

Intellian[®]

v240M

**C and Ku Multiband
Installation and Operation User Guide**

Serial number of the product

This serial number will be required for the all troubleshooting or service inquiries.

Intellian[®]

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CERTIFICATIONS



FCC Declaration of Conformity

Intellian Technologies, manufactures of stabilized maritime VSAT antenna systems for satellite communication at sea, supplies stabilized maritime VSAT antenna systems to the satellite communication service providers for their ESV (Earth Station on Vessels) networks.

FCC §25.221 defines the provisions for blanket licensing of ESV antennas operation in the C-band. It defines the antennas radiation, and each article regulates the followings;

- §25.221 (a)(1)(i)(A): Regulation for Azimuth Direction & Co Polarization
- §25.221 (a)(1)(i)(B): Regulation for Other Direction & Co Polarization
- §25.221 (a)(1)(i)(C): Regulation for Cross Polarization

FCC §25.222 defines the provisions for blanket licensing of ESV antennas operation in the Ku-band. It defines the antennas radiation, and each article regulates the followings;

- §25.222 (a)(1)(i)(A): Regulation for Azimuth Direction & Co Polarization
- §25.222 (a)(1)(i)(B): Regulation for Other Direction & Co Polarization
- §25.222 (a)(1)(i)(C): Regulation for Cross Polarization

Intellian Technologies, Inc. declares that v240M complies with the threshold level as defined in §25.221(a)(1)(i)(A)/ §25.222(a)(1)(i)(A);, and declares that v240M is in accordance with all defined regulations from §25.221(a)(1)(i)(B) to §25.221(a)(1)(i)(C) / from §25.222(a)(1)(i)(B) to §25.222(a)(1)(i)(C) at the below stated input power spectral density, with an N value of 1.

Product description	Intellian v240M, 2.4m Multi-band maritime VSAT antenna system
EIRP spectral density limit	C-band: -7.415dBW/ 4KHz
	Ku-band: -14.0dBW/ 4KHz

Intellian Technologies, Inc. declares that the above antenna will maintain a pointing error of less than or equal to 0.2 degree under specified ship motion conditions in accordance with the requirements of §25.221 (a)(1)(ii) / §25.222 (a)(1)(ii).

Intellian Technologies, Inc. declares that the above antennas will automatically cease the transmission with a mute command to the modem within 100 milliseconds if the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5 degree and will not resume until such angle is less than or equal to 0.2 degree in accordance with the requirements of §25.221 (a)(1)(iii) / §25.222 (a)(1)(iii).

Radiation pattern data is available upon request to verify the conformance.

Authority: **Steve Cha**
Vice President, Research & Development



Signature: _____

Date: June 2, 2014

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INTRODUCTION

Intellian v240M Introduction

Intellian v240M Features

System Configuration

Intellian v240M Introduction

The Intellian v240M is a 2.4 meter Multiband marine VSAT communication antenna system, offering automatic switching between C and Ku-band. With its 3-axis stabilized platform and enhanced vibration and shock damping design, the v240M delivers outstanding performance on all vessels, no matter what the sea condition is like.

Featuring patented technology available only from Intellian, the v240M enables effortless and automatic switching between C-band and Ku-band satellites without any physical changes to the antenna. The frequency band selection can be controlled by the satellite modem, remotely by the operator, or conveniently at the ACU.

The v240M requires minimal involvement to commission. It is easy to operate and also simple to upgrade and manage. Each unit comes preloaded with a ready-to-use, customizable satellite library that can be conveniently tailored via Aptus®, Intellian's remote antenna control software. The Wi-Fi enabled ACU provides easy connection to and control of the antenna, simplifying routine processes, such as firmware updates, routine maintenance and diagnostics.

In cases where the ACU is installed at a large distance from the antenna, the built-in Bluetooth connection module on the antenna itself enables a PC connection from within the radome, making it easy to move and control the antenna while observing operation for diagnostic purposes.

Robust and versatile, the v240M marks a new era for VSAT connectivity on the open water for deep sea vessels that require global coverage.

Intellian v240M Features

Automatic Frequency Band Switching

The Intellian v240M antenna automatically changes between C-band and Ku-band operation since it does not require any manual or physical changes to the antenna system. When a target satellite or operational frequency is selected from the ACU or the Aptus® program, the patented band changing assembly is automatically adjusted.

RF Switch Enabled Modem Mediator

Intellian supplies a Modem Mediator as an option. This allows the user to install either one single satellite modem for both C and Ku-band, or two separate modems to support each frequency band.

When operating in a network that offers intelligent beam switching, a single modem may be used. When the user requires the enhanced features of a more specialized modem, then the Modem Mediator manages this, removing the need to swap cables onboard.

DVB/DVB-S2 and NBD Detection Capability

Intellian v240M is capable of detecting DVB-S/DVB-S2 signal, SCPC, and Narrow-Band signal through its integrated digital tuner and the narrow band detector (NBD).

Wireless Communication with the ACU

The v240M's ACU offers upgraded functions. The built-in wireless network card enables the ACU to be wirelessly connected and can be activated or deactivated by a switch on the rear of the ACU. Once enabled, the antenna can be managed and controlled from any PC or Mobile Device via the Aptus software.

Antenna Data Log and Firmware Upgrade through USB

The v240M ACU now automatically stores all function data onto a built-in memory. All existing logs are stored in the built-in memory for six months of period, and can be transferred onto USB drives.

In addition, the ACU firmware can be automatically updated and upgraded by plugging in a USB drive which contains the firmware update files.

Maximized RF Performance

The main reflector, Feed-horn and other RF parts are newly designed to maximize the antenna performance for maritime applications. With the highest level of gain and Maximum Allowed EIRP Density amongst the similar-sized VSAT antenna systems, the Intellian v240M also conforms to various ESV (Earth-Station-on Vessels) standards and FCC requirements.

Easy Installation, Setup and Operation

The v240M installation and setup are easier than ever before. Once a satellite's peak signal position is acquired during initial setup, the unit automatically readjusts accordingly every time it boots (bow, home sensor offset, azimuth, and elevation position), saving you huge amounts of time and effort.

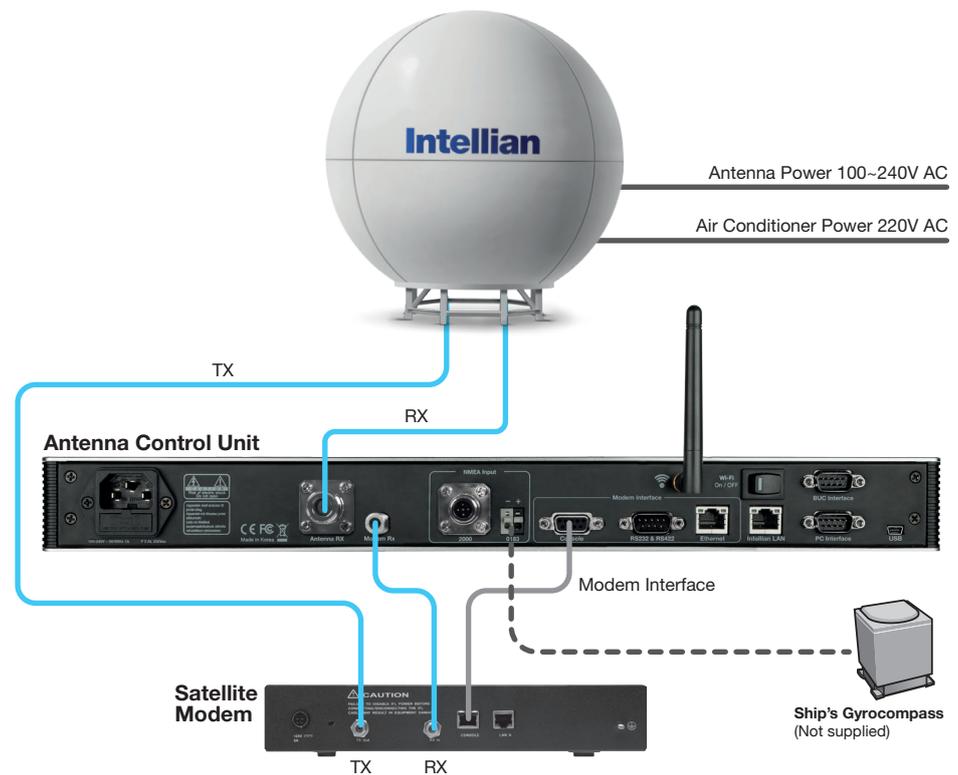
Future Proof Satellite Network

With the v240M, end-users and service providers will enjoy greater flexibility of space segment selection, allowing them access to greater data rates, lower cost space segment, better performance, and enhanced regulatory compliance, now and into the future.

System Configuration

For your VSAT system to work properly, the system will have to be connected with all of the provided components properly, as shown in the figures below (Refer to the next chapter 'Installation' in this manual for more detailed connection instructions). Separate purchase of a satellite modem and other network equipment is required.

Basic System Configuration



Basic System Configuration: Single Antenna and Single Modem

For detailed information regarding system configurations, please see section 2. ACU and Antenna Configurations are in Chapter 4.

PLANNING INSTALLATION

v240M System Composition

Antenna Unit
Antenna Control Unit (ACU)
Installation Kit

Three Packages Composition

Radome Package
Antenna Package
Frame Package

Antenna Specification

Radome Dimension
Heading Alignment

Planning the Installation

Selection of Installation Site
RF Interference and Recommended Distance
Cables

- System Cables
- Power Cables
- RF Cables
- Gyrocompass Cables
- Power Requirements

RF Hazard
Tools Required for Installation

v240M System Composition

Antenna Unit

The v240M antenna is composed of the following components:

- **Mechanical Unit** – manipulates the antenna to provide optimal satellite tracking.
- **Control Unit** – controls mechanical operation of the antenna.
- **RF Unit** – transmits the optimum satellite signal to the modem.
- **Radome** – protects the antenna from the severe marine environment.



v240M Antenna Unit

Antenna Control Unit (ACU)

The Antenna Control Unit (ACU) controls the various settings of the antenna. The functions of the ACU are as follows:

- Monitors the antenna status.
- Changes the target satellite.
- Sets up the user environment.
- Sets the current GPS information.
- Sets satellite information.
- Moves the antenna manually
- Built-in real-time diagnostics function and event log recorder
- Sets up the interface with a PC.
- Supports Wi-Fi operation.
- Logs data and firmware upgrade through USB
- Built-in web-based remote control management



Antenna Control Unit: ACU

Installation Kit

ACU Box Components			
Description	Q'ty	Size	Remarks
ACU	1	43.1 x 38 x 4.4cm	Antenna Control Unit
Wi-Fi Antenna	1		
ACU Side Bracket (Rack)	2		ACU to 19inch Rack
ACU Side Bracket (Table)	2		ACU to Table
USB Cable (A-A)	1	1.8m	ACU to PC
D-Sub 9 pin Male Connector	2		ACU
N to F Adaptor	1		N(Male) to F(Female) Adaptor
USB Flash Drive	1		
User Manual	1		
RF Hazard Sticker	1		Radiation Safety Distance Label
Self-Tapping Screw	5	M4 x 16L	Bolt Kit for ACU Rack Mount Bracket
Sems Bolt	5	M3 x 12L	
Flat Head Screw	10	M4 x 12L	

Cable Kit Components			
Description	Q'ty	Size	Remarks
RG6 Cable	1	3m	ACU to Modem
AC Power Cable (CEEE7/7)	1	1.5m	ACU Power (220V)
AC Power Cable (USA)	1	1.5m	ACU Power (110V)
PC Serial Cable	1	1.8m	ACU to PC
iDirect Interface Cable	1	1.5m	ACU to Modem
iDirect Modem Cable Pin Connection Manual	1		
LAN Cable for Intellian M&C	1	1.8m	

Rope Box Components			
Description	Q'ty	Size	Remarks
Main Reflector Fixed Rope	1	5m	Fix to Antenna Assembly
EL Weight Plate Side R	2		Antenna Assembly
EL Weight Plate Side L	2		Antenna Assembly
C-Feeder Fixed Bar	1		Antenna Assembly

Bolt Kit Components			
Description	Q'ty	Size	Remarks
Hex Bolt	4	M16 x 40L	Bolt Kit for Stable Mount
Flat Washer	4	M16	
Spring Washer	4	M16	
Hex Bolt	250	M6 x 35L	Bolt for Radome Assembly
Flat Washer	500	M6(Ø18)	Washer & Nut for Radome & Radome Base Assembly.
Spring Washer	250	M6	
Nut	250	M6	
Hex Bolt	10	M6 x 35L	Bolt Kit for Upper Radome Lift Bracket
Flat Washer	20	M6(Ø18)	
Spring Washer	10	M6	
Hex Bolt (BUMAX)	25	M12 x 60L	Bolt Kit for Antenna Mounting
Lock Washer	50	M12	
Nut (BUMAX)	25	M12	
Wrench Bolt	7	M10 x 40L	Bolt Kit for EL Support Bar
Flat Washer	7	M10	
Spring Washer	7	M10	
Wrench Bolt	10	M10 x 40L	Bolt Kit for EL Weight Plate
Flat Washer	10	M10	
Spring Washer	10	M10	
Wrench Bolt	28	M8 x 20L	Bolt Kit for EL Side Plate
Flat Washer	28	M8	
Spring Washer	28	M8	
Wrench Bolt	5	M6 x 25L	Bolt Kit for Ku Module
Flat Washer	5	M6	
Spring Washer	5	M6	
Wrench Bolt	3	M8 x 70L	Bolt Kit for Reflector Support Pipe
Flat Washer	6	M8	
Spring Washer	3	M8	
Nut	3	M8	

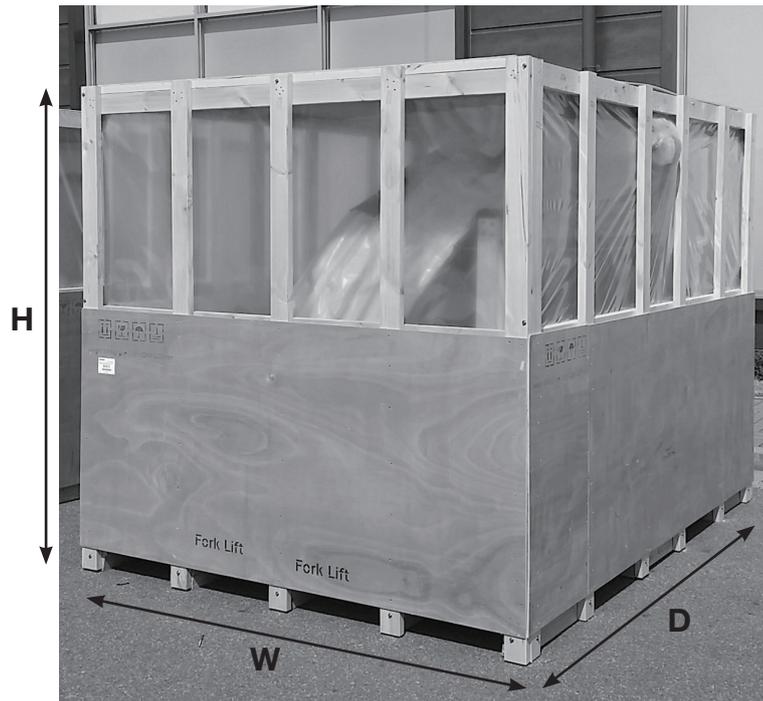
Description	Q'ty	Size	Remarks
Wrench Bolt	5	M6 x 25L	Bolt Kit for Reflector Square Support Bar
Flat Washer	5	M6	
Spring Washer	5	M6	
Wrench Bolt	2	M8 x 70L	
Flat Washer	2	M8	
Spring Washer	2	M8	
Wrench Bolt	5	M5 x 30L	Bolt Kit for C-Horn Attachment
Flat Washer	5	M5	
Spring Washer	5	M5	
Wrench Bolt	3	M6 x 90L	
Flat Washer	6	M6	
Spring Washer	3	M6	
Nut	3	M6	Weight Kit for Antenna Balance Adjustment
Weight CL 04 (1t)	10	PL1t x 70 x 42	
Weight CL 03 (2t)	10	PL2t x 70 x 43	
Flat Washer	20	M5	
Spring Washer	20	M5	
Wrench Bolt	10	M5x12L	
Wrench Bolt	10	M5x15L	
Stable Mount Jig	1		
Silicon	3		
Silicon Gun	1		Loctite 262 or 263
Cable tie	30		
Loctite	1		
Ku Module Box	1		
Ku Module Support Pipe	1		

Three Packages Composition

Radome Package

Radome package consists of the following items:

- Upper and lower Radome panels
- A cap and a side hatch
- Lifting strap and mediator (optional)



Radome Package Dimension

NOTE: Size: 3015mm x 2265mm x 2225mm (W x D x H)



Lifting Strap and Mediator Box (optional)

Antenna Package

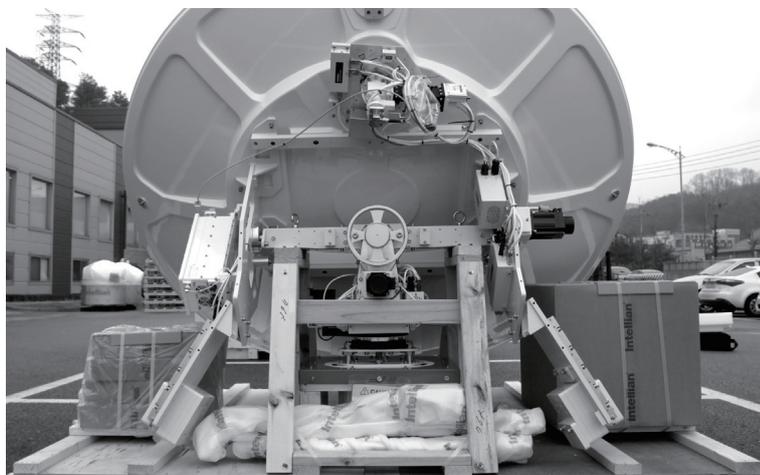
The Antenna package consists of the following items:

- Antenna and pedestal assembly
- ACU and installation kit box
- EL support frame
- Ku Module Box
- Ku Module Support Pipe



Antenna Package Dimension

NOTE: Size: 2715mm x 2295mm x 2225mm (W x D x H)



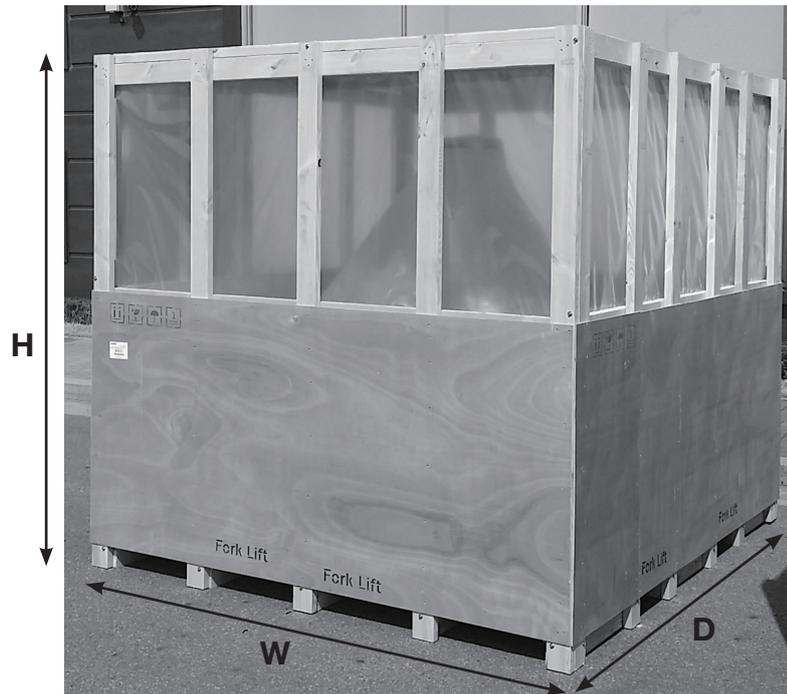
ACU, Installation Kit Box, Ku Module Box, Ku Module Support Pipe, and EL Support Frame

There are two boxes at each side of antenna pedestal assembly: a component box and a Ku module box. The component box contains an ACU, an installation kit box, and cables, and the Ku module box contains a Ku module.

Frame Package

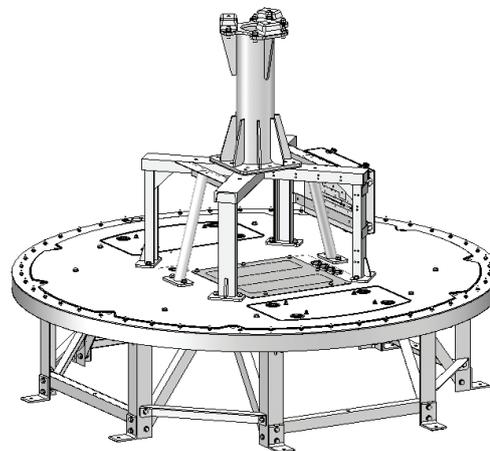
The Frame package consists of the following items:

- Base frame and air-conditioner frame
- Post
- Air-conditioner (optional)
- Lifting frame (optional)



Frame Package Dimension

NOTE: Size: 2515mm x 2265mm x 2225mm (W x D x H)



Preassembled Radome Base Frame

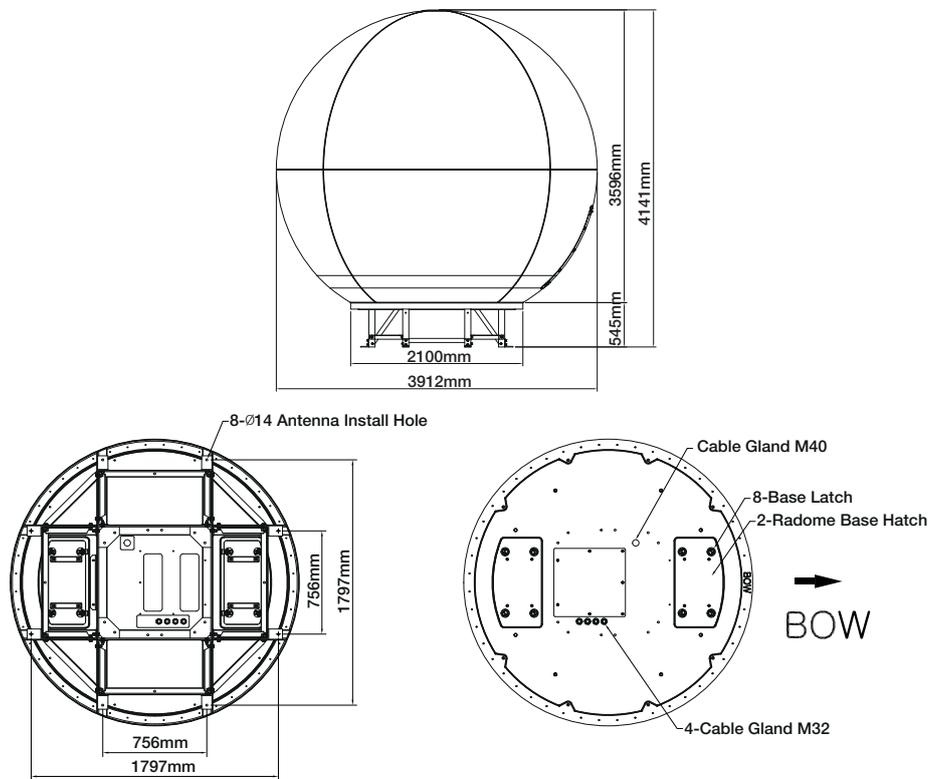
The Radome base frame is assembled before it is put into the frame package.

Antenna Specification

Radome Dimension

Confirm the height and diameter of the bottom surface of the antenna unit before installing it. The mounting surface and overall space occupied by the antenna must be sufficient for the height and diameter of the fully constructed radome on top of its base frame.

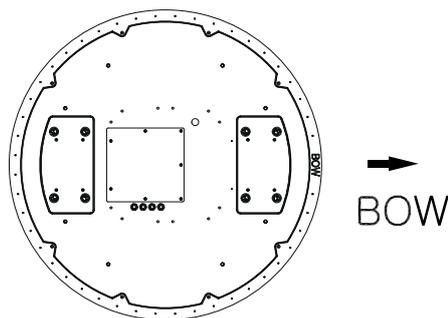
The height and the diameter of the bottom surface of the antenna are as shown in the following drawing. It is strongly suggested that the installation is conducted using a crane.



Radome Dimension

Heading Alignment

The radome assembly should be positioned with the BOW marker aligned as close as possible to the center line of the ship.



Heading Alignment

Planning the Installation

The v240M installation requires extreme precaution and safety measures given its size and weight. Failure to follow the correct installation process may lead to injury of the installer and/or cause damage to the system. In order to maximize the performance of the system, a thorough review of this installation guide is strongly recommended, as well as executing the installation process as it is noted in this manual.

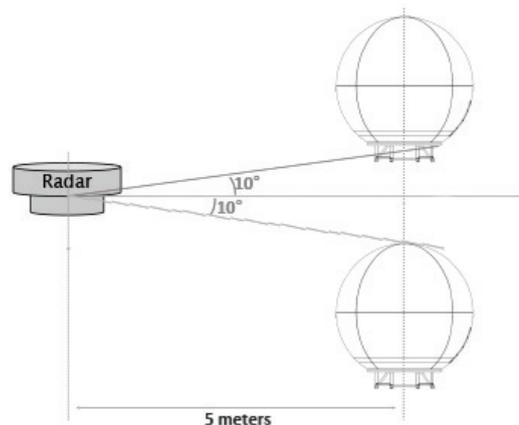
Selection of Installation Site

The system should be placed in an area onboard the vessel with little to no RF signal blockage. A safe mounting place and a restricted access location should be selected due to its heavy weight and size.

When the antenna is transmitting, obstacles in way of the beam path will cause decreases satellite signal strength. The antenna unit should have direct line-of-sight with the desired satellite without any obstacles in the beam path. Certain minimum distances between the antenna and other onboard devices must also be considered during installation.

RF Interference and Recommended Distance

The Antenna Unit should be mounted more than 2.5 meters away from any of the following devices: L-band satellite antennas, magnetic compass installations, and GPS receiver antennas. Additionally, please note the diagram below, in which safe distances and mounting planes are shown for the v240M in relation to any onboard radar assemblies. A minimum safe distance of 5m is recommended. The antenna should also be mounted 10 degrees above or below the radar plane, as shown.



RF Interference and Recommended Distance

Recommended Distances	Other Antenna Affecting the ADE
5 meters ⁽¹⁾	All Radar antenna
5 meters	Any high power short wave antenna
4 meters	Any short range antenna

(1) The C-band ADE is 10 meters from S-band Radar antennae if the ADE is C-band.

Cables

Four types of cables used for standard installation are introduced in the subsections below. For cables that run longer than Intellian's recommendations, please consult Intellian Technologies.

• System Cables

Before installing the system cables, you need to take the following points into consideration.

1. All cables need to be well clamped and protected from physical damage and exposure to heat and humidity.
2. Cable with an acute bend is not allowed.
3. Where a cable passes through an exposed bulkhead or deck head, a watertight gland or swan neck tube should be used.

• Power Cables

The cable sizes recommended in the following table are the input power cable size for standard system installation.

Cable Length	Cable Cross Sectional Area	AWG (American Wire Gauge) Size
Up to 100m	2.62 mm ²	13
Up to 200m	4.17 mm ²	11

Note : The power cable in the package is 10 meter in length.

• RF Cables (Customer Furnished)

Due to the voltage losses across the length of the RF coax on L-Band, Intellian recommends the following 50 ohm coax cable types for standard system installations. For cables that run longer than 200 meters, please consult Intellian Technologies.

Coaxial Cable Type	Attenuation in dB/100M	Attenuation in dB/M	Recommended Cable Length
LMR300	30.3	0.303	35M
LMR400	19.6	0.196	60M
LMR500	15.9	0.159	80M
LMR600	12.8	0.128	100M
LMR900	8.6	0.086	150M
LMR1200	6.5	0.065	200M

• Gyrocompass Cables (Customer Furnished)

Due to the environment of various type of vessel, Intellian recommend the general cable types compatible with v240M.

Cable Type	Number of Wires
Multi-conductor, Shielded	2 conductors for NMEA / NMEA 2000

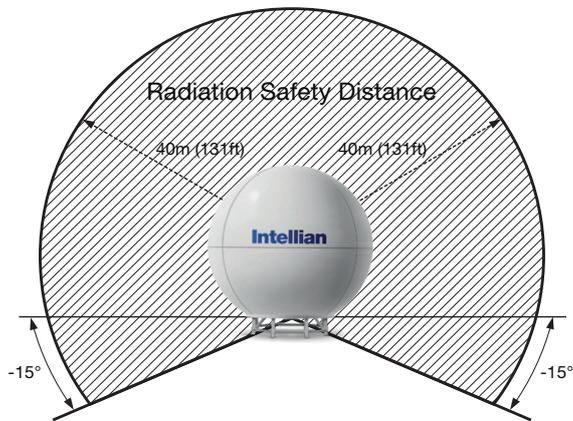
• Power Requirements

The Intellian v240M has been designed to work on a vessel’s power supply rated at 100-240 VAC.

RF Hazard Precautions

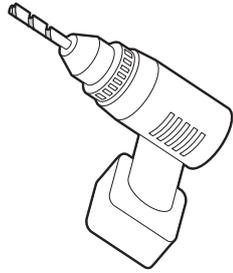
The antenna is designed to be used with radiation transmit equipment manufactured by others. Exposure to RF radiation, including exposure associated with an improper use of the transmit equipment, may be hazardous to persons close to the above deck unit. Ensure safety of personnel who work on the system.

During transmission, ensure to keep the minimum safety distance. The recommended minimum safety distance to the reflector on the focal line is about 40m, based on a radiation level of 5mW/ cm² that applies under occupational/controlled environment. No hazard exists >15° below the antenna’s mounting plane.

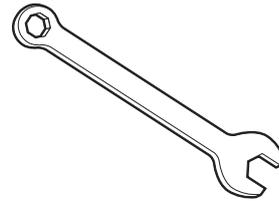


Safe access from radiation hazard

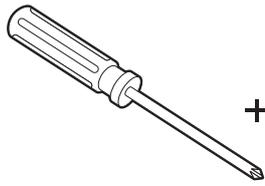
Tools required for Installation



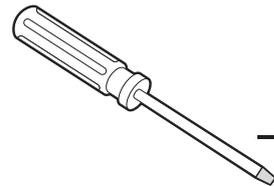
Impact Drill



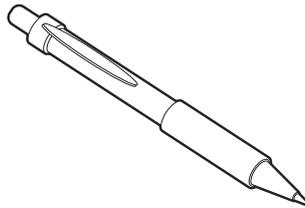
7, 8, 10, 13, 19, 24mm Spanner



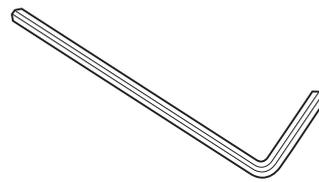
Phillips Head
Screwdriver



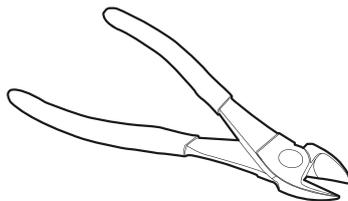
Flat Head
Screwdriver



Pencil



3, 4, 5, 6, 8, 10mm Alen/Hex key



Wire Snips

Required Tools for Installation

ANTENNA INSTALLATION

Uncrating the Antenna

Dismantling the Antenna Package

Placing the Base Frame

Reflector and Pedestal Assembly

Dismantling the Antenna Package

Assembling the Reflector and Base Frame

Turning the Counterweight Plate

Assembling the EL Arms and EL Arm Support Frame

GPS Location

Disassembling the EL Limits

Turning the Reflector

Ku Module Assembly

Dismantling the Ku Module from the Radome Package

Assembling the Waveguide

Assembling the Ku Module and Feed Horn

Checking Skew Movement and Cable Connections

Radome Assembly

Assembling Upper Radome

Assembling Lower Radome

Completing Radome Assembly

Radome Mounting

Power Box Connection

Uncrating the Antenna

Dismantling the Antenna Package

Remove all walls of the 3 crates (Radome Package, Antenna Package, and Frame Package) using an impact drill.

Upper and lower Radome panels and a side hatch

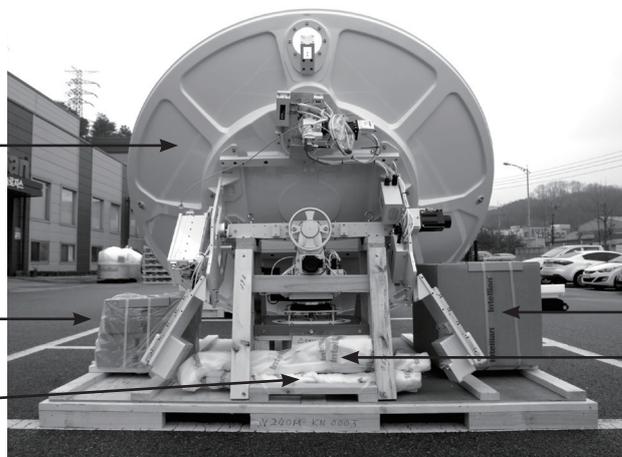


Remove Walls of Radome Package

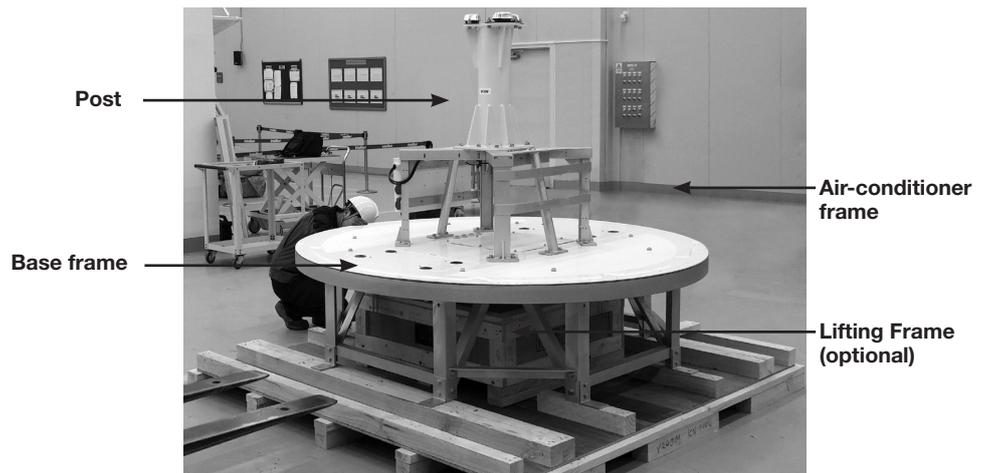
Antenna and pedestal assembly

ACU and installation kit box

EL support frame



Remove Walls of Antenna Package



Remove Walls of Frame Package

Placing the Base Frame

Once all walls of the three crates are removed, it is time to move the Base Frame to a working space to assemble the antenna.



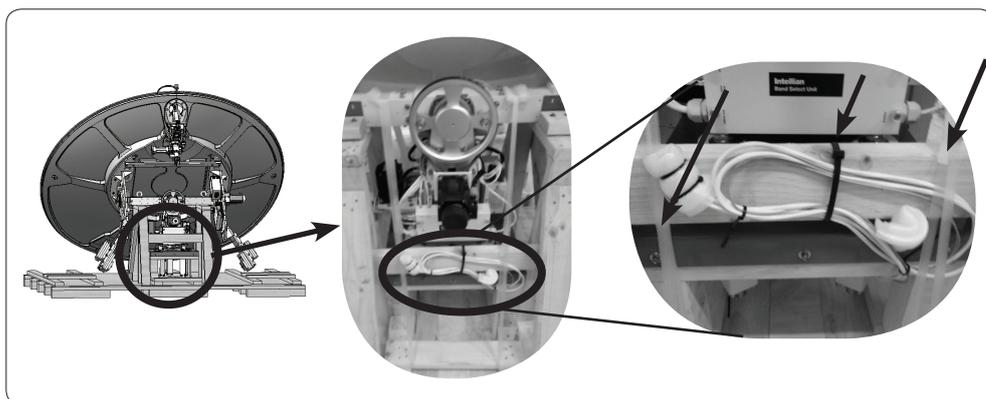
Move Base Frame using Fork Lift

As shown in the figure above, move the Base Frame using a fork lift to the place in which you will assemble the antenna.

Reflector and Pedestal Assembly

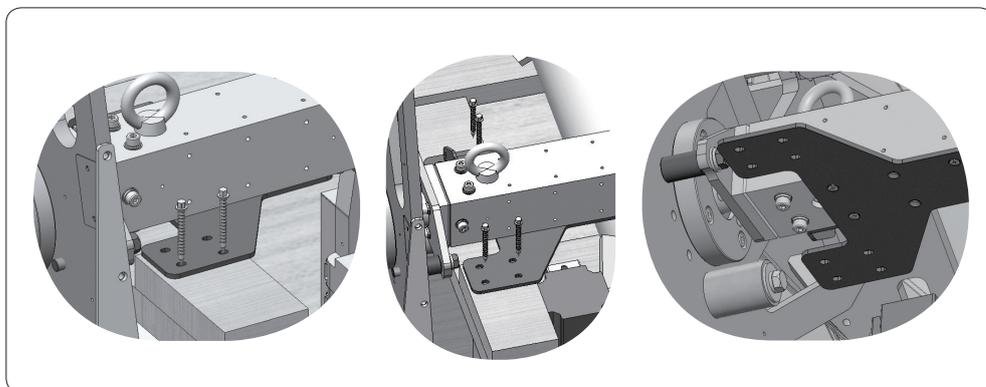
Dismantling the Antenna Package

For the Antenna Package, the installer should remove ties and rope prior to dismantling the pedestal.

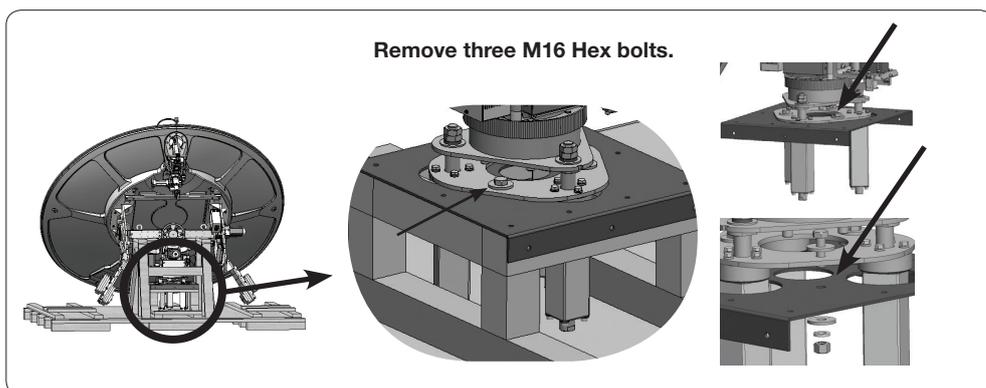


Remove Cable Ties and Rope in Antenna Package

Remove the two brackets on each side of the cross level arm.



Remove Two Brackets on both sides of CL Arm



Remove three M16 Hex bolts.

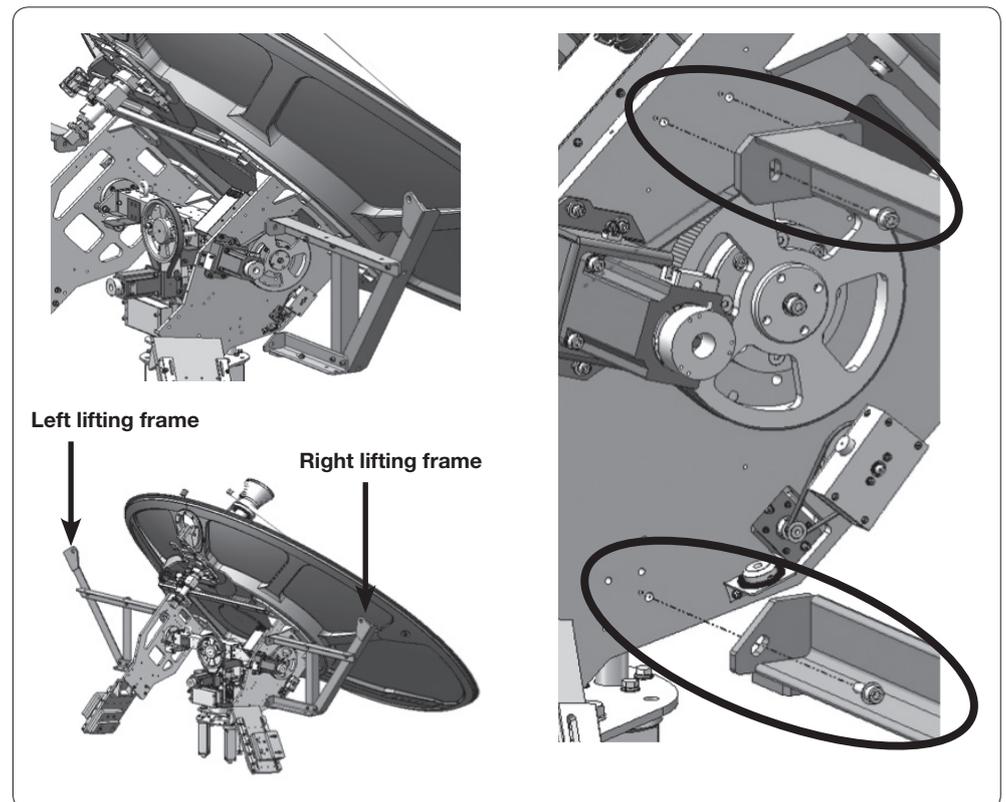
Remove M16x3 Bolts on the Pedestal

Assembling the Reflector and Base Frame

CAUTION: Lifting up the reflector using a crane is strongly recommended through a separate purchase of the Lifting Frame that needs to be assembled on the EL arms. In case of using a fork lift, be careful not to damage the peripheral module and cables while inserting the fork. Intellian is not responsible or liable for any damage incurred due to improper handling.

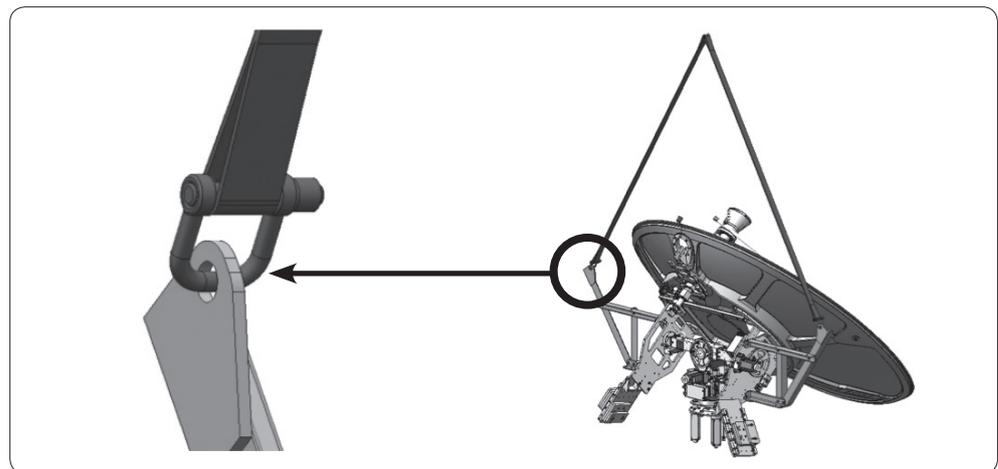
Option 1. Using a crane through Lifting Frame (Separate Purchase)

Assemble the left and right lifting frames to the EL arms by using the supplied M10x25L Hex. Bolts (3EA) and M10 Flat Washers (3EA). Ensure to use the supplied bolts only.



Assemble the left and right Lifting Frames

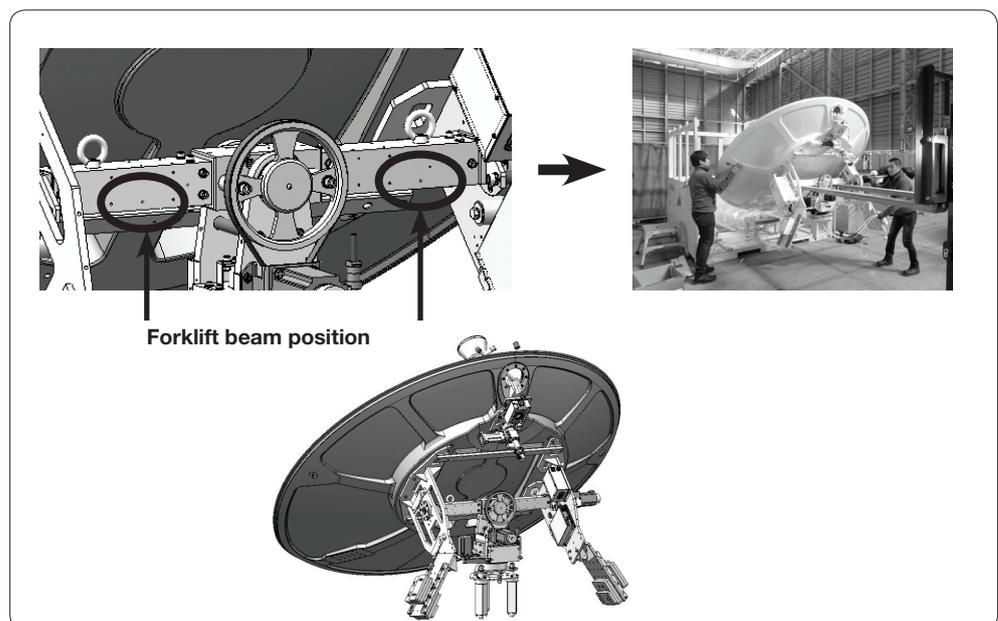
Shackle the lifting rope to the hole at each end of the lifting frame and then move the reflector using a crane. After moving the reflector, disassemble the frames in the reverse order of assembly. (Refer to the 'Lifting Frame Installation Guide' for more detailed instructions.)



Move Reflector using Crane

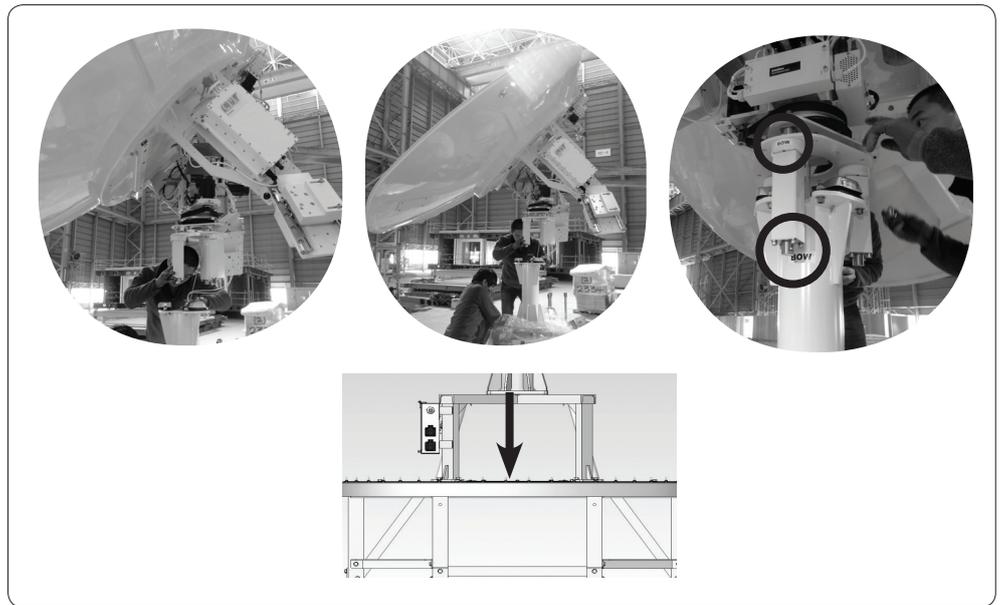
Option 2. Using a fork lift

Lift up the Reflector using a fork lift, and move it above to the post located on the air-conditioner frame.



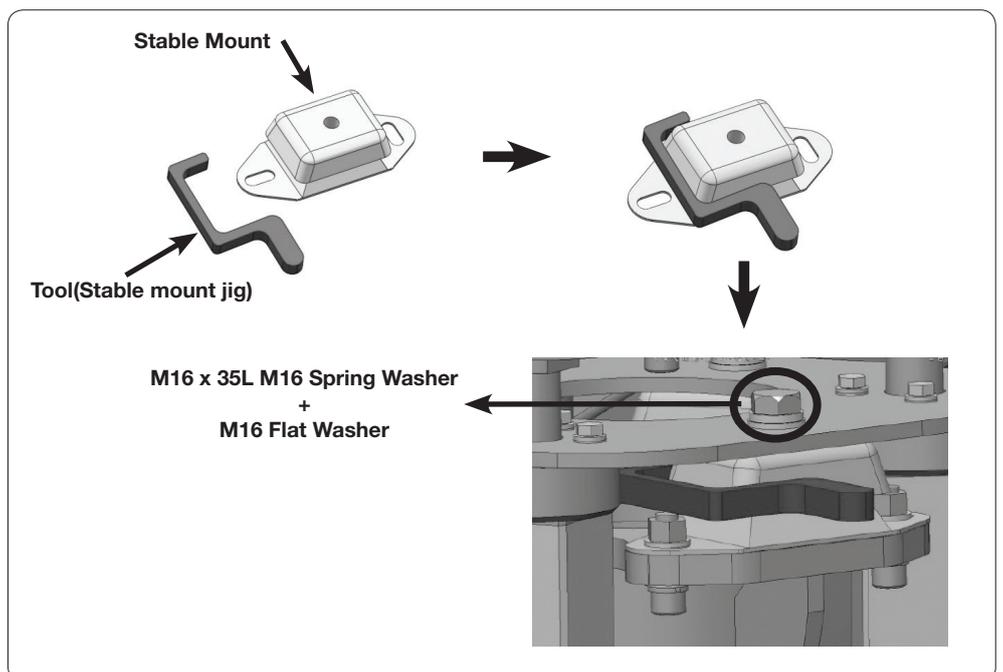
Move Reflector using Fork Lift Truck

Now it is time to assemble the Reflector and the Base Frame. Before putting the Reflector down onto the post, be sure the cables go through the center hole of the post, and that the two BOW markers on the pedestal and the post are in the same direction.



The Cables in the Post Center and BOW Markers in the Same Direction

After putting the Reflector and the Base Frame together, they should be fastened using three M16x35L hex bolts as shown in the figure below.



Fasten the Reflector and the Base Frame using M16x35L Hex Bolts

Turning the Counterweight Plate

To simplify the assembly process, the Reflector should be turned to the opposite side. Before turning the Reflector, the Counterweight Plate should be assembled following the procedures as shown in the figure below.

① Before turning the Counterweight Plate.

② Remove the M12 Hex Wrench Bolts(4EA).

③ Turn the reflector and maintain horizontal position to turn the counterweight plate easily.

Note: Be careful when turning the reflector because the unit is very heavy. Incorrect handling of the reflector may lead to injury to the installers who must hold both sides of the reflector during installation and/or cause significant damage to the unit.

④ When the holes on the EL Arm and frame hole match, screw them together using the M12 Hex Wrench Bolts(2EA).

⑤ Remove two M10 hex wrench bolts.

⑥ Loosen a M10 hex wrench bolt lock (do not remove).

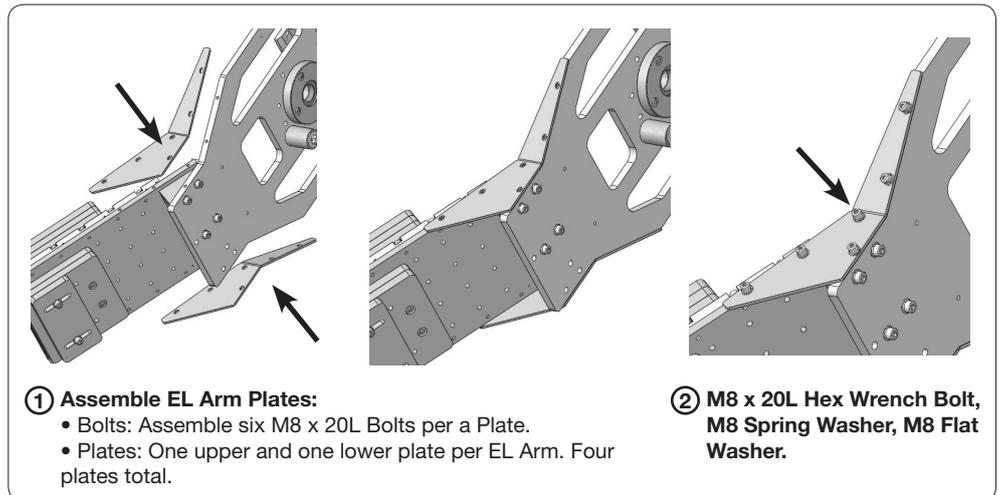
⑦ Turn the plate to match a circle and a square as a pair.

⑧ Tighten the four M10 bolts circled above while keeping the lower two bolts open. The lower two will be tightened when assembling Support Frame.

⑨ After completing the Counterweight Plate assembly.

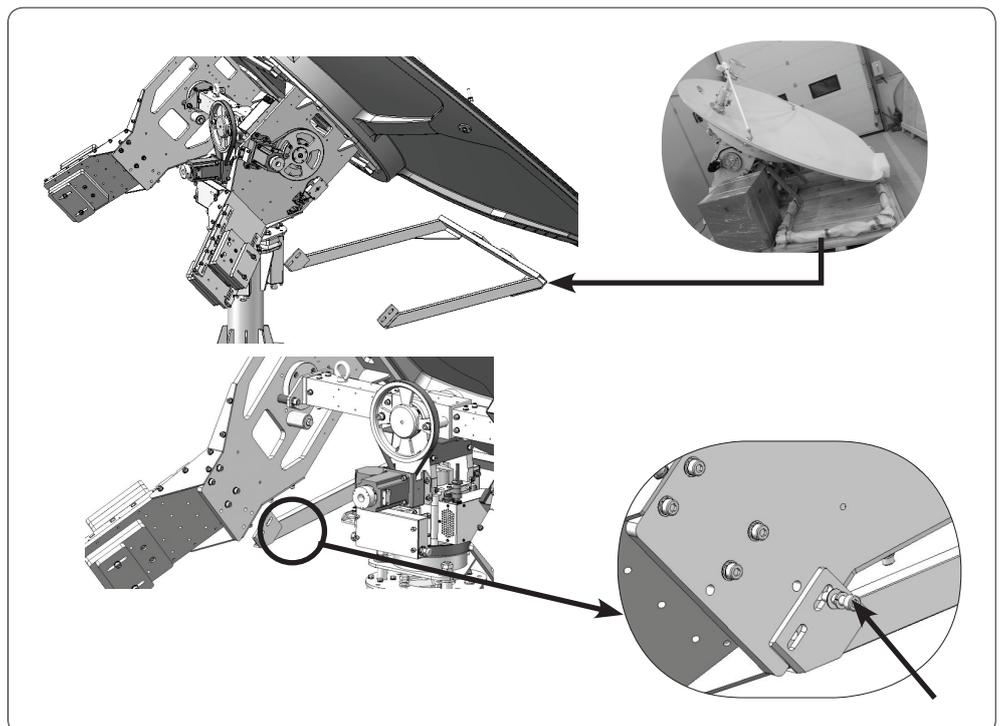
Turning the Counterweight Plate

Assembling the EL Arms and EL Arm Support Frame



Assemble EL Arm Plates

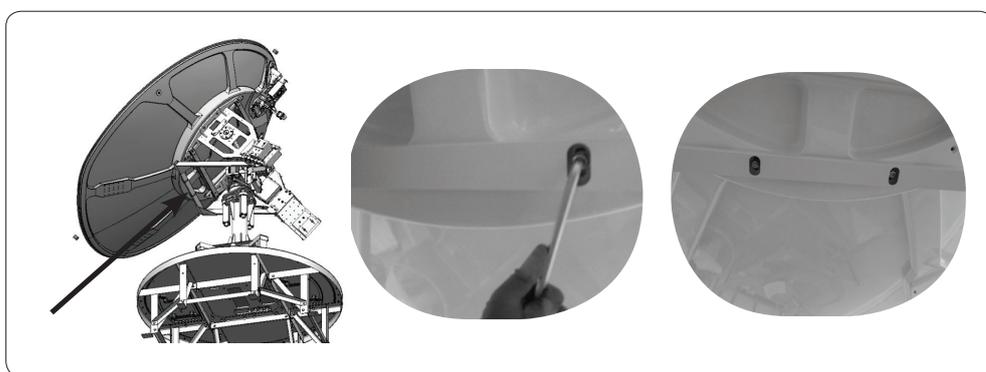
After assembling the EL Arm Plates to the EL Arms on both sides, attach the EL Arm Support Frame as shown in the figure below. The EL Arm Support Frame should be fixed to both ends of EL Arms in the holes left empty from the figure on page 33.



Assemble EL Arm Support Frame

The bolts used for tightening the Support Frame should be two M10x35L Hex Wrench Bolts including an M10 Spring Washer and Flat Washer. This procedure must be performed on both the left and right EL Arms.

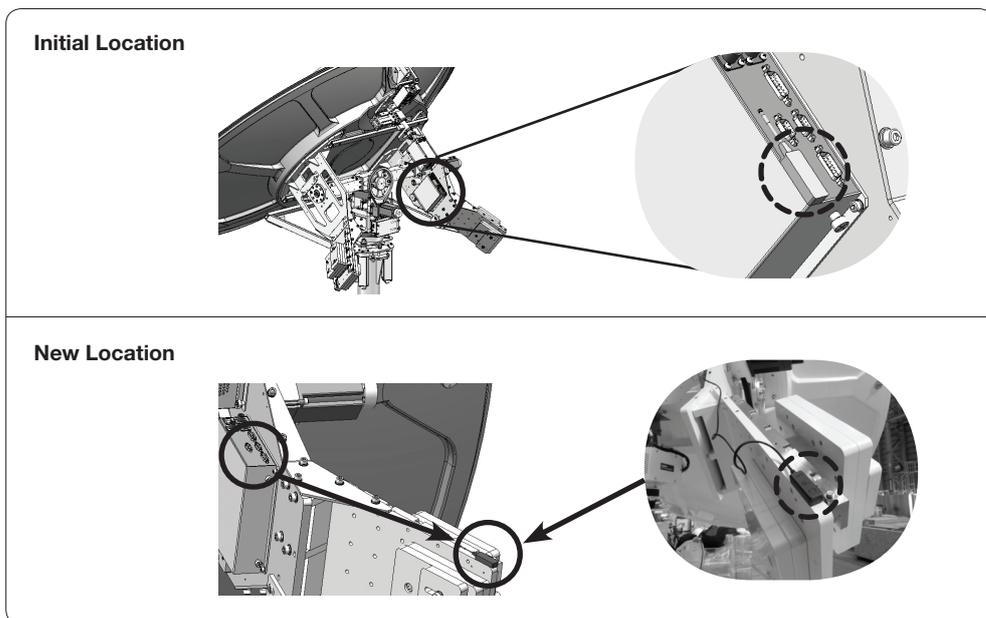
After tightening both sides of the EL Arms, the middle of the frame should be tightened as shown in the figure below.



Tighten EL Arm Support Frame

GPS Location

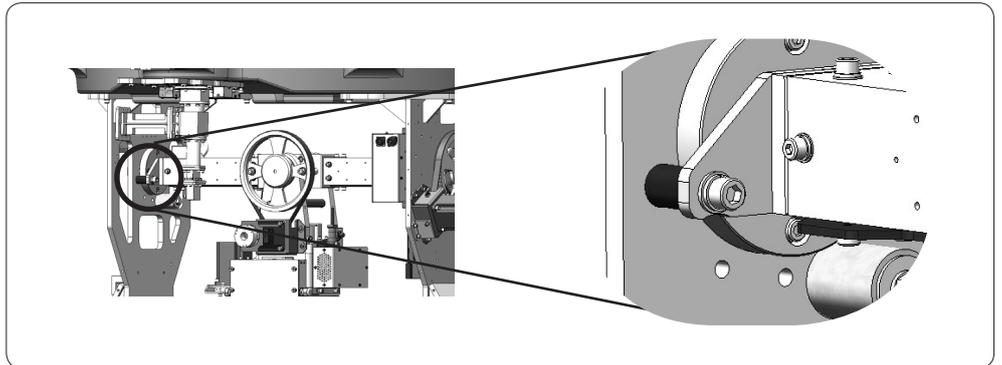
The GPS unit should be moved from the surface of the Control Board Case to the end of the EL Arm Counterweight Plate. Double sided tape attached on the GPS will make it easy to move and secure to the EL Arm Counterweight Plate.



Move GPS Location

Disassembling the EL Limits

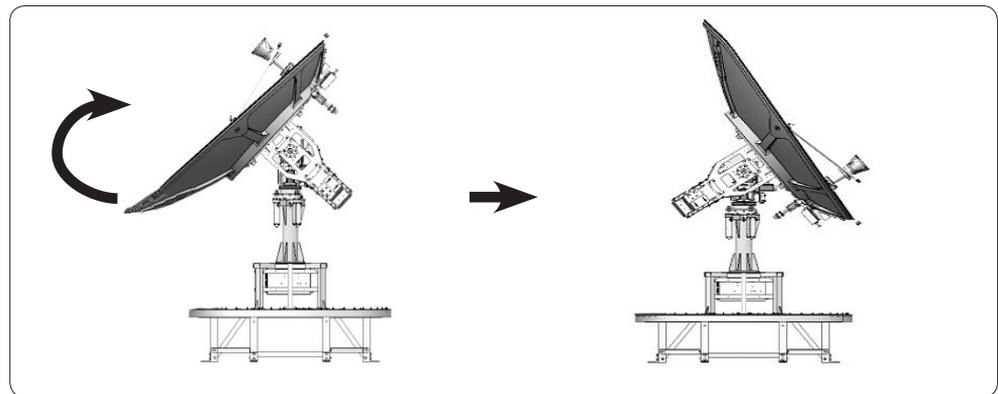
Remove the M12 Hex Wrench Bolts(2EA) to disassemble the EL Limit. One EL Limit on the left and another on the right EL Arms must be removed.



Remove EL Limits

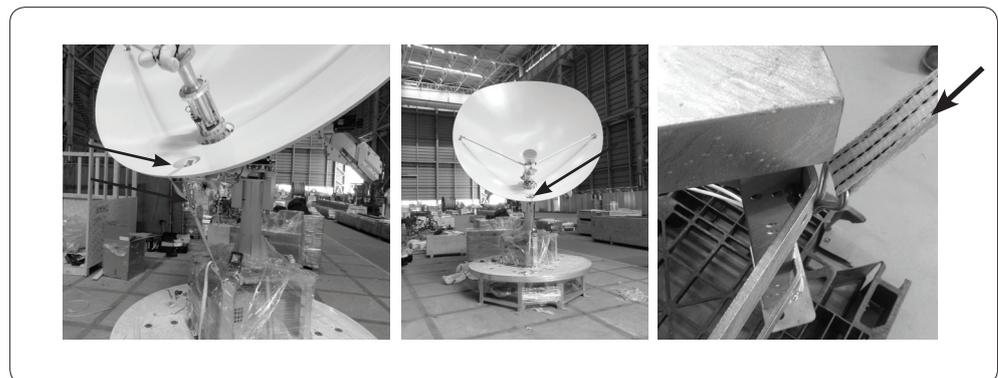
Turning the Reflector

Now it is time to turn the Reflector clockwise to change the EL angle after disassembling the EL Limits.



Turn the Reflector

Since the Weight Balance is not yet adjusted, please be careful when turning the Reflector. If the antenna is fixed using the supplied strap as shown in the figure below the turning the procedure will be easier.

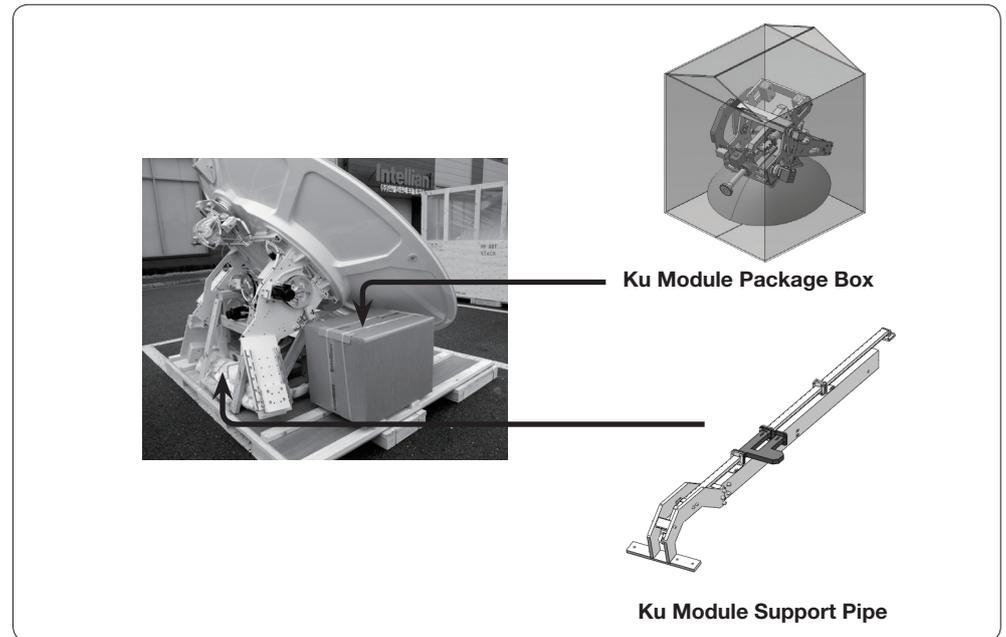


Fix the Reflector using the Supplied Strap

Ku Module Assembly

Dismantling the Ku Module from the Antenna Package

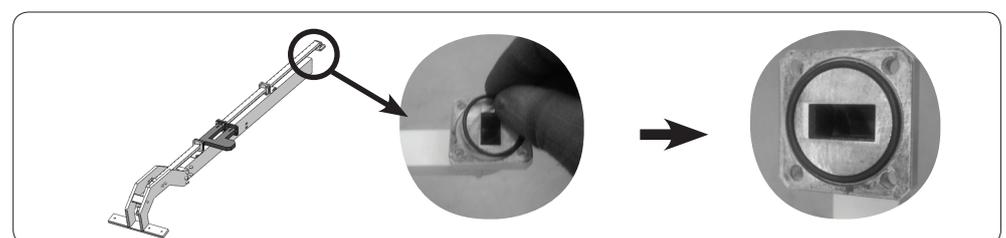
For the Ku Module Assembly, please take out the Ku Module from the Radome Package (Crate 1). Below figure shows inside the Radome Package as a reference.



Radome Package

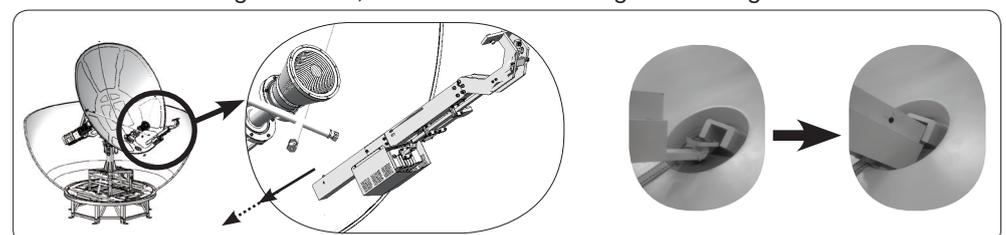
Assembling the Waveguide

Before inserting the Ku Module Support Frame into the Reflector, place the O-Ring into the groove on the Waveguide (located on the end of Ku Module Support Frame) as shown in the figure below.



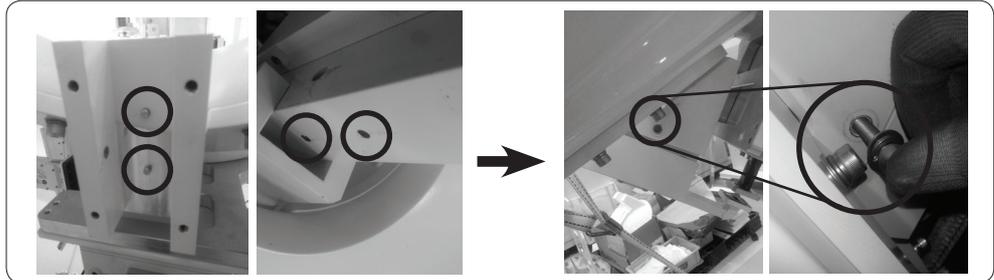
Assemble O-Ring

Now, insert the Ku Module Support Frame into the hole of Reflector shown in the figure below. While inserting the frame, be careful not to damage the Waveguide.



Insert Ku Module Support Frame

Fix the position of the Ku Module Support Pipe to match the holes. When the holes on the frame and pipe hole match, screw them together using M8 x 70L Hex Wrench Bolts temporarily.



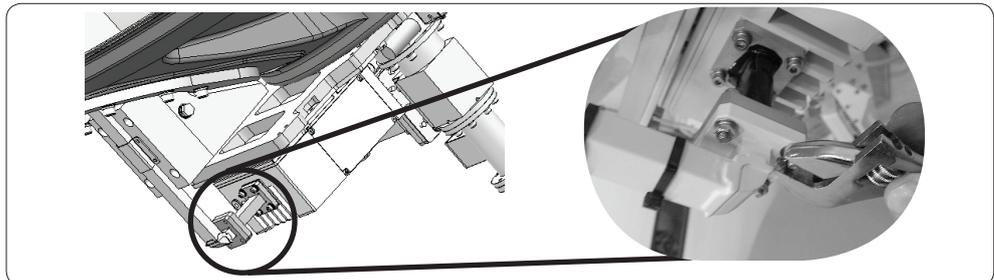
Match the Holes

Tighten four M6 x 20 Hex Wrench Bolts first as shown below, and then tighten the M8 Bolts which were applied temporarily in an earlier step.



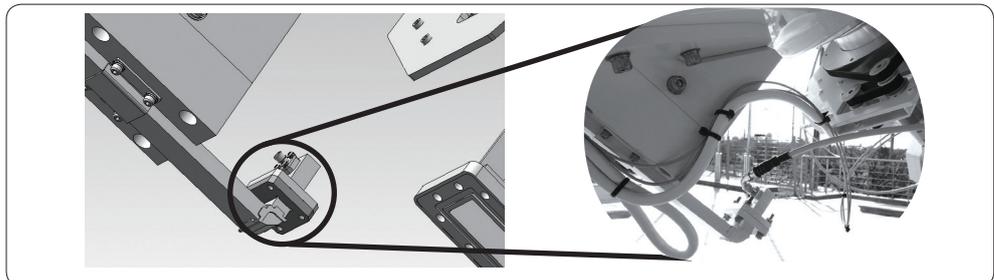
Tighten Bolts

Connect the Waveguide and Flexible Waveguide together using four M4 x 20 Bolts and nuts. **This method applies to Circular only model.**



Connect the Waveguide and Flexible Waveguide (For Circular only model)

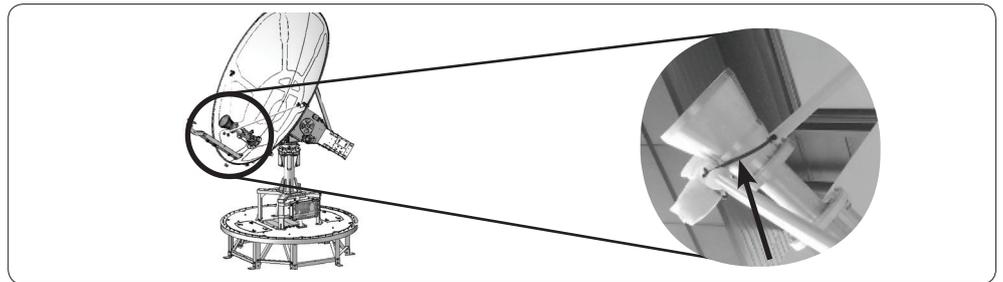
For a Circular and Linear system with a Ku-band BUC installed on the EL Arm, connect the Ku-band BUC Tx cable to the WR75 adaptor. This step may not be needed depending on the BUC type.



Connect the BUC TX Cable (For Circular and Linear model)

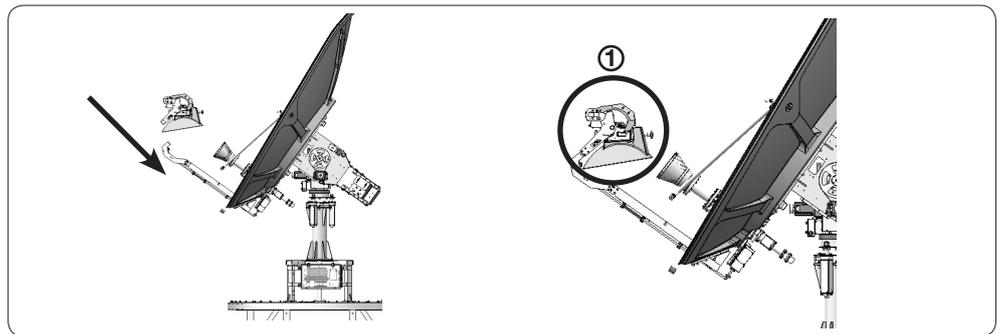
Assembling Ku Module and Feed Horn

Cut the cable ties which are holding Reflector Support Pipe.



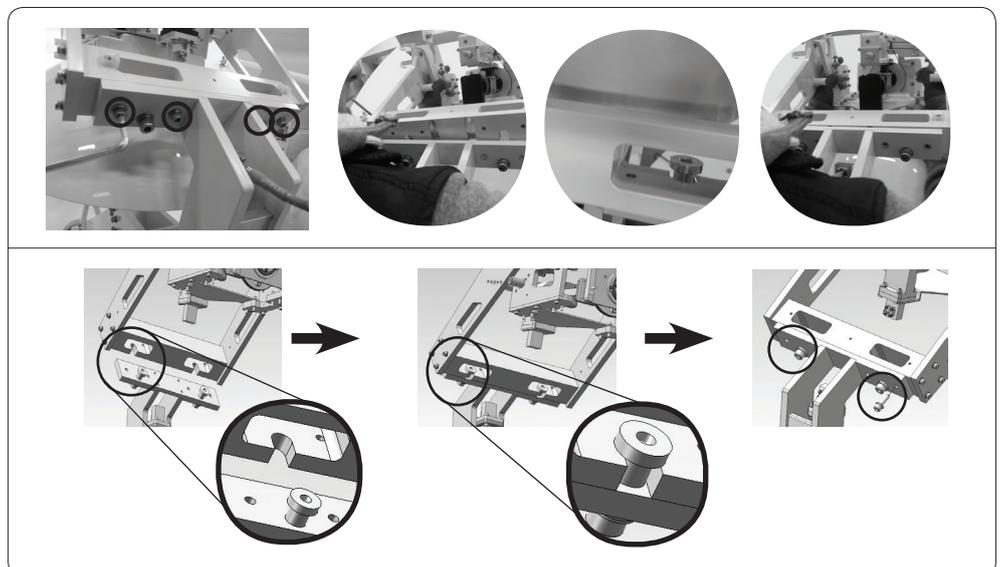
Cut Cable Ties

Insert the Ku Module in the direction of the **arrow** shown below. Be sure that your Ku Module looks the same as ① the figure below.



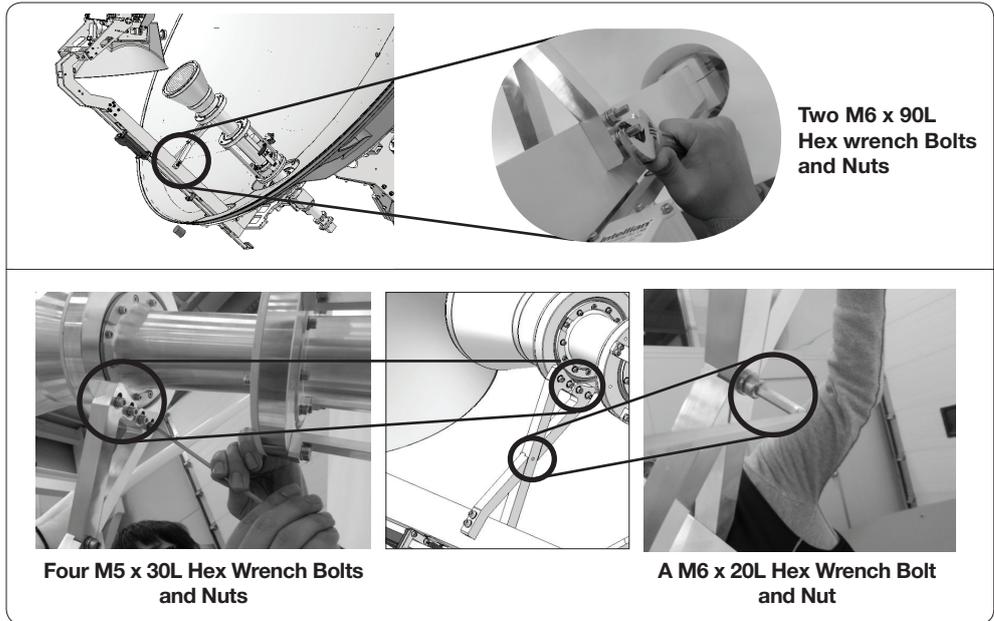
Connect Ku Module and Ku Module Support Frame

While inserting the Ku Module, be sure that the lower part is caught into the groove joint. Use four M6 x 20L Hex Wrench Bolts when tightening the module and the Groove Joint.



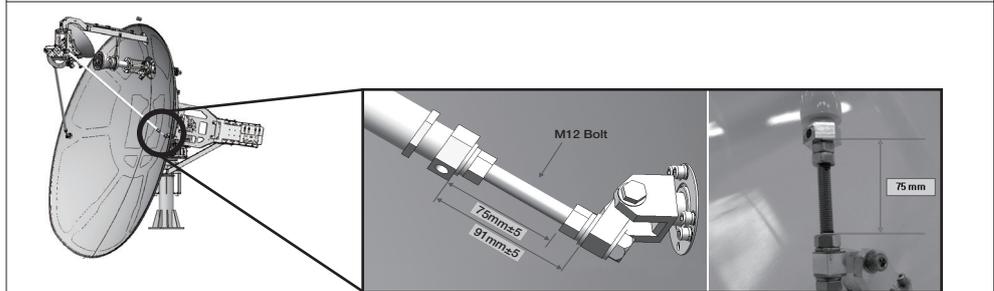
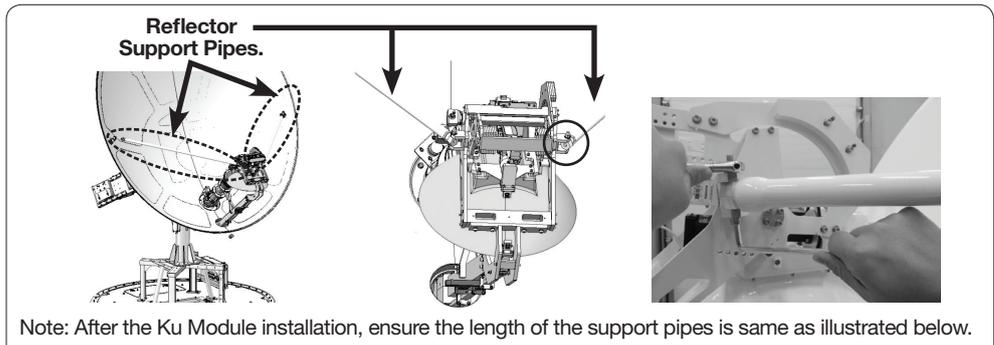
Ku Module Caught into the Groove Joint

Assemble the Ku Module Support Frame and Feed Horn as shown in the figure below.



Ku Module Support Frame and Feed Horn

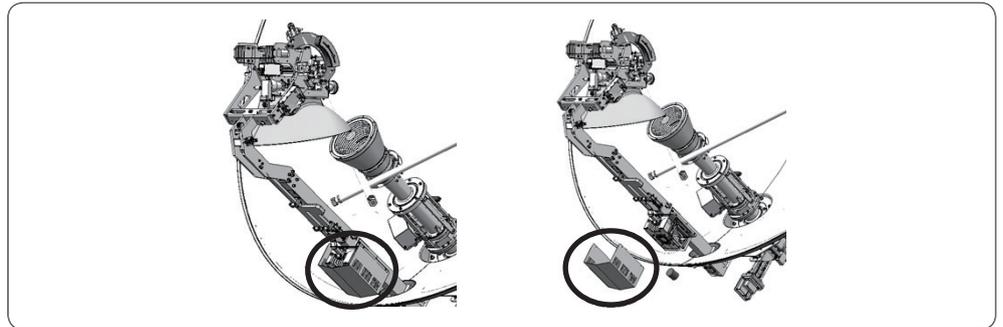
Assemble the Ku Module and Reflector Support Pipes using M8 x 70L Hex Wrench Bolts as shown in the figure below. The Ku Module should be connected to both the left and right pipes.



The support pipes are pre-assembled at the factory. However, if they need to be re-assembled after part replacement, the length of the M12 bolts on the support pipes must be adjusted to such proper settings to ensure stable performance.

Ku Module and Reflector Support Pipes

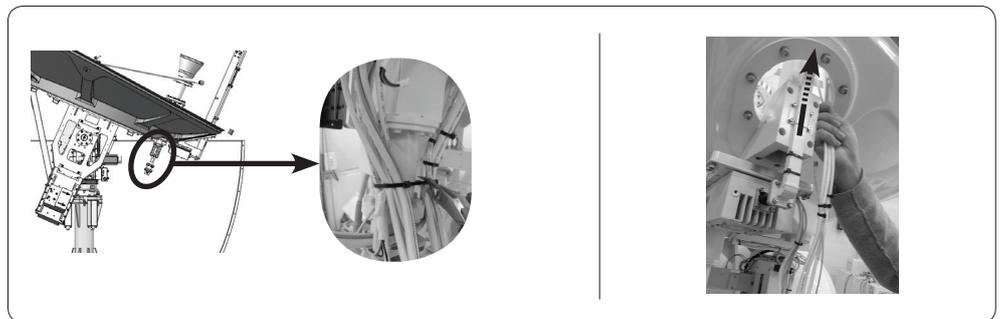
For a Circular and Linear system with a Ku-band BUC installed on the support pipe, make sure to remove the Ku-band BUC Cover before connecting cables.



**Ku Module Cover Removal
(For Circular and Linear Model with a Ku-band BUC on Support Pipe)**

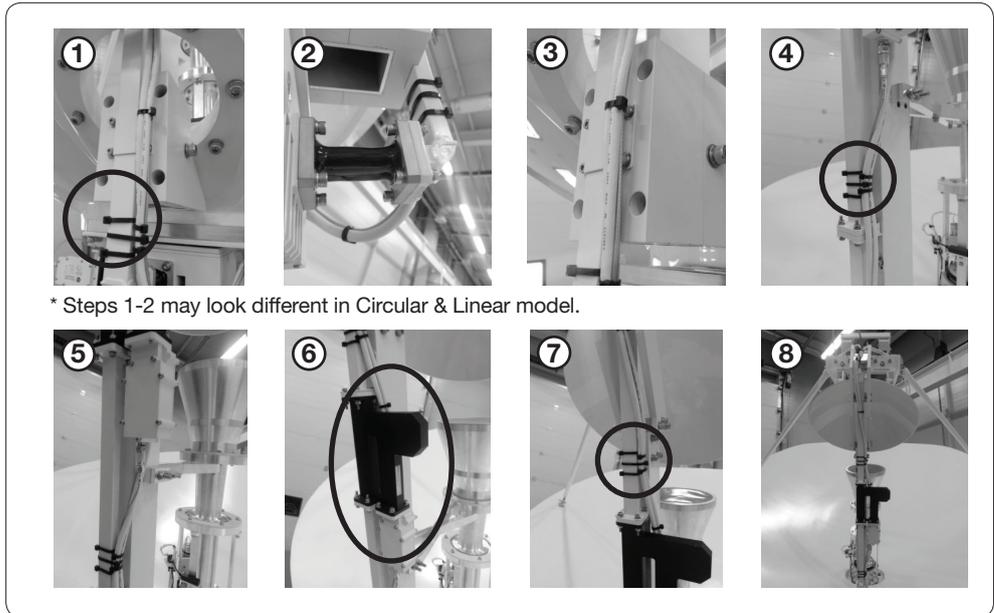
Pass the Ku Module Cables through the Reflector Hole. Remove the cable tie (See left picture below). Insert the cables in the direction of the arrow shown in the right picture below.

The cables basically include Ku-band Co-pol Cable, Ku-band Cross-pol Cable and Ku-band Interface Cable and may be more depending on the BUC type (e.g. BUC power cable and BUC to Band Select Tx Cable for a BUC mounted on the support pipe)



Ku Module Cables into the Reflector Hole

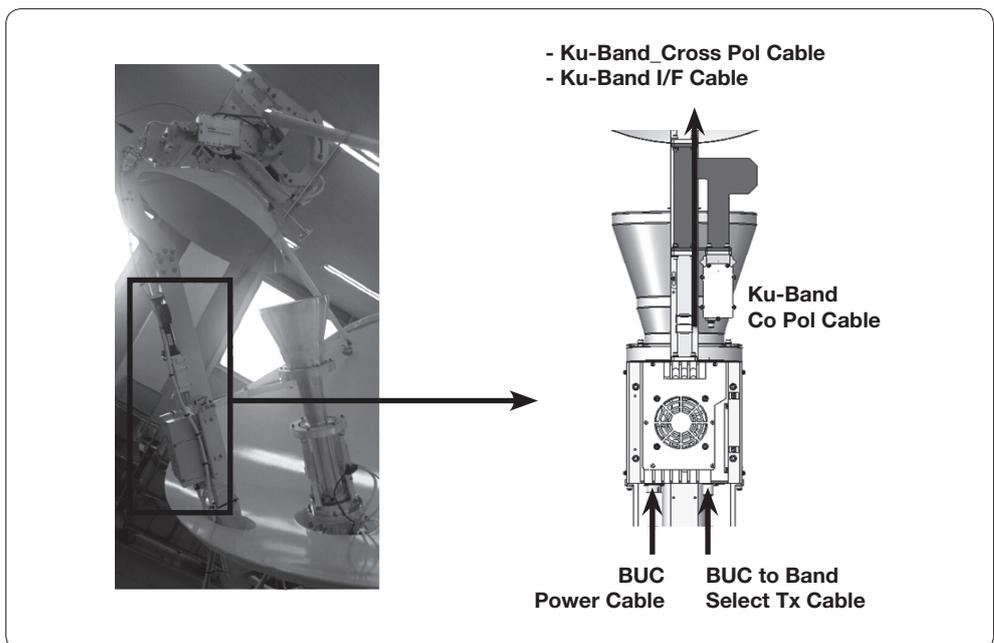
After passing the Ku Module Cables through the Reflector Hole, organize them using cable ties as shown in ⑧ in the figure below.



* Steps 1-2 may look different in Circular & Linear model.

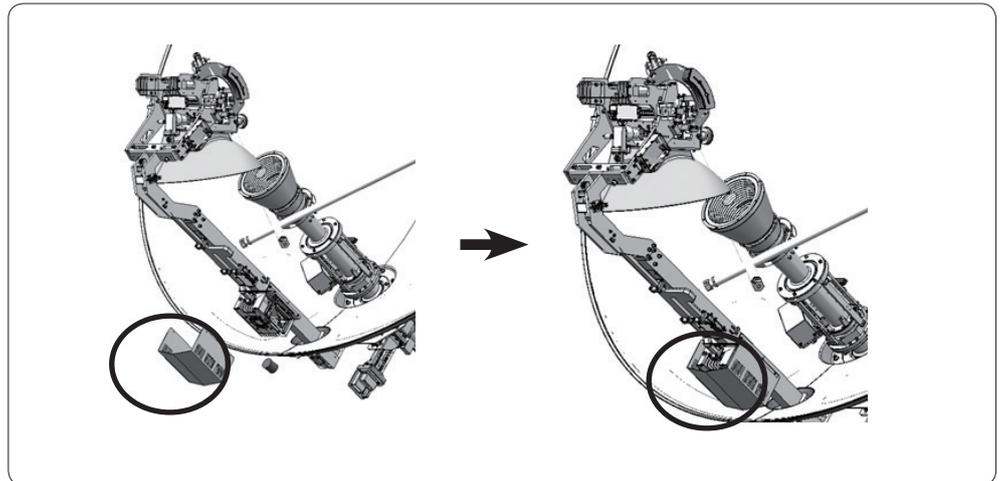
Ku Module Cable Arrangement (For a system with a BUC or EL Arm or Skew)

For a Circular and Linear system with a Ku-band BUC on the support pipe, connect the cables and clean up using cable ties as shown below.



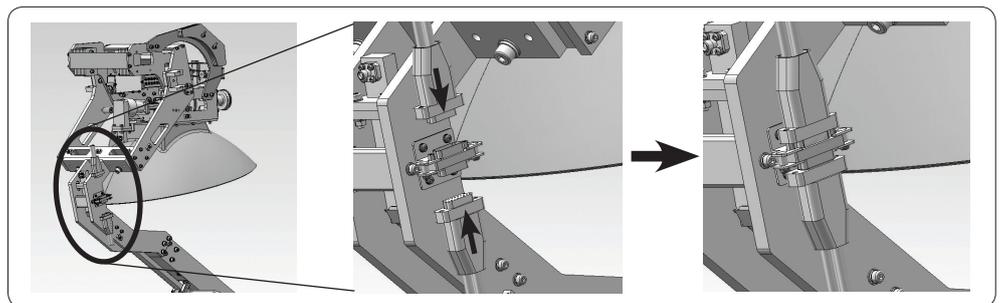
Ku Module Cable Arrangement (For Circular & Linear system with a BUC on Pipe)

After arranging the cables, attach the Ku-band BUC Cover again.



Ku-band BUC Cover Assembly

At the left side of the Ku-Module, connect the D-Sub Cables.



D-Sub Connector of Ku Module

Ku Module Cables should be connected following the procedures as shown in the figure below.

① Before connecting the Ku Module cables.

② At the middle of the Ku Module, connect the BUC Cable.

③ Connect the RF cable to the LNB by routing the cable around the left of Ku Module as shown in the figure above.

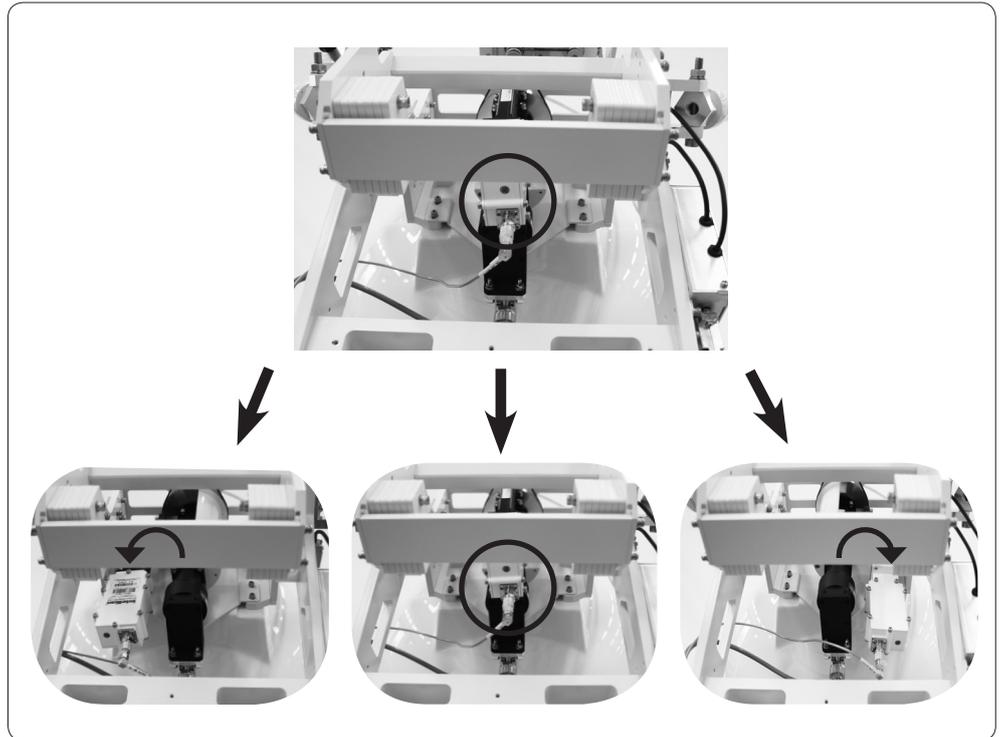
④ Secure the BUC cable and RF cable together using a cable tie.

⑤ After connecting all Ku Module cables, ensure all connectors are tightened.

Ku Module Cable Connections

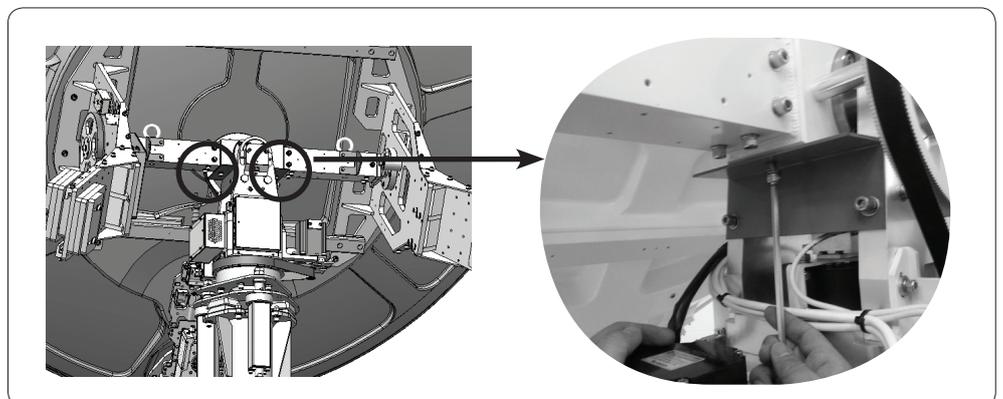
Checking Skew Movement and Cable Connections

Turn the Skew $\pm 90^\circ$ left and right as shown below and check if the cables are excessively folded.



Check Skew

Finally, the Ku Module Assembly is completed by removing the CL Limit Brackets. Be sure to remove the CL Limit Brackets on both sides (three M8 Hex Wrench Bolts).



Removing CL Brackets

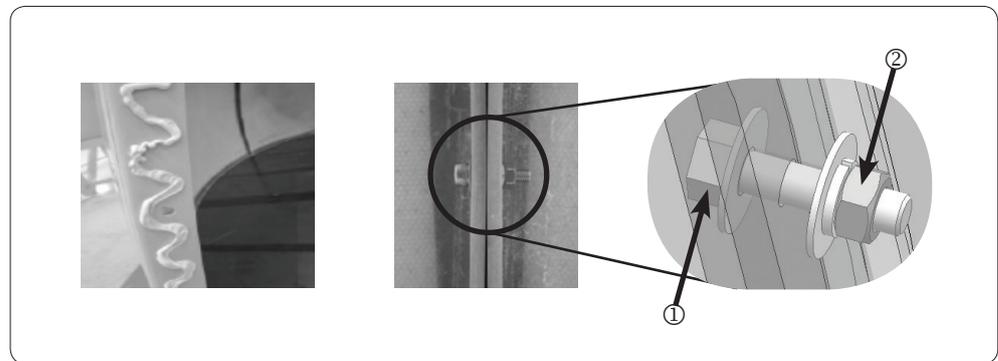
Radome Assembly

Assembling Upper Radome

The upper Radome consists of four panels, and a set of two panels are assembled to make two sets. A Cap is then placed on the top of the Radome before joining the two sets of panels.

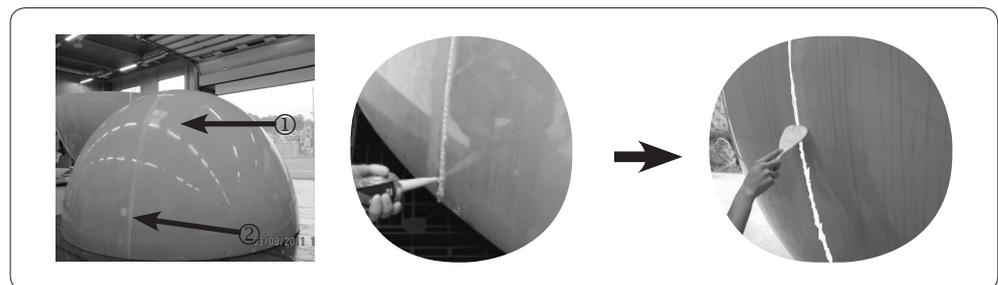
1. Two panels are assembled.
2. Repeat step ①.
3. Place the Cap on top of the Radome before joining the two panel assemblies.

As shown in the figure below, spread silicon on the binding surface of each panel, and connect them together using M6 x 35L Bolts (①) and nut (②). Keep the bolts and nuts loosened temporarily.



Upper Radome Assembly

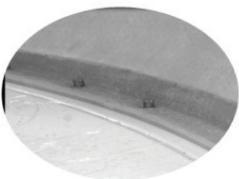
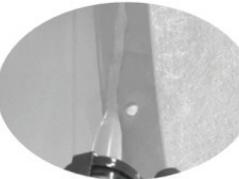
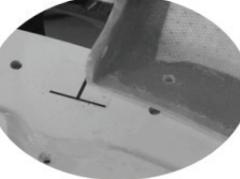
After joining the panels together, apply silicon to the panel seams ((①) and (②) as shown in the figure below) from the outside. After applying the silicon, remove excess silicon from each bead and clean the surface of the Radome.



Spread Silicon between Radome Panels

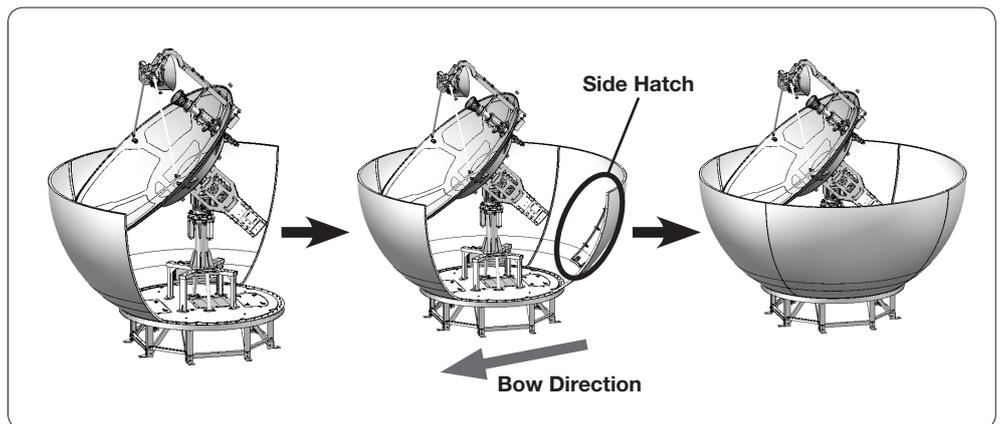
Assembling Lower Radome

To assemble lower Radome, spread silicon on the Base Frame as shown below. Put the Panels on the Base Frame using bolts and nuts.

 	 	 
<p>① Spread silicon on the Base Frame. When putting Panels on the Base Frame, use bolts and nuts.</p>	<p>② Spread silicon on the side of the Panel to assemble.</p>	<p>③ Match the Panel to the mark on the Base Frame.</p>

Lower Radome Assembly

Be sure that the Side Hatch is located on the opposite side of the Bow marker as shown below. The silicon should be applied to the panel seams as done for the upper Radome.



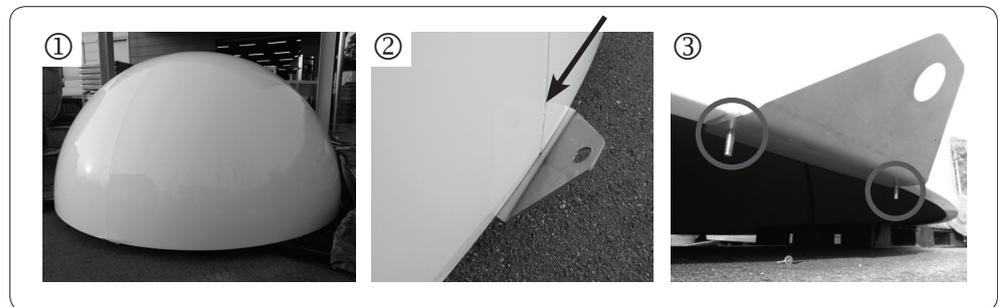
Side Hatch and Bow Direction

Completing Radome Assembly

To join the upper and lower Radome sections, follow the procedures below:

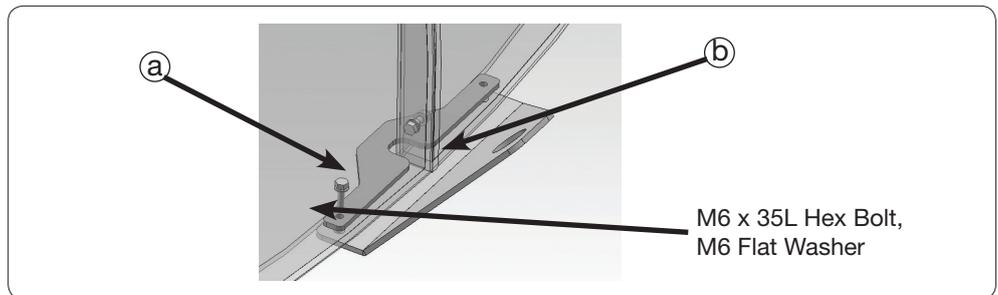
- ① Lift up the upper Radome.
- ② Place the upper section on top of the lower Radome.
- ③ Match the upper and lower Radomes and Remove the lift brackets.
- ④ Connect the upper and the lower Radomes.

Before lifting the upper Radome, attach the lift brackets under the upper Radome as shown in the figure below. Each lift bracket should be positioned on the boundary line of two panels as shown in the figure ②, and the two M6 x 35L bolts should come down through the holes as shown in the figure ③.

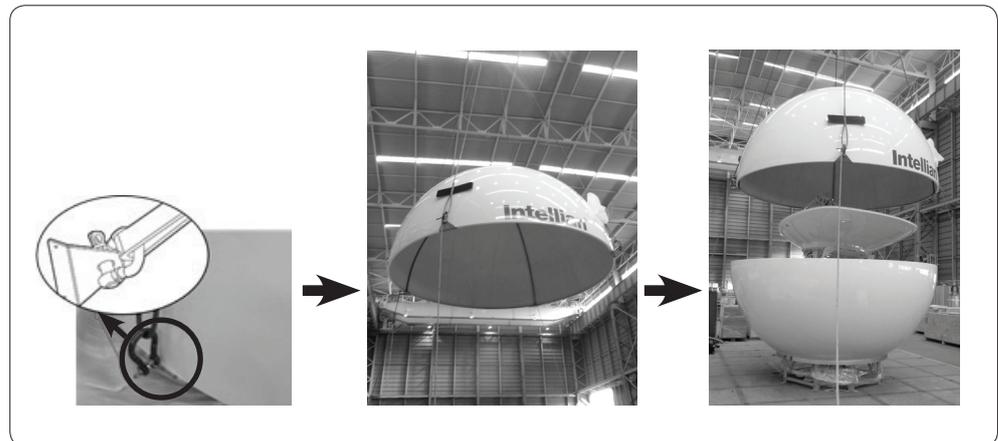


Lift Bracket Attachment

Each bracket is composed of (a), (b), M6 x 35L Hex Bolt, and M6 Flat Washer as shown below.



Lift Bracket Components



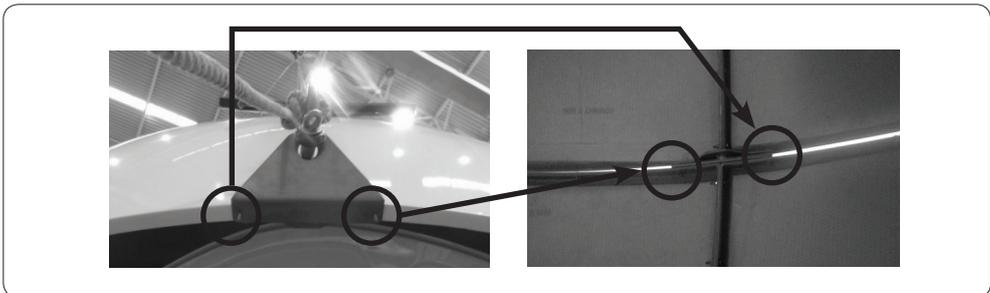
Place the Upper Radome on top of the Lower Radome (I)

Before laying down the upper Radome on the lower Radome, position the two ends of the bracket bolts in conjunction with the holes on the lower Radome as shown below. Spread silicon on the binding surface of the lower Radome prior to lowering the top section.



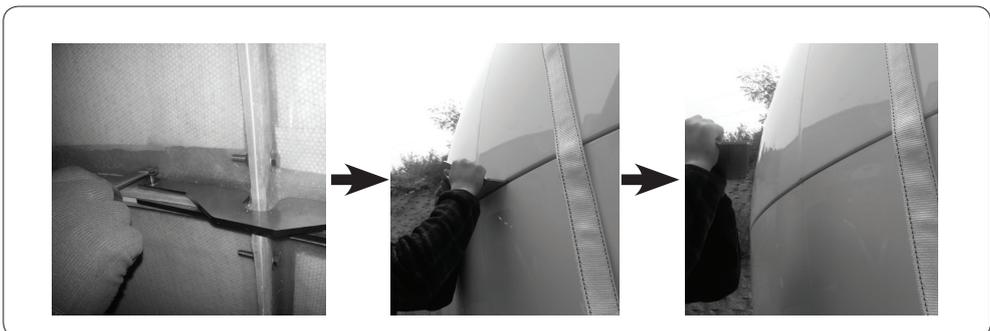
Assemble the Upper Radome and the Lower Radome (II)

Match the two ends of M6 Bolts to the holes located on the binding surface of the lower Radome.



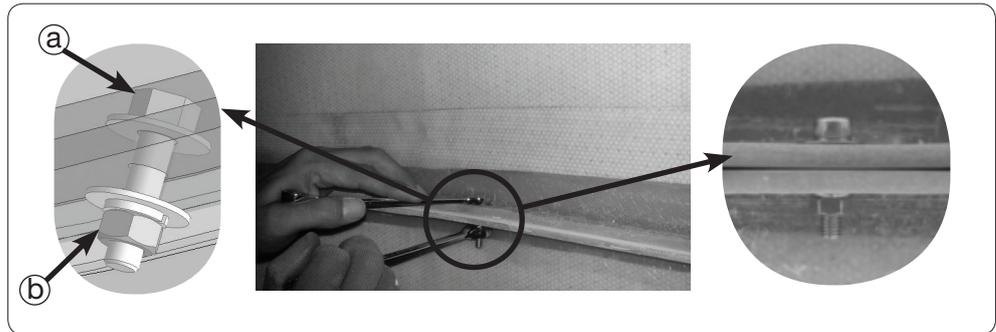
Match the Two Ends of M6 Bolts to the Lower Radome

Remove the lift bracket bolts from inside the Radome, and then take out the brackets from outside as shown below.



Remove the Lift Brackets

When all lift brackets are removed, start to connect the upper Radome and the lower Radome using M6 x 35L Bolts (a) and (b) nuts.



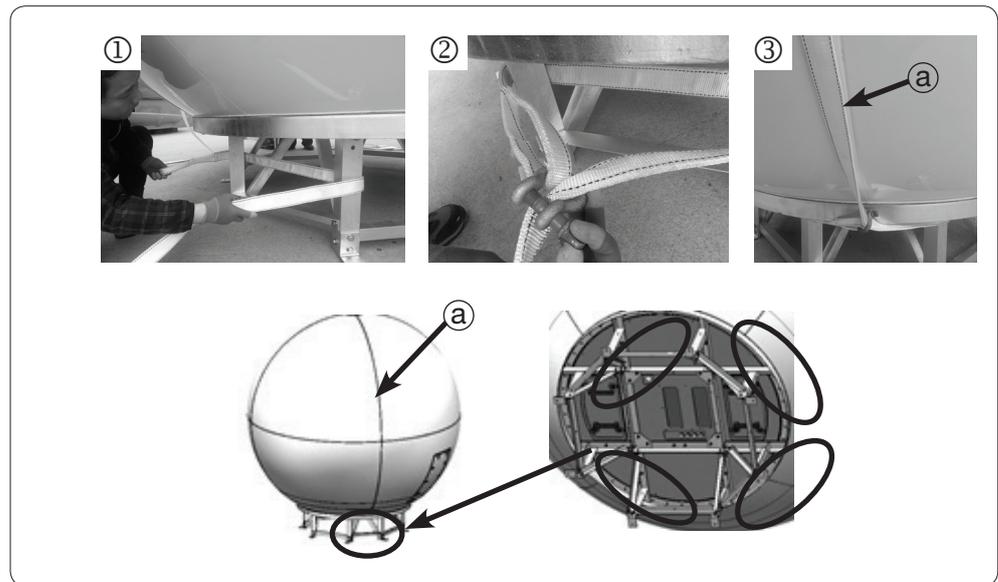
Connect the Upper Radome and the Lower Radome



Radome Assembly Complete

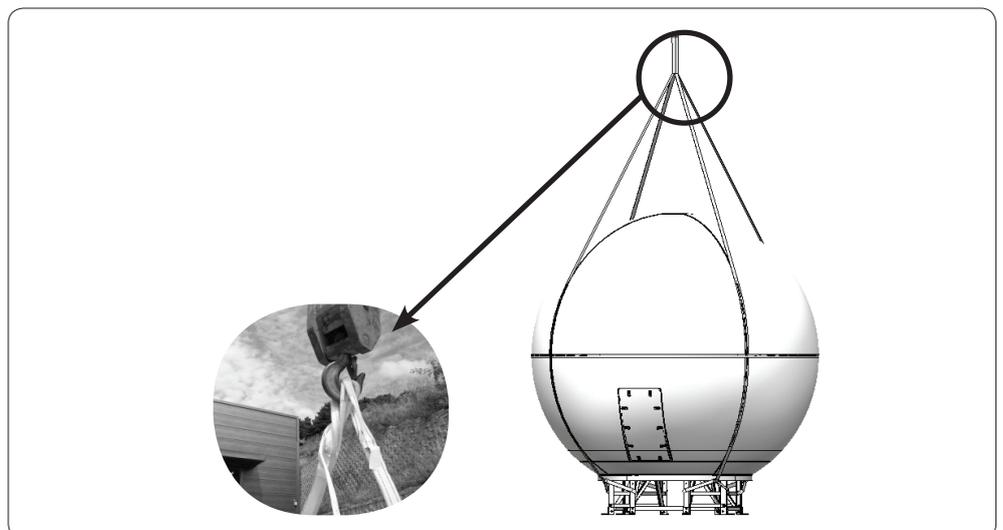
Radome Mounting

Hook the two frame legs using the lifting strap as shown in ①, and tie the strap as shown in ② below. Once secured and lightly tensioned using a crane, check to be sure the straps match the vertical connection lines of the Radome panels as shown in ③.



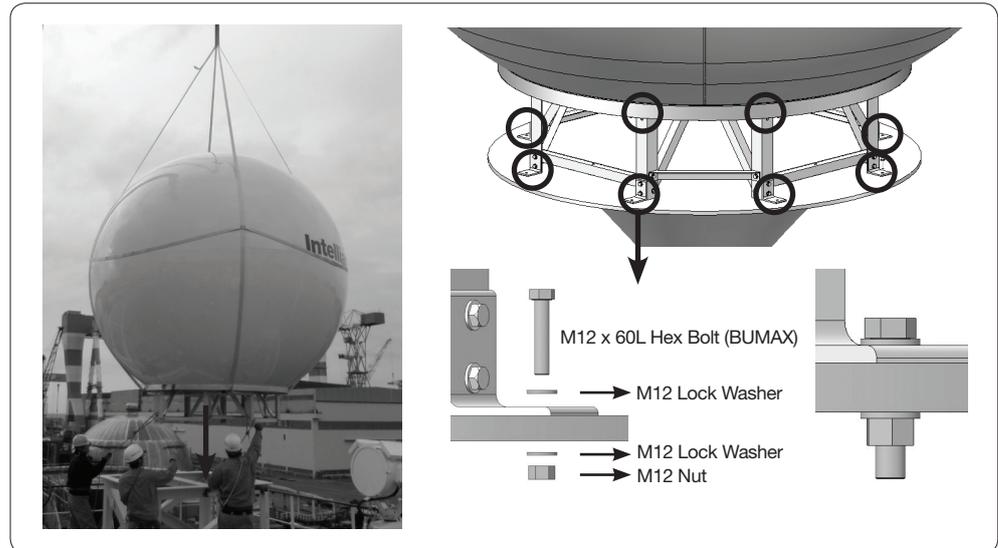
Hook and Tie Lifting Strap

Lift up the Radome hanging all four straps on a crane hook as shown in the figure below. Straighten out the lifting straps as shown below prior to lifting the entire load of the antenna.



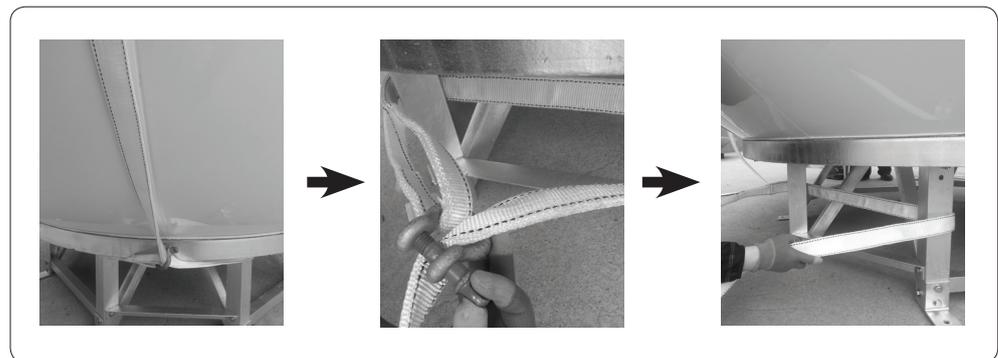
Lifting up the Radome using the Crane Hook

After placing the antenna on the ship's mast, fix the antenna frame to the mast using M12 x 60L Hex Wrench Bolts (8 times).



Fix the Antenna to the Mast

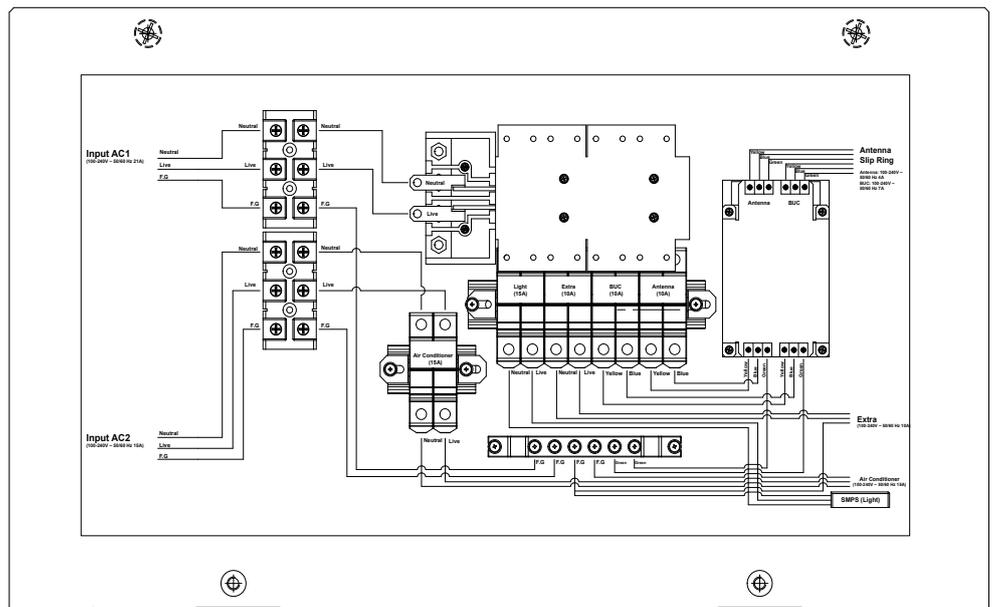
Remove the lifting straps after fixing the antenna frame to the ship's mast as shown below. The removing procedures for the lifting straps are performed in reverse order of assembling.



Remove the Lifting Strap

Power Box Connection

Connect the power cable to the power box and connect the other end into a power supply rated at 100-240V.



ACU INSTALLATION

Mounting the ACU

19" Rack Mount Type

Table Mount Type

ACU Dimensions

Selection of ACU Installation Site

Antenna and ACU Configurations

Connecting the System with a Ship's Gyrocompass

Connecting the System without a Ship's Gyrocompass

Ship Gyrocompass Connection

Connecting the System with a Ship's Gyrocompass

Connecting the System without a Ship's Gyrocompass

Wi-Fi Connection

Set Up Wi-Fi Connection

Setting Up the ACU to access Wi-Fi

Setting Up a PC to access Wi-Fi

ACU Connector Guide

Console Port

RS232/422 Connector (Modem & BUC Interface)

NMEA 2000 Connector

Mounting the ACU

Intellian supplies two types of mounting methods: a 19" Rack Mount Type and a Table Mount Type to mount the ACU.

19" Rack Mount Type



19" Rack Mount Type ACU

The ACU should be installed using the two supplied 19" Rack Mounting Brackets. Using the Flat Head Screw supplied, attach the mounting brackets to the sides of the ACU. Place the ACU in the location where it is going to be installed. Connect the cables to the rear of the ACU.

Table Mount Type

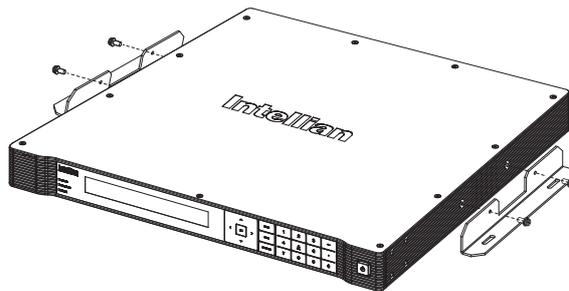


Table Mount Type ACU

The ACU should be installed using the two supplied Table Mounting Brackets which allow for a top or bottom mounting configuration. Using the Sems Bolt supplied, attach the mounting brackets to the sides of the ACU. Place the ACU in the location where it is going to be installed. Using a pencil to mark the 4 hole positions (2 on each side), and use the appropriate drill bit to screw down the brackets. Connect the cables to the rear of the ACU.

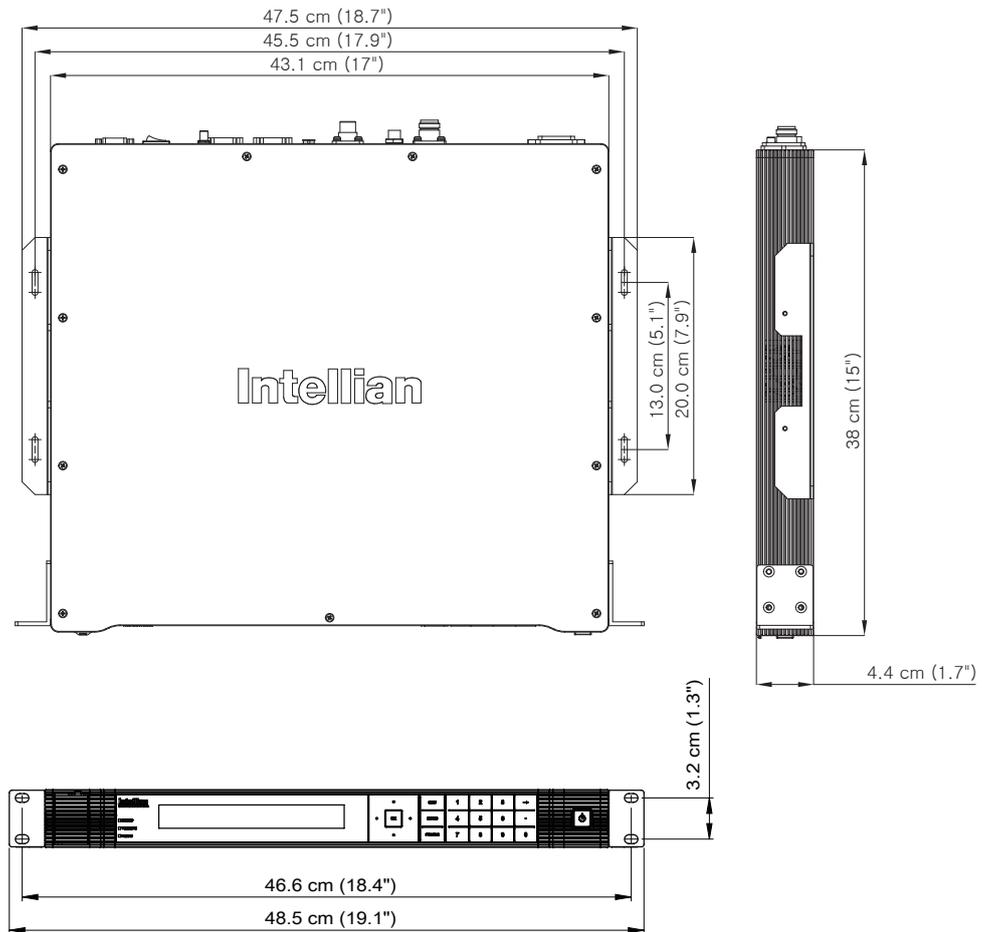


WARNING

WARNING: Ensure that the cables connected to the ACU are long enough to prevent damage when the ACU is pulled out from the rack.

ACU Dimensions

Dimension of ACU



ACU Dimensions

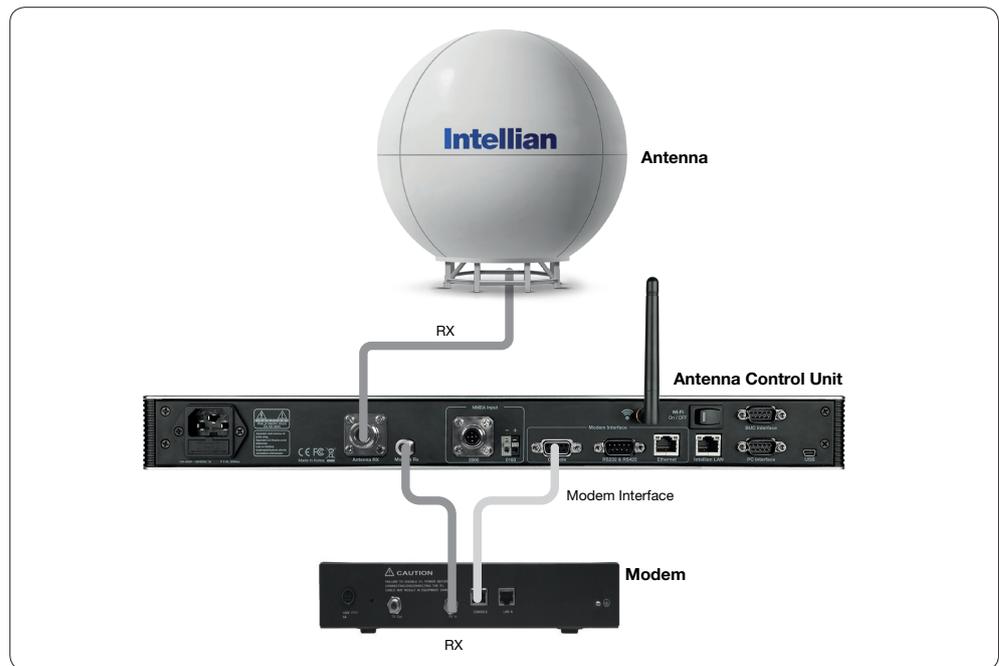
Selection of ACU Installation Site

The ACU should be installed below deck, in a location that is:

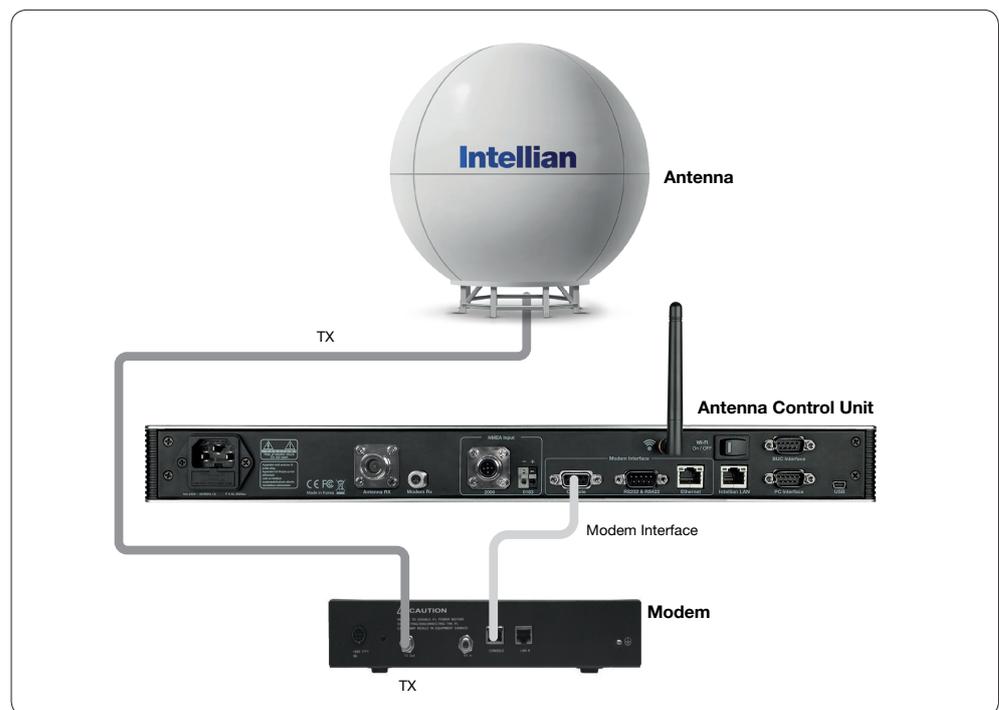
- Dry, cool, and ventilated.
- Allows easy access.

Antenna and ACU Configurations

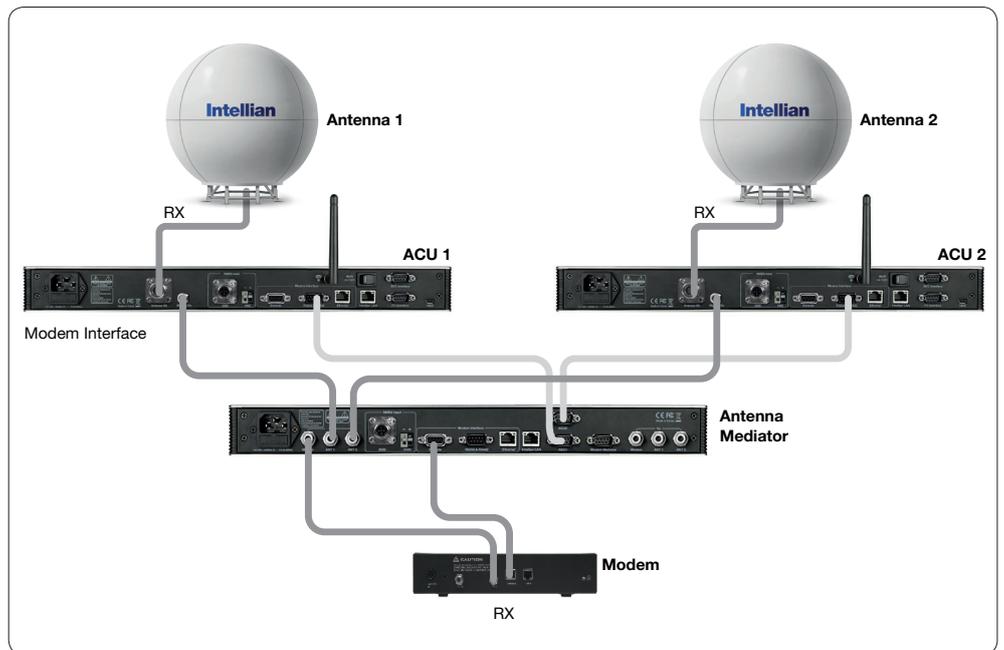
Below are diagrams of some common antenna installation configurations.



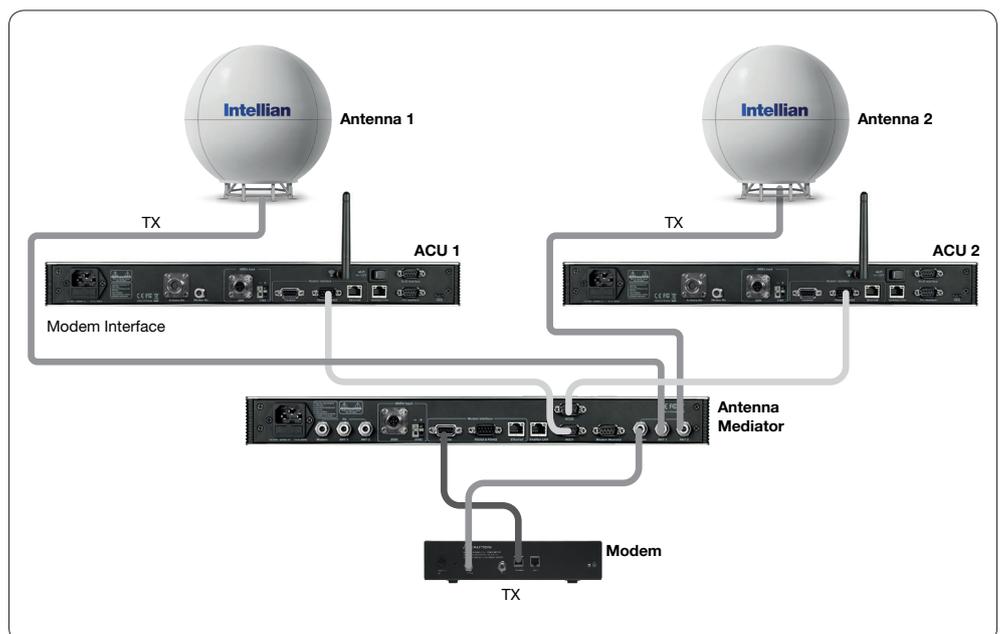
Basic System Configuration RX: 1 Antenna and 1 Modem



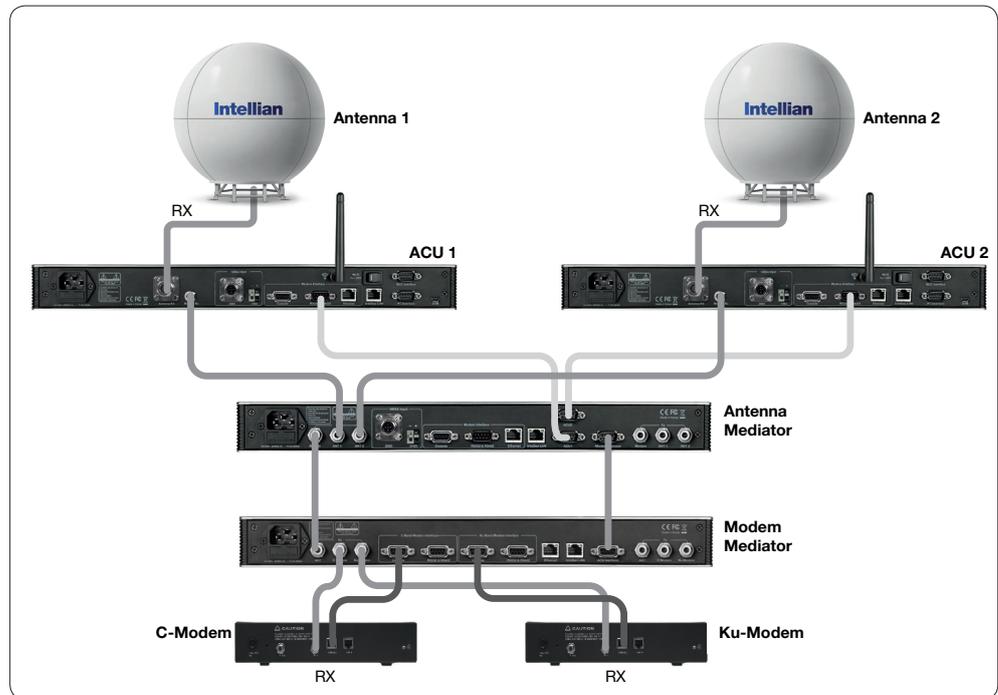
Basic System Configuration TX: 1 Antenna and 1 Modem



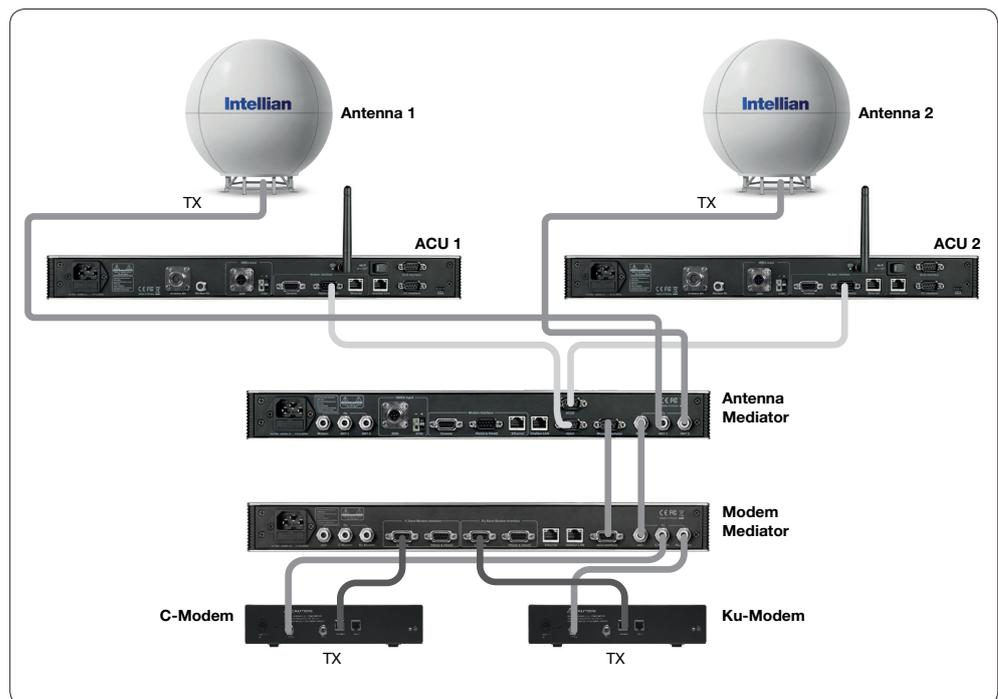
System Configuration RX: 2 Antennas and 1 Modem



System Configuration TX: 2 Antennas and 1 Modem



System Configuration RX: 2 Antennas and 2 Modems



System Configuration TX: 2 Antennas and 2 Modems

Ship Gyrocompass Connection

Connecting the System with a Ship's Gyrocompass

For satellite tracking, you must connect a ship's gyrocompass to the antenna system through the gyrocompass interface on the rear of the ACU. Intellian's ACU supports NMEA 0183 and NMEA 2000 gyrocompass inputs. If the ship's gyrocompass output uses a different standard, a compass convertor should be installed to supply the required NMEA input.

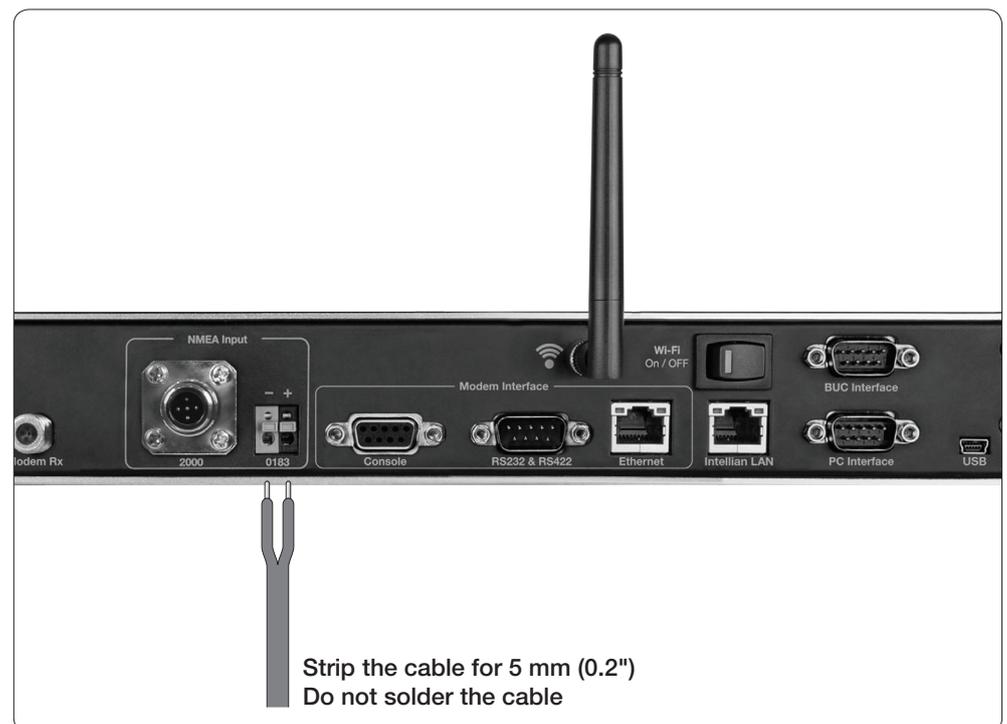
NMEA 0183 Gyrocompass Interface Cable (Customer Supplied)

Type: 2 conductors for NMEA 0183

NMEA heading sentence: xx HDT (4800 Baud, 8, N, 1).

If there is no HDT sentence then use HDM sentence instead.

NMEA 2000 heading PGN Number = 127250 (Vessel Heading)



Ship's Gyrocompass Connection

Connecting the System without a Ship’s Gyrocompass

For a vessel where the ship’s gyrocompass is not installed or is difficult to connect, the Intellian Gyro-Free satellite search function will be automatically enabled allowing the antenna to lock onto the desired satellite without requiring an external heading input.

The table below provides an example of the Gyro-Free satellite search algorithm. Depending on whether or not a heading input is detected and the setting of the heading device, a Search 1 or Search 3 satellite search pattern is triggered.

Search 1: The antenna will search for the target satellite by turning its azimuth angle in a Counter Clockwise (CCW) direction until the antenna receives a signal lock from the modem or until the Digital Video Broadcasting (DVB) transponder of the target satellite is decoded by the antenna.

Search 3: The antenna will search for the target satellite by turning its azimuth angle directly to the position calculated using the ship’s heading input and lock onto the satellite.

Existence of Heading Data	Setting of Heading Device		
	No Device	NMEA / NMEA 2000	Ground Test
w/ Heading Data	Search 1	Search 3	Search 3
w/out Heading Data	Search 1	Search 1	Search 3

Quick Setup Procedure

- Select a satellite with a DVB transponder as the target satellite.
- Set “No Device” to the heading device.
- The antenna will search for the target satellite by turning its azimuth angle in a CCW direction and lock onto the satellite signal until the antenna receives a signal lock from the modem or until the DVB transponder of the target satellite is decoded.
- Set the heading device as NMEA
- Enter the “Manual search” MODE and press the “Function” key to save the current settings. Intellian’s ACU will automatically calculate and save the BOW offset.
- Now upload the real TARGET satellite pre-configured from the library.

Wi-Fi Connection

You can connect to the ACU via Wi-Fi and to the antenna via Bluetooth for easy management and control whenever you are on the vessel.

Set Up Wi-Fi Connection

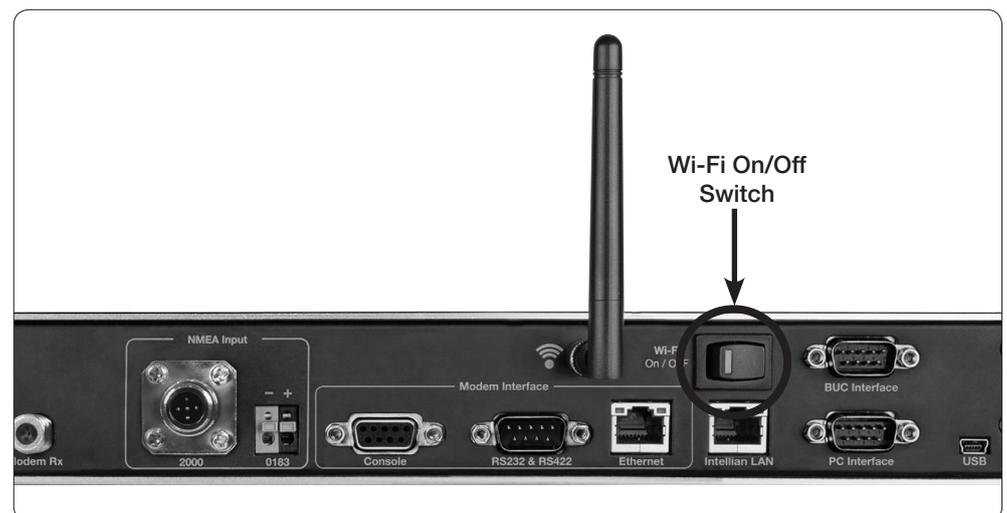
Enabling Wi-Fi functionality on the ACU

Setting up a PC (AP Mode) to access the ACU via Wi-Fi

Aptus Web Confirmation

Set Up the ACU to access Wi-Fi

Turn on the Wi-Fi power switch located on the back of the ACU. After 30 seconds, confirm that a red light appears on the switch.



Wi-Fi Connection

Setting Up a PC to access Wi-Fi

① Setting up my computer's wireless IP address:

Control Panel > Network and Sharing Center > Change Adapter Settings >

Right click on the "Local Area Connection" > Click "Properties"

After selecting TCP/ IPv4, click on the properties menu, then select "Obtain an IP address automatically".



Wi-Fi Connection : TCP / IPv4

- ② Manually change the network settings, click on “Use the following IP address” and use the settings listed below.

Case #1

If iARM Module’s IP is known
 The iARM module’s default IP is 192.168.1.223

PC IP: 192.168.1.222
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.1.223

Case #2

If iARM Module’s IP is unknown
 The iARM module’s secondary IP is 10.10.10.1

PC IP: 10.10.10.2
Subnet Mask: 255.255.255.0
Gateway: 10.10.10.1

- ③ Connect Wi-Fi in AP mode.
 After clicking on the Windows Wireless Connection icon, click on Intellian-VSAT (Default).
- ④ Enter the Network Security Key.
 Key: intellian1234 (Default)



Wi-Fi Connection : Network Security Key

⑤ You can confirm the logo and version data by accessing <http://192.168.1.223>.

Login by entering the ID/ Password listed below.

Username: intellian (Default)

Password: 12345678 (Default)

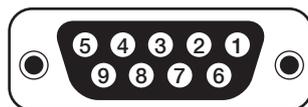


Wi-Fi Connection : Aptus Web

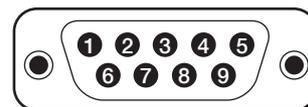
⑥ When you login, make sure that all the data within every page is being displayed correctly.

ACU Connector Guide

Console Port



ACU Console Port
D-Sub 9 Pin Female



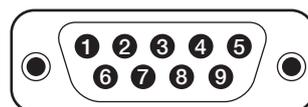
D-Sub 9 Pin Male Connector
Supplied Component

Pin	Signal
1	GND
2	GPS OUT +
3	MODEM_LOCK
4	MODEM_CTRL1 (TX MUTE)
5	GPS IN +

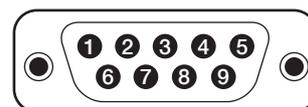
Pin	Signal
6	GPS OUT -
7	MODEM_SIGNAL_IN
8	MODEM_CTRL2
9	GPS IN -

NOTE: NMEA GPS IN/OUT Sentence: GPGLL (4800 Baud, 8, N, 1)

RS232/422 Connector (Modem & BUC Interface)



D-Sub 9 Pin RS232
Connector

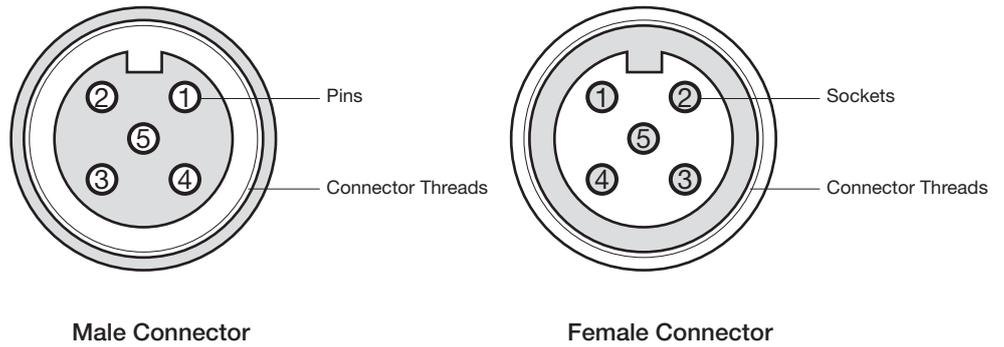


D-Sub 9 Pin RS422
Connector

Pin	Signal	Pin	Signal
1	-	6	-
2	RXD	7	-
3	TXD	8	-
4	-	9	-
5	GND		

Pin	Signal	Pin	Signal
1	-	6	-
2	RXD +	7	RXD -
3	TXD +	8	TXD -
4	-	9	-
5	GND		

NMEA 2000 Connector



Pin	Signal
1	Shield
2	NET-S, (power supply positive, +V)
3	NET-C, (power supply common, -V)
4	NET-H, (CAN-H)
5	NET-L, (CAN-L)

Pin	Signal
1	Shield
2	NET-S, (power supply positive, +V)
3	NET-C, (power supply common, -V)
4	NET-H, (CAN-H)
5	NET-L, (CAN-L)

OPERATION INSTRUCTION

Introduction

ACU soft Keys

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Monitoring Antenna Current Status

Setup Mode

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Setup Antenna LNB pol Angle

Search Parameters

Setting Search Parameters

Setup Block Zone

Diagnosis Procedures

Satellite Settings

Load Satellite

Edit Satellite Information

Addition of Satellite Information

Check NID

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Setting Local

Setting Location

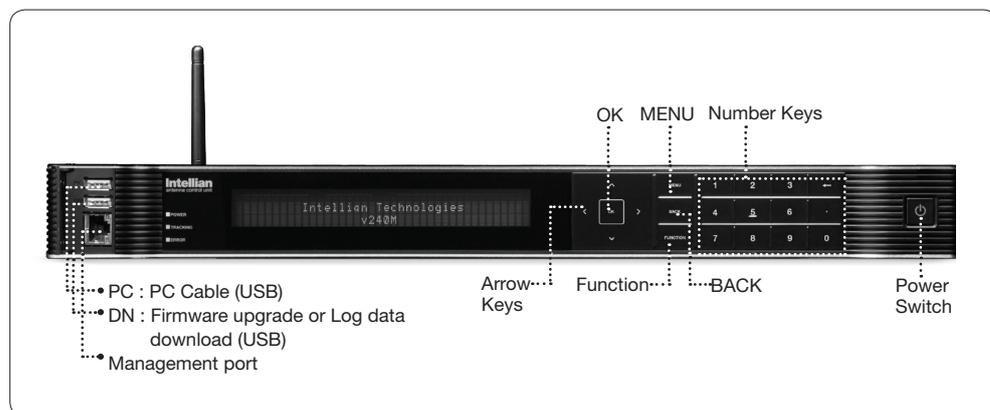
Setting Modem Port

System Management

Key Lock

Introduction

ACU Soft Keys



ACU Front Panel

Touch key	Function
OK KEY	Enter next step, or menu.
MENU	Enter SETUP mode
BACK	In SETUP mode, returns to previous menu or option, or saves the adjusted settings. In NORMAL mode, returns to the first page of the antenna's current status.
ARROW KEYS	Moves cursor to an alternative option to select, or increase and decrease the selected character to a desired value.
FUNCTION	Saves the adjusted settings.
NUMBER KEYS	Inputs numbers.

Normal Mode

Startup

With the system is installed and power applied, the ACU screen will show the following sequence.

Start up

```
INTELLIAN TECHNOLOGIES INC.
```

1. The data communication is being established between the antenna and the ACU.

Initialize antenna info

```
INITIALIZE - ANTENNA INFO
INTELLIAN v240M
```

2. The ACU receives antenna information.

Initialize elevation &
cross level angle

```
INITIALIZE - EL POSITION
INTELLIAN v240M
```

3. The elevation angle and cross level angle are initialized.

Initialize azimuth angle

```
INITIALIZE - AZIMUTH POSITION
INTELLIAN v240M
```

4. The azimuth angle is initialized.

Initialize target satellite
position

```
INITIALIZE - SAT POSITION
INTELLIAN v240M
```

5. The antenna returns to the target satellite position.

Search status

```
⌘ SEARCH1 125.0E ASIA6AH SIG: 101 C ⌘
AZ: 150.7 ( 150.7 ) EL: 45.3 SK: 02.0
```

6. The antenna is searching for the target satellite.

Tracking status

```
⌘ TRACKING 125.0E ASIA6H SIG: 201# C ⌘
AZ: 181.7 ( 181.7 ) EL: 47.3 SK: 02.0 Fr
```

7. The antenna has locked onto the satellite.

Monitoring the Antenna's Current Status

When the ACU power is on, it displays the status of the antenna. The current status of the antenna is displayed as shown below.

Current search status

```
SEARCH1 125.0E ASIA6AH SIG:101 C
AZ:150.7(150.7) EL:45.3 SK:02.0
```

1. The antenna is searching for the target satellite.

Current tracking status

```
TRACKING 125.0E ASIA6H SIG:201# C
AZ:181.7(181.7) EL:47.3 SK:02.0 Fn
```

2. The antenna has locked onto the target satellite.

The current IF signal level (SIG/AGC) is displayed. SIG is displayed when the Narrow Band Detection (NBD) mode for TRACKING SIGNAL is selected. AGC is displayed when the DVB mode for TRACKING SIGNAL is selected.

The symbol “#” is only displayed when the satellite signal is strong enough to generate a lock.

The C/ Ku indicator changes depending on the satellite being tracked.

The true azimuth [181.7] position of the antenna is the sum of ships heading 000.0 [HDG] and antenna relative [181.7].

Save current satellite info

```
SAVE CURRENT SAT INFO ?
→ YES NO
```

3. Press the FUNCTION key to save the current BOW OFFSET information or abort and return to the main display. "Fn" will be displayed only if the antenna is in tracking mode.

Current tracking status

```
TRACKING 125.0E ASIA6H SIG:201# C
AZ:181.7(181.7) EL:47.3 SK:02.0 Fn
```

4. Press the RIGHT arrow key to display NBD, GPS and ship's heading information.

Tracking & Heading
information

```

# NBD      F: 1070000  BW: 1000      SIG: 201# #
  127.05E  37.00N  HDG: 000.0  L: 5150 F#

```

5. NBD, GPS and ship's heading information are shown.

- NBD (Narrow Band Detection) IF tracking frequency : 1070000 KHz
- Detected Band Width : 1000 kSps
- SIG (Signal Level) : 201
- W (West) / E (East) Longitude: 127.05 ° E
- N (North) / S (South) Latitude: 37.00° N
- HDG (Ship's Heading) : 000.0 degree
- LNB local oscillator(LO) frequency: 5150 MHz (C band)

Antenna & ACU
versions

```

# V1-240-K10  ANT. Serial  1.00/1.00  #
  VP-T331     ACU Serial  1.00/1.00

```

6. Press the RIGHT arrow key to display the information below.

- Antenna part number, Antenna serial number and PCU / Stabilizer firmware version.
- ACU part number, ACU serial number, ACU / Pol. Controller firmware version.
- Part number & serial number are displayed depending on each product.

Press the BACK Key to return to the first page of the antenna's current status.

Select
USB
functions

```

# [USB FUNCTION]  SELECT USB FUNCTION  #
                ▲  UPGRADE FIRMWARE  ▼

```

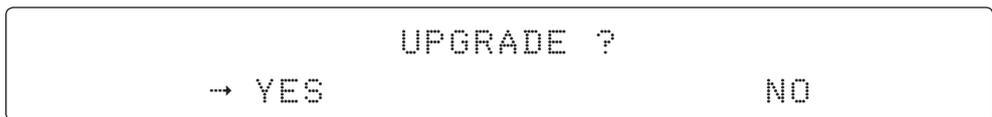
7. Press the RIGHT arrow key to display the USB FUNCTION.

When a USB Memory Stick is connected to the USB port, the above screen will be displayed. With FWP file stored in the USB Memory folder, the ACU upgrades itself once the USB drive is inserted into the port.

UPGRADE FIRMWARE : ACU is upgraded with a FWP file in designated folder of a USB memory stick

COPY LOG DATA : Copies all data logs to the USB memory stick

Upgrade the system



8. Press the OK key to upgrade firmware.

Firmware Error Messages:

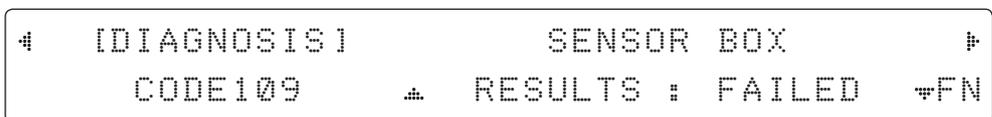
UPGRADE FIRMWARE

- FIRMWARE FILE NOT FOUND : No FWP file on the USB memory stick
- INVALID FIRMWARE : FWP file is broken or an invalid file
- MORE THAN 2 FILES EXIST : There are more than 2 FWP files
- CHECK USB CONNECTION : The USB memory stick is not connected

COPY LOG DATA

- COPY LOG DATA TO USB[30%] : Display the status of data copying
- NO ENOUGH SPACE IN USB : There is too little space on the USB memory stick
- CHECK USB CONNECTION : The USB memory stick is not connected

Real-time diagnostic result



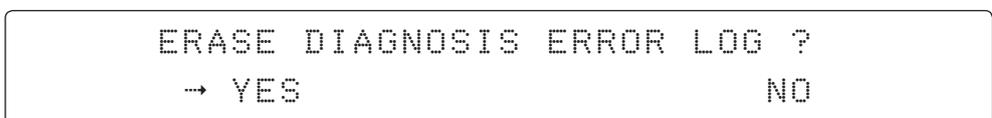
9. Press the RIGHT arrow key to display the real time diagnosis result.

REALTIME DIAGNOSIS RESULT

It shows the ERROR status after the power is turned ON.

If there is no ERROR, this page will not be shown.

Erase Error message



10. Press the FUNCTION key to erase diagnosis error messages.

Setup Mode

To enter SETUP mode simply follow the instructions below.

Searching / Tracking mode

```

# TRACKING 125.0E ASIA6AH SIG: 201# C #
AZ: 183.7 ( 183.7) EL: 47.3 SK: 02.0 Fn
  
```

1. While the antenna is in SEARCHING / TRACKING mode, press the MODE key to enter SETUP mode. * indicates the key pad lock function is on (Refer to KEY LOCK menu to setup the key pad lock function). When the key pad lock function is activated press the MODE key or when the “Fn” menu is activated press the FUNCTION key. Then the ENTER PASSWORD menu will be displayed.

Enter password

```

ENTER PASSWORD
- - - -
  
```

2. If the key pad lock function is on, enter the password before accessing SETUP mode. If the key pad lock function is off, access SETUP mode directly by following Step 3.

Setup mode

```

                SETUP MODE ?
    → YES                                NO
  
```

3. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode or press the RIGHT arrow key to move the cursor to NO and press the OK key to abort and return to the main display.

Exit setup mode

```

                EXIT SETUP MODE ?
    → YES                                NO
  
```

4. While the antenna is in SETUP mode, press the FUNCTION key as a shortcut key to exit SETUP mode.

Installation Settings

During the initial installation, the installation settings must be configured.

Setup mode

```

                SETUP MODE ?
            →  YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode

Installation
MODE

```

    +ANTENNA                +SATELLITE
    +SYSTEM                  →+INSTALLATION
    
```

2. Press the arrow keys to move the cursor to INSTALLATION and press the OK key to enter it.

Select satellite

```

                SELECT SATELLITE
    ▲  [1]      C  ASIAGAH    125.0E  ▼
    
```

```

                SELECT SATELLITE
    ▲  [1]      KU  KOREA5    113.0E  ▼
    
```

3. Press the UP and DOWN arrow keys to select the satellite that you wish to track and press the OK key to load the selected satellite.

Latitude & Longitude

```

                LATITUDE                LONGITUDE
    ▲  37.00N  ▼                        126.53E
    
```

4. Set the current LATITUDE and LONGITUDE
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value, or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter.

Gyrocompass type

```

                GYRO TYPE                BOW ADJUST
    ▲  NMEA  ▼                            000
    
```

5. Set the ship's GYRO TYPE* and BOW ADJUST

Search pattern 1 or 3 will be initiated according to which gyrocompass type is selected and the existence of a gyrocompass input. Ensure that the supported gyrocompass type is set correctly.

For the v240M, if the ship's gyrocompass output is Step-by-Step (SBS) or Synchro, separate purchase of a gyrocompass converter is required.

Search pattern 1 will be initiated automatically if the gyrocompass input does not exist and the gyrocompass type is set to anything other than GROUND test.

The BOW ADJUST is to offset the angle difference between the antenna's bow and the ship's bow (Range: 0-360°)

NOTE: The bow offset will not be saved automatically if a Search 1 pattern is initiated. In this case, the antenna will need to retarget the desired satellite using Search 1 every time if the antenna restarts.

Gyrocompass search mode

Setting of Heading Device			
Existence of Heading Data	No Device	NMEA 0183 NMEA 2000	Ground Test
With Heading Data	Search 1	Search 3	Search 3
Without Heading Data	Search 1	Search 1	Search 3

GYRO TYPE* (v240M)

- NO DEVICE
- NMEA
- NMEA 2000
- GROUND TEST

Set modem type and LNB local frequency

```

MODEM TYPE          13V + 0KHz
┌ IDIRECT-I/O ─┘    10000MHz
    
```

6. Set **MODEM TYPE** * and LNB LOCAL.

MODEM TYPE is to select a proper data communication port on the ACU to interface with the satellite modem.

MODEM TYPE*

- USER SETTING
- IDIRECT-I/O
- IDIRECT-AMIP
- COMTECH-I/O
- COMTECH-ROSS
- HUGHES
- SATLINK-SERIAL
- ELEKTRIKOM-AMIP
- GILAT-SE-II
- IPSTAR-SOTM

```

18V + 0KHz          13V + 22KHz
┌ 10750MHz ─┘      11300MHz
    
```

```

18V + 22KHz
┌ 11300MHz ─┘
    
```

7. Set the LNB local oscillator frequency for each voltage power. (13V + 0KHz , 18V + 0KHz , 13V +22 KHz , 18V +22 KHz)

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value, or press the NUMBER keys to set the desired value directly.

Load

```
                                LOAD ?
                                → YES                                NO
```

8. Press the BACK key to load the current setting or abort and return to the main display.

Loading settings

```
LOADING ...                ###00000000
DO NOT TURN OFF !
```

9. Setting is being loaded to the system.
The ACU will restart the system automatically after uploading the setting.
DO NOT TURN OFF THE ACU POWER while data is being uploaded.

Tracking status

```
⚡ TRACKING 125.0E ASIA6AH  SIG: 201# C  ⚡
  AZ: 183.7 ( 183.7 ) EL: 47.3 SK: 02.0 Fn
```

10. The antenna has locked onto the target satellite.

Antenna Settings

Manual Search

Search for the desired satellite manually.

Setup mode

```

                SETUP MODE ?
          → YES                               NO
  
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Antenna MODE

```

→+ANTENNA                +SATELLITE
  +SYSTEM                  +INSTALLATION
  
```

2. Press the OK key to enter the ANTENNA menu.

Manual search MODE

```

# →+MANUAL SEARCH        +SET POL ANGLE #
  +SEARCH PARAM          +SET PARAMETERS
  
```

3. Press the OK key to enter the MANUAL SEARCH menu.

Antenna movement

```

STEP SIZE  AZIMUTH  ELEVATION  AGC
# 00.2 #   ← 231.7 ▶   ▲ 48.3 ▼   301   Fn
  
```

4. Current IF tracking signal level (AGC) / (SIG) is displayed to assist you in manually peaking the AZIMUTH (0°-360°) and ELEVATION (0°-90°) angles for the best signal level. Press the NUMBER key to change the STEP SIZE (Range : 0.1~99.9). Press the LEFT and RIGHT arrow keys to increase or decrease the azimuth angles. Press the UP and DOWN arrow keys to increase or decrease the elevation angles. Press the FUNCTION key to save the current settings or abort and return to the main display.

Save

```

                SAVE CURRENT SAT INFO?
          → YES                               NO
  
```

5. If the current settings are able to locate the satellite, press the FUNCTION key to save "current satellite information". This will help to reduce the satellite acquisition time after restarting the system. Press the LEFT arrow key to move cursor to YES and press the OK key to save the settings.

NOTE: If the gyrocompass type is not NMEA or the gyrocompass is not connected to the ACU, the information cannot be saved.

Setup Antenna LNB pol Angle

Setup mode

```

                SETUP MODE ?
            → YES                                NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Antenna MODE

```

    →+ANTENNA                                +SATELLITE
      +SYSTEM                                +INSTALLATION
    
```

2. Press the OK key to enter the ANTENNA menu.

Set pol angle MODE

```

    ⚡ +MANUAL SEARCH                                →+SET POL ANGLE ⚡
      +SEARCH PARAM                                +SET PARAMETERS
    
```

3. Press the RIGHT arrow key to move cursor to the SET POL ANGLE menu and press the OK key to enter it.

LNB pol angle type

```

                SELECT LNB POL. ANGLE MENU
            ⚡                                CALIBRATION                                ⚡
    
```

4. Press the UP and DOWN arrow keys to select the LNB pol angle menu and press the OK key to run the selected operation 'CALIBRATION', 'MANUAL ADJUST C POL', or 'MANUAL ADJUST KU POL'.

Select MANUAL ADJUST C POL or MANUAL ADJUST KU POL to control the LNB pol angle manually. If the control board, skew potentiometer or belt is replaced, select CALIBRATION to calibrate the LNB pol angle.

LNB pol angle Signal

KU

```

    LNB POL ANGLE                                SIGNAL: 180
    ⚡                20.5                            ⚡
    
```

C

```

    LNB POL ANGLE    POLARITY    SIGNAL: 180
    ⚡                10.0        ⚡ ⚡ LINEAR ⚡
    
```

5. Press the UP and DOWN arrow keys to increase or decrease the LNB pol angle manually and the correspondent SIGNAL level will be displayed next to it.

If the tracking satellite is a C-band satellite, the POLARITY item is shown as above.

If the tracking satellite is a Ku-band satellite, the POLARITY item is not shown.

Polarity is changeable to "LINEAR", "RHCP", and "LHCP" with the LEFT/RIGHT key.

Press the BACK key to return to the main display.

NOTE: LNB POL ANGLE menu will be displayed only if MANUAL ADJUST is selected.

Search Parameters

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Antenna MODE

```

    →+ANTENNA                +SATELLITE
      +SYSTEM                +INSTALLATION
    
```

2. Press the OK key to enter the ANTENNA menu.

Manual search MODE

```

    #  +MANUAL SEARCH        +SET POL ANGLE  #
      →+SEARCH PARAM        +SET PARAMETERS
    
```

Search param

3. Press the DOWN arrow keys to move the cursor to SEARCH PARAM and press the OK key to select it.

```

    SEARCH WAIT TIME      INCREMENT STEP
      ▲      030          ▼      0.50
    
```

4. Set the SEARCH WAIT TIME and INCREMENT STEP
 Set the time-out for automatic initiation of a search after the signal level drops below the predefined threshold value (Range : 1 - 120 sec) and set the increment step size (Range : 0.01 - 5.00 sec).

Search 1 range

```

    SEARCH1 AZ          SEARCH1 EL
      ▲      400        ▼          06
    
```

Search 3 range

```

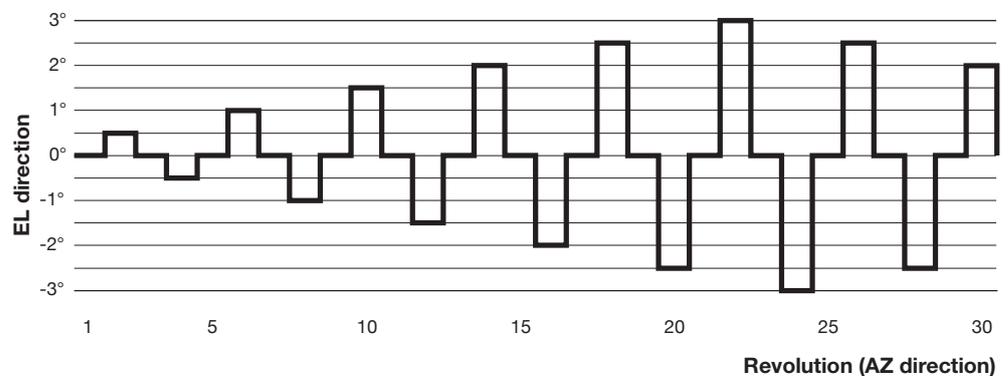
    SEARCH3 AZ          SEARCH3 EL
      ▲      003        ▼          04
    
```

5. Set the SEARCH 1 and 3 AZ (Azimuth) range and EL (Elevation) range. SEARCH 2 is reserved for future use.

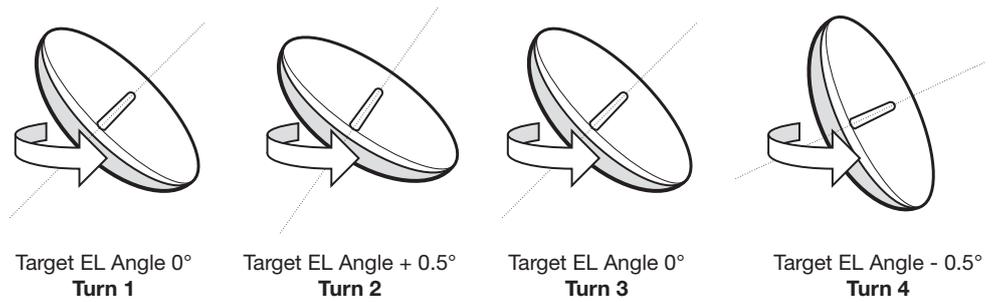
A search pattern 1 or 3 initiates according to the existence of a gyrocompass input and which GYRO TYPE is selected.

Search 1: a search pattern 1 automatically initiates when the ship's heading input does not exist / fails. The antenna will go to the relative azimuth position 0° at the calculated elevation and search in the azimuth CCW direction and search up + 0.5° & down -0.5° with a total 6 (±3°) in elevation. The search cycle will repeat until the antenna receives a lock signal from the modem or the DVB transponder of the target satellite is decoded by the antenna. If the desired signal is found and is higher than the predefined detect level, the ACU will then initiate Search 3. However, although ACU initiates Search 3 with the detection of the desired signal, the antenna will not initiate Search 3 pattern but go into TRACKING mode immediately. If the detected signal is below the predefined tracking threshold level, the search 1 will repeat and start 3° away from the current position.

**Search1
(Gyro-Free
Search Pattern)**

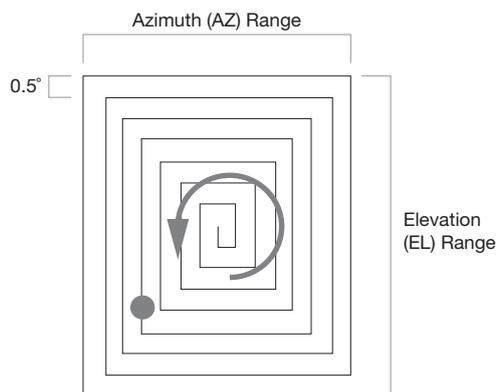


Search 1 antenna motion



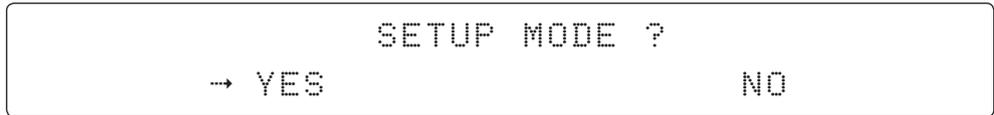
Search 3: a search pattern 3 automatically initiates when the AGC / SIG falls below the current tracking level threshold value. If the desired signal is found and above the predefined tracking level, the ACU will terminate Search 3 and go into TRACKING mode.

A search pattern automatically initiates when the AGC/SIG falls below the current threshold setting (indicates that satellite signal has been lost). Search is conducted in a two-axis pattern consisting of alternate movements in azimuth (AZ) and elevation (EL), forming an expanding square, demonstrated in the diagram below.



Setting Search Parameters

Setup mode



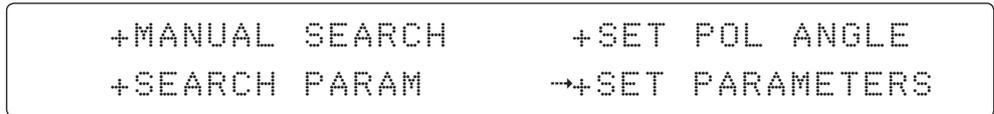
1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Antenna menu



2. Press the OK key to enter the ANTENNA menu.

Set parameters menu



3. Press the arrow keys to move the cursor to the SET PARAMETERS menu and press the OK key to enter it.

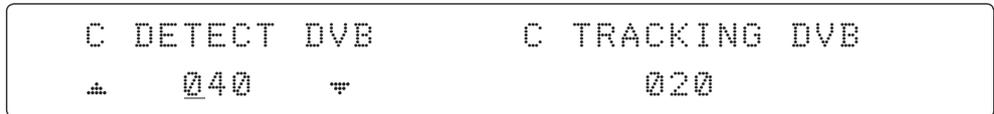
Password



4. Enter the 4 digit password to enter the SET PARAMETERS MODE (1590). Setup parameters are only required after installation or repairs to your antenna system.

These parameters should only be changed by an authorized service technician. Improper setting of these parameters will render your system inoperable.

Set detect & tracking DVB

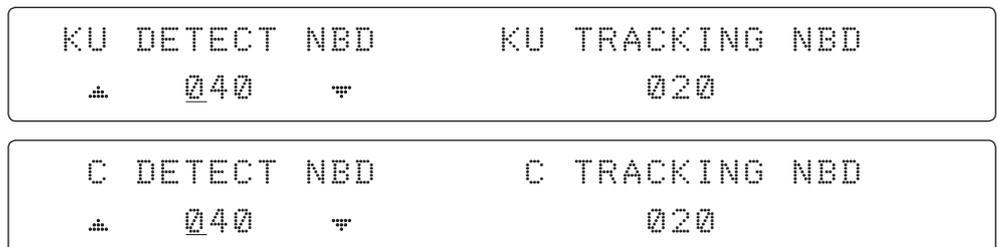


5. Set DETECT DVB and TRACKING DVB when the DVB mode of TRACKING SIGNAL is being used (Range : 1-200). DETECT DVB is to set the satellite signal detection level and TRACKING DVB is to set the satellite signal tracking level.

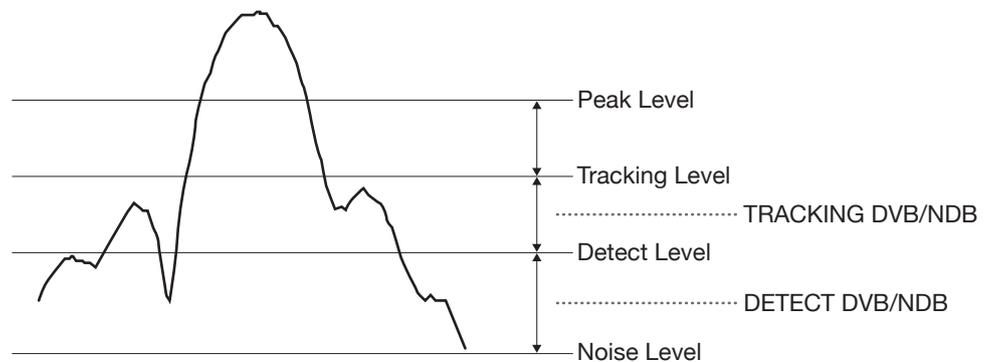
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter. Press the BACK key to select the parameter you wish to edit and press the BACK key again to save or abort and return to the main display.

Set detect & tracking NBD 6. Set DETECT NBD and TRACKING NBD when the NBD (Narrow band detection) mode of TRACKING SIGNAL is used (Range : 1-200). DETECT NBD sets the satellite signal detection level and TRACKING NBD sets the satellite signal tracking level.

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter. Press the BACK key to select the parameter you wish to edit and press the BACK key again to save or abort and return to the main display.



Detect & tracking level



BOW & EL adjust



7. Set the BOW OFFSET and EL. ADJUST

The BOW OFFSET function offsets the angle difference between the antenna’s bow and the ship’s bow (Range: 0 – 360°). The EL. ADJUST function offsets the angle difference between the mechanical elevation angle and actual elevation angle (Range: ± 5°).

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter. Press the BACK key to select the parameter you wish to edit and press the BACK key again to save or abort and return to the main display.



8. Set OPERATION

Press the UP and DOWN arrow keys to select OPERATION items.

- OPERATION***
- SAVE
- IDLE ON / OFF
- REBOOT

SAVE : save and execute the current settings.

The antenna is balanced at the factory. However, after disassembly for shipping, maintenance or parts replacements, antenna balance adjustment may be required.

The elevation and cross-level motors have a brake mechanism integrated into them, therefore the antenna power and IDLE MODE must be ON to release the motor brakes. Balancing is achieved by adding or removing weight blocks at strategic locations to keep the antenna balanced.

REBOOT ANTENNA : The antenna will restart automatically if REBOOT ANTENNA is ON.

Setup Block Zone

Up to 5 block or radiation hazard zones can be programmed with relative azimuth and elevation sectors.

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Antenna MODE

```

    →+ANTENNA                +SATELLITE
      +SYSTEM                +INSTALLATION
    
```

2. Press the OK key to enter the ANTENNA menu.

Block zone MODE

```

    ← →+BLOCK ZONE                +DIAGNOSIS →
    
```

3. Press the RIGHT arrow key to move cursor to BLOCK ZONE and press the OK key to enter it. Up to 5 block zones are allowed to be programmed.

Block zone 1

```

    ZONE 1 BLOCK
    ↑   ON   ↓
    
```

Block zone range

```

    ← →AZ.1 START    AZ.1 END    EL.1 LIMIT→
          000          000          90
    
```

4. Set ZONE 1 BLOCK

Press the UP and DOWN arrow keys to select "ON" to setup the block zone for ZONE 1.

Press the OK key to use ZONE 1 BLOCK and set the zone 1 block range.

Press the BACK key to select the parameter you wish to edit and press the BACK key again to save or abort and return to the main display.

Set the AZ.1 START, AZ.1 END and EL.1 LIMIT while ZONE 1 BLOCK is ON.

This is the clockwise of the two points. AZ.1 START is where the relative azimuth starts and AZ.1 END is where the relative azimuth ends (Range: 0- 360°). The EL.1 Limit is where the elevation starts (Range 0- 90°).

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character.

Or Press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter. Press the BACK key to select the parameter you wish to edit and press the BACK key again to save or abort and return to the main display.

Block zone 2

ZONE 2 BLOCK
▲ OFF ▼

5. ZONE 2 to ZONE 5 BLOCK setting is same as ZONE 1 BLOCK.
Press the OK key to set ZONE 2 BLOCK and set the next parameter.

Save

SAVE ?
→ YES NO

6. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the main display.

Diagnosis Code:

- CODE 101: The data communication between the antenna and the ACU is tested.
- CODE 102: The azimuth motor is tested.
- CODE 103: The elevation motor is tested.
- CODE 104: The cross-level motor is tested.
- CODE 105: The azimuth encoder is tested.
- CODE 106: The cross-level encoder is tested (skip for v240M).
- CODE 107: The rate sensor is tested.
- CODE 108: The tilt sensor is tested.
- CODE 109: The sensor box motor is tested.
- CODE 110: The LNB/NBD is tested.
- CODE 111: The LNB pol motor is tested.
- CODE 112: The sub-reflector is tested.
(Skip for v-series communication products)
- CODE 113: The antenna power is tested.
- CODE 114: The ACU power is tested.
- CODE 115: The receiver power is tested.
(Skip for v-series communication products)
- CODE 116: The home sensor is tested.

An example of test result: ●2●●●●●●●●●●-●●-●

- : test is passed
- 2: test is failed (CODE102)
- : test is skipped (TVRO products only)
- ?: test is in process

Satellite Settings

Load Satellite

Setup mode

```

                SETUP MODE ?
          → YES                               NO
  
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Satellite MODE

```

+ANTENNA                →+SATELLITE
+SYSTEM                  +INSTALLATION
  
```

2. Press the RIGHT arrow key to move the cursor to SATELLITE and press the OK key to enter it.

Load sat MODE

```

→+LOAD SAT.              +EDIT SAT.
+ADD SAT.                 +CHECK NID
  
```

3. Press the OK key to enter the LOAD SAT. menu.

Load satellite

```

                LOAD SATELLITE
      ▲  [1] C   ASIA6AH  125.0E  ▼
  
```

4. Press the UP and DOWN arrow keys to select satellite that you wish to track. Press the OK key to load the selected satellite.

Load

```

                LOAD ?
          → YES                               NO
  
```

5. Press the LEFT arrow key to move the cursor to YES and press the OK key to load the selected satellite and execute the current settings. Or press the RIGHT arrow key to move the cursor to NO and press the OK key to abort and return to the main display.

Edit Satellite Information

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

Satellite MODE

```

    +ANTENNA                →+SATELLITE
    +SYSTEM                  +INSTALLATION
    
```

2. Press the RIGHT arrow key to move the cursor to SATELLITE and press the OK key to enter it.

Edit sat MODE

```

    +LOAD SAT.                →+EDIT SAT.
    +ADD SAT.                 +CHECK NID
    
```

3. Press the RIGHT arrow key and the OK key to enter EDIT SAT. MODE.

Edit satellite

C

```

                EDIT SATELLITE
    ▲ [1] C      ASIAGAH  125.0E      ▼
    
```

KU

```

                EDIT SATELLITE
    ▲ [1] KU      KOREA6   116.0E      ▼
    
```

4. Press the UP and DOWN arrow keys to select the satellite that you wish to edit and press the OK key to edit the selected satellite.

Edit longitude & name

```

    LONGITUDE                SAT. TYPE
    ▲ 125.00E                ▼      C
    
```

5. Edit the satellite orbit position, LONGITUDE and satellite TYPE C or KU.

```

    EDIT NAME                SELECT LOCAL
    ▲ ASIAGAH                ▼      5150MHz
    
```

6. Edit the satellite **name** and select local frequency.

Depending on the selected SAT and TYPE,
 C : Select only 5150MHz.
 KU: Select the LNB local frequency.

DVB verify method

```

DVB VERIFY                SKEW OFFSET
▲ DVB DECODE ▼           +0.0
    
```

7. Edit satellite **DVB VERIFY*** method and SKEW OFFSET.

DVB VERIFY will be only activated and applied when DVB mode of TRACKING SIGNAL is chosen to be used. Press the UP and DOWN arrow keys to select DVB VERIFY and press the OK key to set the parameter.

DVB VERIFY1*

- AGC – use signal level for satellite tracking.
- DVB Lock – use DVB Lock for satellite tracking.
- DVB Decode – use DVB Decode for satellite tracking.
- DSS Decode – use DSS Decode for satellite tracking.

Set polarity

```

RX POL                    TX POL
▲  HORI. ▼                VERT.
    
```

8. Set RX POL and TX POL

To select the polarity for both RX (receive) and TX (transmit). Press the UP and DOWN arrow keys to select VERTICAL, HORIZONTAL, RHCP, or LHCP.

SAT. TYPE KU : VERTICAL, HORIZONTAL

SAT.TYPE C : VERTICAL, HORIZONTAL, RHCP, or LHCP

Press the OK key to set the parameter.

Set DVB tracking frequency

```

DVB FREQ.                SYMBOL                NID
▲04080MHz▼              27500KSp/s              0X0888
    
```

9. Set DVB FREQUENCY, SYMBOL RATE and NID when the DVB mode of TRACKING SIGNAL is selected.

45,000 is the maximum allowed symbol rate value. NID (network ID) range is from 0x000 to 0xFFFF (hexadecimal digit).

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value. Or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter.

Addition of Satellite Information

Setup mode

```

                SETUP MODE ?
          → YES                               NO
  
```

1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

Satellite MODE

```

    +ANTENNA                →+SATELLITE
    +SYSTEM                  +INSTALLATION
  
```

2. Press the RIGHT arrow key to move cursor to SATELLITE and press the OK key to enter it.

Add sat MODE

```

    +LOAD SAT.                +EDIT SAT.
    →+ADD SAT.                +CHECK NID
  
```

3. Press the DOWN arrow key and the OK key to enter the ADD SAT. menu.

Set longitude & name

```

#          LONGITUDE                SAT. TYPE          #
  ▲      125.00E      ▼                C
  
```

4. Edit the satellite orbit position, LONGITUDE and satellite TYPE C or KU.

DVB verify method

```

          EDIT NAME                SELECT LOCAL
  ▲    ASIA6AH      ▼                5150MHz
  
```

5. Edit the satellite NAME and select the local frequency.

Set LNB local frequency

```

          DVB VERIFY                SKEW OFFSET
  ▲    DVB DECODE      ▼                +00.0
  
```

6. Edit the satellite **DVB VERIFY*** and SKEW OFFSET

DVB VERIFY will only be activated and applied when the DVB mode of TRACKING SIGNAL is used. Press the UP and DOWN arrow keys to select DVB VERIFY and press the OK key to set the parameter.

DVB VERIFY*

- AGC – use signal level for satellite tracking.
- DVB Lock – use DVB Lock for satellite tracking.
- DVB Decode – use DVB Decode for satellite tracking.
- DSS Decode – use DSS Decode for satellite tracking.

Set polarity

RX POL	TX POL
┌ VERT. ┐	HORI.

7. Set the RX POL and TX POL
 To select the polarity for both RX (receive) and TX (transmit) pol.
 Press the UP and DOWN arrow keys to select VERTICAL or HORIZONTAL.

SAT. TYPE KU : VERTICAL, HORIZONTAL
SAT.TYPE C : VERTICAL, HORIZONTAL, RHCP, or LHCP

Press the OK key to set the parameter.

Set DVB tracking frequency

DVB FREQ.	SYMBOL	NID
┌000000MHz┐	00000KSp/s	0x0000

8. Set the DVB FREQUENCY, SYMBOL RATE and NID when the DVB mode of TRACKING SIGNAL is used.

45,000 is the maximum allowed symbol rate value. The NID (network ID) range is from 0 x 0000 to 0 x FFFF (hexadecimal digit).

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
 Press the UP and DOWN arrow keys to increase or decrease the value.
 Or press the NUMBER keys to set the desired value directly.
 Press the OK key to set the parameter.

Sat NBD tracking frequency

NBD FREQ.	BANDWIDTH
┌ 0000.000MHz┐	00000KHz

9. Set the NBD IF FREQUENCY and detection BANDWIDTH when the NBD (Narrow band detection) mode of TRACKING SIGNAL is used.

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
 Press the UP and DOWN arrow keys to increase or decrease the value.
 Or press the NUMBER keys to set the desired value directly. Press the OK key to set the parameter.

TRACKING SIGNAL
┌ NBD ┐

10. Set the **TRACKING SIGNAL***
 Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
 Press the UP and DOWN arrow keys to increase or decrease the value. Press the OK key to set the parameter.

TRACKING SIGNAL*

- NBD
- DVB

Save

```

                                SAVE ?
                                -----
                                → YES                               NO
    
```

11. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the main display.

Check NID

Setup mode

```

                                SETUP MODE ?
                                -----
                                → YES                               NO
    
```

1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

Satellite MODE

```

+ANTENNA                               →+SATELLITE
+SYSTEM                                 +INSTALLATION
    
```

2. Press the RIGHT arrow key to move the cursor to SATELLITE and press the OK key to enter it.

Check NID MODE

```

+LOAD SAT.                               +EDIT SAT.
+ADD SAT.                                 →+CHECK NID
    
```

3. Press the DOWN arrow key and the OK key to enter the CHECK NID menu.

NID verification

```

[CHECK NID]  F: 12490 S: 27490 0X00AD
PRESS OK      RECEIVED  NID [0X0000]
    
```

4. CHECK NID verifies the NID (Network ID) of the current tracking transponder. Press the OK key to verify the NID [0 x 0000] only when the "PRESS OK" function is activated. The "PRESS OK" function will only be activated when the DVB Lock signal is confirmed by the antenna. However, a "NO LOCK" message will be displayed if the DVB Lock signal cannot be confirmed.

System Settings

Setting local

Setup mode

```

                SETUP MODE ?
          → YES                               NO
    
```

1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

System MODE

```

      +ANTENNA                               +SATELLITE
    →+SYSTEM                                 +INSTALLATION
    
```

2. Press the DOWN arrow key to move cursor to SYSTEM and press the OK key to enter it.

Set local frequency MODE

```

  ⏪ →+SET LOCAL                               +SET LOCATION  ⏩
      +MODEM PORT                             +MANAGEMENT
    
```

3. Press the OK key to enter the SET LOCAL menu to set the LNB local frequency.

LNB info

```

  ⏪ →13V + 0KHz                               18V + 0KHz  ⏩
      + 10000MHz                               11300MHz
    
```

```

      13V + 22KHz                               18V + 22KHz  ⏩
      + 10750MHz                               ▲ 09750MHz ▼
    
```

4. Set the LNB local oscillator frequency for each correspondent voltage power. (13V+0KHz , 18V+0KHz, 13V+22KHz, 18V+22KHz)
The local frequency of C-band is fixed as 5150MHz.

Press the BACK key and press the LEFT and RIGHT arrow keys to select the parameter you wish to edit. Press the OK key to edit parameter. Or press the BACK key again to return to the main display.

LNB LOCAL: the selectable LNB frequencies are depending on the installed LNB type.

Save

```

                SAVE ?
          → YES                               NO
    
```

5. Press the LEFT arrow key to move cursor to YES and press the OK key to save the current settings. Or move the cursor to NO and press the OK key to abort and return to the main display.

Setting Location

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

System MODE

```

    +ANTENNA                +SATELLITE
    →+SYSTEM                +INSTALLATION
    
```

2. Press the DOWN arrow key to move the cursor to SYSTEM and press the OK key to enter it.

Set location MODE

```

    # +SET LOCAL                →+SET LOCATION #
    +MODEM PORT                +MANAGEMENT
    
```

3. Press the RIGHT arrow key to move the cursor to SET LOCATION and press the OK key to enter it.

Gyrocompass type and Baud rate

```

    GYRO TYPE                BAUD RATE
    NMEA                      ⬆ 4800 ⬇
    
```

4. Set the ship's **GYRO TYPE*** and BAUD RATE

A search pattern 1 or 3 will initiate according to which GYRO TYPE is selected and the existence of the gyrocompass input. Set the BAUD RATE as 4800, 9600, 19200 or 38400 according to your device.

A search pattern 1 will initiate automatically if the gyrocompass input does not exist and the gyrocompass type is to any setting other than GROUND TEST.

NOTE: The bow offset will not be saved automatically if a Search 1 pattern is initiated. In this case, the antenna will need to retarget the desired satellite using Search 1 every time if the antenna restarts.

Gyrocompass search type

Setting of Heading Device			
Existence of Heading Data	No Device	NMEA NMEA 2000	Ground Test
With Heading Data	Search 1	Search 3	Search 3
Without Heading Data	Search 1	Search 1	Search 3

GYRO TYPE*

- NO DEVICE
- NMEA
- NMEA 2000
- GROUND TEST

Latitude & longitude

←	→	LATITUDE	LONGITUDE	→
		37.00N	126.50E	

5. Set the current LATITUDE and LONGITUDE
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value. Or press the NUMBER keys to set the desired value directly. Press the the OK key to set the parameter.

Heading

←	HEADING	→
	000.0	

6. Entry of the ship's heading is not required when your system is connected to a NMEA(0183) or NMEA2000 Heading Gyrocompass output. Ensure that the supported gyrocompass type is set correctly. For the v240M , if the ship's gyrocompass output is Step-by-Step (SBS) or Synchro, separate purchase of a gyrocompass converter is required.

Save

	SAVE ?	
→	YES	NO

7. Press the LEFT arrow key to move the cursor to YES and press the OK key to save the current settings. Or move the cursor to NO and press the OK key to abort and return to the main display.

Setting Modem Port

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

System MODE

```

    +ANTENNA                               +SATELLITE
    →+SYSTEM                               +INSTALLATION
    
```

2. Press the DOWN arrow key to move the cursor to SYSTEM and press the OK key to enter it.

Modem port MODE

```

#    +SET LOCAL                               +SET LOCATION    #
    →+MODEM PORT                             +MANAGEMENT
    
```

3. Press the DOWN arrow keys to move the cursor to COM. PORT and press the OK key to enter it.

Set Mediator & modem type

```

    USE MEDIATOR                               MODEM TYPE
    ⚡    NO    ⚡                               IDIRECT-I/O
    
```

4. The USE MEDIATOR function enables the usage of the Intellian VSAT Mediator in dual antenna configurations.

NOTE: USE MEDIATOR must be disabled if there is no MEDIATOR connected to the ACU. Improper setting of this parameter will cause your ACU's modem interface to work incorrectly.

MEDIATOR-ANT : DUAL ANTENNA - ONE MODEM
MEDIATOR-MODEM : ONE ANTENNA - DUAL MODEM
MEDIATOR-ALL : DUAL ANTENNA - DUAL MODEM

The **MODEM TYPE*** function selects a proper data communication port and protocol on the ACU to interface with the satellite modem.

- USE MEDIATOR***
- NO
 - MEDIATOR-ANT
 - MEDIATOR-MODEM
 - MEDIATOR-ALL

- MODEM TYPE***
- | | |
|--|---|
| <ul style="list-style-type: none"> • USER SETTING • IDIRECT-I/O • IDIRECT-AMIP • COMTECH-I/O • COMTECH-ROSS | <ul style="list-style-type: none"> • HUGHES • SATLINK-SERIAL • ELEKTRIKOM-AMIP • GILAT-SE-II • IPSTAR-SOTM |
|--|---|

If you select a pre-defined modem, the modem setting is done automatically.
 If you want to use a modem not listed in the extensive preset library, choose "USER SETTING" to configure your own modem.

The next display will be shown only when you select "USER SETTING".

Set modem protocol

MODEM PORT	PROTOCOL
▲ ETHERNET ▼	I/O CONSOLE

5. The **MODEM PORT*** function selects a proper data communication port on the ACU to interface with the modem.

The **PROTOCOL*** function selects a proper communication protocol on the ACU to interface with the modem.

- MODEM PORT***
- ETHERNET
 - RS422
 - RS232

PROTOCOL*

I/O CONSOLE: is a protocol for exchanging of information (GPS Out, TX mute, and modem lock) between the ACU (through Console port) and a modem.

OPEN AMIP: is an ASCII based protocol developed by iDirect for exchanging of information between the ACU and a modem. OpenAMIP is not intended for any purpose except to allow the ACU and a modem to perform synchronized automatic beam switching (ABS).

SERIAL GPS: is a protocol for sending GPS Out information from the ACU (through RS232/422 port) to a modem.

ROSS: the ROSS Open Antenna Management (ROAM) protocol was developed by the Comtech EF Data Corporation to offer a common management interface for Comtech EF Data's Roaming Oceanic Satellite Server (ROSS) and the ACU.

VCAP: is the interface between the SatLink mobile VSAT IDU and the Intellian antenna controllers for Intellian mobile antennas.

ELELKTRIKOM-AMIP: is an OPEN AMIP based protocol.

GILAT: Is a NMEA0183 based protocol to monitor the status of the antenna and the modem. It is passed through the Gilat SkyEdgell modem RS232 serial port.

SOTM: Is a protocol interface between the ACU and the IPSTAR modem's beam switching controller to perform automatic beam switching (ABS).

Use TX mute

GPS OUT SENTENCE	USE TX MUTE
▲ GPGLL ▼	YES

6. The **GPS OUT SENTENCE*** function selects the GPS OUT SENTENCE type. The **USE TX MUTE*** enables or disables the TX MUTE function from the satellite modem. A transmit inhibit output from the ACU will disable/mute the modem transmit via a voltage whenever the antenna is blocked, searching, or is mis-pointed 0.5 degrees from the peak satellite position.

GPS OUT SENTENCE*

- GPGLL
- GPGGA
- SIMPLE GPGGA

Use EXT.LOCK

```

      USE EXT. LOCK      EXT. LOCK ACTIVE
      ▲      YES      ▼      LOW
    
```

7. **USE EXT. LOCK** selects whether or not to use an external lock signal from the satellite modem. The **USE EXT. LOCK** item will only be activated when the **PROTOCOL** is set as I/O CONSOLE.

The **EXT. LOCK ACTIVE** parameter indicates that the modem lock signal is being received by the ACU. This is provided by a logical input via a 5V (HIGH) or 0V (LOW) current being sent to the ACU when the modem is locked on the correct satellite carrier. **EXT. LOCK ACTIVE** is only active when the **PROTOCOL** is set as I/O CONSOLE.

TX mute activation

```

      TX MUTE ACTIVE
      ▲      LOW      ▼
    
```

8. **TX MUTE ACTIVE** is a transmit inhibit output from the ACU to disable/mute the modem transmit through a 5 V (HIGH) or 0 V (LOW) current whenever the antenna is blocked, searching, or is mis-pointed more than 0.5° from peak satellite position. The **TX MUTE ACTIVE** item will only be activated when the **PROTOCOL** is set as I/O CONSOLE.

Save

```

                                SAVE ?
      → YES                                NO
    
```

9. Press the LEFT arrow key to move the cursor to YES and press the OK key to save the current settings. Or move cursor to NO and press the OK key to abort and return to the main display.

System Management

Setup mode

```

                SETUP MODE ?
            → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

System MODE

```

    +ANTENNA                +SATELLITE
    →+SYSTEM                +INSTALLATION
    
```

2. Press the DOWN arrow key to move the cursor to SYSTEM and press the OK key to enter it.

BACKup and restore MODE

```

← +SET LOCAL                +SET LOCATION →
    +MODEM PORT            →+MANAGEMENT
    
```

3. Press the arrow keys to move the cursor to BACKUP & RESTORE MODE and press the OK key to enter it.

Select process type

```

                SELECT PROCESS TYPE
            ▲                ▼
            BACKUP USER DATA
    
```

4. Press the UP and DOWN arrow keys to **SELECT PROCESS TYPE***
Press the OK key to set the parameter and the processing message will be displayed.

```

SELECT PROCESS TYPE*

BACKUP USER DATA : Backs up the antenna's user settings.

RESTORE USER DATA: Restores the user settings to the antenna.

UPGRADE FROM USB : Upgrades the antenna by accessing a FPW file stored on a USB.

COPY LOG TO USB : Copies the data log from the antenna to a USB drive.

BACKUP TO USB : Backs up the antenna user settings to a USB drive.

RESTORE FROM USB : Restores the antenna by using the backup user data from a USB.

UPGRADE ACU-REMOTE : Upgrades the iARM processor by retrieving a TGZ file stored on
                        a USB drive.

UPGRADE FROM USB / COPY LOG TO USB / BACKUP TO USB / RESTORE FROM USB /
UPGRADE ACU-REMOTE : These items are shown only when the USB memory stick is connected
                        to the ACU.
    
```

```

    BACK UP ANT INFO
    DO NOT TURN OFF! #####
    
```

Key Lock

Setup mode

```

                SETUP MODE ?
          → YES                               NO
    
```

1. Press the LEFT arrow key to move the cursor to YES and press the OK key to enter SETUP mode.

System MODE

```

      +ANTENNA                               +SATELLITE
    →+SYSTEM                                 +INSTALLATION
    
```

2. Press the DOWN arrow key to move the cursor to SYSTEM MODE and press the OK key to enter it.

Key lock MODE

```

#  →+KEY LOCK                               +INTELLIAN DEVICE#
    
```

3. Press the arrow keys to move the cursor to KEY LOCK and press the OK key to enter it. The menu INTELLIAN DEVICE is not available for v240M.

Set key lock and password

```

      KEY LOCK                               UNLOCK P/W
    #  ON                                   1590
    
```

4. Press the UP and DOWN arrow keys to choose whether or not to use the key pad lock function when entering SETUP mode or saving the satellite information. Setup the password for disabling the key pad lock. The factory default is 1590.

Check key lock activation

```

# TRACKING 125.0E ASIA6H   SIG: 201# C #
  *AZ: 181.7( 181.7) EL: 47.3  SK: 02.0 Fn
    
```

When KEY LOCK function is activated, the " # " mark is displayed.

Introduction

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Operating System and Software

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Access ACU through Network Communication (TCP/IP)

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Antenna - Advanced Info.

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Monitor

ACU System

Antenna UI

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Introduction

Intellian’s new GUI Antenna PC Controller Software, Aptus® is a next-generation graphically based antenna remote control software. It is designed in a MS.NET programming environment with an additional Software Development Kit (SDK). The SDK allows the NOC or service center to integrate antenna monitoring and control into existing network management systems in an easier, more user-friendly, and convenient manner.

Compatibility

Aptus® is compatible with Intellian’s TVRO and VSAT antenna systems.

Requirements

Below is a list of the minimum PC hardware and software requirements to install and run Aptus®.

Hardware

Hardware	Requirements
CPU	Intel® Pentium® 4 or higher
Memory	512MB or higher
Video Card	DirectX9.0 or higher supported
	H/W acceleration supported
	Video Memory 128MB or higher
HDD	1GB or higher

Operating System and Software

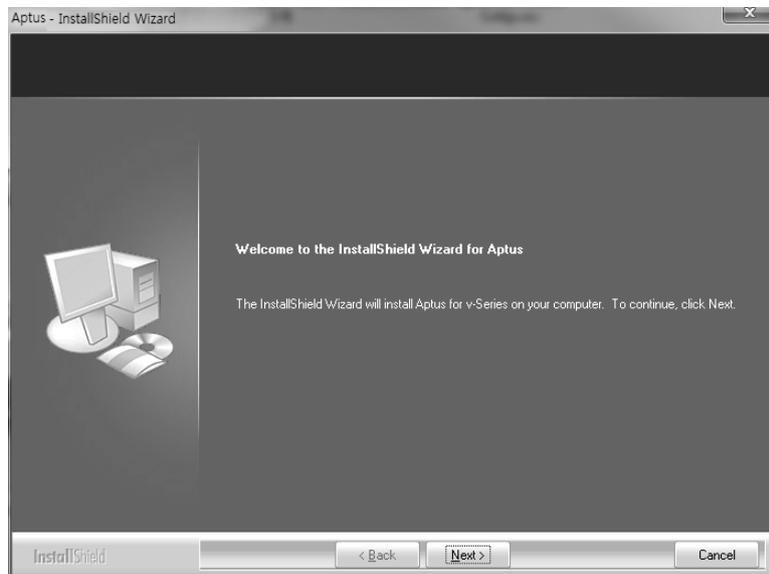
Software	Requirements
Operating System	Windows XP SP or higher
Framework	Microsoft.Net Framework 3.5 Service Pack 1 or higher

Installation

Double click the Install Icon to install Aptus® directly onto your computer/ laptop. The InstallShield Wizard will guide you through the program setup process. The installation routine provides an icon on the desktop that can be clicked to start the software. In addition, Intellian also provides patch files for software upgrades.



Aptus Install Icon



InstallShield Wizard



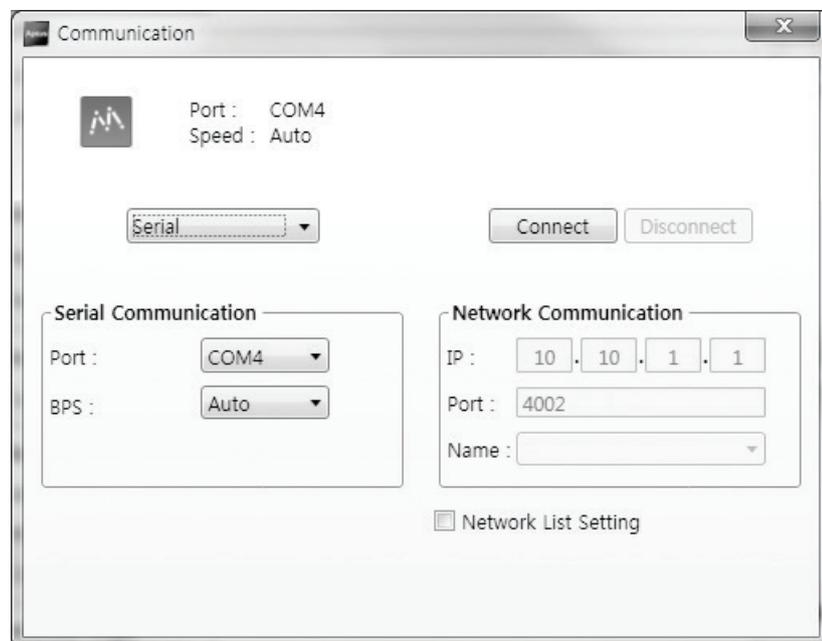
Aptus Desktop Icon

Operation

Starting Aptus®

By double-clicking the Aptus® desktop icon, the Communication Window where you can establish the data communication between your PC and the ACU will appear. You are given the options of accessing your ACU through the Serial Port Communication or through the Network Communication (TCP/IP).

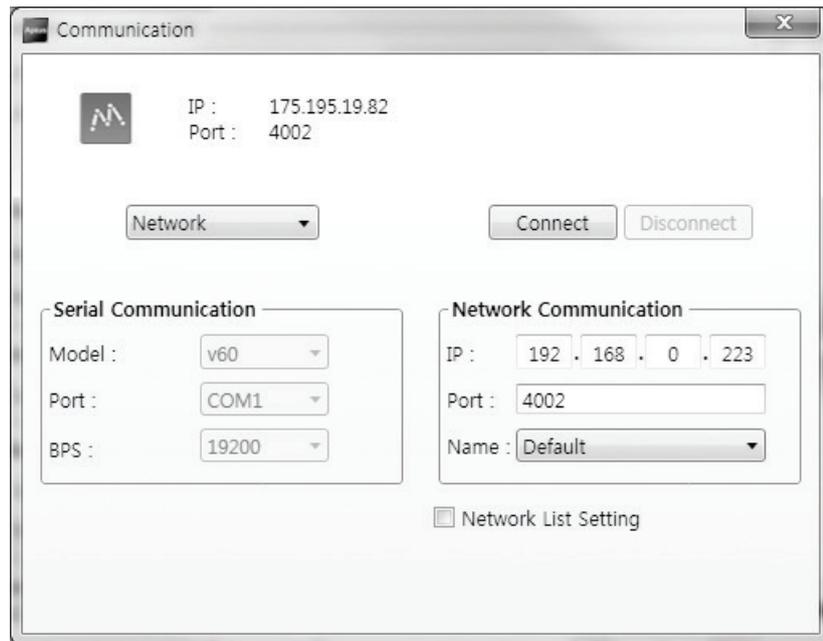
Access ACU through Serial Communication



Serial Communication

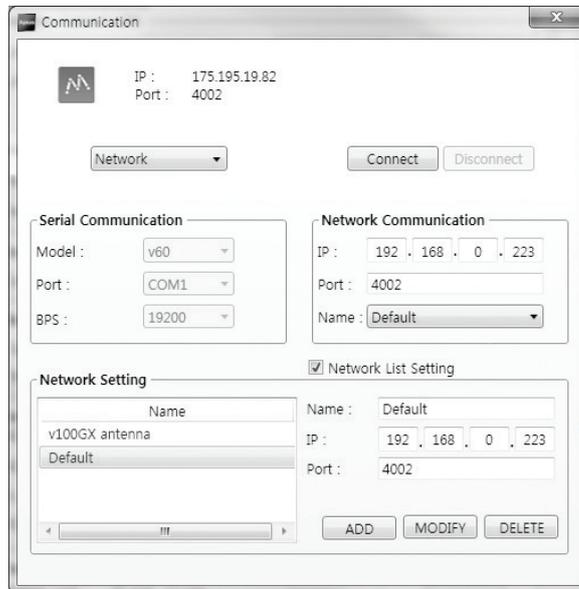
1. Connect a 9 pin serial cable from the PC INTERFACE connector on the ACU to the 9-pin serial port on the PC. If there is not a 9-pin serial port on the PC, use a USB-Serial adapter.
2. Select **Serial** in the communication type combo-box.
3. Select a COM port which is not occupied by other devices.
4. The baud rate of the ACU is automatically configured.
5. Click the Connect button.

Access ACU through Network Communication (TCP/IP)

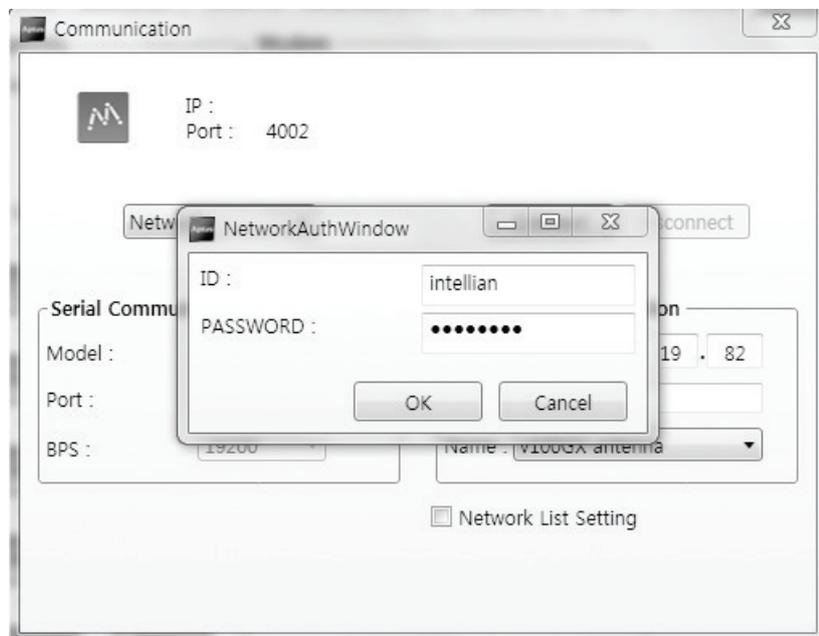


Network Communication

1. Turn off the wireless connection on your ACU while using this method, as the Ethernet port on the ACU front panel is disabled when the Wi-Fi function is active.
2. Select **Network** in the communication type combo-box.
3. Enter the ACU's IP address (Factory default : 192.168.0.223)
4. Enter the ACU's port number (Factory default : 4002)
The IP address and port number can be customized by enabling the Network List Setting option. The user network setting list can be editable through the ADD, MODIFY and DELETE options. Once added to the list, you can select a desired network list in the Network Communication's Name combo-box.
5. Click the Connect button
6. The Authentication window will appear.
7. Login by using the username and password below:
8. Username: intellian (Factory default)
9. Password: 12345678 (Factory default)



Network List Setting



Authentication Window



WARNING

WARNING: The amount of data will increase rapidly if Network Communication is in use. Intellian recommends using Remote Web Access to access the ACU.

Toolbar Menu

With the Toolbar menu, users can quickly and easily access the most commonly used functions of Aptus® through the toolbars and icons at the top of the screen.



Toolbar

Quick Buttons



Setup: enters Setup mode.



Restart: exits Setup mode and restarts the antenna.



Reboot: reboots the antenna.



Get Ant. Info: obtains the information stored in the antenna



Save Satellite: saves the current bow offset only if the antenna is tracking a satellite. Using this function greatly reduces satellite acquisition time after an antenna restart.

Files



Backup: Backups the antenna information to the ACU or PC.

- To ACU: backs up the antenna information to ACU (file format:*.ibf).
- To PC: backs up the antenna information to PC (file format: *.rpt).



Restore: restores the antenna by using the stored information in ACU or PC.

- From ACU: restores the antenna by using the stored information in the ACU.
- From PC: restores the antenna by using the stored information in the PC.

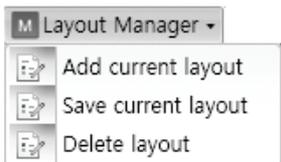


Load Config. : loads the antenna configuration file (file format: *.cfg). The configuration file includes the antenna control parameters which are pre-loaded at the factory and should only be changed by an authorized service technician. Improper setting of these parameters will cause your system to perform improperly.

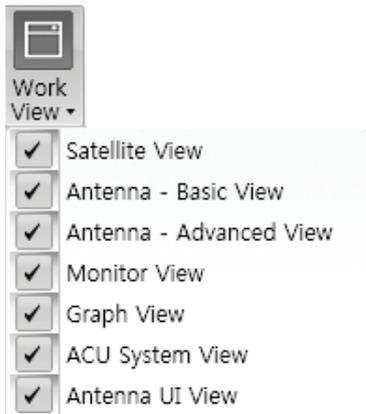
View



- **User Layout:** displays the layout list that the user has previously stored by using the Layout Manager. If you select a layout in this list, the selected layout will be constructed in the Work View screen. The 'Basic layout' is provided by default.

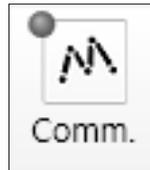


- **Layout Manager:** provides the user with add, delete, and save functionalities in order to customize the user's layouts.



- **Work View:** displays a list of seven pre-constructed Work View Tabs (Satellite View, Antenna Basic View, Antenna Advanced View, Monitor View, Graph View, ACU System View, and Antenna UI View) and also provides the Activate / Close functionalities for each view tab. Activate the work view tab by ticking the checkbox next to it.

Connection

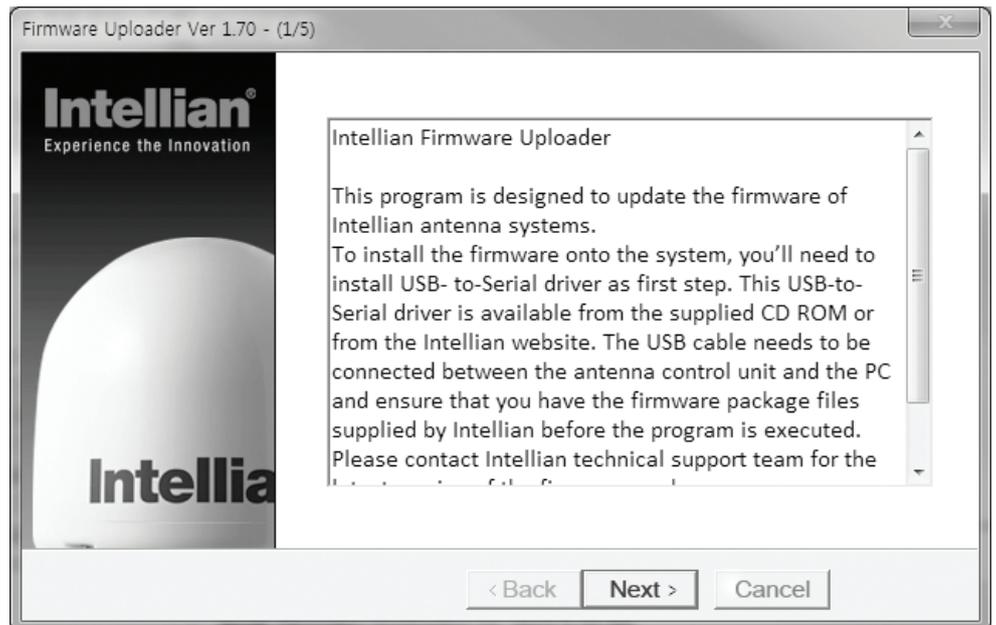


Comm : At any time, a data communication channel can be reestablished between Antenna and ACU via a Serial or Network connection. Clicking the Comm. button will display the Communication Window to connect to the ACU via Serial or Network communication.

Firmware Upload

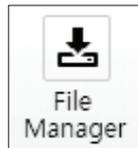


FW Uploader: launches firmware upload wizard to upgrade Antenna and ACU firmware from a PC. Connect the PC to the ACU via a USB cable and follow instructions on the Wizard until the firmware upgrade is complete.

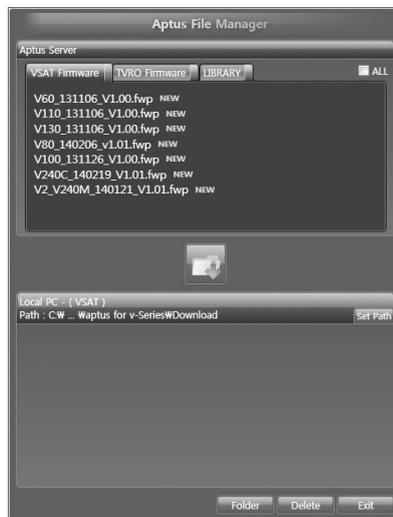


Firmware Uploader Wizard

File Manager

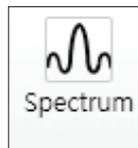


File Manager : displays the latest firmware and library file available on the Aptus Server. Select a desired firmware and download it to your local PC.

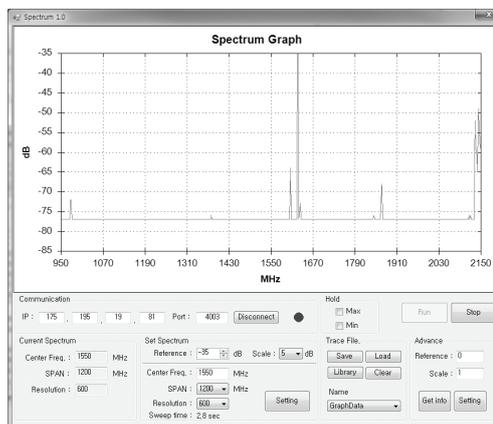


Aptus File Manager

Spectrum



Spectrum : displays current spectrum graph with options to set spectrum data view.



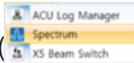
Spectrum Analyzer

How to set up Spectrum Analyzer

1. Spectrum Analyzer Function

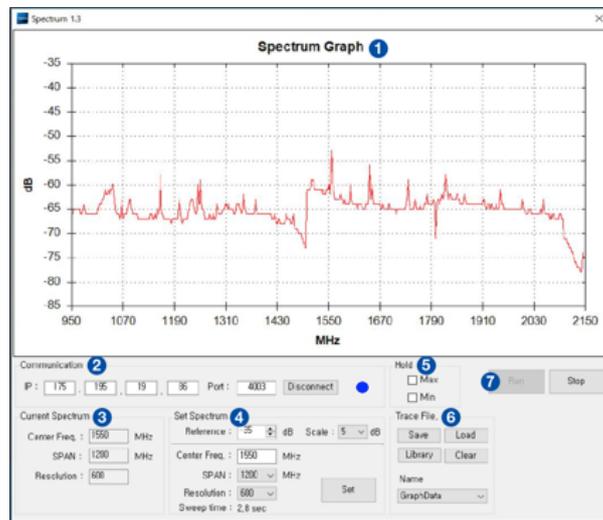
- Display that a spectrum analyzer measures an input Rx signal frequency within the full frequency range and sets spectrum data view.
- The disconnect fault can be checked and solved through spectrum analyzer results.

2. Access Spectrum Analyzer

On the Aptus PC, select “Utility () → Spectrum ()” on the toolbar menus to display current spectrum graph and allow to set spectrum data view options.

3. Spectrum Graph / Data View

After clicking the Spectrum menu button, the spectrum analyzer will be popped up. To perform the Spectrum Analyzer function, check the following information.



Spectrum Analyzer Main Menu

1) Graph

Displays measurement results. The display of a spectrum analyzer has the frequency on the horizontal axis and the amplitude displayed on the vertical axis.

2) Communication

Access the Spectrum Analyzer entering the ACU’s IP address and Port number. Then click the Connect button. When Aptus has connected Ethernet, Spectrum Analyzer will connect automatically.

The connection status is displayed on the right LEDs. The blue is in connection status and the gray is disconnection status.

3) Current Spectrum

Display the current Spectrum settings.

4) Set Spectrum

- **Reference/Scale:** Set Amplitude Reference Level and Scale. Press the Reference Level submenu key and use the arrow keys, or the keypad to change the reference level (2000 to -2000). Select the Scale number (1, 2, 5, or 10 dB) in the drop down list to enter the desired scale.
- **Center Freq.:** Enter the desired center frequency using the keypad then click the Set button to apply the adjusted value. The adjusted value is shown at the Current Spectrum part.
- **Span:** To quickly move the span value up or down, select the span number (6, 60, 300, or 1200 MHz) in drop down list. These numbers facilitate a zoom-in, zoom-out feature. Then click the Set button to apply the adjusted value. The adjusted value is shown at the Current Spectrum part.
- **Resolution:** To quickly adjust the resolution value up or down, select the resolution number (100, 200, 300, or 600) in drop down list. These numbers facilitate a zoom-in, zoom-out feature. Then click the Set button to apply the adjusted value. The adjusted value is shown at the Current Spectrum part.
- **Sweep Time:** Display the elapsed time all data received during the start to stop testing interval.

5) Hold

- **Max:** Set the desired maximum display range value by clicking the check button. Then click the Set button to change the max level.
- **Min:** Set the desired minimum display range value by clicking the check button. Then click the Set button to change the min level.

6) Trace File

- **Save:** Save current Spectrum setting values and data.
- **Load:** Load the Trace file and display the data on the spectrum graph.
- **Library:** Create the new Trace file. After saving the file, it will show in the Name list.
- **Clear:** Remove the spectrum data displayed on the graph.
- **Name:** Show the Trace file which it was created at Library in the drop down list.

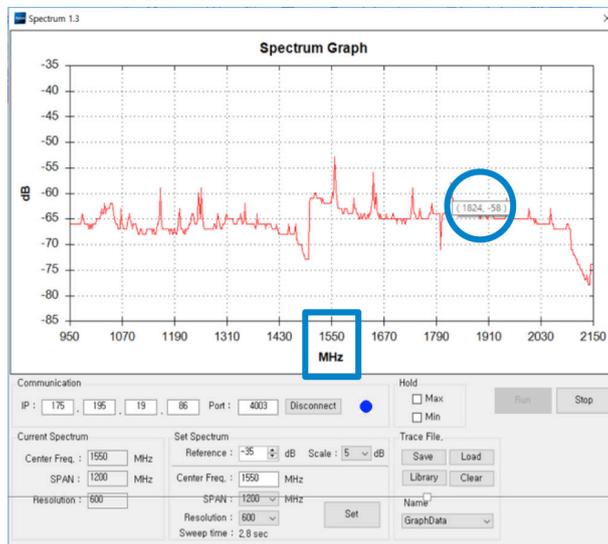
7) Run/Stop

- **Run:** Request the spectrum data to antenna continuously and update graph data in real time.
- **Stop:** Stop requesting the spectrum data. (The graph cannot be updated.)

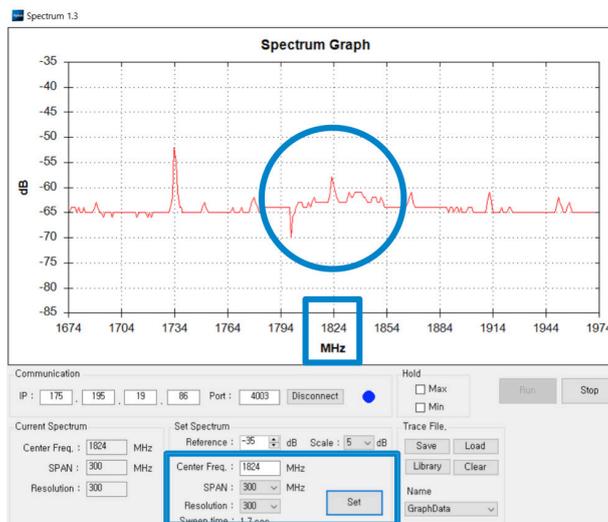
4. Change Zoom in Spectrum Graph (Example)

For example, **1550 MHz** is the default frequency in the spectrum graph. If you wish to base the spectrum graph on **1824 MHz**, follow these steps:

1. Adjust **Center Freq.** to the desired value. (e.g. 1824 MHz)
2. Adjust **Span value** to the desired value. (e.g. 300 MHz)
3. Adjust **Resolution** to the desired value. (e.g. 300)
4. Click the **Set** button to apply the adjusted values. Verify the spectrum graph is now displayed using the desired values.



Spectrum Analyzer Graph using defaults



Zoom in Spectrum Analyzer Graph

System Property Status Dashboard

Users can monitor the antenna status, the availability of TX transmission, signal level, GPS and heading status, software information, product information and error status quickly through the property status dashboard on the left side of the screen.

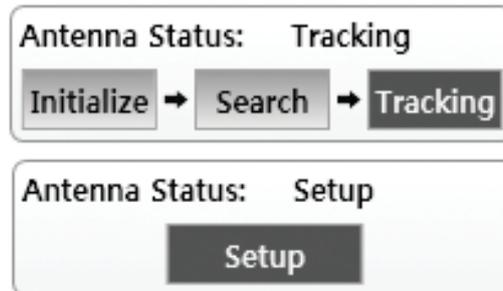
The screenshot displays the System Property Status Dashboard with the following sections:

- Antenna Status:** Tracking. Includes buttons for Initialize, Search, and Tracking.
- TX Enable:** A radio button is selected. Options include Enable Mode, Blockage, Pointing, Modem Lock, and LNB Rotate.
- Signal Level:** DVB 184. A progress bar shows the signal level at 184.
- Ant. GPS Status:** (127.05 E, 37.07 N)
- Heading Status:** (0.00)
- Software Information:**
 - Ant. PCU : V 1.10
 - Ant. Stabilizer : V 1.06
 - ACU Main : V 3.90
 - Lib Version : V 5.00
 - E2s Firmware : V 3.05
- Product Information:**
 - Ant. Size : 100 cm / 41 inch
 - Ant. Voltage : 24.3V / 26.8V
 - Ant. Name : V2-GX-v100
 - Ant. Serial : VGX1303006
 - ACU Name : VP-T434
 - ACU Serial : VGX1303006
 - System Pol : Co&Cross
 - System Band : KU_BAND
- Diagnostic Error Report:**

System Property Status Dashboard

Antenna Status: Displays the status of the current mode of the antenna.

- **Search:** The Antenna is searching for the target satellite signal. Search will automatically be initiated when the ship's heading input does not exist or if it fails. The search cycle will repeat until the antenna receives the lock signal from the modem or until the DVB transponder of the target satellite is decoded by the antenna. Search will also automatically be initiated when the AGC (NBD mode is in use) or SIG (DVB mode is in use) falls below the current tracking level threshold value. Once the desired signal is found and is above the predefined tracking threshold, the ACU will enter tracking mode.
- **Tracking:** The Antenna is tracking the target satellite.
- **Initialize:** The Antenna or ACU is initializing.
- **Setup:** The Antenna is in SETUP mode.

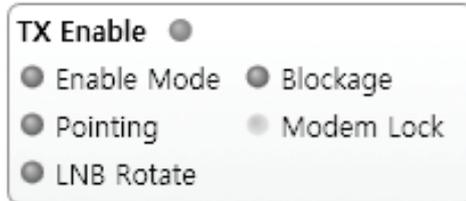


Antenna Status View

TX Enable

Displays the status of the TX transmit function. If the circle next to **TX Enable** shows “Blue”, it means the antenna TX function is enabled. If the circle shows “Red”, it means the antenna TX function is disabled. The TX function will be enabled only if all five factors (Enable Mode, Blockage, Pointing, Modem Lock, and LNB Rotate) listed below show a “Blue” circle next to each of them. However, if the “Use TX Mute” function in the ACU System Work Tab is disabled, the TX function will be enabled regardless the above factors.

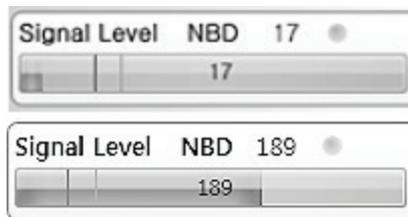
- **Enable Mode:** displays whether or not the antenna is in SETUP mode. If the antenna is in Setup mode, the circle next to the Enable Mode will show “Gray”.
- **Blockage:** displays whether or not the antenna is pointing in a predefined block zone(s). If the antenna is pointing in the blockage zone, the circle next to the Blockage will show “Gray”. If the antenna pointed outside the blockage zone, the circle next to the Blockage will show “Blue”.
- **Pointing:** displays whether or not the antenna is pointing to the target satellite. If the antenna is miss-pointing to the target satellite, the circle next to the Pointing will show “Gray”. If the antenna is pointing to the target satellite, the circle next to the Pointing will show “Blue”.
- **Modem Lock:** displays whether or not the antenna is tracking onto the correct satellite by receiving a confirmation signal from the satellite modem. If the antenna is tracking on the wrong satellite, the circle next to the Modem Lock will show “Gray”. If the antenna is tracking on the correct satellite, the circle next to the Modem Lock will show “Blue”.
- **LNB Rotate:** displays whether or not the LNB is rotating. If the LNB is rotating, the circle next to the LNB Rotate will show “Gray”. If the LNB is not rotating, the circle next to the LNB Rotate will show “Blue”.



TX Enable Status View

Signal Level

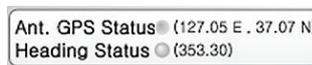
Shows "DVB" when DVB signal tracking mode is in use and "NBD" when NBD signal tracking mode is in use. The "Red" line indicates the signal "Detect Level Threshold" and the "Orange" line indicates the signal "Tracking Level Threshold". If the signal level is higher than the tracking level threshold, the signal level bar will display "Blue" color. If the signal level is lower than the tracking level threshold, the signal level bar will display "Orange" color and the antenna will stay in searching mode.



Signal Level View

GPS and Heading

Displays the current GPS location from the Antenna and Ship's heading information. The status light flashes green if the system receives a correct input of the GPS and Ship's heading.



GPS and Heading Information View

Software Information

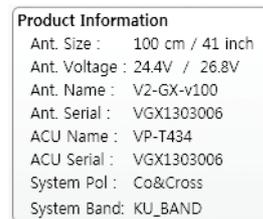
Displays the antenna and the ACU firmware versions, and the library version. Please note that the display may be different in accordance with the model.



Software Information View

Product Information

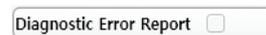
Displays the antenna and ACU serial numbers, antenna model and ACU model.



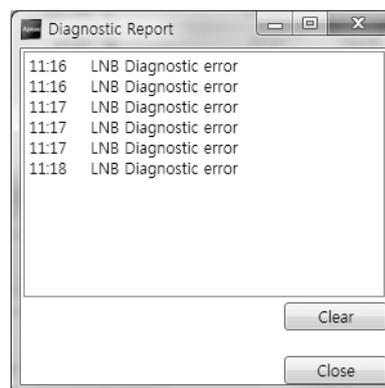
Product Information View

Diagnostic Error Report

The square button next to the Diagnostic Error Report turns red when the system receives an error. Click the button to see a Diagnostic Report.



Diagnostic Error View



Diagnostic Report

Work View Tabs

Aptus® provides seven Work View Tabs (Satellite View, Antenna Basic View, Antenna Advanced View, Monitor View, Graph View, ACU System View, and Antenna UI View) to manage the Antenna and the Satellite configuration. Tick the checkbox next to the Set button to modify the settings. After the desired value is entered, press the Set button to save the settings

Enter Setup mode to modify following settings:

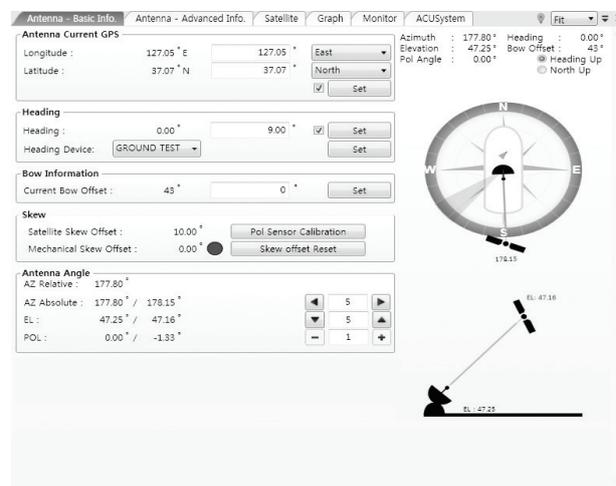
- Antenna Angle
- Tilt Sensor Bias
- Rate Sensor Bias

Following settings can be modified both in Setup mode and Operation mode:

- Heading and Heading device
- Current satellite information
- Bow Information
- Conical Range
- EL Adjust
- Search Parameters
- Threshold Setting
- TX Enable threshold
- Blockage

Antenna – Basic Info.

This view tab provides information on the Antenna's Current GPS location, Heading Device, Bow Information, Skew Information, and the Antenna's Angle. This view tab uses the Antenna's AZ and EL information as well as the Ship's Heading information in order to provide a dynamic graphic user interface (UI).

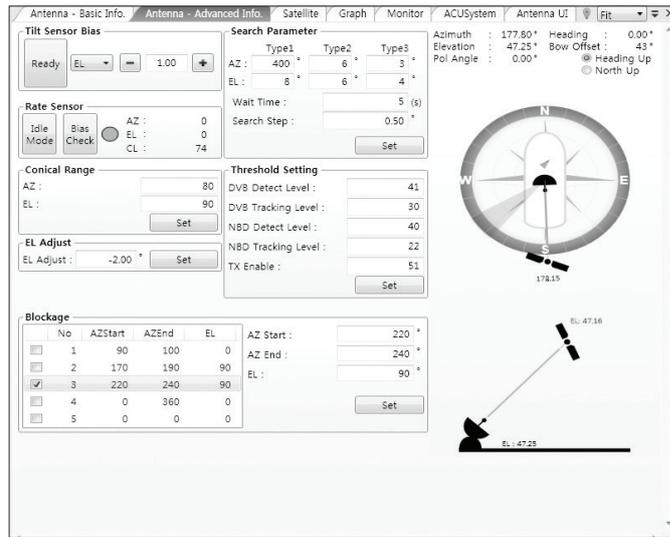


Antenna - Basic Info. Work View Tab

- **Antenna Current GPS:** displays and sets the antenna's current GPS.
- **Heading:** displays and sets the ship's current heading information.
 - Heading Device:**
None / SYNC 1:1/ SYNC 36:1/ SYNC 90:1/ SYNC 360:1/ NMEA/
NMEA2000 / Ground Test
Please note some options may not be available dependent on
model. The baud rate (4800/ 9600/ 19200/ 38400) must be set if
NMEA is selected.
- **Bow Information:** displays and sets the antenna's current bow.
- **Skew:** displays the antenna's current skew and skew offset.
 - Pol Sensor Calibration:** calibrates the sensor (potentiometer).
 - Mechanical Skew Offset:** the mechanical skew offset is preset in
the factory with a default value (0, 1, or 2) depending on the
assembly status. Resets to the mechanical skew offset may be
required when the satellite skew offset is unknown (Overall system
skew offset = satellite skew offset + mechanical skew offset). Due
to each satellite having its own skew offset, Intellian recommends
you check with your service provider or satellite operator to get the
satellite skew offset value and input it in the Satellite Work Tab
rather than resetting the mechanical skew offset directly.
- **Antenna Angle:** displays and sets the antenna's current absolute and
relative AZ (azimuth) position, EL (elevation) position and LNB Pol angle.
You can move the antenna's azimuth and elevation position and LNB Pol
angle by using the arrows or inputting a value to find the desired satellite
manually.

Antenna – Advanced Info.

This view provides information on the Tilt Sensor Bias, Conical Range, EL Adjust, Rate Sensor, Search Parameter and Blockage Zone.



Antenna - Advanced Info. Work View Tab

- Tilt Sensor Bias:** This maintains the elevation and the cross level axes in order to keep the pedestal parallel to the horizon. Adjust the two solid-state tilt sensors to provide absolute cross-level tilt of the antenna and elevation feedback to eliminate long-term pointing drift (error). Tilt bias must be adjusted when the antenna control board or sensor box is replaced. If the bubble on the button level located on the sensor box is not centered, please follow the following steps to adjust the tilt sensor bias.

 - Step 1.** Enter Setup mode and press the “Ready” button to bring the elevation and cross-level to 0°.
 - Step 2.** Select “EL” from the drop down list and press the Up and Down arrow keys to adjust the bubble until it is located on the centering of the button level.
 - Step 3.** Select “CL” from the drop down list and press the Up and Down arrow keys to adjust the bubble until it is located on the center ring of the button level.
 - Step 4.** Press the Restart button to reboot the antenna.
- Rate Sensor:** is used to calibrate the DC voltage output from the three rate sensors (azimuth, elevation, and cross-level). These are used to sense antenna motion that corresponds to the ship’s motion (roll, pitch, and yaw) for stabilizing the pedestal. The DC voltage output from each of the rate sensors may vary by an amount which is directly proportional to the direction and rate of motion induced on it.

Before calibrating the rate sensors located on the Sensor box, make sure that the antenna is placed on a rigid and flat platform. During the calibration process, any motion of the antenna should be avoided as it can affect the antenna's performance. Proceed with the following steps to perform the calibration.

Step 1. Enter Setup mode.

Step 2. Press the Idle Mode button to release the elevation and cross level motor brakes while the antenna is in Setup mode.

Step 3. Check whether or not the bubble is located at the center of the button level. If not, move it to the center (Refer to the previous instruction of Tilt Sensor Bias adjustment).

Step 4. Press the Bias Check button to calibrate the rate sensor. A blue circle will be displayed next to the Bias Check button if the calibration is completed. A red circle will be displayed if calibration failed. A green circle will be displayed during the calibration process.

- **Conical Range:** The relative force of the motors controlling azimuth and elevation. Set the conical range while the antenna is in tracking mode.
- **EL Adjust:** The elevation adjustment is to offset the angle difference between the mechanical elevation angle and actual elevation angle.
- **Search Parameter:**
 - Wait time:** set the time-out for automatic initiation of a search after the signal level drops below the pre-defined threshold value.
 - Search Step:** set increment step size.
 - Type 1 & Type 3 (Search 1 & 3) Range:** This parameter may not be available dependent on model (ex. i-series). Set Search 1 & 3 search range. Search 3 is conducted in a two-axis pattern consisting of alternate movements in azimuth and elevation as it forms an expanding square.
- **Blockage Zone**
Displays current blockage zones by azimuth and elevation sectors. Up to 5 blockage zones can be programmed. A blue shading area in the Antenna UI view at the right will be displayed once the blockage zone is created.

- Threshold Settings**

DVB Detect Level: displays and sets signal detection threshold level when the DVB tracking mode is in use.

DVB Tracking Level: displays and sets signal tracking threshold level when the DVB tracking mode is in use.

NBD Detect Level: displays and sets signal detection threshold level when the NBD tracking mode is in use.

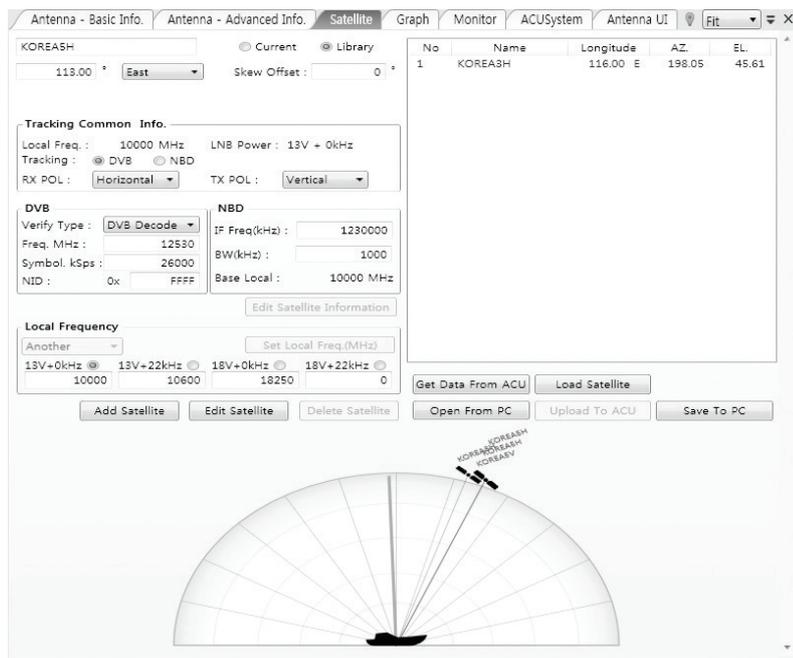
NBD Tracking Level: displays and sets signal tracking threshold level when the NBD tracking mode is in use.

TX Enable Threshold: displays and sets up TX enable threshold.

Satellite View

This view provides information on the Satellite’s Information, Common Tracking, Information, DVB and NBD Tracking Transponder, LNB Local Frequency, and the Satellite Library. Some settings can be varied by model dependant on specific functions of the antennas. This view shows a graphic UI of the current satellite at which the antenna is pointing, and the satellites that are located at a 180° arc on the horizon with reference to the current position.

Note: Based on the satellite EIRP footprint and the size of the antenna, you may not be able to track all the satellites visible in 180° arc

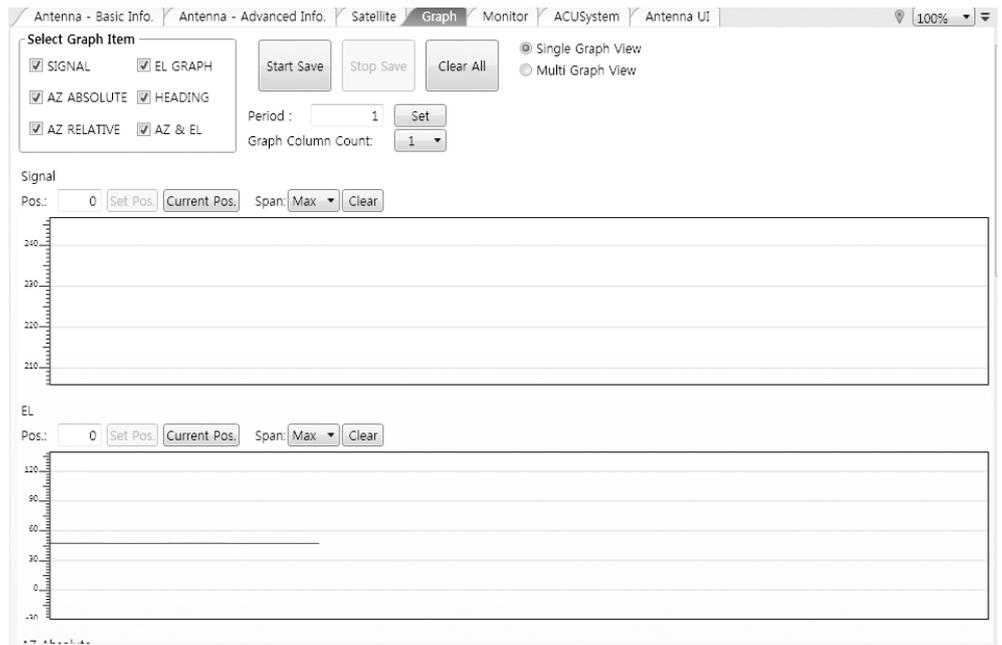


Antenna - Satellite View Tab

- **Satellite Information:** displays the current satellite's name, longitude position, and satellite skew of the satellite in the library. Tick the Edit Satellite checkbox to edit the current satellite information.
- **Tracking Common Information:** displays the current LNB local oscillator frequency that is in use and the corresponding voltage supplied. Selects the tracking mode (DVB / NBD) to be used and sets polarization (Horizontal / Vertical) for the RX pol and the TX pol.
- **DVB and NBD Tracking Transponder:** sets the tracking transponder information for either DVB tracking mode (Verification Type, Frequency, Symbol rate, and NID) or NBD tracking mode (Frequency and bandwidth).
- **LNB Local Frequency:** Displays or sets the LNB's local frequency and its corresponding LNB voltage supplied. You may select pre-programmed LNB LO settings from the drop down list. This procedure is the same for both the Intellian Global VSAT PLL LNB and any other LNB.
- **Satellite Library:** you are able to edit, add, and delete the satellite library.
 - Add Satellite:** adds the satellite information as defined in the current settings.
 - Edit Satellite:** edits the satellite information of the selected satellite.
 - Delete Satellite:** deletes the selected satellite from the library.
 - Get Data From ACU:** pulls the satellite information from the ACU.
 - Load Satellite:** uploads the satellite information to the ACU.
 - Open from PC:** opens the satellite library file (File format: *.ilf) from the supplied CD or from the external hard drive/PC.
 - Upload to ACU:** uploads the satellite library to ACU.
 - Save to PC:** saves the current library settings to PC.

Graphic View

This view provides information on Signal, Elevation (EL), Absolute AZ (Azimuth), Relative AZ, Heading, AZ and EL in Single or Multi graph formats.

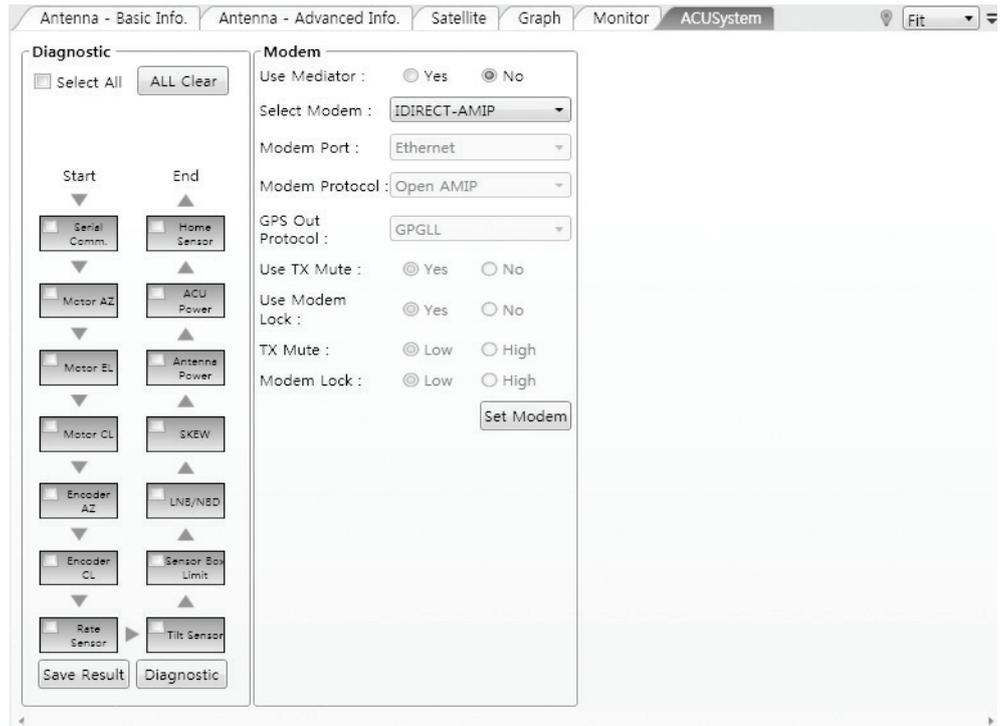


Garph View Tab

- **Select Graph Item:** shows the graphs of only the checked item(s) in a Single or Multi Graph View.
- **Single Graph View:** supports multiple Graph Items in one large Graph View.
- **Multi Graph View:** supports the Graph Item(s) chosen in each Graph View.
- **Start/Stop Save:** the chosen item is saved within the data log.
- **Clear All:** clears everything drawn on the Graph View window.
- **Set Pos.:** sets the current position as center value of each Graph Item.
- **Current Pos.:** moves to the location according to values of each Graph Item.
- **Span:** sets the Display Range(s) of the corresponding Graph Item.
- **Period:** displays and sets the signal sampling rate.
- **Graph Column Count:** makes all Graph Views show in either a one or two-column format.

ACU System

This view provides Antenna Diagnostic Testing. For v-series models, this view also provides functions for setting up the interface between the ACU and the Intellian VSAT Mediator or the satellite modem.



ACU System View Tab

Note : Modem or VSAT Mediator settings are only available on the Intellian v-Series models.

- Diagnostic:** select to run a full diagnostic test or single diagnostic test.
 - Serial Comm.:** tests the data communication between the antenna and the ACU.
 - Motor AZ:** tests the azimuth motor.
 - Motor EL:** tests the elevation motor.
 - Motor CL:** tests the cross-level motor.
 - Encoder AZ:** tests the azimuth encoder.
 - Encoder CL:** tests the cross-level encoder.
 - Rate sensor:** tests the rate sensor.
 - Tilt Sensor:** tests the tilt sensor.
 - Home sensor:** tests the home sensor.
 - ACU power:** tests the ACU power to see whether or not it is within the nominal operating range.
 - Antenna power:** tests the antenna power to see whether or not it is within the nominal operating range.
 - Skew:** tests the LNB skew motor.
 - LNB/ NBD:** tests the LNB and NBD (narrow band detector).
 - Sensor Box Limit:** tests the sensor box motor.

- Modem: sets the interface between the ACU and the Intellian Dual VSAT Mediator or the satellite modem.

Use Mediator: enables use of the Intellian Dual VSAT Mediator. Use Mediator must be set to “NO” if there is no MEDIATOR connected to the ACU. Improper setting of this parameter will cause your ACU’s modem interface to work incorrectly

Select Modem: selects your modem type for loading pre-configuration settings. If the ABS (auto beam switching) function is in use, select either IDIRECT-AMIP or COMTECH-ROSS depending on which type of modem is used.

Modem Port: selects the data communications port (RS232/ 422/ Ethernet) to interface with the modem.

Modem Protocol: selects a proper communications protocol on the ACU to interface with the modem (I/O Console/ Open AMIP/ Serial GPS).

GPS Out Sentence: selects GPS out sentence type (GPGLL/ GP-GGA/ Simple GPGGA).

Use TX Mute: selects whether or not to use the “TX Mute” function from the satellite modem. A transmit inhibit output from the ACU will disable/ mute the modem transmit via a voltage change whenever the antenna is blocked, searching, or is miss-pointed 0.5 degrees from the peak satellite position.

Use Modem Lock: selects whether or not to use the external lock signal from the modem.

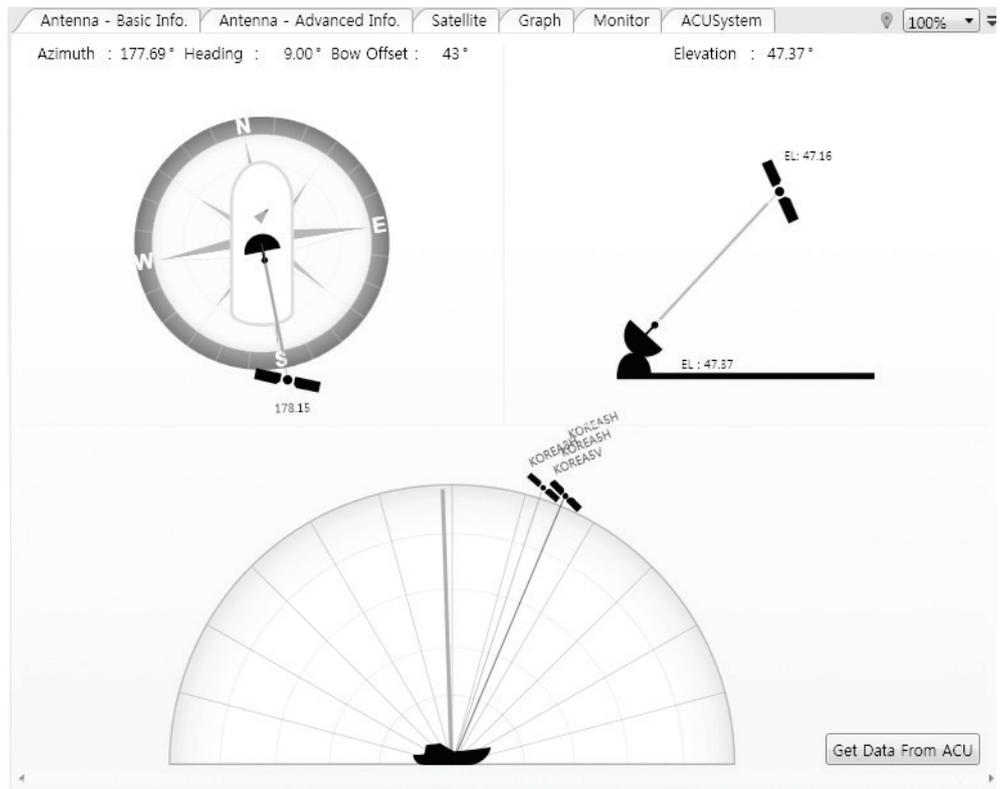
TX Mute: TX Mute is a transmit inhibit output from the ACU to disable /mute the modem transmit through a 5 V (HIGH) or 0 V (LOW) current whenever the antenna is blocked, searching, or is miss-pointed 0.5 degrees from peak satellite position. TX Mute will only be activated when modem protocol is set as I/O console.

Modem Lock: is the modem lock output from the modem. It provides a logic input through a 5V (HIGH) or 0 V (LOW) current to the ACU to identify when the system is on the correct satellite.

Antenna UI

This view shows a graphical representation of the current antenna position which allows you to easily identify whether or not the antenna is aligned properly to the target satellite or is in a blockage zone. In addition, this view shows the current satellite that the antenna is pointed towards and the satellites that are located at a 180° arc on the horizon, according to the current position.

Note: Based on the satellite EIRP footprint and the size of the antenna, you may not be able to track all the satellites visible in 180° arc.



Antenna UI View Tab

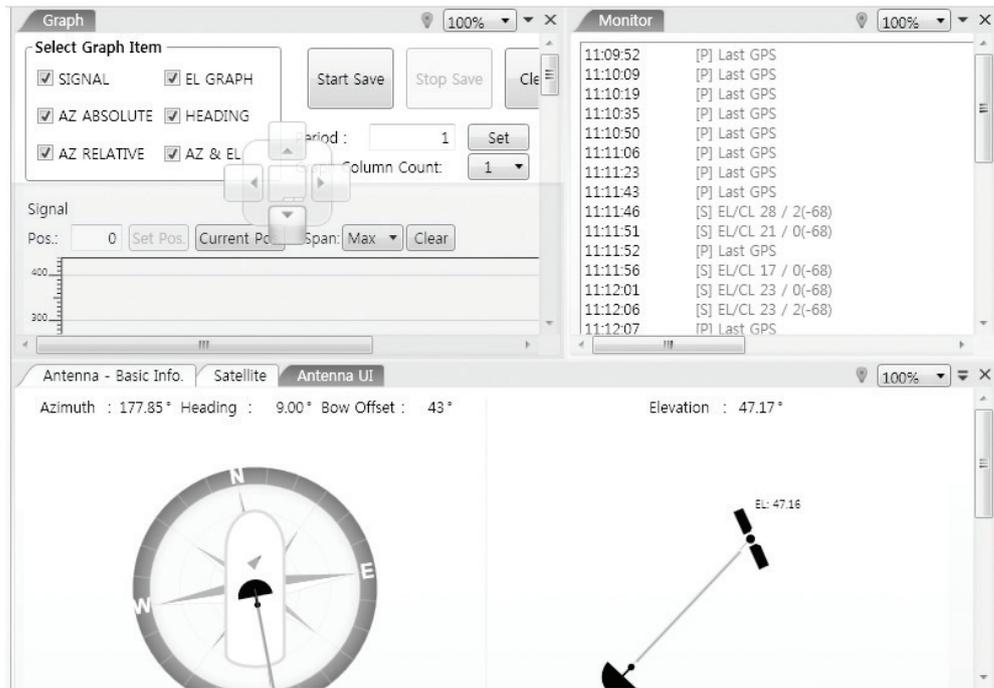
Work View Functions

The seven Tabs displayed in the Work View can be arranged in customized layouts.

Layout Formatting

- The Work View Tab can be dragged out if the left mouse button is clicked on the Work View Tab's header. If a Work View Tab is separated from the rest of your Work View Tabs, then a "cross-shaped" icon will appear if you click and hold the mouse on the Work View Tab's header. If you release the mouse button at this time, the selected view will be moved to the desired position.

You may arrange multiple Work View Tabs into the desired position within your layout by clicking your mouse on each Work View Tab's header and dragging the tab onto the desired arrow on the "cross-shaped" icon to place a view to the desired position.



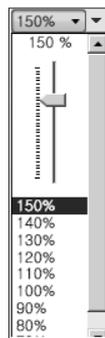
Layout Formatting

Zoom Tool

Using the Zoom tool, you can easily select the magnification you want by using Zoom In and Zoom Out bar, and Fit in Work View button.



Fit Work View Button: fits the current view to the Work View window size. The button toggles between the fit view and the previous view.



Zoom In and Zoom Out Bar: zooms in and out to expand and reduce the View to the desired size. (The zoom changes in 10% increments.)



View Switch Button: displays a list of the current views in a list. Choosing one of these views will display the selected view in the Work View window.



View Name Button: displays the current Work View name.



Close View Button: closes the current view.

Aptus WEB

Introduction

Main Page

Page Login
Top Menus
Dash Board & Information

Antenna Settings

Ship Setting
Antenna Position & Parameters
Tracking Setting
Modem Setting
Diagnostic

Firmware & Configuration

Antenna Firmware Upgrade
Antenna Log
Library Setting
Antenna Backup & Restore

Administration

Network Setting
SNMP Setting
Antenna Event Log
Intellian Network Devices
User Management
iARM Upgrade
iARM Save & Reboot

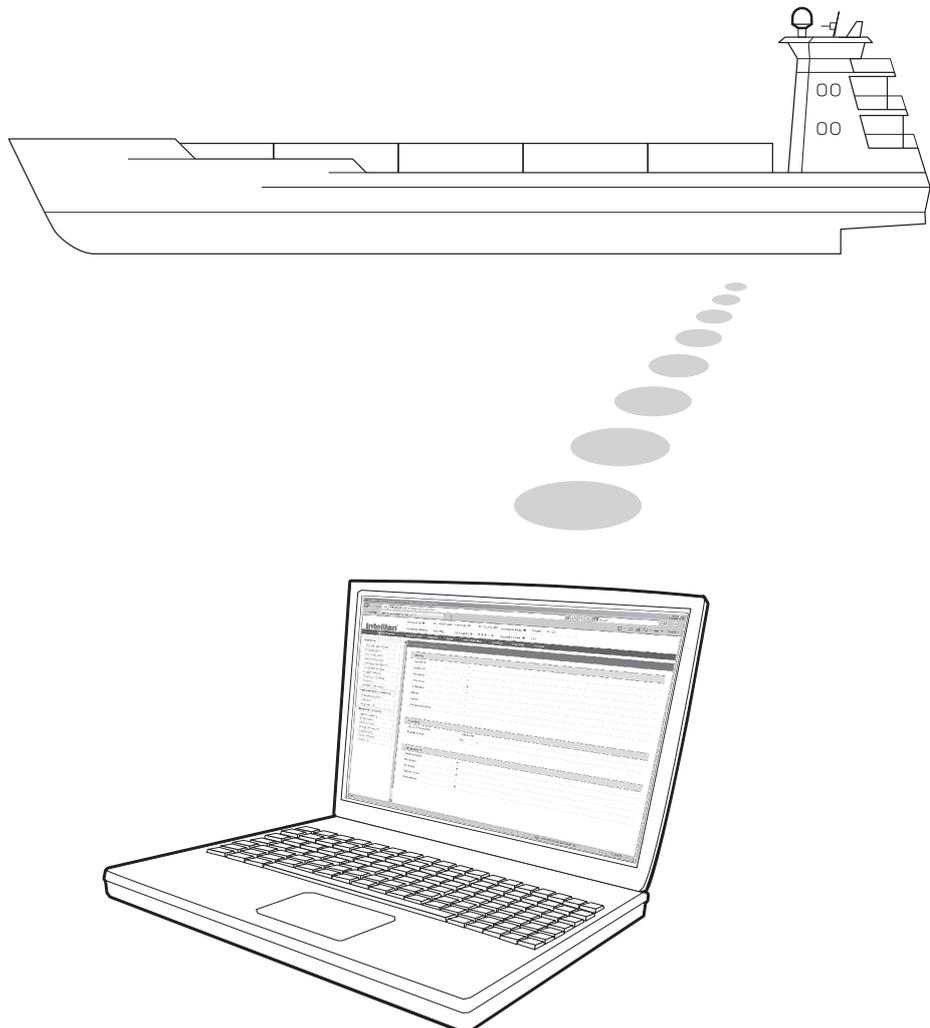
Introduction

With embedded Aptus Web software, the v-Series can be monitored, controlled, and diagnosed remotely from anywhere, anytime through the TCP/IP protocol. This not only can save time but also save the cost generated from the hundreds of routine maintenance activities such as operating firmware upgrades, tracking parameters resets, and system diagnostic.

How to access Aptus Web:

1. Connect an Ethernet Cable between your PC and the Management Ethernet Port.
2. Enter the ACU's IP address (192.168.2.1) into your web browser's address bar to login into the ACU's internal HTML page, if this system has not been changed from the ACU's factory default.

NOTE: Aptus Web can be displayed in Internet Explorer 7 or later and is also compatible with Firefox and Chrome web browsers.



Main Page

Page Login

1. Choose either to Control & Monitor the ACU (Control & Monitoring) or Only Monitor the ACU (Monitoring Only).
2. Log into the ACU by typing in User Name and Password information. If this system has not been changed from the factory default:

- **User Name:** intellian
- **Password:** 12345678



**Aptus Web
V240M v1.08**

Control & Monitoring
 Monitoring Only

Username
Password



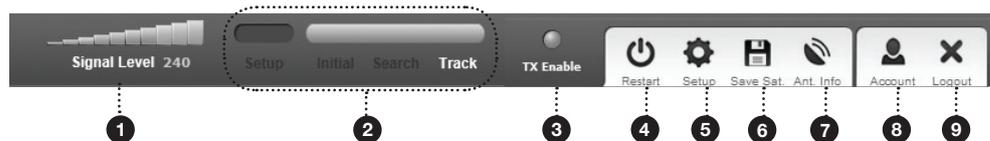
WARNING

WARNING: The Control & Monitoring Mode will be switched to the Monitoring Only Mode in the following cases;

- If PC Software (Aptus) is connected using TCP/IP Communication while Aptus Web Control is in use.
- If Control & Monitoring Mode is accessed while PC Software is running via TCP/IP Communication. In this case, the web page will display a pop-up message asking if you want to disconnect the PC Software network connection. If you select 'No', the Control & Monitoring Mode will be switched to the Monitoring Only Mode.

Top Menus

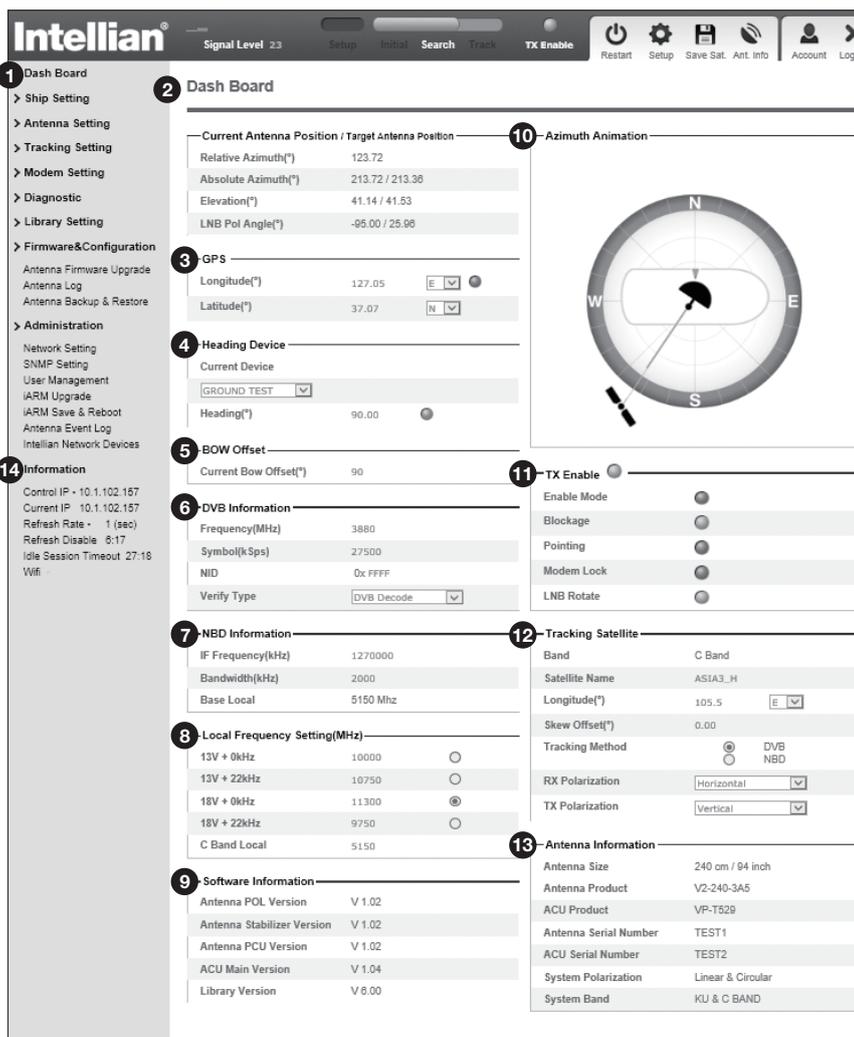
Once you log in, the following information and menus are displayed.



No.	Item	Description
①	Signal Level	Display current signal level.
②	Antenna status	<ul style="list-style-type: none"> - Setup: Displays whether or not the antenna is in SETUP mode. The indicator shows “Blue” in the SETUP mode. - Initial: Antenna or ACU is initialized. - Search: Antenna is searching a target satellite. - Track: Antenna is tracking the target satellite.
③	TX Enable/ TX Disable	Displays whether or not the antenna is able to transmit the data
④	Restart	Restarts the antenna system.
⑤	Setup	Enters SETUP mode.
⑥	Save Sat.	Saves current satellite settings. Bow offset will be adjusted and saved automatically.
⑦	Ant. Info	Obtains current antenna information.
⑧	Account	Shortcut to User Management menu. Change login ID and Password.
⑨	Logout	Logs out of the ACU's internal HTML page.

Dash Board & Information

On the left side of the page, the Dash Board and Information menus are displayed as below to provide quick monitoring of the antenna status and settings. Other menus are displayed only in the Control & Monitoring mode and their functions will be described in the next sections.



No.	Item	Description
①	Dash Board	Displays current antenna status to be quickly monitored.
②	Current Antenna Position / Target Antenna Position	Displays current antenna position. <ul style="list-style-type: none"> - Relative Azimuth: displays antenna relative AZ angle. - Absolute Azimuth: displays antenna absolute AZ angle. - Elevation: displays antenna elevation angle. - LNB Pol Angle: displays LNB pol angle. - Heading: displays ship's heading information
③	GPS	Displays current GPS information. <ul style="list-style-type: none"> - Longitude (East / West) - Latitude (North / South)
④	Heading Device	Displays current Heading Device: NONE, NMEA, NMEA 2000, Ground test If the ship's gyrocompass input is other than NMEA separate purchase of NMEA Converter is required. <ul style="list-style-type: none"> - Heading: displays ship's heading information.

⑤	BOW Offset	Display current bow offset
⑥	DVB Information	Displays DVB tracking mode's current tracking information. - Frequency: displays tracking frequency. - Symbol rate: displays symbol rate. - NID: displays network ID. - Verify type: displays verification type. (AGC, DVB, DVB Decode)
⑦	NBD Information	Displays NBD tracking mode's current tracking information. - Frequency: displays tracking IF frequency. - Bandwidth: displays detection bandwidth.
⑧	Local Frequency Setting (MHz)	Displays current LNB's local frequency and voltage
⑨	Software Information	Displays current Antenna and ACU firmware versions and Satellite Library version installed in the system. - Antenna POL Version (It will display "v-----" if there is no Pol Control Board installed.) - Antenna Stabilizer Version - Antenna PCU Version - ACU Main Version - Library Version
⑩	Azimuth Animation	Shows a graphical representation of the current antenna position to identify whether or not the antenna is aligned properly to the target satellite or is in a block zone.
⑪	TX Enable	Displays whether or not the antenna is able to transmit the data. The TX function will only be enabled (shows BLUE dot) only if all of the factors listed below shows "BLUE" dot. Exception: If "Use TX Mute" is set as "NO", the TX function will be enabled regardless of which factor listed below shows "gray" dot or "red" dot. - Enable Mode: antenna is not in SETUP mode. - Blockage: antenna is not facing the predefined block zone(s). - Pointing: antenna is pointing to the target satellite. - Modem Lock: satellite modem is sending a logic input to the ACU to identify when the antenna tracks on the correct satellite. - LNB Rotate: LNB is not rotating.
⑫	Tracking Satellite	Displays current tracking mode. - Satellite: displays satellite name. - Longitude: displays satellite orbit position. - Skew Offset: displays Skew offset. - Tracking Method: displays current tracking mode (DVB/ NBD). - RX Polarization: displays current RX polarization. - TX Polarization displays current TX polarization.
⑬	Antenna Information	Displays the product information
⑭	Information	- Control IP: Displays current IP that controls the ACU. - Current IP: Displays current IP address.- Refresh Rate: Displays screen refresh rate (default: 1 sec.) - Refresh Disable: Displays time out. The screen will not refresh once the time-out shows 0:00. Exception: If the Refresh Disable Time is set to "OFF" in the Network Setting page, then the clock will show "--:--" and system will keep monitoring all activities regardless of timeout. - Wifi : Displays Wifi on/off switch

Antenna Settings

Ship Setting

No.	Item	Description
①	Ship Setting	Set the ship information and block zone.
②	GPS	Set GPS information. - Longitude (East/West) - Latitude (North/South)
③	Bow Offset	Set Bow Offset if needed.
④	Heading Device	Set ship's heading device (NONE, NMEA, NMEA2000, Ground Test) and ship's heading information
⑤	Blockage	Set the antenna's block zones up to 5 by azimuth and elevation sectors. AZ. START is where the relative azimuth starts and AZ. END is where the relative azimuth ends (Range: 0 - 360°). EL. Limit is where the elevation starts (Range 0 - 90°).



WARNING

WARNING: Enter the SETUP mode for configuration. Tick the checkbox before modifying the settings. After configuration, click 'Set ...' button to submit the settings.

Antenna Position & Parameters

No.	Item	Description
①	Antenna Setting	Set current antenna position and Search and Tracking parameters. These parameters should only be changed by an authorized service technician. Improper setting of these parameters will render your system inoperable.
②	Current Antenna Position/ Target Antenna Position	Display current antenna position. - Relative Azimuth: display antenna relative AZ angle. - Absolute Azimuth: display antenna absolute AZ angle. - Elevation: display antenna elevation angle. - LNB Pol Angle: display LNB pol angle. - Heading: display ship’s heading information.
③	Manual Movement	Move antenna azimuth and elevation angles and LNB pol angle to find the desired satellite manually. LNB Pol Angel can be adjusted at any time either in SETUP Mode or Tracking Mode.
④	LNB Pol Sensor Calibration	Calibrate the LNB pol angle when the control board, potentiometer or belt is replaced.
⑤	Elevation Adjust	Adjust the elevation to offset the angle difference between the mechanical elevation angle and actual elevation angle.
⑥	Conical Range	The relative force of the motors controlling azimuth and elevation. Set the conical range while the antenna is in tracking mode.

No.	Item	Description
⑦	Idle Mode	Release the elevation and cross level motor brakes while the antenna is in SETUP mode. The antenna can be moved manually during the mode.
⑧	Reboot	Reboot the system.
⑨	Search & Tracking Parameter Setting	<p>DVB Detect and Tracking Level Threshold: display / set current detect level threshold and tracking level threshold when DVB tracking mode is chosen to be used.</p> <p>- NBD Detect and Tracking Level Threshold: display / set current detect level threshold and tracking level threshold when NBD tracking mode is chosen to be used. - TX Enable Threshold: display / set TX enable threshold. - Wait time: set the time-out for automatic initiation of a search after the signal level drops below the pre-defined threshold value.</p> <p>- Search Step: set increment step size.</p> <p>- Search 1 & 3 Range: set Search 1 & 3 search range. Search is conducted in a two-axis pattern consisting of alternate movements in azimuth and elevation as forming expanding square.</p> <p>- Search 2 Range: is reserved for future use.</p>
⑩	Tilt Sensor Bias	Adjust the two solid-state tilt sensors used to provide absolute cross-level tilt of the antenna and elevation feedback to eliminate long-term pointing drift (error). Tilt bias is required to be adjusted when the antenna control board or sensor box is replaced. Check to see whether or not the bubble is located at the center of the level vial.
⑪	Rate Sensor Adjust	Calibrate DC voltage output from the three rate sensors used to sense antenna motion in azimuth, elevation and cross-level axes. During the calibration process, the antenna should avoid any motion as it can affect the antenna's performance.



WARNING

WARNING: Tick the checkbox before modifying the settings. After configuration, click 'set...' button to submit the settings.

Tracking Setting

No.	Item	Description
①	Tracking Setting	Display or set current tracking mode and tracking frequency of the target satellite.
②	Local Frequency Setting (MHz)	Display and set LNB’s local frequencies. Display current LNB local frequency and band which are in use and voltage.
③	Current Satellite Setting	Display and set current satellite setting.
④	Tracking Satellite	Display and set current tracking mode. - Band: display and set band (C-band and Ku-band) - Satellite: display and set satellite name. - Longitude: display and set satellite orbit position. - Skew Offset: display and set Skew offset. - Tracking Method: display and set current tracking mode (DVB/ NBD). - RX Polarization: display and set current RX polarization. - TX Polarization display and set current TX polarization.
⑤	DVB Information	Display and set DVB tracking mode’s tracking information. - Frequency: display and set tracking frequency. - Symbol rate: display and set symbol rate. - NID: display and set network ID. - Verify type: display and set verification type (AGC, DVB, DVB Decode)
⑥	NBD Information	Display and set NBD tracking mode’s tracking information. - Frequency: display and set tracking IF frequency. - Bandwidth: display and set detection bandwidth.



WARNING: Tick the checkbox before modifying the settings. After configuration, click 'set...' button to submit the settings.

Modem Setting

- > Dash Board
- > Ship Setting
- > Antenna Setting
- > Tracking Setting
- 1 Modem Setting**
- > Diagnostic
- > Library Setting
- > Firmware&Configuration
 - Antenna Firmware Upgrade
 - Antenna Log
 - Antenna Backup & Restore
- > Administration

Modem Setting

2 Modem
YES NO

Use Mediator	<input type="radio"/> YES <input type="radio"/> NO	
Select Modem	<input type="text" value="IDIRECT-AMIP"/>	
Modem Port	<input type="text" value="Ethernet"/>	
Modem Protocol	<input type="text" value="Open AMIP"/>	
GPS Out Sentence	<input type="text" value="GPGLL"/>	
<small>Set Modem Configuration</small>		

Use TX Mute	<input checked="" type="radio"/> YES <input type="radio"/> NO	
Use Modem Lock	<input checked="" type="radio"/> YES <input type="radio"/> NO	
TX Mute	<input checked="" type="radio"/> LOW <input type="radio"/> HIGH	
Modem Lock	<input checked="" type="radio"/> LOW <input type="radio"/> HIGH	

No.	Item	Description
①	Modem Setting	<p>Set the modem interface.</p> <ul style="list-style-type: none"> - Use Mediator: enable the usage of Mediator if the antenna is connected to the Intellian Dual VSAT Mediator. Use Mediator must be set to “NO” if there is no MEDIATOR connected to the ACU. Improper setting of this parameter will cause your ACU’s modem interface to work incorrectly. - Select Modem: select a proper data communication port and protocol on the ACU to interface with the satellite modem. The settings related to the modem interface will be set automatically once the modem type is selected (USER SETTING, IDIRECT-I/O, IDRECT-AMIP, COMTECH-I/O, COMTECH-ROSS, HUGHES, SATLINK-SERIAL, SATLINK-VACP, ELEKTRIKOM-AMIP, GILAT-SE-II). However, it is required to set the related settings separately if USER SETTING is selected. - Modem Port: select a proper data communication port on the ACU to interface with the satellite modem (RS232/422/ Ethernet). - Modem Protocol: select a proper communication protocol on the ACU to interface with the modem (I/O Console, OpenAMIP, Serial GPS, ROSS, VACP, ELEKTRIKOM AMIP, GILAT). - GPS Out Sentence: select the GPS out sentence type (GPGLL/GPGGA/SIMPLE GPGGA) - USE TX Mute: select whether or not to use TX mute function from the satellite modem. - USE Modem Lock: select whether or not to use external lock signal from the satellite modem. - TX Mute: is a transmit inhibit output from the ACU to disable/ mute the modem transmit through a 5V (High) or 0V(LOW) current whenever the antenna is blocked, searching, or is mispointed 0.5° from peak satellite position. - Modem Lock: is the modem lock output from the modem which provides a logic input through a 5V (High) or 0V(LOW) current to the ACU to identify when it is on the correct satellite. <p>Note: TX Mute and Modem Lock items will only be activated when the modem protocol is set as I/O Console.</p>
②	Modem	

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WARNING: Ensure to tick the checkbox before modifying the settings. Select 'Set Modem Configuration' to confirm the modem settings configured.

Diagnostic

No.	Item	Description
①	Diagnostic	Execute antenna diagnostic test.
②	Diagnostic	<p>Select to run a full diagnostic test or single diagnostic test.</p> <ul style="list-style-type: none"> - Serial Comm.: test the data communication between the antenna and the ACU. - Motor AZ: test the azimuth motor. - Motor EL: test the elevation motor. - Motor CL: test the cross-level motor. - Encoder AZ: test the azimuth encoder. - Rate Sensor: test the rate sensor. - Tilt Sensor: test the tilt sensor. - Sensor Box Limit: test the sensor box motor. - LNB/NBD: test the LNB. - SKEW: test the LNB pol motor. - Antenna Power: test the antenna power. - ACU Power: test the ACU power. - Home Sensor: test the home sensor - Test ALL: test all devices.
③	Graph	<p>Select to view a graph of AZ Absolute, AZ Relative, EL and Heading data of the antenna.</p> <ul style="list-style-type: none"> - A Month: display all data within a month - A Week: display all data within a week - A Day: display all data in a day - Real-time: display data in real time. Press F5 button to refresh. - View Graph: select to view the data graph.

④ Spectrum

Select to view a current spectrum graph and to set the spectrum display options.



WARNING: Tick the checkbox before modifying the settings. Click Diagnosis button to execute diagnostic test. To clear previous diagnosis result, click Diagnosis Clear button.

Firmware & Configuration

Antenna Firmware Upgrade

- > Dash Board
- > Ship Setting
- > Antenna Setting
- > Tracking Setting
- > Modem Setting
- > Diagnostic
- > Library Setting
- 1 Firmware&Configuration**
- Antenna Firmware Upgrade
- Antenna Log
- Antenna Backup & Restore
- > Administration
- Network Setting
- SNMP Setting
- User Management
- iARM Upgrade
- iARM Save & Reboot
- Antenna Event Log
- Intellian Network Devices
- > Information
- Control IP • 10.1.102.157
- Current IP 10.1.102.157
- Refresh Rate • 1 (sec)
- Refresh Disable 7:19
- Idle Session Timeout 28:19
- Wifi

Antenna Firmware Update

2 New Antenna Firmware

Upgrade Method Manual Upgrade

The update may take a few minutes to complete.
The upload time may vary due to a variety of factors such as the speeds of your network.
Upload an incorrect firmware file may cause serious damage to your antenna and ACU.

Browse and select the firmware file to upload.

찾아보기...

Start Upload
Cancel

3 Current Running Version

Current Firmware Version	Antenna POL v1.02	
	Antenna STABILIZERv1.02	
	Antenna PCU v1.02	
	ACU Main v1.04	
	Library v6.00	

4 Cold Rollback

Previous Package Version v140721	Antenna POL v1.02	Antenna STABILIZERv1.02	Antenna PCU v1.02	ACU Main v1.04	Rollback
Latest Package Version v140722	Antenna POL v1.02	Antenna STABILIZERv1.02	Antenna PCU v1.02	ACU Main v1.04	Rollback

No.	Item	Description
①	Antenna Firmware Upgrade	Upgrade the antenna and ACU firmware version.
②	New Antenna Firmware	Introduce the upgrade method (Manual Upgrade or Auto Upgrade), and display the firmware package file to upload.
③	Current Running Version	Display current firmware version (Antenna POL, Antenna STABILIZER, Antenna PCU, ACU main, Library)
④	Cold Rollback	Display Previous/Latest Package version and rollback firmware to Previous or Latest version. Other functions cannot be operated while rollback is in progress.

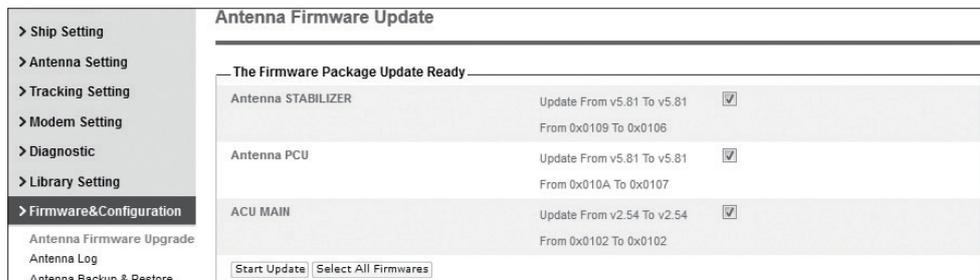
156

Manual Upgrade procedures:

1. Choose "Manual Upgrade" from the pull-down menu of Upgrade Method.
2. Click on the "Start Upload" button to transfer the Firmware package file (*.fwp") to iARM module.
3. Browse and select the upgrade package file to upload.
4. After the package file is transferred, it will show "upgrade from vx.xx Version to vx.xx Version". Enable the check box to select the firmware file that you wish to upgrade. To select all firmware files, click Select All Firmware.
5. Click on the "Start Upgrade" button.

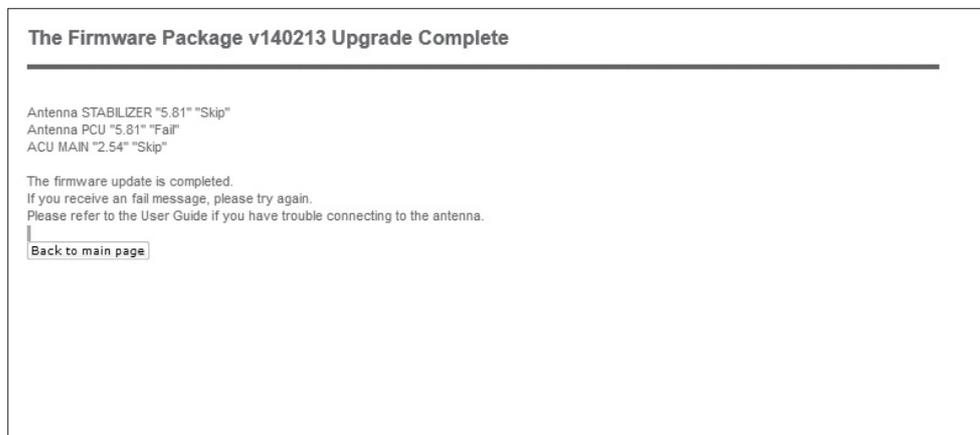
<ul style="list-style-type: none"> > Dash Board > Ship Setting > Antenna Setting > Tracking Setting > Modem Setting > Diagnostic > Library Setting <li style="background-color: #cccccc;">> Firmware&Configuration Antenna Firmware Upgrade Antenna Log Antenna Backup & Restore > Administration 	<h3 style="margin: 0;">Antenna Firmware Update</h3> <hr/> <p>The Firmware Package Update Ready</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #f2f2f2;"> <td style="padding: 5px;">Antenna STABILIZER</td> <td style="padding: 5px;">Update From v5.81 To v5.81 From 0x0109 To 0x0106</td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 5px;">Antenna PCU</td> <td style="padding: 5px;">Update From v5.81 To v5.81 From 0x010A To 0x0107</td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr style="background-color: #f2f2f2;"> <td style="padding: 5px;">ACU MAIN</td> <td style="padding: 5px;">Update From v2.54 To v2.54 From 0x0102 To 0x0102</td> <td style="padding: 5px; text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> <p style="margin-top: 5px;"> <input type="button" value="Start Update"/> <input type="button" value="Select All Firmwares"/> </p>	Antenna STABILIZER	Update From v5.81 To v5.81 From 0x0109 To 0x0106	<input checked="" type="checkbox"/>	Antenna PCU	Update From v5.81 To v5.81 From 0x010A To 0x0107	<input checked="" type="checkbox"/>	ACU MAIN	Update From v2.54 To v2.54 From 0x0102 To 0x0102	<input checked="" type="checkbox"/>
Antenna STABILIZER	Update From v5.81 To v5.81 From 0x0109 To 0x0106	<input checked="" type="checkbox"/>								
Antenna PCU	Update From v5.81 To v5.81 From 0x010A To 0x0107	<input checked="" type="checkbox"/>								
ACU MAIN	Update From v2.54 To v2.54 From 0x0102 To 0x0102	<input checked="" type="checkbox"/>								

Firmware upgrade status page



6. It will display information about the upgrade process status on full screen.

Upgrade process status page



7. If the firmware is successfully upgraded, it will display "The firmware update is completed."

8. Click on "Back to main page" to go out of the screen.

To verify the upgraded firmware version, go to Dash Board > Software Information.

Upgrade complete page

The Firmware Package v120726 Upgrade Complete

Antenna POL "-----" "Skip"
Antenna STABILIZER "0.95" "Success"
Antenna PCU "0.95" "Success"
ACU MAIN "0.95" "Success"

The firmware update is completed.
If you receive an fail message, please try again.
Please refer to the User Guide if you have trouble connecting to the antenna.

[Back to main page](#)

NOTE: To roll back to the previous firmware package version or latest package version, select Rollback Upgrade menu on the Antenna Firmware Upgrade page.

Antenna Log

- > Dash Board
- > Ship Setting
- > Antenna Setting
- > Tracking Setting
- > Modem Setting
- > Diagnostic
- > Library Setting
- > Firmware&Configuration
- Antenna Firmware Upgrade
- 1 Antenna Log
- Antenna Backup & Restore
- > Administration
- Network Setting
- SNMP Setting
- User Management
- iARM Upgrade
- iARM Save & Reboot
- Antenna Event Log
- Intellian Network Devices

Antenna Log

2 GPS Log Option

Enable

3 Antenna Log Download

Execute Start Download button to proceed.
It will open a new pop-up window for log download.

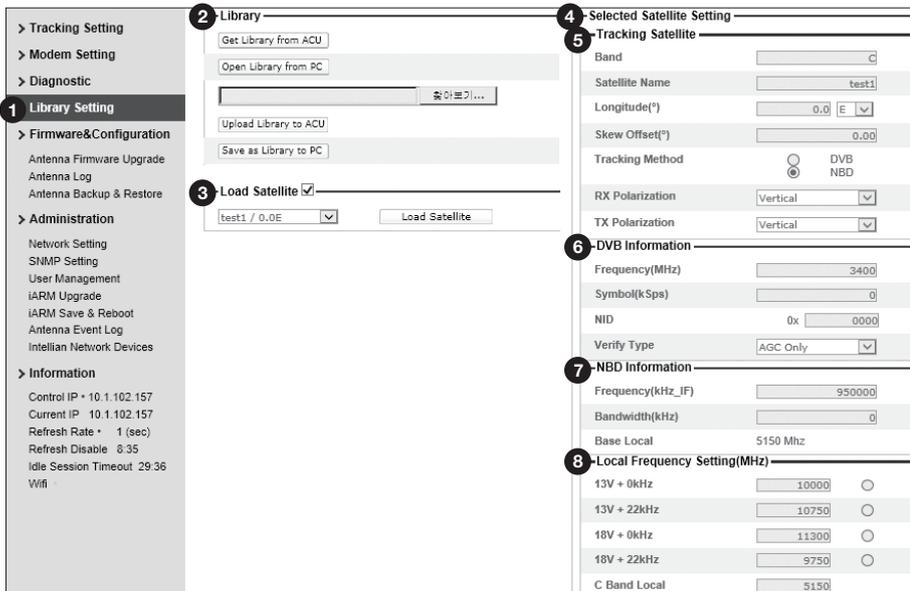
4

5 Antenna Firmware Log

Date/Time(UTC 00:00)	POL	STAB	PCU	Main
Fri, 25 Apr 2014 03:33:45	1.01 Skip	1.01 Skip	1.01 Skip	1.01 Success
Fri, 25 Apr 2014 03:32:27	1.01 Skip	1.01 Skip	1.01 Skip	1.01 Success

No.	Item	Description
1	Antenna Log	Displays the antenna log data
2	GPS Log Option	Disable/Enable to save GPS information in the antenna log file.
3	Antenna Log Download	Download the log file. Select start download button to proceed.
4	Start Download	Download the antenna log information.
5	Antenna Firmware Log	Display log information of firmware upgrade.

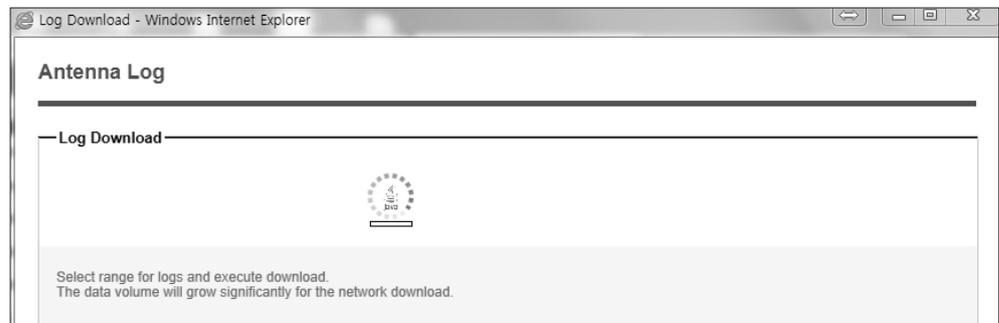
Library Setting



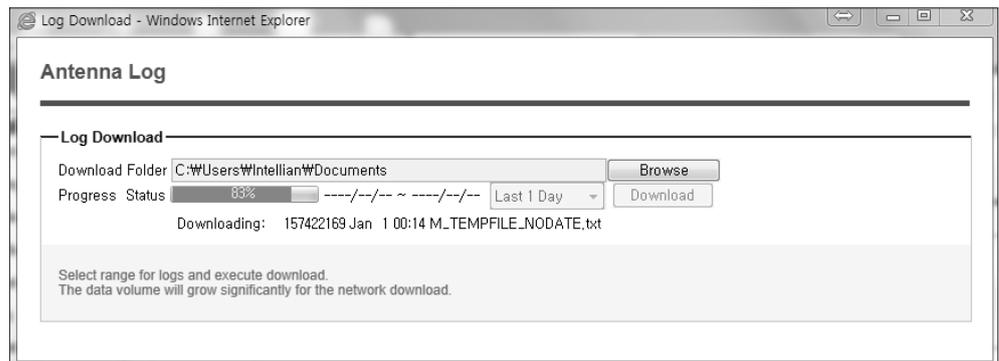
No.	Item	Description
①	Library Setting	Display and set the satellite library information.
②	Library	<ul style="list-style-type: none"> - Get Library from ACU: Obtain satellite information installed in the ACU. - Open Library from PC: open the satellite library file from the supplied Intellian CD or from the external hard drive/PC. (File format: *.ilf) - Upload Library to ACU: upload the satellite library file to ACU. - Save as Library to PC: save the current library setting to the PC.
③	Load Satellite	Select the satellite that you wish to track and press Load Satellite button to load the selected satellite.
④	Selected Satellite Setting	Displays selected satellite information.
⑤	Tracking Satellite	<ul style="list-style-type: none"> - Band: displays current band. - Satellite: displays satellite name. - Longitude: displays satellite orbit position. - Skew offset: displays Skew offset. - Tracking method: displays current tracking mode (DVB/NBD) - RX polarization: displays current RX polarization. - TX polarization: displays current TX polarization.
⑥	DVB Information	<ul style="list-style-type: none"> - Displays DVB tracking mode's tracking information. - Frequency: displays tracking frequency. - Symbol rate: displays symbol rate. - NID: displays network ID. - Verify type: displays verification type (AGC only, DVB lock, DVB decode, DSS decode)
⑦	NBD Information	<ul style="list-style-type: none"> - Displays NBD tracking mode's tracking information. - Frequency: displays tracking frequency. - Bandwidth: displays detection bandwidth.
⑧	Local Frequency Setting (MHz)	Displays LNB local frequency (MHz) and voltage.

Log Download procedures:

1. Select the 'Start Download' button.
2. To run Java applications you must have Java Runtime Environment (JRE) version 6.0 and above installed in your PC/ laptop when you access the antenna log page for first time. Click the "Run" button on the popup message "The application's digital signature cannot be verified. Do you want to run the application? " to install the Applet. Refer to the Appendix for Java Installation Instructions if the system does not display the popup message.



3. Select the 'Browse' button to browse the target directory of the antenna log file.
4. Select the log period for file download.
 - Last 3 Months: download the antenna log information for the past three months.
 - Last 1 Month: download the antenna log information for the past one month.
 - Last 1 week: download the antenna log information for the past one week.
 - Last 1 Day: download the antenna log information for the past one day.
5. Select 'Download' to download the log file to the target directory according to the selected log period.



NOTE: You can choose to Enable or Disable the GPS tracking function. Liability for information that is disclosed when GPS is enabled is solely the operators responsibility and it is up to the operator on whether or not to provide their GPS information to third parties. Any issues regarding safety and privacy when turning on the GPS function is solely up to the user. Intellian is not responsible for information that is disclosed when the GPS function is enabled.

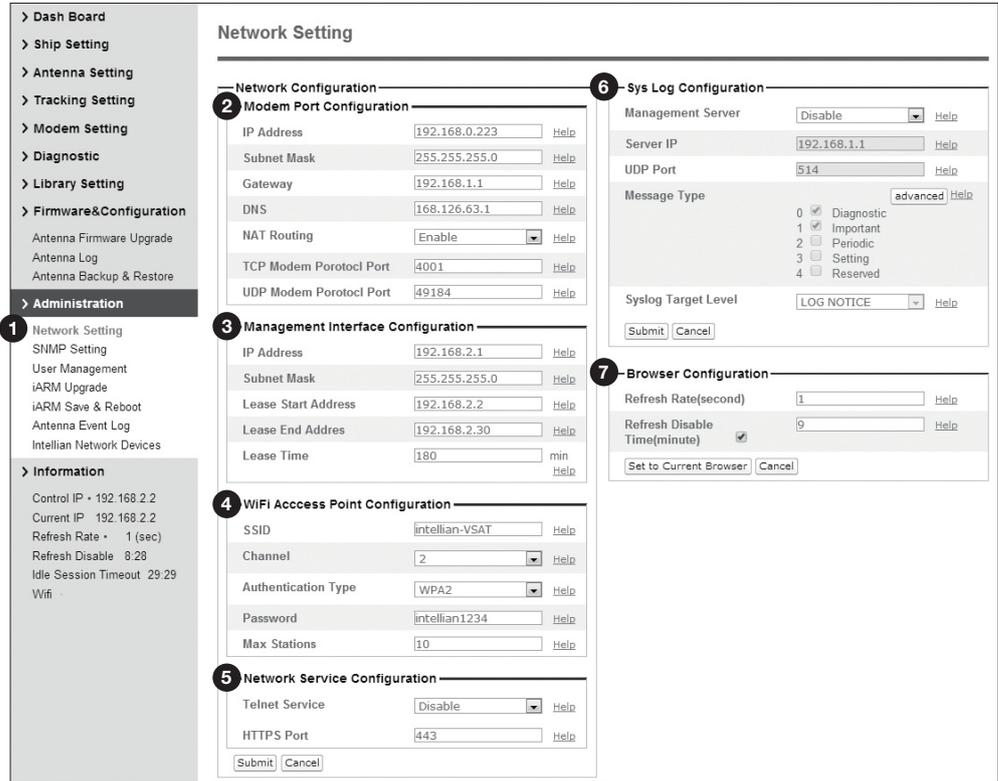
Antenna Backup & Restore



No.	Item	Description
①	Antenna Backup & Restore	Enter the Backup & Restore page. (Setup mode is required)
②	Target	Backup antenna information to the ACU/PC or restore the antenna by using the saved information from ACU/PC.
③	Backup	Backup antenna information.
④	Restore	Restore antenna information.

Administration

Network Setting



No.	Item	Description
①	Network Setting	Enter network setting page.
②	Modem Port Configuration	<p>Modify the ACU's Internal IP address and press the Submit button. Go to the "Save & Reboot" page and press the Save & Reboot button to validate the changes.</p> <ul style="list-style-type: none"> - IP Address : Factory default(Primary:192.168.0.223)/(Secondary:10.10.1.1). - Subnet Mask : Factory default(255.255.255.0). - Gateway : Factory default(192.168.0.254). - DNS : Current default DNS Address is assigned to. - NAT Routing : Enable/Disable NAT routing. - TCP Modem Protocol Port : TCP port number for modem protocols using TCP as transport. - UDP Modem Protocol Port : UDP port number for modem protocols using UDP as transport.
③	Management Interface Configuration	<p>Modify Management Port's network configuration and press the Submit button. Go to the "Save & Reboot" page and press the Save & Reboot button to validate the changes.</p>

		<ul style="list-style-type: none"> - IP Address : The ACU front network port /Factory default(192.168.2.1). - Subnet Mask : Factory default(255.255.255.0). - Lease Start Address : Lease IP address start range. - Lease End Address : Lease IP address end range. - Lease Time : Lease IP address update time.
		<ul style="list-style-type: none"> - SSID : The SSID is the network name shared among all devices in a wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which may be any keyboard character. Make sure this setting is the same for all devices in your wireless network. - Channel : Select an appropriate channel from the list provided to correspond with your network settings. All devices in your wireless network must use the same channel in order to function correctly. Try to avoid conflicts with other wireless networks by choosing a channel where the upper and lower three channels are not in use. - Authentication Type : Module supports an authentication mode that the 802.11 device uses when it authenticates and associates with an access point or IBSS cell. - Password : WiFi access password. - Max Stations : Setting max stations.
④	WiFi Access Point Configuration	
⑤	Network Service Configuration	<ul style="list-style-type: none"> - Telnet Service : Enable or disable telnet login support. - HTTPS Port : HTTPS port number.
⑥	Sys Log Configuration	<p>Set the system log configuration.</p> <p>The antenna sends log messages according to emergency level. Enabling this function sends the message to your management server.</p> <ul style="list-style-type: none"> - Management Server : Sys log function enable/disable - Server IP : Management server IP address - UDP Port : Management port - Message Type : Select message type (Intellian message level) to send to management server (Lower number indicates higher emergency). - Sys log Target Level : If you select this target level, the management server receives log message equal to or less than this level.
⑦	Browser Configuration	<p>Setting the refresh rate and refresh disable time.</p> <ul style="list-style-type: none"> - Refresh Rate : Set the browser refresh rate (Default 1 seconds. Range 1~99). - Refresh Disable Time : Set the browser idle timeout (Default:9 minites. Range 0~9). To use this function, check the checkbox.

SNMP Setting

No.	Item	Description
①	SNMP Setting	Display and Set SNMP configuration.
②	SNMP V1/V2 Status	Set SNMP mode(Use Attribution Disable, Read Only or Read Write).
③	V1/V2 Community Name	Set SNMP V2 community name.
④	V3 Authentication Type	Set SNMP V3 authentication mode.
⑤	V3 Authentication Encoding	Set SNMP V3 authentication encoding.
⑥	V3 Username	Set the V3 username and password of the SNMP Agent. The password is at least 8 character string.
⑦	V3 Private Encoding	Set SNMP V3 Private Encoding.
⑧	V3 Private Password	Set the V3 password of the SNMP Agent. The Password is at least character string.
⑨	TRAP IP/Port	Set the V3 password of the SNMP Agent. The Password is at least character string.
⑩	TRAP Parameter	Set the SNMP trap specific parameter.

Antenna Event Log

- > Dash Board
- > Ship Setting
- > Antenna Setting
- > Tracking Setting
- > Modem Setting
- > Diagnostic
- > Library Setting
- > Firmware&Configuration
 - Antenna Firmware Upgrade
 - Antenna Log
 - Antenna Backup & Restore
- 1 Administration
 - Network Setting
 - SNMP Setting
 - User Management
 - iARM Upgrade
 - iARM Save & Reboot
 - Antenna Event Log
 - Intellian Network Devices
- > Information
 - Control IP - 192.168.2.2
 - Current IP - 192.168.2.2
 - Refresh Rate - 1 (sec)
 - Refresh Disable - 8:51
 - Idle Session

Antenna Event Log

2 Query Filter

Severity: Category:

Time Frame: Sording Order: Descending Ascending

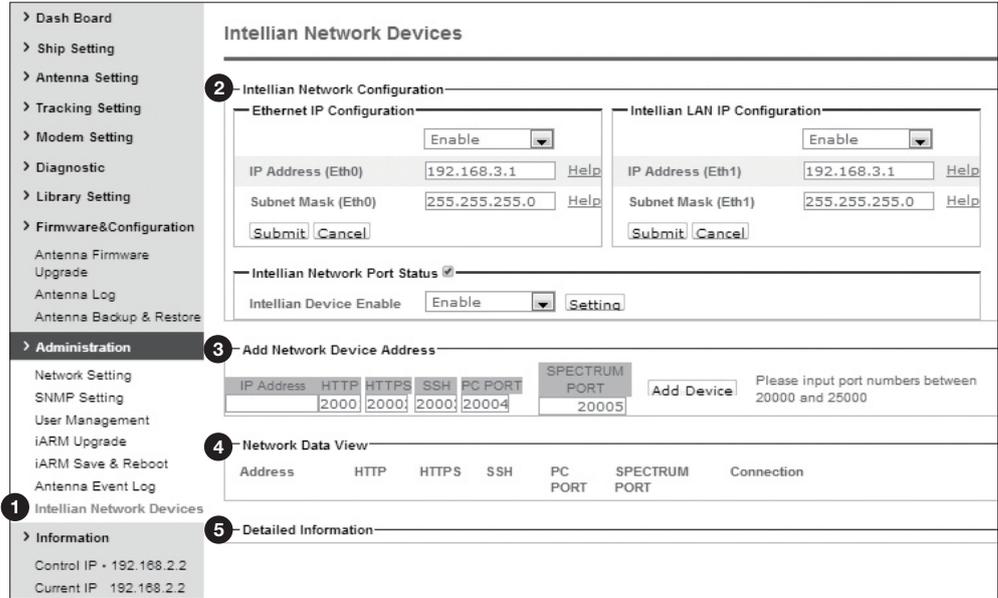
3 Event Log

Date/Time(UTC)	Severity	Category	Log	<input type="button" value="Save Event Log"/>
2014-06-27 02:29:32	Major	Antenna	[S1] Action Enabled [1]	
2014-06-27 02:29:22	Critical	Antenna	[S0] Diagnosis [103] Failed	
2014-06-27 02:28:59	Major	Antenna	[S1] Action Enabled [1]	
2014-06-27 02:28:49	Critical	Antenna	[S0] Diagnosis [103] Failed	
2014-06-27 02:28:27	Major	Antenna	[S1] Action Enabled [1]	
2014-06-27 02:28:17	Critical	Antenna	[S0] Diagnosis [103] Failed	
2014-06-27 02:27:55	Major	Antenna	[S1] Action Enabled [1]	
2014-06-27 02:27:45	Critical	Antenna	[S0] Diagnosis [103] Failed	
2014-06-27 02:27:34	Major	Antenna	[S1] Action Enabled [2]	

No.	Item	Description
①	Antenna Event Log	Displays user's log information (Data/Time, Login ID and IP)
②	Query Filter	Set the Log message option. - Severity : Set urgency level. - Category : Set target that caused the message. - Time Frame : Set time limit that you want to show. - Sorting Order : Sorting based on date (descending or ascending).
③	Event Log	Displays log information (Date/Time, Severity, Category, Log). - Save Event Log : Save log message to your PC.

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Intellian Network Devices



No.	Item	Description
①	Intellian Network Devices	Add up to 8 network devices and enable to monitor real time information of the connected device.
②	Network Configuration	<ul style="list-style-type: none"> Eth0 IP Configuration : ACU network Eth0 IP and subnet mask setting. Eth1 IP Configuration : ACU network Eth1 IP and subnet mask setting. Intellian Network Port Status : not used on t-series.
③	Add Network Device Address	Add Intellian network devices, then you can browse the various information of the device. <ul style="list-style-type: none"> IP Address : IP address of the device to be monitored. HTTP, HTTPS, SSH : Set port number(These port numbers will be matched the http, https or SSH port number of each device).
④	Network Data View	Displays the setting information of the added device (IP address, http, https, SSH port number, current connection). If you click the http/https port number of each device, then you can connect to the device's web page. If you click Delete Device button, then you cannot see its information.
⑤	Detailed Information	Displays the information of each device. (Updated every 3 second).

NOTE: More information about the Intellian Network Devices are introduced in the Intellian supplied documents.

User Management

No.	Item	Description
①	User Management	Change login ID and Password to access the Aptus Web. This setting can be also accessed by the 'Account' icon on the top menu.
②	Change ID & Password	<p>Change your login ID (user name) and password.</p> <ul style="list-style-type: none"> - Change ID : Enter your current login ID (user name) and new login ID. Click the Submit button to validate the changes that are made to the login ID. - Change Password : Enter your current login password and new login password. Click the Submit button to validate the changes that are made to the login password.
③	Change User Settings	<p>Change User Password Expire in days and Idle session timeout.</p> <ul style="list-style-type: none"> - Password Expire Timeout : Set the password to expire in days. - Idle Session Timeout : Set for Console and for Network Timeout.

iARM Upgrade

No.	Item	Description
①	iARM Upgrade	Upgrade the firmware of iARM module.
②	Bootstrap /Bootloader	Displays current bootstrap and bootloader version.
③	Kernel /File System	ACU has 3 storage parts sys0, sys1, Factory Default. Display kernel and file system version and current activated part Information.

iARM firmware Manual Upgrade procedures:

1. Click on the “Browse” button to select the iARM firmware file (.tgz) that you wish to upgrade.
2. Click on the “Start Update” button to update the iARM firmware. Wait until the page is loaded.
3. It will inform you that the firmware is being uploaded.

Firmware upload in progress

<ul style="list-style-type: none"> > Dash Board > Ship Setting > Antenna Setting > Tracking Setting > Diagnostic > Firmware&Configuration <ul style="list-style-type: none"> Antenna Firmware Upgrade Antenna Log Antenna Backup & Restore <li style="background-color: #333; color: white; padding: 2px;">> Administration <ul style="list-style-type: none"> Network Setting SNMP Setting 	<h4 style="margin-top: 0;">Save & Reboot</h4> <hr/> <p style="font-size: small;">Now the device will reboot with new firmware. Please refer to the User Guide if you have trouble connecting to the device. This screen will be inaccessible in 10 seconds.</p>
--	---

4. Do not turn off the ACU power if the firmware upgrade page is displayed.

Firmware upgrade in progress

<ul style="list-style-type: none"> > Dash Board > Ship Setting > Antenna Setting > Tracking Setting > Diagnostic > Firmware&Configuration <ul style="list-style-type: none"> Antenna Firmware Upgrade Antenna Log Antenna Backup & Restore <li style="background-color: #333; color: white; padding: 2px;">> Administration <ul style="list-style-type: none"> Network Setting SNMP Setting User Management iARM Upgrade iARM Save & Reboot Antenna Event Log Intellian Network Devices > Information <ul style="list-style-type: none"> Control IP : 192.168.3.5 Current IP : 192.168.3.5 Refresh Rate : 0 (sec) Refresh Disable : 1:31 Idle Session Timeout : 10:31 	<p style="font-size: x-small;">Please wait for updating system...</p> <div style="border: 1px solid #ccc; width: 150px; height: 15px; margin: 0 auto; position: relative;"> <div style="background-color: #333; width: 20px; height: 100%; position: absolute; left: 0;"></div> running </div> <p style="font-size: x-small; margin-top: 5px;">DO NOT TURN OFF ACU.</p>
---	---

5. It will take around 2 minutes to complete the firmware upgrade. Once the upgrade is completed, the system will reboot automatically.

<ul style="list-style-type: none"> > Dash Board > Ship Setting > Antenna Setting > Tracking Setting > Diagnostic > Firmware&Configuration <ul style="list-style-type: none"> Antenna Firmware Upgrade Antenna Log Antenna Backup & Restore <li style="background-color: #333; color: white; padding: 2px;">> Administration <ul style="list-style-type: none"> Network Setting SNMP Setting User Management iARM Upgrade iARM Save & Reboot Antenna Event Log Intellian Network Devices > Information <ul style="list-style-type: none"> Control IP : 192.168.3.5 Current IP : 192.168.3.5 	<p style="font-size: x-small;">Please wait for file transfer...</p> <div style="border: 1px solid #ccc; width: 150px; height: 15px; margin: 0 auto; position: relative;"> <div style="background-color: #333; width: 20px; height: 100%; position: absolute; left: 0;"></div> running </div>
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iARM Save & Reboot

The screenshot shows the 'iARM Save & Reboot' configuration page. On the left is a navigation sidebar with categories like 'Dash Board', 'Ship Setting', 'Antenna Setting', 'Tracking Setting', 'Modem Setting', 'Diagnostic', 'Library Setting', 'Firmware&Configuration', and 'Administration'. The 'Administration' category is expanded, showing 'iARM Save & Reboot' as the selected item. The main content area is titled 'iARM Save & Reboot' and contains two sections. The first section, 'Save & Reboot', includes a warning: 'All configuration changes made will be saved in the ACU and effective upon reboot.' and a 'Save & Reboot' button. The second section, 'Reboot without Saving', includes a warning: 'All configuration changes made will be lost upon reboot.' and a 'Reboot Only' button.

No.	Item	Description
①	iARM Save & Reboot	Save settings to the ACU and reboot or reboot the system without saving.
②	Save & Reboot	Save the modified settings and reboot the system. Click Save & Reboot button.
③	Reboot without Saving	Reboot the system without saving the modified settings. Click Reboot Only button.

Technical Specification

Dimensions	
Satellite Antenna Unit (with Base Frame)	390cm x 414cm (153.5" x 162.9")
Antenna Dish Diameter	240cm (94.5")
Antenna Control Unit	43.1cm x 38.1cm x 4.4cm (17" x 15" x 1.7")
Weight	
Satellite Antenna Unit (with Radome)	880kg (1940 lbs)
Antenna Control Unit	3.5kg / 7.7lbs
Antenna System Performance (VM2-24X-PXX)	
Tx Frequency	5.85 GHz ~ 6.425 GHz C-Band 13.75 GHz ~ 14.5 GHz Ku-Band
Tx Gain	41.9 dBi @ 6.14 GHz C-Band 49 dBi @ 14.25 GHz Ku-Band
Rx Frequency	3.7 GHz ~ 4.2 GHz C-Band 10.7 GHz ~ 12.75 GHz Ku-Band
Rx Gain	38.6 dBi @ 3.91GHz C-Band 48 dBi @ 11.82 GHz Ku-Band
Polarized Feed	Ku-band: Linear (Cross-pol & Co-pol) C-band: Circular or Circular & Linear
Cross-pol Isolation	30 dBc Typical
G/T	20.3 dB/K C-Band (Clear sky, 30° elevation) 28.2 dB/K Ku-Band (Clear sky, 30° elevation)
Azimuth Range	Unlimited with home sensor (no limit switch)
Elevation Range	-15° ~ +120°
Cross-level Range	±30°
Stabilization Accuracy	0.2° peak mis-pointing @max. ship motion condition
Max Ship's Motion	±25° roll, ±15° pitch, ±8° yaw @ 6 sec
Turning Rate	Up to 10°/ sec ²
BUC	C-Band 40~200W, Ku-Band 8~40W
Power Consumption	100~240 V AC, 50~60 Hz, 11A
Antenna Control Unit (VP-T537)	
Display	2 Line 40 Character Graphic VFD Module
PC Interface (Serial)	RS232C (57600 bps, 8, N, 1), USB
Modem Interface	Ethernet port, RS232C, I/O ports
RF Interface	Antenna Rx: N-type, Modem Rx: F-type
Gyrocompass Interface	NMEA2000, NMEA0183
GPS Interface	NMEA0183 In/ Out
Remote access	RJ45, TCP/IP
Management Port	Serial, USB, Ethernet
Intellian M&C	Ethernet
Power consumption	100~240V AC, 50~60Hz, 1A

Environmental Test Specification

Test	Intellian Standard	Remark
Temperature	Operational: -25 °C ~ + 55 °C Survival: -40 °C ~ + 80 °C Storage: -40 °C ~ + 85 °C	
Damp Heat	Preconditioning (3 hours (± 30 min.)) • Temp. : 25 °C ± 3 °C • Humidity : more than 95 % 9 hours (± 30 min.) at 55 °C ± 2 °C/ 93 % ± 3 % (humidity) 3 to 6 hours temperature fall 9 to 6 hours at 25 °C ± 3 °C/ more than 95 % (humidity) 2 cycles	DNV
Dry Heat	Relative Humidity : Max. 55 % 16 hours at 55 °C + 2 hours at 70 °C Tolerances: Temp : ± 2 °C Humidity : ± 10 %	DNV
Salt Mist	Number of spraying : 4 Storage period in damp chamber : 7days after each spraying, 28 days total Spraying duration : 2 Hour Temperature: 25 °C ±10°C Saline solution: 5%NaCl, PH6.5 to 7.2 at 20°C ± 2°C Storage temperature: 40 °C ±2°C Humidity : in chamber during storage : 93% +2%/-3% IEC-60068-2-52	DNV
Cold Test	2 hours at -40 °C ± 2 °C	
Vibration	MIL-STD-167A-1	
Shock	MIL-STD-810F	
Water Ingress	Resistant to water penetration sprayed from any direction Standard: IPX6	IEC60945
Wind Speed	100 Knots	
MTBF	At least 40,000 hours	

Compliances with Regulations

Standard	
R&TTE	<ul style="list-style-type: none"> Safety: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 EMC: IEC 60945:2002, EN60945:2002, EN301 489-1:2011
FCC	FCC Part 15:2010
Military Standards	MIL-STD-167A-1 MIL-STD-801F

Warranty

This product is warranted by Intellian Technologies Inc., to be free from defects in materials and workmanship for a period of THREE (3) YEARS on parts and TWO (2) YEARS on labor performed at Intellian Technologies, Inc. service center from the purchased date of the product.

Intellian Technologies, Inc. warranty does not apply to product that has been damaged and subjected to accident, abuse, misuse, non-authorized modification, incorrect and/ or non-authorized service, or to a product on which the serial number has been altered, mutilated or removed.

It is required to present a copy of the purchase receipt issued by Intellian Technologies, Inc. that indicates the date of purchase for after-sales service under the warranty period. In case of failure to present the purchase receipt, the warranty period will begin 30 days after the manufacturing production date of the product purchased.

Any product which is proven to be defective in materials or workmanship, Intellian Technologies, Inc. will (at its sole option) repair or replace during the warranty period in accordance with this warranty. All products returned to Intellian Technologies, Inc. under the warranty period must be accompanied by a return material authorization (RMA) number issued by the dealer/distributor from Intellian Technologies, Inc. and a copy of the purchase receipt as a proof of purchased date, prior to shipment. Alternatively, you may bring the product to an authorized Intellian Technologies, Inc. dealer/distributor for repair.

Additional Terms and Conditions;

The warranty(THREE (3) YEARS on parts and TWO (2) YEARS on labor) is effective only for products purchased since January 1st, 2017.