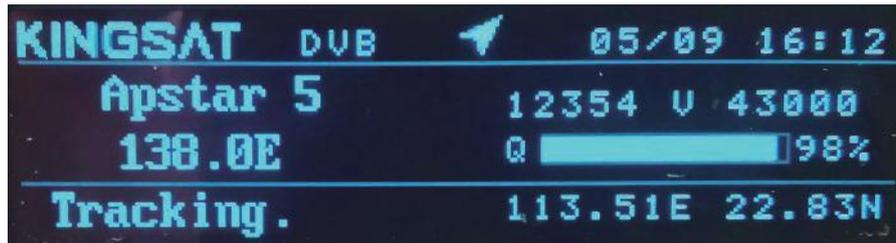
Appendix 4

Troubleshooting Guide---TVRO Mode

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

Wait for Tracking.

Once Antenna shows Tracking, means antenna hardware 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°.

Local Time: 2023-7-12 14:31:15

HOME MONITOR SETTING CONTACT US

ANT LOCATION

Latitude: 22.833674
Longitude: 113.509582
GPS Number: 12
UTC: +8

ANT POINTING

Manual pointing

EL - EL +
AZ - AZ +

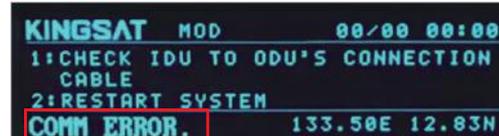
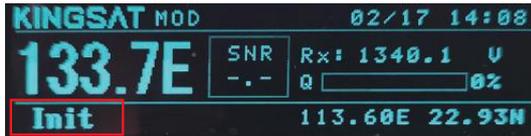
	Target		Current	
EL	54.93	Degree	54.64	Degree
AZ	136.51	Degree	136.50	Degree

Appendix 4

Troubleshooting Guide---FAQ

FAQ

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



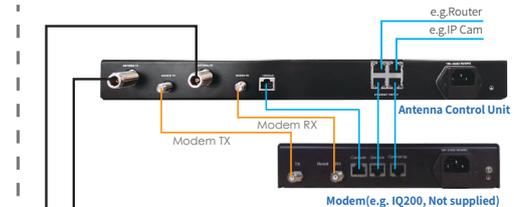
Now problem is from connection between ACU and antenna.

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.



Antenna RX
Antenna TX + 48V Power

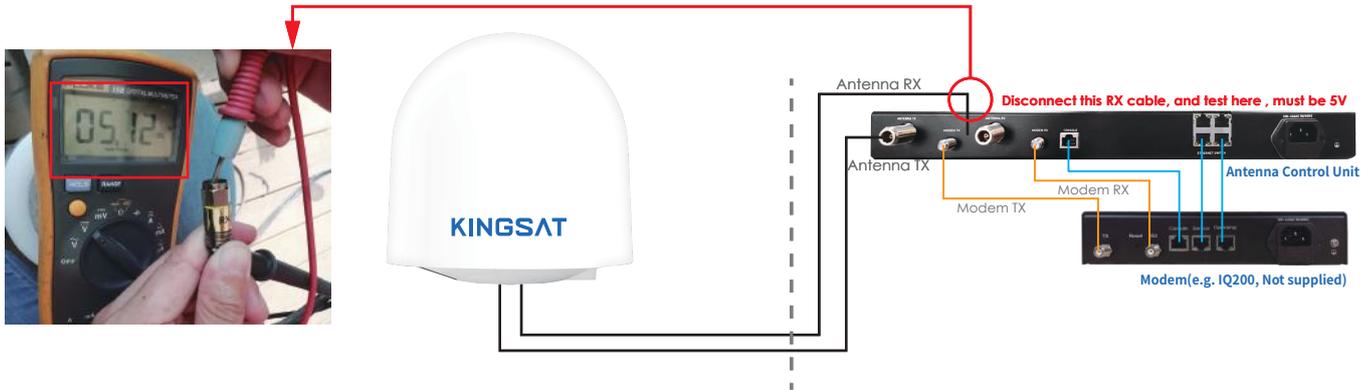
Disconnect this TX cable, and test here , must be 48V



Appendix 4

Troubleshooting Guide---FAQ&A

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



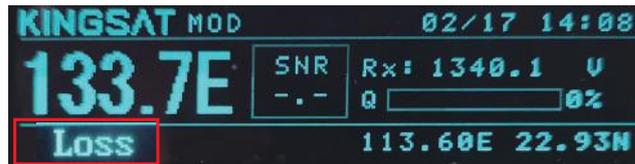
4. If the voltages of Tx and Rx coaxial cable are normal, but the status still shows Init or COMM ERROR, check the ACU mainboard or the antenna mainboard. Mainboard issues need to contact the manufacturer with help.

Appendix 4

Troubleshooting Guide---FQ&A

FQ&A

The status shows Loss, what should we do?

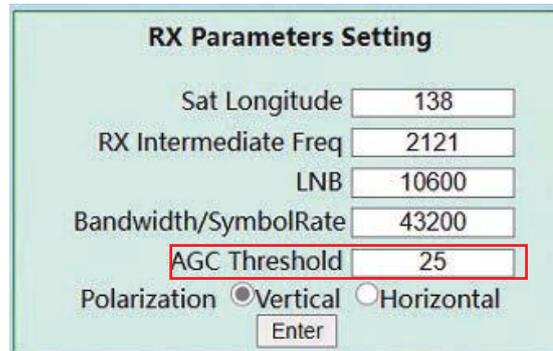


This status indicates a loss of signal.

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---FAQ

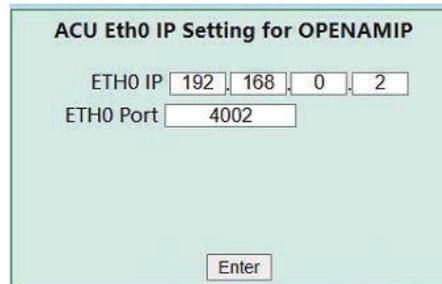
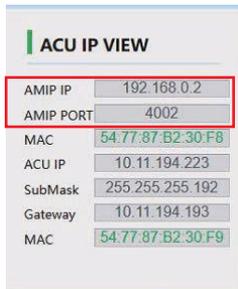
FAQ

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



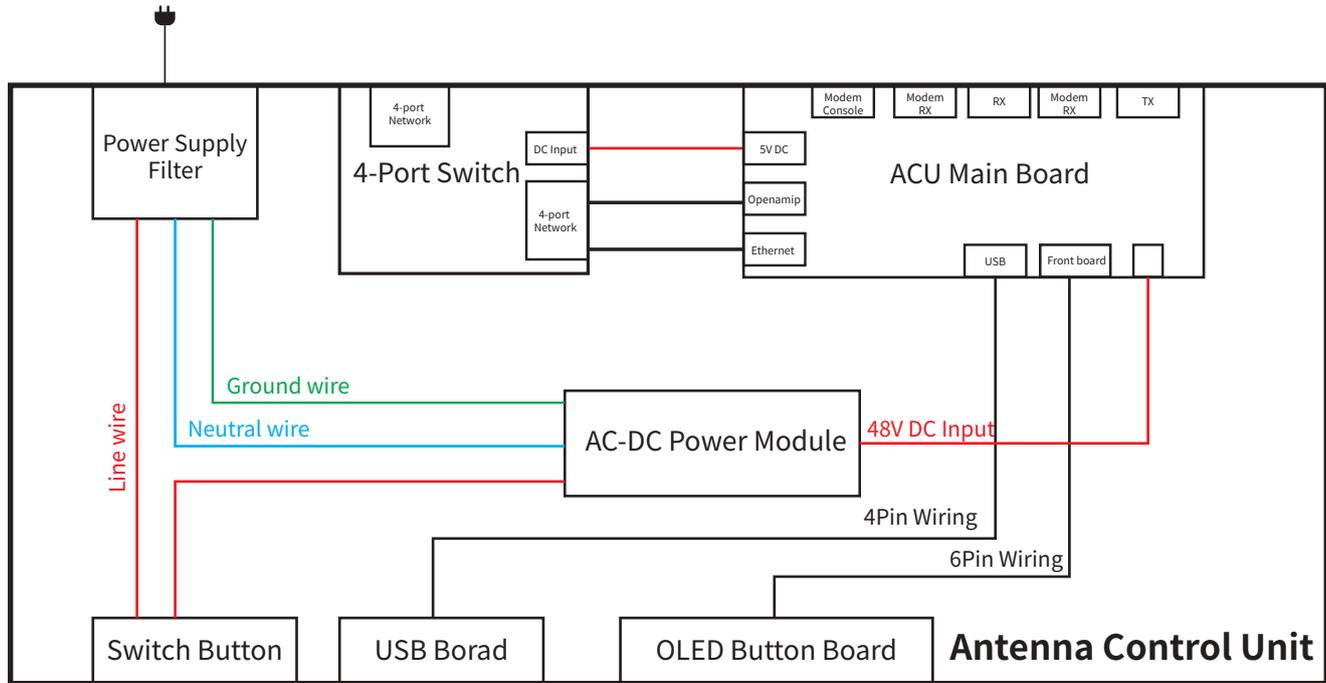
Now ACU can NOT communicate with MODEM correctly .

- 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.



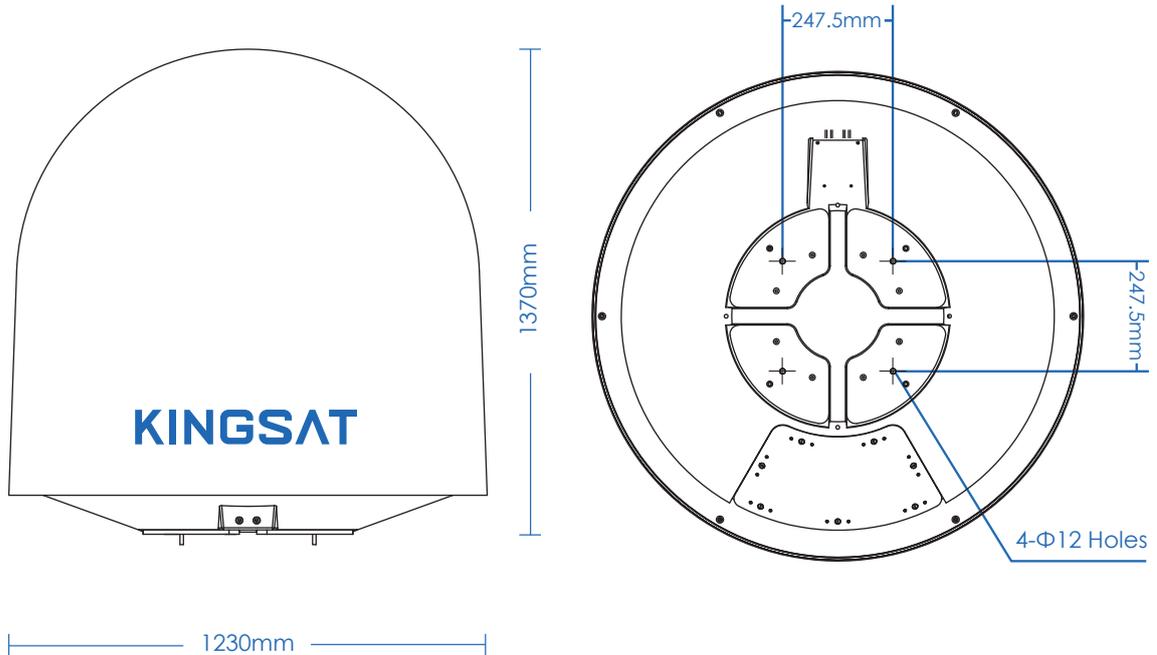
Appendix 6

Internal block diagram of ACU



Appendix 7

Radome Dimension



Appendix 8

Specification-P10/P10E/P10+E

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)

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Maritime Antennas