Intellian

v150NX
150 cm Maritime
VSAT Antenna System

Quick Installation Guide

1 Important Information

This guide provides basic installation instructions for the Intellian v150NX. The detailed installation and operation user guide can be readily accessible on our website at http://www.Intelliantech.com. If you need any assistance, please contact Intellian Technical Support. (support@intelliantech.com)

2 Planning Installation

2.1 Selection of Installation Site

The system should be placed in an area onboard the vessel with little to no RF signal blockage. 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.

2.2 Preparing Mast and RF Cable Installation

Refer to the user manual (http://www.Intelliantech.com) to confirm the height and diameter of the mast before installing an antenna.

2.3 Placing Cable on Mast

A.1 Place the cables from the gooseneck labeled on the deck to the antenna as shown in the picture.

A.2 Maintain a sufficient cable length (more than 2M) from the surface of the mast. After connecting the cables to cable connector on the unit inside the radome, adjust the cable length and then fix the cables on the cable brackets by using cable ties.

3 ADE (Above Deck Equipment) Installation

3.1 Removing Antenna from Wooden Crate

Eight radome brackets secure the antenna to the pallet. To remove the radome bracket, follow the procedures below.

3.1.1 Remove the fixing screws (2EA) on the radome bracket that secures the antenna to the pallet by using a wrench.

3.1.2 Remove the radome bracket bolt (1EA) using a wrench, then detach the radome bracket from the radome. After removing radome bracket, apply Loctite #263 to the bolt's threads to ensure the bolts are fastened firmly. Fully tighten the detached radome bolt (1EA) using a wrench. Apply the same procedure to all eight parts.

3.1.3 Check the condition of lifting strap to make sure the shackles (2EA) are tightened. Re-wrap the shackles with the existing protection to avoid radome damage.

WARNING When lifting the antenna using the lifting straps, make sure to remove the securing radome brackets to separate antenna from the pallet.

3.2 Placing Antenna on Mast

The Intellian antenna comes with the lifting straps pre-mounted from the factory. Check the condition of the lifting strap ensure the shackle is tightened up. Lift the antenna above the mast using a crane and carefully put the antenna down on the mast. When placing the radome, consider that the antenna should be positioned with the BOW marker aligned as close as possible to the ship's heading.

WARNING The antenna may be subject to swaying motions in windy conditions. Be careful when handling the antenna.

3.3 Mounting Radome

Bring the Bolt Kit (4EA) from the ACU box. Before assembling bolts, apply Loctite #263 to the bolt's threads to ensure the bolts are fastened firmly. Insert the bolts and washers from under the mast into the radome, and fasten them to the nuts assembled inside the radome. After mounting the antenna on the mast, remove the lifting strap. (A) BOW mark, (B) cable glands, and (C) cable brackets direction must be as shown below.

NOTE
- Make sure the cable from the mast is aligned with the cable entry of antenna bottom for a stable connection.
- If the mast's surface thickness is greater than 20 mm, use the M12x100L (BUMAX) Hex Bolt.
- To fasten the M12 bolts use a torque setting of 110 Nm.

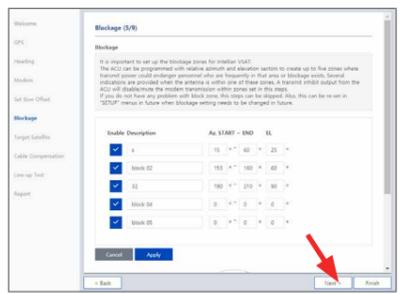
5 Operating Install Wizard

• Step 5: Blockage

It is important to set up the blockage zones for Intellian VSAT. The ACU can be programmed with relative azimuth and elevation sectors to create up to five zones where transmit power could endanger personnel who are frequently in that area or blockage exists.

The "AZ Start" is where the relative azimuth starts and the "AZ End" is where the relative azimuth ends (Range: 0 ~ 360). The "EL" is where the elevation block starts (Range: 0 ~ 90).
If you have no problems, click the "Next" button.

• Step 6: Target Satellite

Sets the target satellite that you want to track. There are two methods for selecting a target satellite.

NOTE
The following images in this step show when the system is using the Open AMIP modem. In case of using other modems, refer to the User Guide for more details.

*(Option 1: Using Controlled by Modem)*
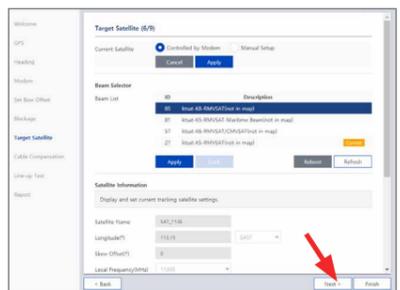
This method is recommended. When you already set the modem connection in the previous step (Step 3: Modem), the "Controlled by Modem" button on the "Current Satellite" is selected and current satellite information and NBD information is displayed automatically. If you have no problems, click the "Next" button.

(Option 2: Using Manual Setup)
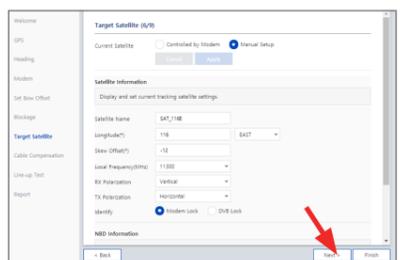
When you did not set the modem connection, select the "Manual Setup" button and enter the satellite information and NBD information manually to track a satellite. Click the "Apply" button. If you have no problems, click the "Next" button.

• Step 7: Cable Compensation
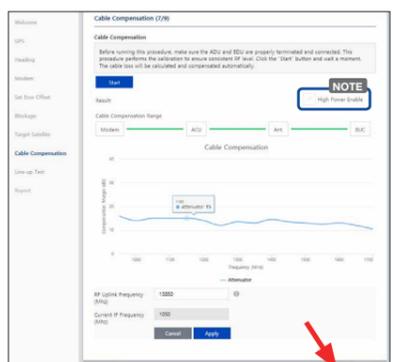
Before running this procedure, make sure the ADU and BDU are properly terminated and connected. This procedure performs the calibration to ensure consistent RF level. Click the "Start" button and wait for a moment. The cable loss will be calculated and compensated automatically. The progress of the cable compensation of a connected device is shown in green. The result of the compensation is displayed as a graph. You can adjust the frequency value. If you have no problems, click the "Next" button.

NOTE: The "High Power Enable" menu is activated when the 'Cable Compensation Range' is a 'Modem ~ BUC' (The 'Modem ~ BUC' range is activated when using iDirect series X5 or X7 modem).

* When the "High Power Enable" checkbox is not selected: the BUC P1dB operates when the Modem TX Output Power is -21dBm. Sets the BUC Attenuator to 0dB. (Existing setting values are ignored.)

* When the "High Power Enable" checkbox is selected: compensation Margin increases by +11 compared to the previous value. The BUC P1dB operates when the Modem TX Output Power is -5dBm. Sets the BUC Attenuator to 5dB. (Existing setting values are ignored.)

• Step 8: Line-up Test

Perform a line-up test by the satellite operator to confirm antenna performance and operation status.

(Option 1: Using iDirect Open AMIP Modem)
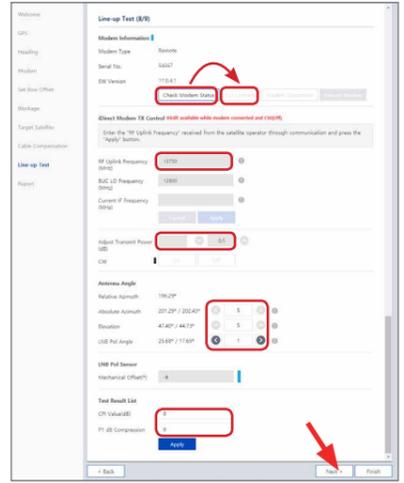
1. Check the modem status which is ready for a connection by clicking the "Check Modem Status" button. Then connect to iDirect Open AMIP modem by clicking the "CLI Connect" button.
2. Enter the "RF Uplink Frequency" received from the satellite operator through communication and click the "Apply" button. *This menu can be edited when the antenna is connected to iDirect Open AMIP modem and the CW is off.*

3. Adjust the "Transmit Power" of the frequency using the arrow keys which increases or decreases by 0.5dBm.
4. Adjust the "Antenna Angle".
5. Enter the "Test Result" value received from the satellite operator and click the "Apply" button. If you have no problems, click the "Next" button.
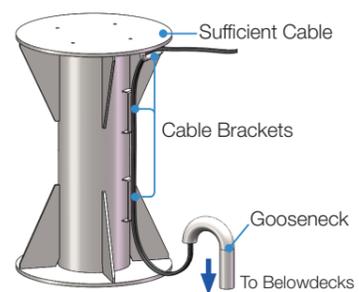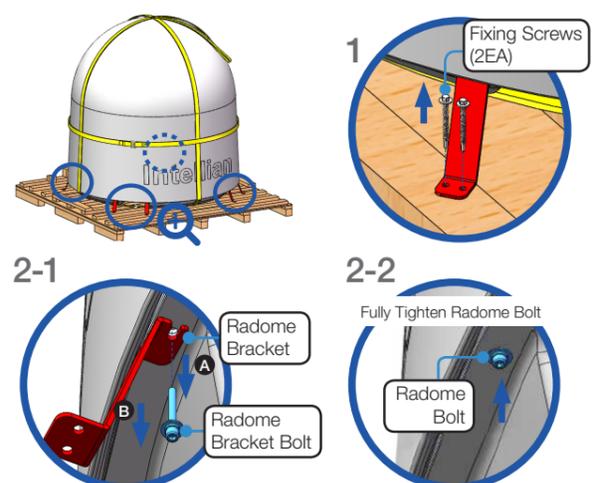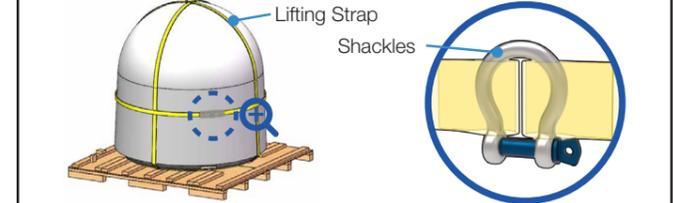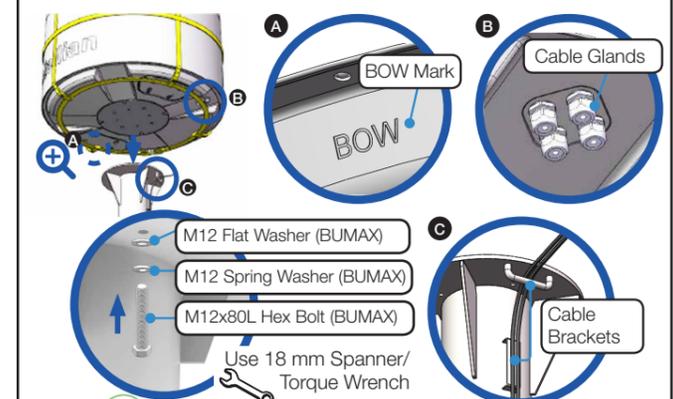
(Option 2: Using Other Modems)
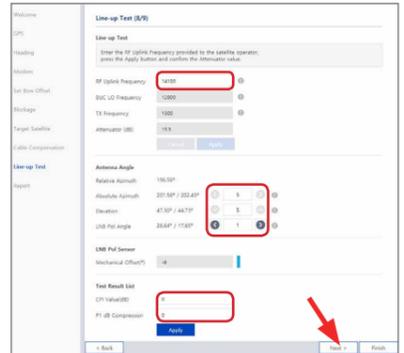
1. Enter the "RF Uplink Frequency" received from the satellite operator through communication and click the "Apply" button.
2. Adjust the "Antenna Angle".
3. Enter the "Test Result" value received from the satellite operator. If you have no problems, click the "Next" button.

• Step 9: Report

NOTE
The following image in this step shows when the system is using the Open AMIP modem. In case of using other modems, the report items displayed may vary with the image below.
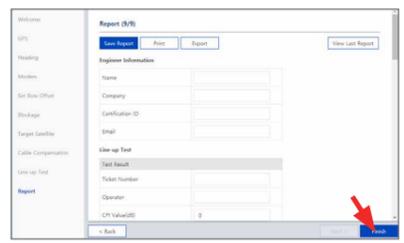
Displays the configuration report (System Information, ACU Parameter, Modem Parameter, Line-up Test). You can save the results to the ACU by clicking the "Save Report" button and print this page by clicking the "Print" button and download the report file (.json) by clicking the "Export" button. Click the "View Last Report" button to check the recently saved report information including the save date and time. After completing the steps, click the "Finish" button.

3. ADE (Above Deck Equipment) Installation

3.4 Connecting RF Cable & AC Power Cable (Customer Supplied)

In the cable connection on both sides, cable termination should be completed using suitable tools. After connecting the cables to the cable connector on the power circuit brake box inside the radome, adjust the cable length and then securely fix the cables on the cable brackets of the mast by using cable ties.

3.4.1 Terminate N(M) connector on the end of the RF Cable. Intellian recommends using genuine cable connectors and tools. Refer to the cable termination instructions provided by the manufacturer to terminate the N connector.

3.4.2 The cables must be inserted through the cable glands at the base of the radome. Pass the "RF Cable" from the "ANTENNA" connector on the rear of the ACU through the cable entry apertures into the radome. Pass the "AC Power Cable" from ship's power through the cable entry apertures into the radome. First, temporarily assemble cable glands to hold the cables in place before. After all of the cables are connected, tighten the cable glands fully. Follow the cable glands assembly sequence as shown in the picture.

Cable Gland Assembly

Cable Entry Aperture (Base of Radome)
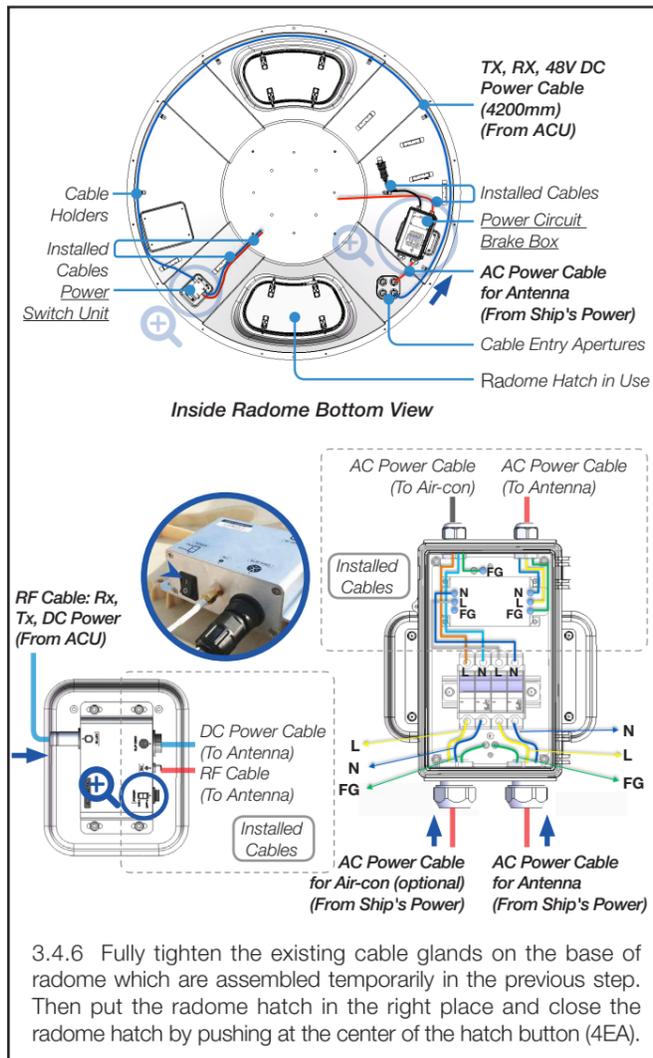*Cable Gland O-ring*
Cable Gland
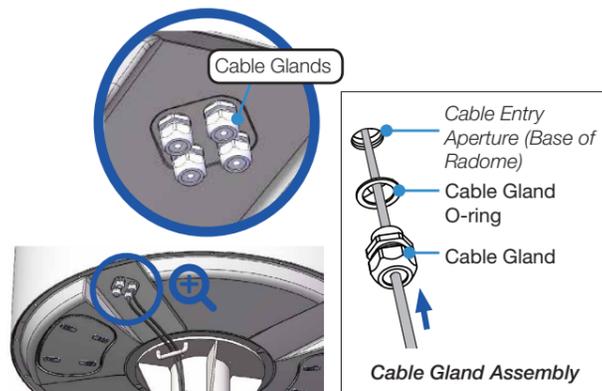
NOTE
To prevent cable damage, first pass the system cables through the cable entry apertures into the radome, then connect the system cables to the cable connectors on the power box inside the radome.

3.4.3 Temporarily tie the cables to the cable bracket by using cable ties. After connecting the cables to cable connector on the unit inside the radome, adjust the cable length and then fix the cables on the cable brackets by using cable ties.

3.4.4 Access the ADU modules inside the radome to connect the system cables through the radome hatch. Make sure that there is sufficient free space underneath the ADU to open the radome hatch. Open the radome hatch located next to the cable entry by pushing at the center of the hatch button (4EA). Keep the radome hatch in a safe place for the next step.

Cable Entry
Open Radome Hatch (Next to Cable Entry)
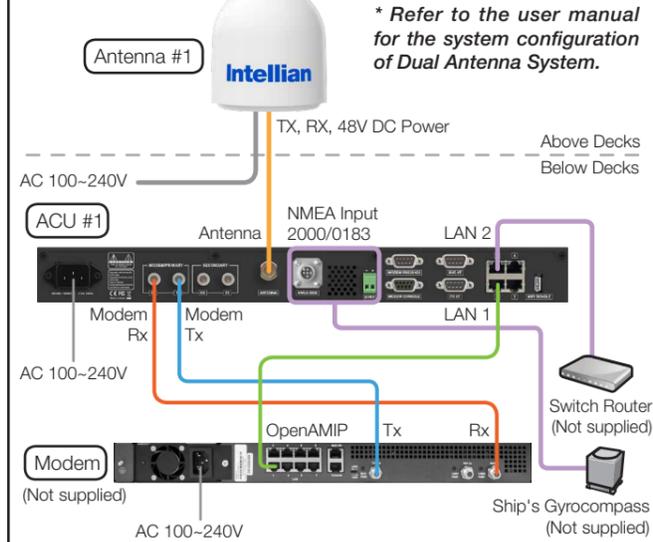Push at Center of Hatch Button
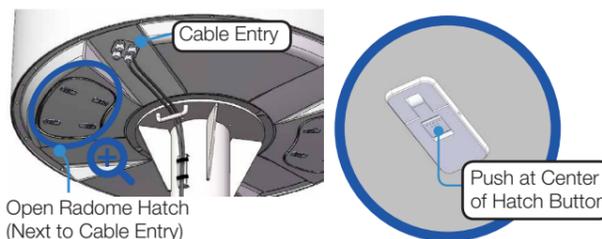
3.4.5 Connect the "RF Cable" to the cable connector on the Power Switch Unit inside the radome. Connect the "AC Power Cable" to the cable connector on the Power Circuit Brake Box inside the radome. Ensure the cable is firmly fastened to the connector. After connecting the cables, adjust the cable length then fix the cables on the cable holders by using cable ties. When all cables have been installed turn on the power switch.

Inside Radome Bottom View

TX, RX, 48V DC Power Cable (4200mm) (From ACU)
Cables Holders
Installed Cables
Power Switch Unit
Installed Cables
Power Circuit Brake Box
AC Power Cable for Antenna (From Ship's Power)
Cable Entry Apertures
Radome Hatch in Use

AC Power Cable (To Air-con)
AC Power Cable (To Antenna)
RF Cable: Rx, Tx, DC Power (From ACU)
Installed Cables
DC Power Cable (To Antenna)
RF Cable (To Antenna)
Installed Cables
Installed Cables
AC Power Cable for Air-con (optional) (From Ship's Power)
AC Power Cable for Antenna (From Ship's Power)

3.4.6 Fully tighten the existing cable glands on the base of radome which are assembled temporarily in the previous step. Then put the radome hatch in the right place and close the radome hatch by pushing at the center of the hatch button (4EA).

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4. BDE (Below Deck Equipment) Installation

4.1 System Configuration

For your satellite communication system to work properly, the system will have to be connected with all of the provided components as shown in the figure below. Separate purchase of a satellite modem, switch router and ship's gyrocompass may be required. The Basic system configuration consists of one VSAT antenna and one ACU. The configuration is as shown below.

* Refer to the user manual for the system configuration of Dual Antenna System.

Antenna #1
Intellian
TX, RX, 48V DC Power
Above Decks
Below Decks
AC 100~240V
ACU #1
Antenna
NMEA Input 2000/0183
LAN 2
Modem Rx
Modem Tx
LAN 1
AC 100~240V
OpenAMIP Tx Rx
Switch Router (Not supplied)
Modem (Not supplied)
AC 100~240V
Ship's Gyrocompass (Not supplied)

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5. Operating Install Wizard

5.1 Turning On System

Press the Power button on the front of the Antenna Control Unit (ACU) then a wait few minutes for system startup. Once the antenna finds the satellite, the "POWER" status lights will be lit Green.

5.2 Accessing AptusNX

The network is automatically configured by DHCP without the need for additional PC IP configuration.

5.2.1 Connect an Ethernet cable from the Management LAN port on the front of the ACU to the LAN port of PC.

5.2.2 The network connection is established automatically.

5.2.3 Use the following IP address to access Intellian AptusNX web page.
- *IP Address: 192.168.2.1 (Default)*
- *User ID: intellian (Default)*
- *Password: 12345678 (Default)*

Intellian
Management LAN Port
PC (Not supplied)
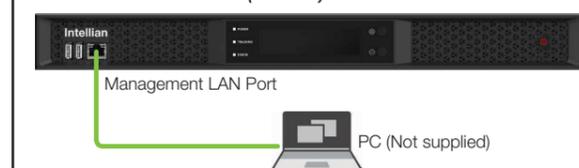
5.3 Starting Install Wizard

The Install Wizard will guide you through the steps of setting up the antenna system for commissioning. We highly recommend using this wizard to complete your installation and commissioning the system. You can choose to exit the wizard at any time by clicking the Finish button. You can also skip a step by clicking the Next button. However, it is recommended to follow the procedure for the initial commissioning. Before you start, please make sure the basic device connections (antenna, modem, etc) are connected to ACU properly. This wizard includes a brief explanation of the purpose and action buttons to perform the setting values. After accessing the AptusNX main page, go to the "INSTALL WIZ." on the main menu then follow these steps.

• Welcome Page


Displays the welcome message. Click the "Next" button.

• Step 1: GPS
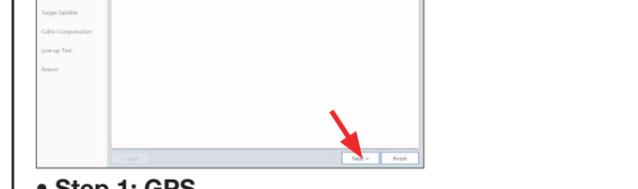
Set the GPS position of the vessel for searching for a satellite. Check the GPS status connected to the antenna system. The indicator right of the title shows the GPS status. Please confirm the GPS indicator is Blue (blinking).

- Blue (blinking): the system received a correct GPS signal.
- Red: the GPS signal is abnormal or the received value is incorrect (Error).
- Black: the system has not received a GPS signal. You can enter the GPS value manually to set the GPS position.
If you have no problems, click the "Next" button.
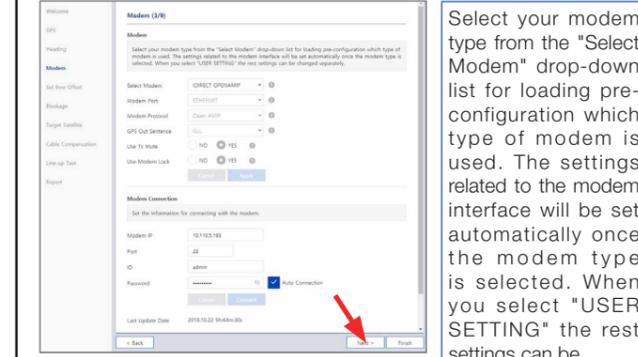

• Step 2: Heading
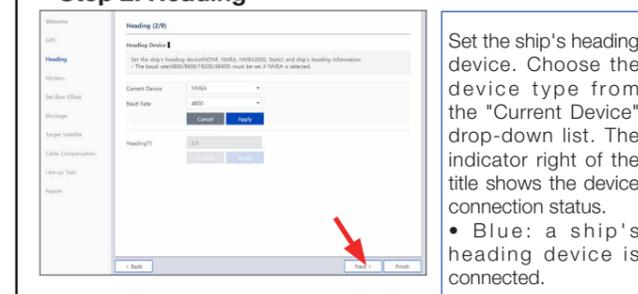
Set the ship's heading device. Choose the device type from the "Current Device" drop-down list. The indicator right of the title shows the device connection status.
- Blue: a ship's heading device is connected.

- Black: a ship's heading device is not connected.
If you have no problems, click the "Next" button.

• Step 3: Modem

Select your modem type from the "Select Modem" drop-down list for loading pre-configuration which type of modem is used. The settings related to the modem interface will be set automatically once the modem type is selected. When you select "USER SETTING" the rest settings can be

changed separately. If you have no problems, click the "Next" button.

• Step 4: Set Bow Offset

For setting bow offset, need to select a trackable satellite. There are two satellite tracking methods. Select the desired tracking type. When Antenna tracks to the satellite selected, the bow offset will be set up automatically based on information of GPS.
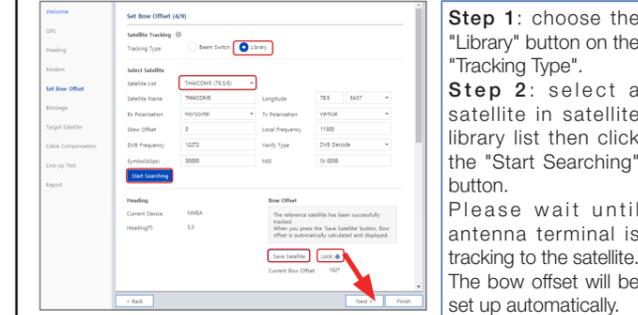
(Option 1: Using Beam Switch Type)
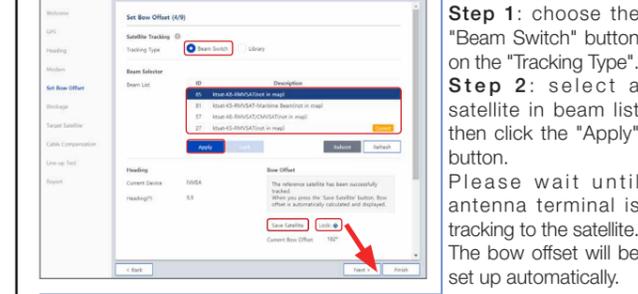
Step 1: choose the "Beam Switch" button on the "Tracking Type".
Step 2: select a satellite in beam list then click the "Apply" button.
Please wait until antenna terminal is tracking to the satellite. The bow offset will be set up automatically.

Step 3: check the "Lock On" mark and click the "Save Satellite" button in the "Bow Offset" menu to save the bow offset information to ACU. If you have no problems, click the "Next" button.

(Option 2: Using Library Type)

Step 1: choose the "Library" button on the "Tracking Type".
Step 2: select a satellite in satellite library list then click the "Start Searching" button.
Please wait until antenna terminal is tracking to the satellite. The bow offset will be set up automatically.

Step 3: check the "Lock On" mark and click the "Save Satellite" button in the "Bow Offset" menu to save the bow offset information to ACU. If you have no problems, click the "Next" button.