



GX100NX

105cm Maritime VSAT Antenna System

Installation & Operation User Guide

Serial number of the product

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

Intellian

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Precautions

Warnings, Cautions, and Notes

WARNING, CAUTION, and NOTE statements are used throughout this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage. The statements are defined below.

 <p>WARNING</p>	<p>WARNING</p> <p>WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
 <p>CAUTION</p>	<p>CAUTION</p> <p>CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.</p>
 <p>NOTE</p>	<p>NOTE</p> <p>A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.</p>

General Precautions

Before you use the antenna, make sure that you have read and understood all safety requirements.

	<p>THIS WAY UP</p> <ul style="list-style-type: none"> Place the boxes/crates on the floor with the arrow pointing up.
	<p>FRAGILE</p> <ul style="list-style-type: none"> Since the Radome is fragile, handle it with care. Do not apply excessive pressure or shock. These may cause surface cracking or other damage.
	<p>DO NOT STACK</p> <ul style="list-style-type: none"> Do not stack boxes/crates as there is a risk boxes/crates may fall and be damaged.
	<p>KEEP DRY</p> <ul style="list-style-type: none"> Always make sure the antenna is stored on a dried floor. The antenna can withstand ordinary rain. However its water resistance cannot be guaranteed if submerged. Keep the antenna in a dried place for sufficient ventilation. Do not store the antenna wrapped in a tarp, tent, vinyl, and others.

* **DO NOT SHIP VIA RAIL:** Ensure not to ship any system via Rail.

Certifications

Certifications

FCC Part 15 Subpart B Declaration of Conformity

We, Intellian Technologies, Inc. located at 18-7, Jinwisandan-ro, Jinwi-myeon (Chungho-ri), Pyeongtaek-si, Gyeonggi-do 17709 Korea declare under our sole responsibility that the product(s) described in the below to which this declaration relates is in conformity with the requirement of the FCC Part 15 Subpart B.

Product Information:

Product Name:	Intellian GX100NX
----------------------	-------------------

Test Result:

Standard	Test	Rule Section	Test Report Number	Result
FCC Part 15 Subpart B	AC Power line conducted emission	ANSI C63.4:2014	DREFCC1905-0170	Pass
	Radiation emissions below 1GHz	ANSI C63.4:2014	DREFCC1905-0170	Pass
	Radiation emissions above 1GHz	ANSI C63.4:2014	DREFCC1905-0170	Pass

Supplementary Information:

Notified Body Involved: (Testing Organization)	DT&C Co., Ltd. 42, Yurim-ro 154 beon-gil, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 17042, Korea
Technical/Compliance File Held by:	Intellian Technologies, Inc. 18-7, Jinwisandan-ro, Jinwi-myeon (Chungho-ri), Pyeongtaek-si, Gyeonggi-do 17709 Korea
Place and Date of Issue:	Gyeonggi-do, Korea on 30 st May, 2019

Signed by: Kevin Eom
/ CTO, R&D

Signature:  _____

Date: 31st May, 2019

Intellian Technologies, Inc.
Innovation Center, Global HQ
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Doc Number IT19-DC0531-04

RED Declaration of Conformity

We, Intellian Technologies, Inc. located at 18-7, Jinwisandan-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do 451-862, Korea declare under our sole responsibility that the product(s) described in the below to which this declaration relates is in conformity with the *essential requirements* and *other relevant requirements* of the Radio Equipment Directive (2014/53/EU).

Product Information:

Product Name(s):	Intellian GX100NX
-------------------------	-------------------

To provide the presumption of conformity in accordance to Annex III(encompassing Annex II) of Directive 2014/53/EU; the following harmonized standards and normative documents are those to which the product's conformance is declared, and by specific reference to the essential requirements of Article 3 of the Directive 2014/53/EU.

2014/53/EU Article	Standard(s) Applied in Full	Result
SAFETY (Art 3.1.a)	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013	Pass
EMC (Art. 3.1.b)	EN 301 843-1 V2.2.1	Pass
SPECTRUM (Art. 3.2)	EN 301-360 V 2.1.1 EN 301-459 V 2.1.1 EN 303-978 V 2.1.2	Pass

Supplementary Information:

Notified Body Involved: (Testing Organization)	DT&C Co., Ltd. 42, Yurim-ro 154 beon-gil, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 17042, Korea
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Doc Number IT19-DC0531-02

Introduction

Intellian GX100NX Introduction

Intellian GX100NX is a Ka-band 3-axis stabilized VSAT maritime antenna system. The GX100NX provides advanced VSAT solutions for Ka-band satellite services. GX100NX is equipped with a new mounting architecture RF module.

The antenna's 3-axis stabilized platform and advanced shock-resistant, and vibration damping design of the Pedestal is fully optimized to withstand the demanding maritime conditions and to ensure reliable broadband communications.

The GX100NX is even more operator-friendly by the integrated RF and power cables in one coaxial cable. The single coaxial cable carries Tx, Rx, DC power, data and reference signals connecting between antennas and BDUs.

AptusNX, Intellian's all-new integrated M&C platform, provides a responsive web user interface to manage and control antenna systems for all types of devices. Installation Wizard in AptusNX automatically configures the system functions and minimizes operators' work for system installation and operation supporting automatic cable loss compensation, line-up test, and auto diagnostics.

Intellian GX100NX Features

Single RF Cable

Intellian's GX100NX incorporates RF cables and power cable into one RF cable. The single cable delivers Tx, Rx, DC power, FSK and Reference signals between Antenna and BDT.

Mediator embedded in BDT

Mediator function is embedded in BDT which is capable of controlling and managing two GX antenna systems simultaneously to assign Primary BDT and Secondary ACU without a mediator box.

Standardized Modular Components Across NX Series

Modular components are used throughout the NX range, such as dynamic motor brakes with integrated encoders, Main Control Unit and skew assembly. Sharing common modules across Intellian's NX antenna series, the number of spare parts is reduced.

Quick and Easy Deployment

The GX100NX can be accessed through the external connector at the bottom of radome so that there is no need to open the radome for installation or pre-test. In addition, the built-in dynamic motor brakes protect the dish (reflector) of GX100NX against any damage in power-off mode, therefore no shipping bracket is required.

AptusNX

Intellian's all-new integrated M&C platform, AptusNX provides a responsive web user interface to manage and control the antenna system regardless of device types. It enables advanced alerts from the live data monitoring and analysis agent, the GX100NX sends warning messages to the NOC in advance when it detects any abnormal operation. Configuration Wizard in AptusNX automates functions for system configuration so that operators are minimally involved in system installation and operation, including automatic cable loss compensation, commissioning test and auto diagnostics.

Antenna Unit

The antenna unit includes an antenna pedestal inside a radome assembly unit. The pedestal consists of a satellite antenna main dish with RF components mounted on a stabilized pedestal. The radome protects the antenna pedestal assembly unit from the severe marine environment.



Figure: Radome and Antenna Unit

Below Deck Terminal (BDT)

Below Deck Terminal (BDT) is the unit combined with various interfaces including ACU, Modem (Core Module), and Ethernet Switch. Below Deck Terminal (BDT) controls Antenna system operation. The following functions are supported by ACU.

- High power supply for the high power BUC
- Mediator function included
- Spectrum analyzer function included
- OLED display
- USB Log download & Firmware upgrade (No PC required)
- Wi-Fi access
- AptusNX Web application

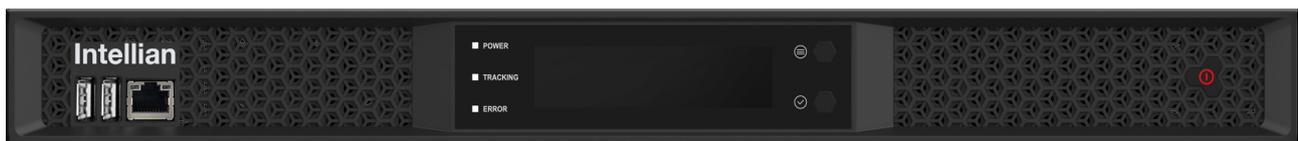


Figure: Front Panel of BDT



Figure: Rear Panel of BDT

Antenna Control Unit (ACU) (Optional: for Dual Antenna System)

In Dual Antenna System, the secondary antenna needs to be connected to non-Core Module installed Antenna Control Unit (ACU) instead of BDT. The following functions are supported by ACU.

- High power supply for the high power BUC
- Spectrum analyzer function included
- OLED display
- USB Log download & Firmware upgrade (No PC required)
- Wi-Fi access
- AptusNX Web application

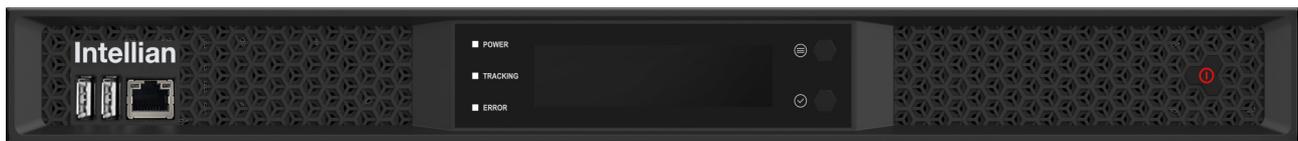


Figure: Front Panel of ACU



Figure: Rear Panel of ACU

Planning Installation

Before beginning installation, make sure you have all the included components.

BDT Components Box

Description	Q'ty	Size	Remarks
Below Deck Terminal (BDT) Box	1	43.1x41.1x4.4cm	Below Deck Terminal (BDT) Box
Quick Installation Guide	1		
RF Hazard Sticker	1		Radiation Safety Distance Label (15m)
Mounting Template	1		
BDT Rack Mount Bracket	2		To fix BDT to 19inch Rack Frame
Flat Head Screw	10	M4x12L	Bolt Kit for Rack Type Mount Bracket
Hex Bolt	5	M12x80L	Bolt Kit to Install Antenna to Antenna Mast (1 Spare Set Included)
Flat Washer	5	M12	
Spring Washer	5	M12	
Hex Head Wrench Bolt	5	M6x40L	Spare Bolt Kit for Radome Assembly
Spring Washer & Flat Washer	5	M6	
Sems Bolt	2	M4x8L	
Radome Door Key	2		Two Door Keys
Cable Waterproof Foam	1		
USB Cable (A-A)	1	1.8m	BDT (Front Panel) to PC
AC Power Cord (CEE7/7)	1	1.5m	BDT Power (220V)
Ethernet Cable (RJ45 / LAN)	2	1m	BDT to PC/Intellian M&C
PC Serial Cable	1	1.8m	BDT (Rear Panel) to PC
Wi-Fi Dongle	1		Use for Wi-Fi Connection

ACU Components Box (Optional: for Dual Antenna System)

Description	Q'ty	Size	Remarks
Antenna Control Unit (ACU)	1	431x350x44.3 mm	Antenna Control Unit (ACU)
Quick Installation Guide (QIG)	1		
RF Hazard Sticker	1		Radiation Safety Distance (15m) Label
Mounting Template	1		
ACU Rack Mount Bracket	2		To fix ACU to 19inch Rack Frame
Flat Head Screw	10	M4x12L	Bolt Kit for Rack Type Mount Bracket
USB Cable (A-A)	1	1.8m	ACU (Front Panel) to PC
AC Power Cord (CEEE7/7)	1	1.5m	ACU Power (220V)
RG-6 RF Cable	2	1m	ACU to Modem
Modem Interface Cable (For iDirect Modem)	1	1.5m	ACU to Modem (iDirect Modem)
Ethernet Cable (RJ45/LAN)	2	1m	ACU to PC/Intellian M&C
Wi-Fi Dongle	1		
Hex Bolt	5	M12x80L	Bolt Kit to Install Antenna to Antenna Mast (1 Spare Set Included)
Flat Washer	5	M12	
Spring Washer	5	M12	
Hex Head Wrench Bolt	5	M6x40L	Spare Bolt Kit for Radome Assembly
Spring Washer and Flat Washer	5	M6	
Sems Bolt	2	M4x8L	
Radome Door Key	2		Two Door Keys
Waterproof Foam	1		X-shape Cable Hole Type

Antenna Specification

Antenna Dimensions

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. 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.

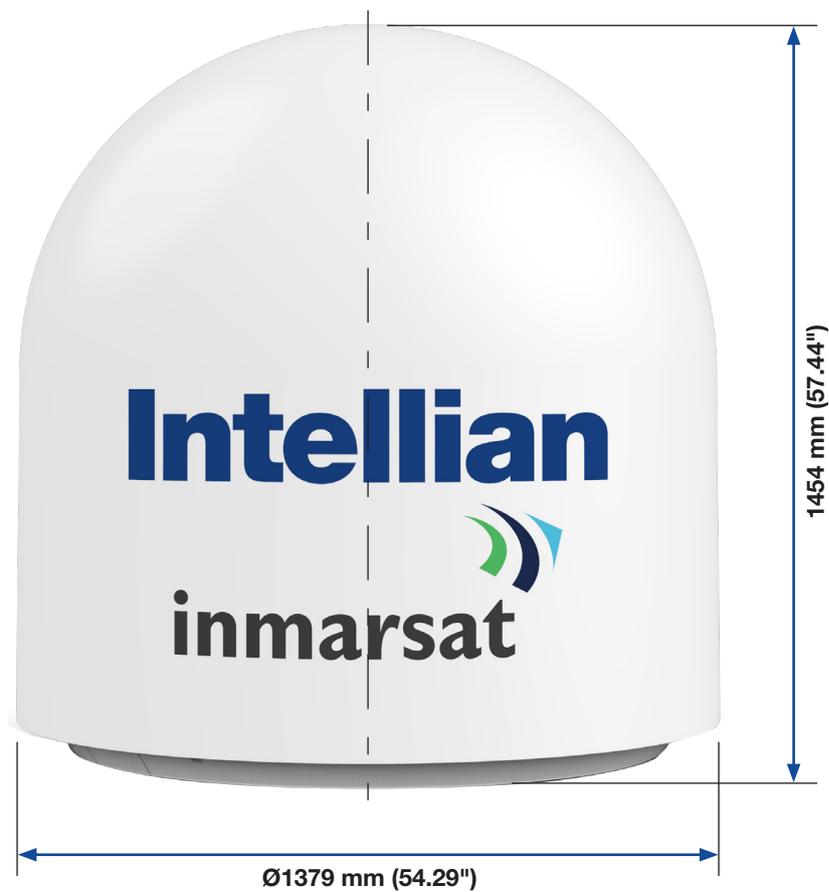


Figure: Antenna Dimensions

Heading Alignment

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

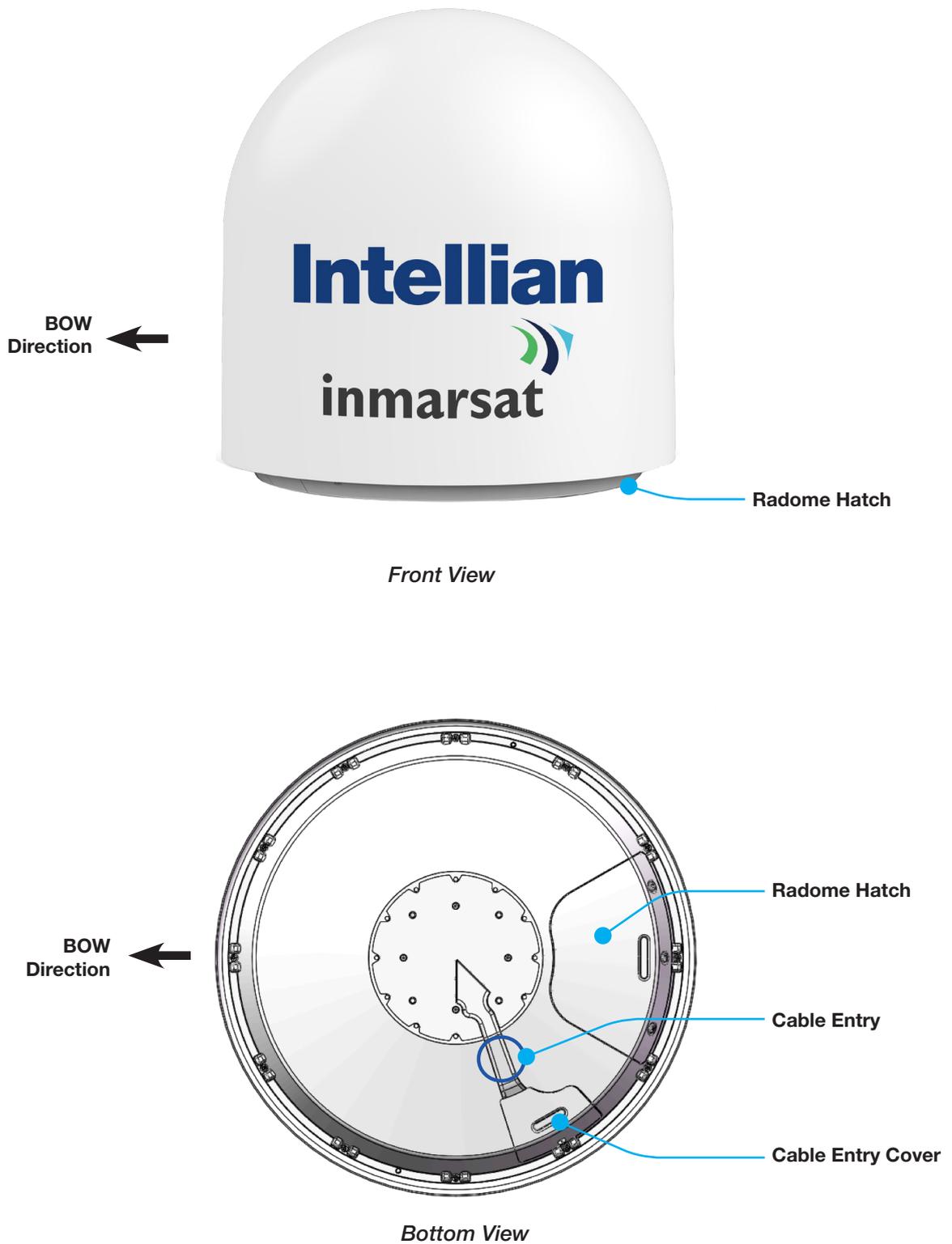


Figure: Antenna Heading Alignment

Antenna Mounting Hole Pattern

The mounting holes must be in the exact same place as shown in the diagram below.

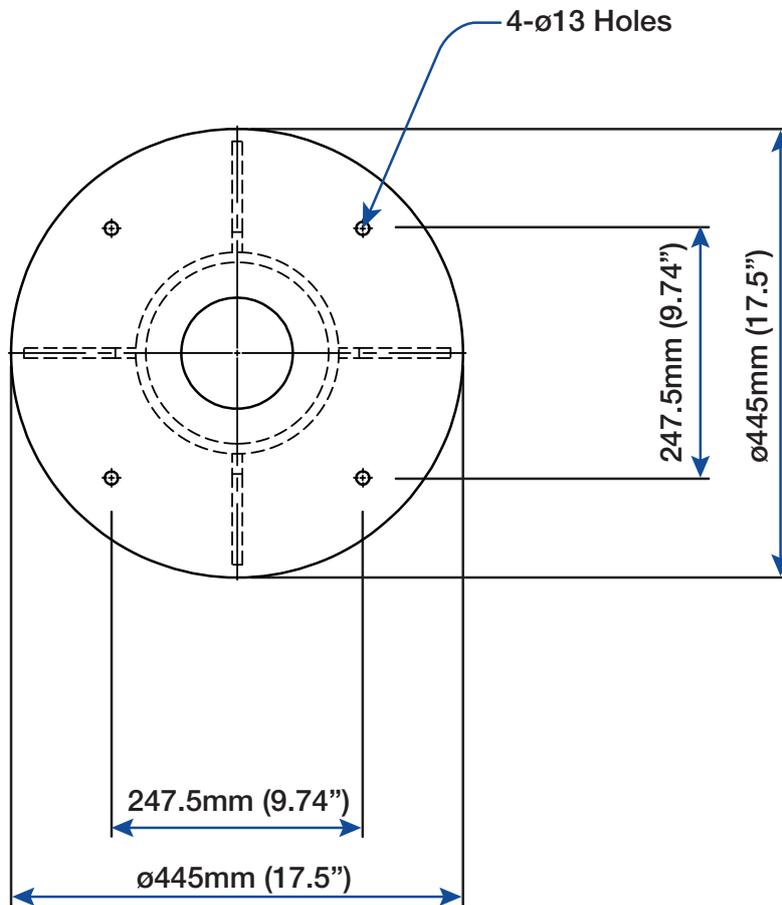


Figure: Antenna Mounting Hole Pattern

Mast Designing (Installation Example)

The installation mast must be robust enough to prevent flex, vibration, and sway when an external force is exerted on the mast with antenna and radome. Refer to the following mast drawing for more details.

Option1. When Placing Cable Inside Mast

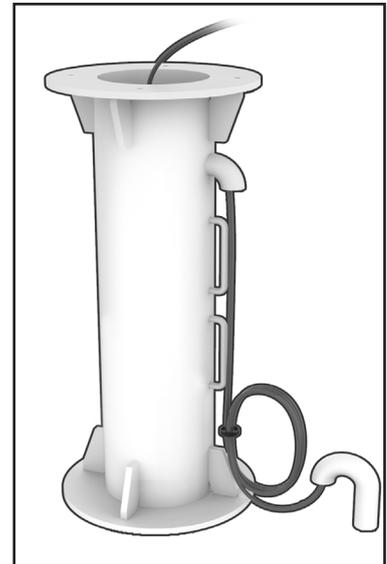
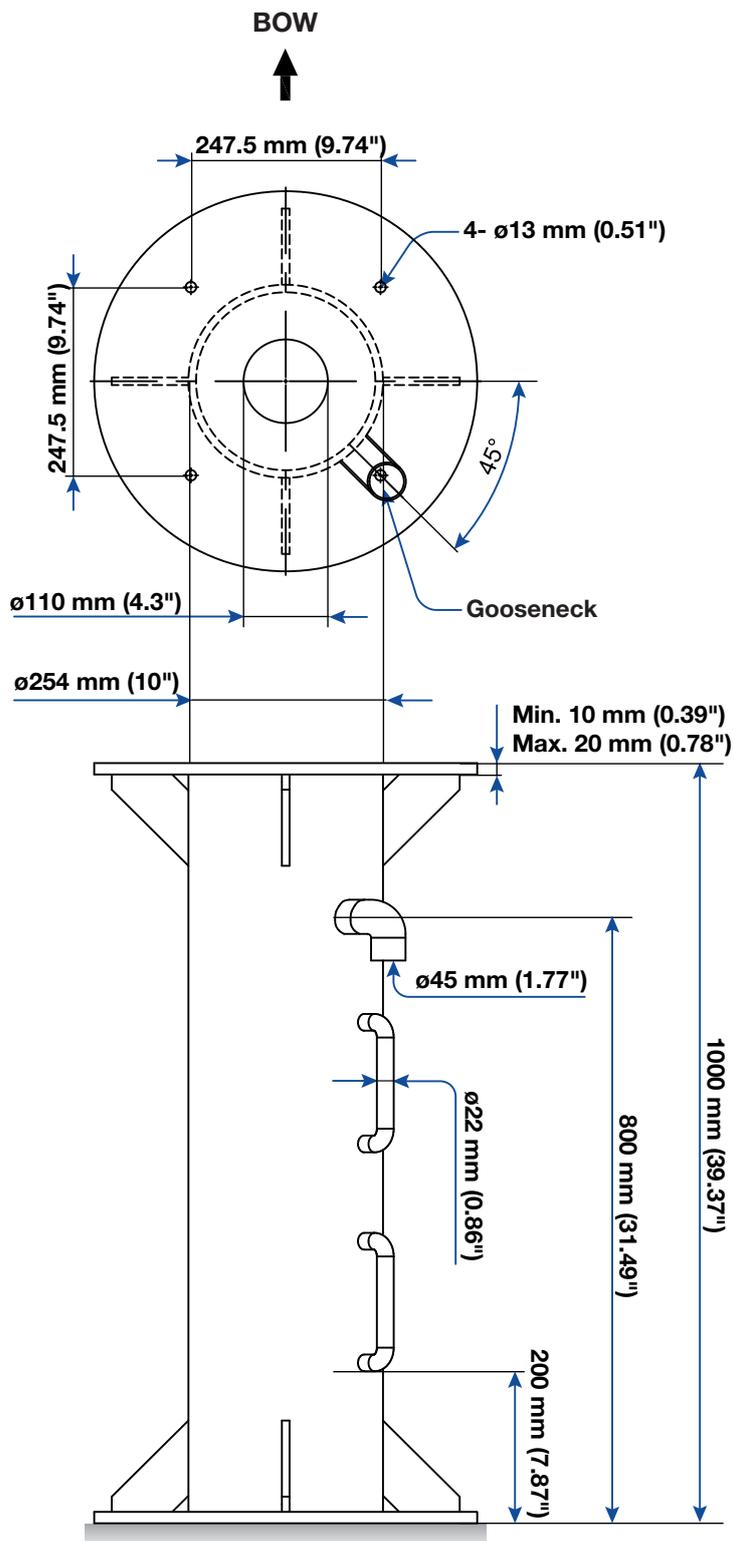


Figure: Recommended Size of Mast (Option1)

Option2. When Placing Cable Outside Mast

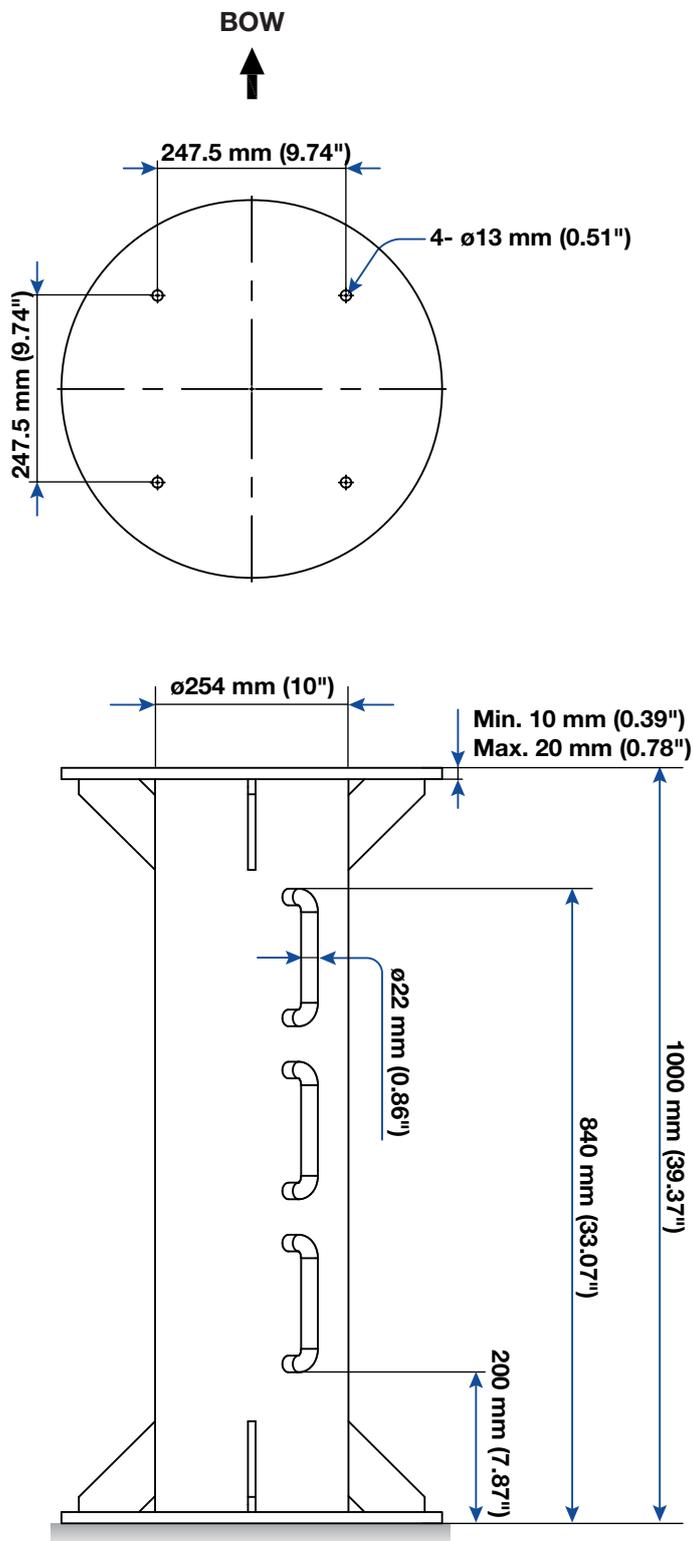


Figure: Recommended Size of Mast (Option2)

Preparing Installation

The antenna 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. When the antenna is transmitting, obstacles in way of the beam path will cause decreased 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.

Minimize Satellite Blockage

Install the antenna in accordance with the following procedures to ensure maximum performance of the antenna. The ideal antenna site should have a clear view of the horizon or satellite with all around clearance. Please be sure there are no obstacles within the EL range -20° to $+115^{\circ}$ from the center of the antenna. Obstacles can prevent the antenna from transmitting and receiving the satellite signal.

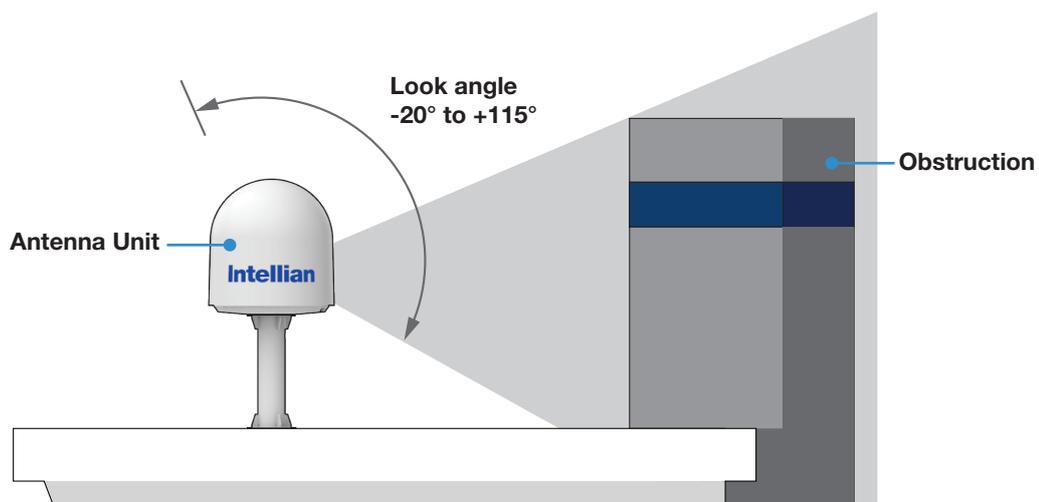


Figure: Elevation Limit of Obstacles

Avoid RF Interference

Do not install the antenna near the high power shortwave radar. Most radar transmitters emit RF energy within an elevation range of -15° to $+15^{\circ}$. For this reason, it is recommended to position the antenna at least 15 feet (4.6 m) away from the radar.

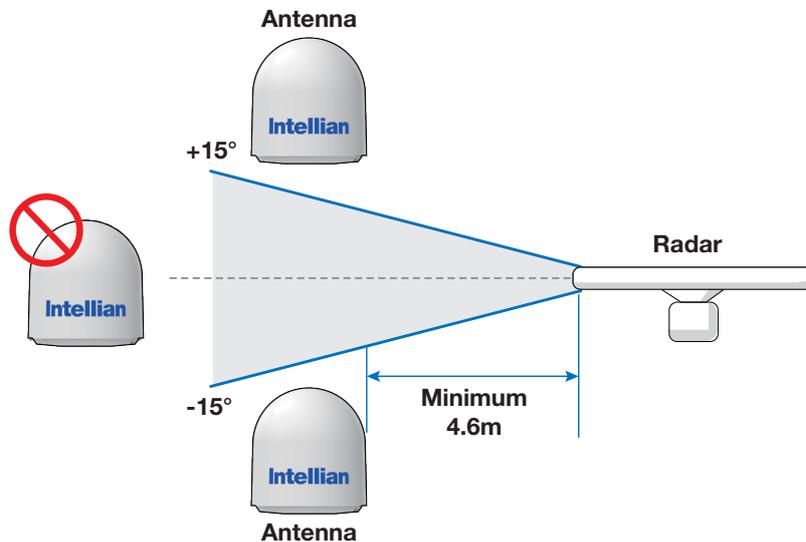


Figure: Potential RF Interference



WARNING

Never place the antenna in the beam path of the radar regardless of distance. The high power shortwave radar may impair its performance or damage the antenna.

RF Hazard Precautions

The antenna is designed to be used with radiation transmitting 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 the 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 15m, based on a radiation level of $5\text{mW}/\text{cm}^2$ that applies under occupational/controlled environment. No hazard exists $>20^{\circ}$ below the antenna's mounting plane.

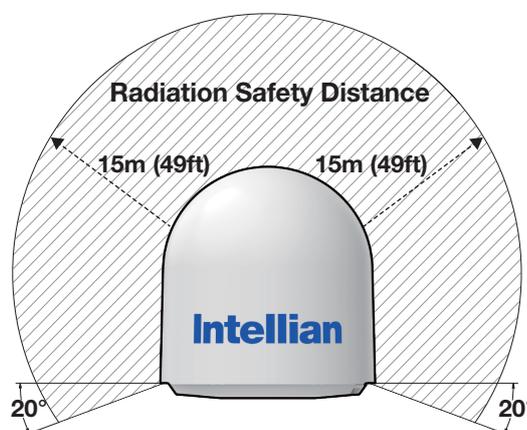


Figure: RF Hazard Precautions

Preparing 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. A cable with an acute bend should be avoided.
3. Wherever a cable passes through an exposed bulkhead or deck head, a watertight gland or swan neck tube should be used.

For cables that run longer than Intellian's recommendations, please consult Intellian Technologies.

- **RF Cable (Customer Supplied)**

Due to the signal losses across the length of the RF coax on L-Band, Intellian recommends the following 50 Ω coax cable types for standard system installations. For cables that run longer than 120 meters (except LMR600 coaxial cable type), please consult Intellian Technologies.

* The Maximum DC Resistance of RF Cable is 0.8 Ohm.

* Tightening Torque Value: N Type Connector, 1.5 N-m

Coaxial Cable Type	Attenuation in dB/100M (@ 2GHz)	Attenuation in dB/M (@ 2GHz)	Recommended Max. Cable Length
LMR400	19.6	0.196	80M
LMR600	12.8	0.128	120M

- **Gyrocompass Cable (Customer Furnished)**

Due to the environment of various types of vessels, Intellian recommend the general cable types compatible with the antenna.

	NMEA 2000	NMEA 0183
Connector Type	Mini-C 5 pins connector	2 pins terminal block connector
Cable Type	5 wires within a single cable	2-wires constructed with one enclosed shield cable
Heading Information	Supports PGN, 127250: Vessel Heading	Supports \$HEHDT , baud rate 4800, format 8N1 as standard.

Placing Cable on Mast

The cable must be routed from the antenna and through various areas of the ship to end up at the antenna control unit. When pulling the cables in place, avoid sharp bends, kinking, and excessive force. After placement, seal the deck penetration gland and tie the cable securely in place. The cable bracket must be installed on the mast to fix the relevant cable. The gooseneck must be installed on the side of the mast to protect the relevant cable against water.



WARNING

Ensure that cable has been run through watertight fittings to prevent water entry into the vessel when installation is completed.

Option1. Placing Cable Outside Mast

1. Place the cable from the gooseneck labeled on the deck to the antenna as shown in the picture.
2. Maintain a sufficient cable length (more than 2M) from the surface of the mast. After connecting the cable to cable connector inside the cable entry, adjust the cable length and then fix the cable on the cable bracket by using cable ties.

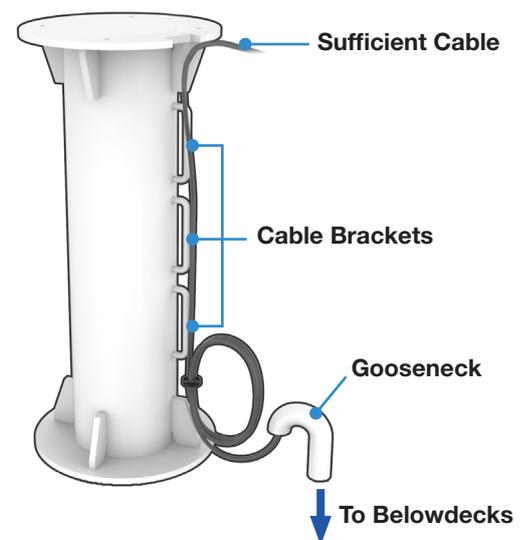


Figure: Cabling on Outside of Mast

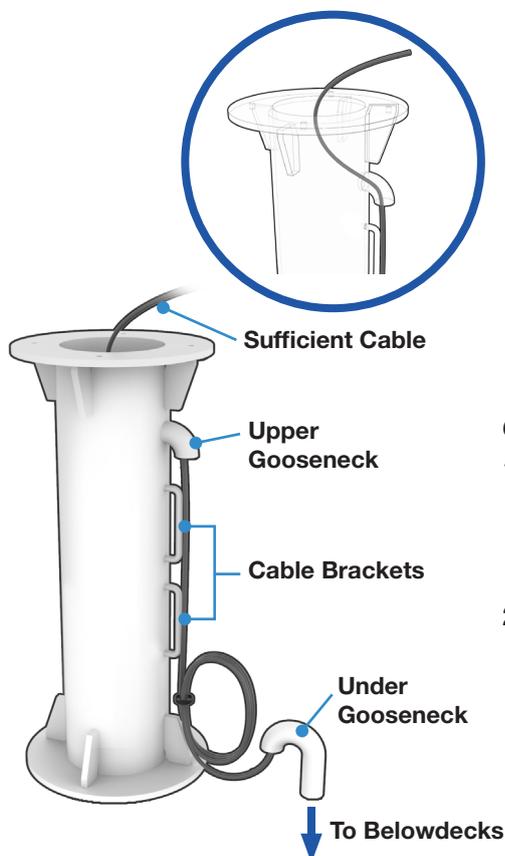


Figure: Cabling on Inside of Mast

Option2. Placing Cable Inside Mast

1. Before placing the radome on the mast, the cable should route through the upper gooseneck from the under gooseneck labeled on the deck to facilitate connecting RF Cable to the antenna as shown in the picture.
2. Maintain a sufficient cable length (more than 2M) from the surface of the mast. After connecting the cable to cable connector inside the cable entry, adjust the cable length and then fix the cable on the cable bracket by using cable ties.

Installing Above Deck Unit (ADU)

Antenna Installation

Unpacking Wooden Crate

The pallet should be lifted by means of a forklift. To unpack the wooden crate, follow the procedure below.

1. Locate one of the side panels with a paper sticker (Unpack Guide). Detach this side panel by removing the fixing screw (1 EA) and clips (6 EA).

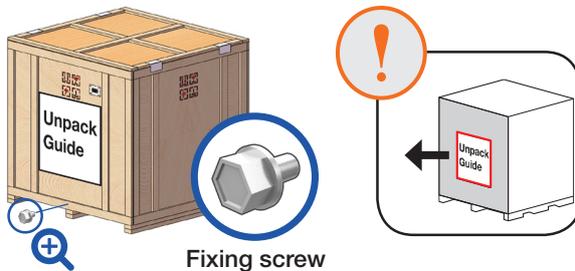


CAUTION

CAUTION

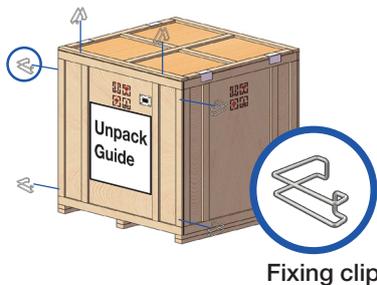
Be careful with the direction of the panel that you must open first.

1-1  : 1 EA



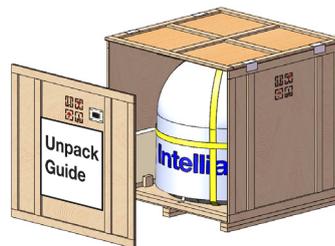
Fixing screw

1-2  : 6 EA



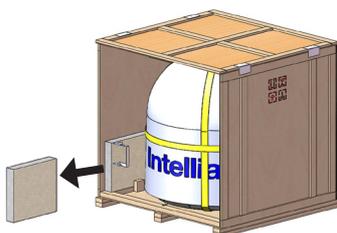
Fixing clip

1-3



2. The BDT box is located inside the side panel. Take out the BDT box by removing fixing screws (2 EA) on the BDT bracket.

2-1



3. Running Diagnostic Tests: *This step is optional.* After removing one of the side panels, you can run the diagnostic tests easily to verify the condition of the antenna. First, prepare the "RF Cable (Customer Supplied)" to connect the antenna and the BDT.

3-1. Remove the M4x15L Wrench Bolt by using the wrench set then open the cable entry cover.

3-2. Connect the "RF Cable (Customer Supplied)" from the "ANTENNA" connector on the rear of the BDT to the "RF Connector" inside cable entry of radome (Antenna).

3-3. Execute diagnostic tests (Full Diagnosis Test) via BDT and check the real-time diagnosis result.

Optional

3-1 Cable Entry Cover

3-2 RF Cable (Customer Supplied)

3-3

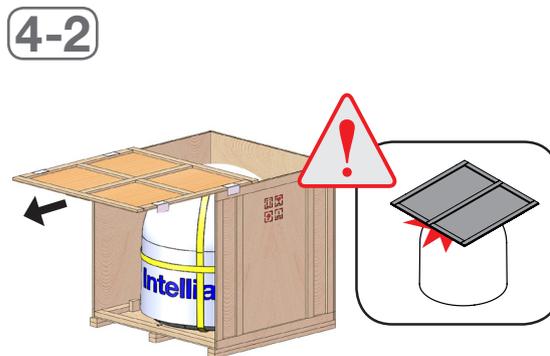
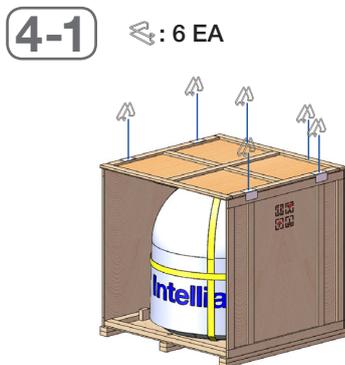
Press Move Key → Press Select Key

4. Remove the clips (6 EA) on the top panel. Detach the top panel by carefully pulling it as shown in the picture.



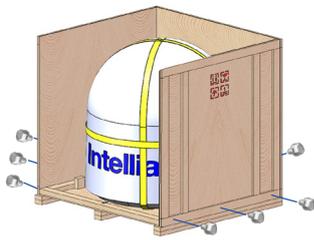
WARNING

The side brackets at the edge of the top panel secure the side panels and top panel in position. When pulling the top panel, ensure that the top panel doesn't fall on the radome.

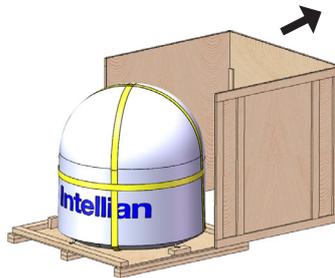


5. Remove the fixing screws (7 EA) from the remaining side panels, then detach the side panels.

5-1 ⚙️: 7 EA



5-2



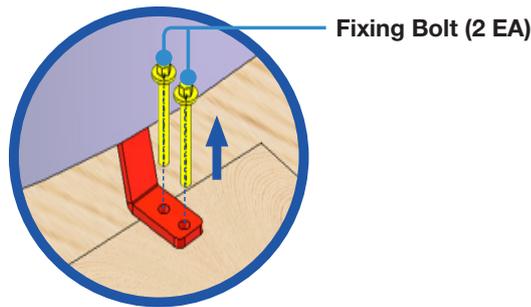
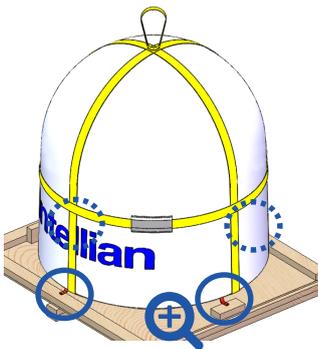
5-3



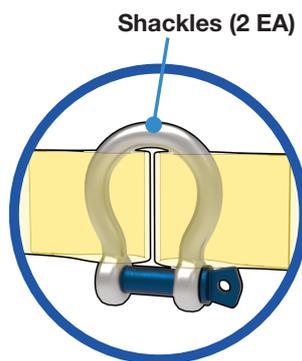
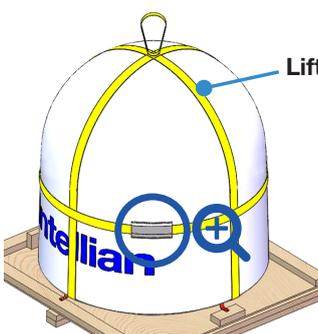
Removing Antenna from Wooden Crate

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

1. Remove the hex head wrench bolt (2 EA) on the radome bracket that secures the antenna to the pallet using a wrench.



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

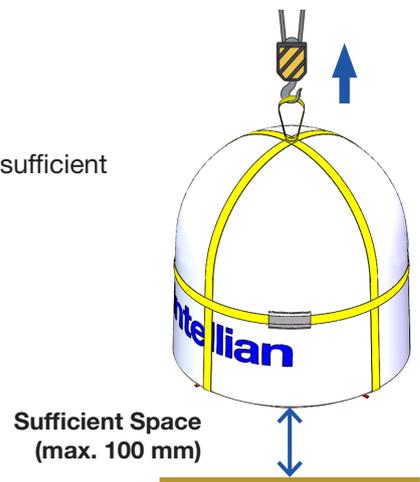


3. Lift the antenna above the bottom pallet using the crane, and maintain sufficient space (max. 100 mm) to remove the shipping brackets.

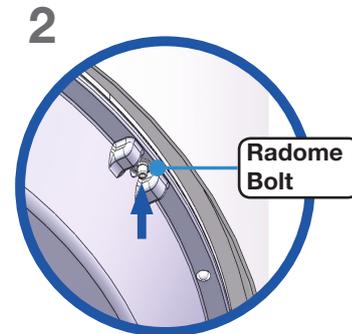
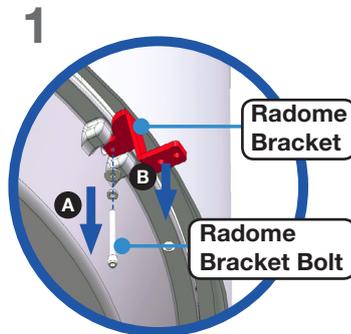


WARNING

- When lifting the antenna using the lifting straps, make sure to remove the securing radome brackets to separate antenna from the pallet.
- Be careful when lifting the heavy object. Incorrect handling of the heavy object may lead to injury to the installers and/or cause significant damage to the unit.



4. Remove the radome bracket bolt (1 EA) using a wrench, then detach the radome bracket from the radome.
5. 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 (1 EA) using a wrench. Apply the same procedure to all four parts.



Fully Tighten Radome Bolt

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.



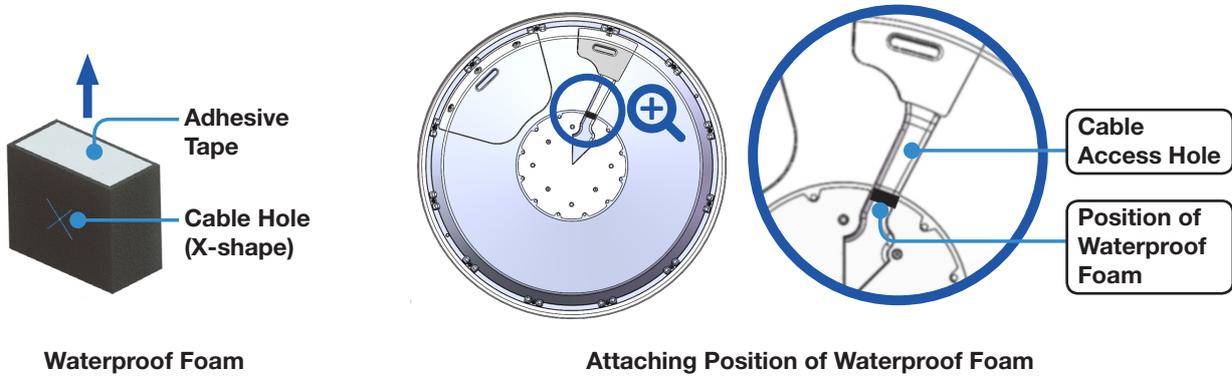
WARNING

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



Attaching Waterproof Foam

The waterproof foam must be attached to prevent water from penetrating inside the Radome before fully mounting the radome to the mast. Make sure the foam is attached in the same position as in the picture below.

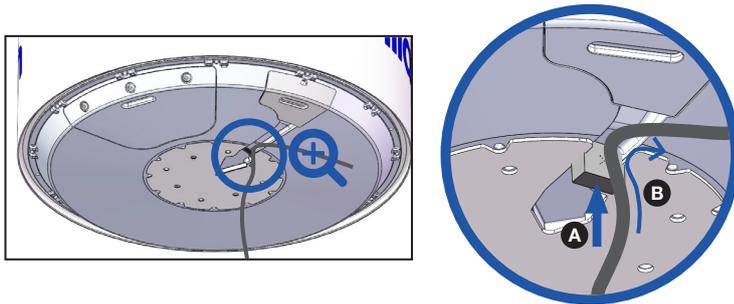


Waterproof Foam

Attaching Position of Waterproof Foam

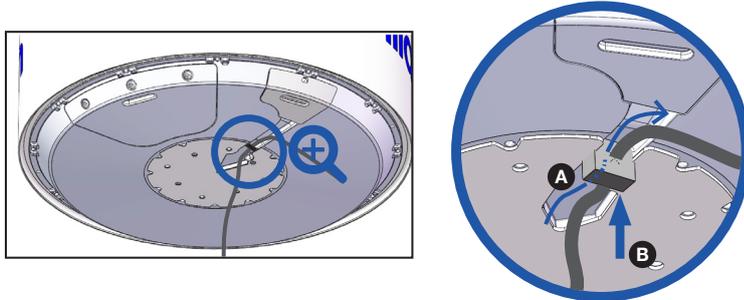
Case 1. When Placing Cable Outside Mast

1. Peel off the paper from the supplied waterproof foam to expose the adhesive.
2. Attach the waterproof foam firmly onto the surface of the cable access hole.
3. Pull the RF cable from the mast.



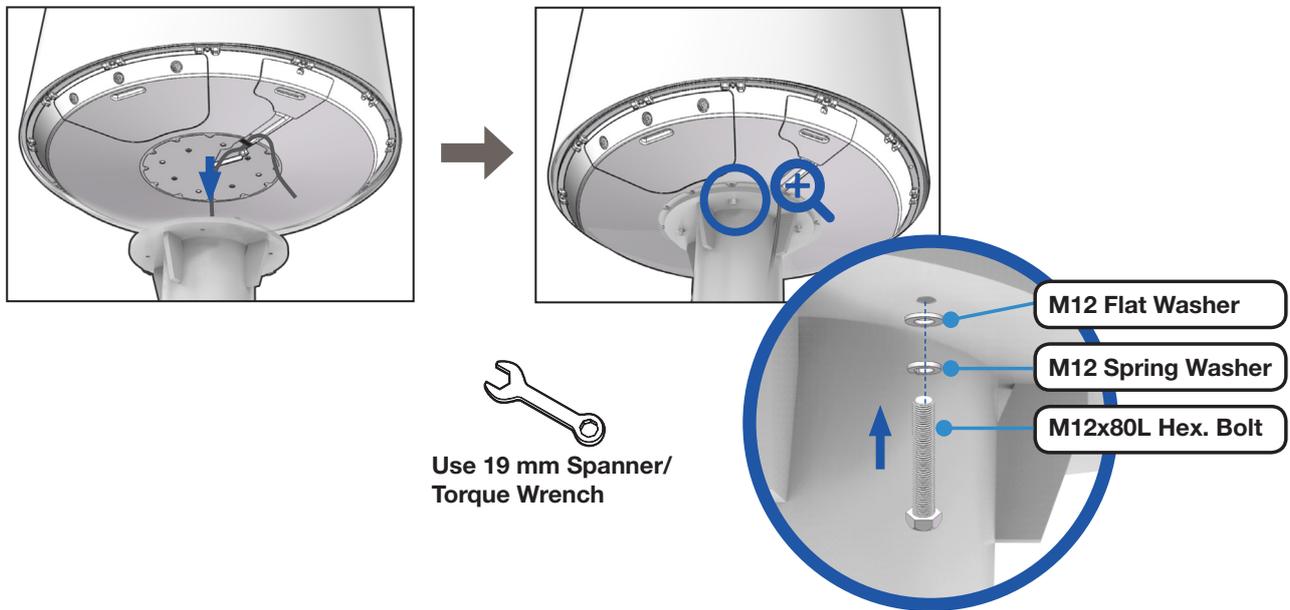
Case 2. When Placing Cable Inside Mast

1. Peel off the paper from the supplied waterproof foam to expose the adhesive.
2. Pull the RF cable from the mast through the cable hole (X-shape).
3. Then attach the waterproof foam firmly onto the surface of the cable access hole. When moving the radome, be careful not to let the waterproof foam or the cable fall down.



Mounting Radome

Bring the Bolt Kit (4 EA) from the BDT 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.



NOTE

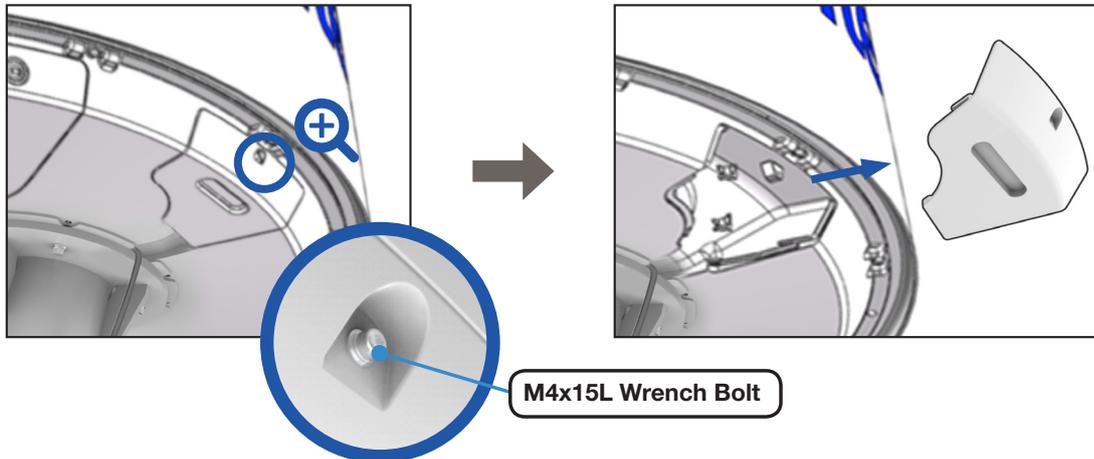
NOTE

- 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 a M12x100L Hex Bolt.
- To fasten the M12 bolts use a torque setting of 110Nm.

Connecting RF Cable (Customer Supplied)

Connect the "RF Cable" from the "ANTENNA" connector on the rear of the BDT to the "RF Connector" inside the cable entry of radome. In the cable connection on both sides, cable termination should be completed using suitable tools. After connecting, securely fix the cable by using the cable ties in place.

1. Remove the M4x15L Wrench Bolt by using the wrench set then open the cable entry cover.

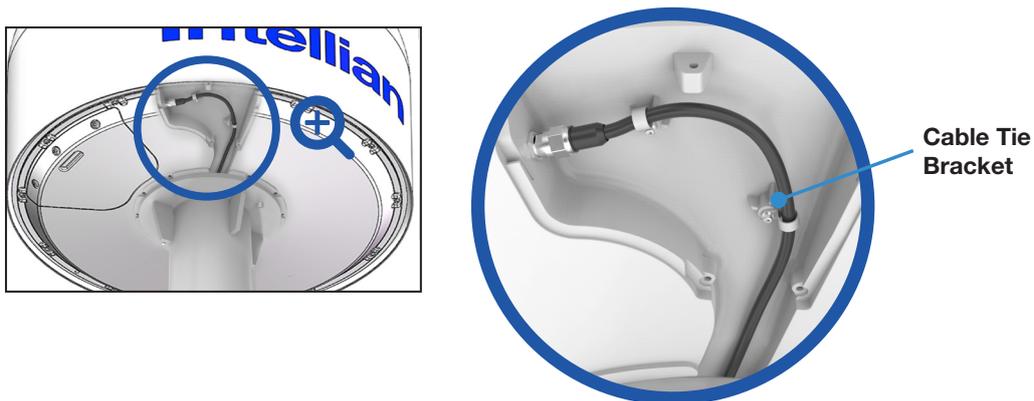


NOTE

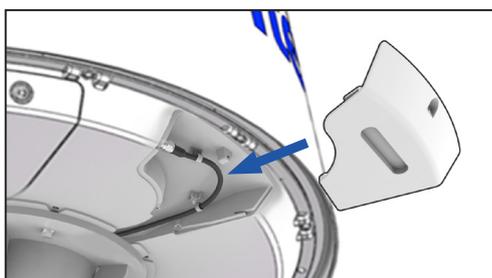
NOTE

After removing the M4x15L Wrench Bolt from the cover of cable entry, Keep it in a safe place for the next step. When closing the cover of cable entry, this bolt must be used.

2. Terminate N(M) connector on the end of the RF Cable. Intellian recommends using a genuine cable connector and tools. Refer to the cable termination instructions provided by the manufacturer to terminate the N connector.
3. Connect the terminated RF cable to the connector as shown in the figure below. Ensure the cable is firmly fastened to the connector. Fasten the cable with cable ties using the cable mount or cable clamp along the routing path.



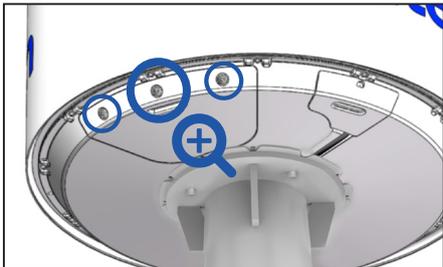
4. After completing cable connection, put the cover in the right place and tighten the M4x15L Wrench Bolt by using the wrench set.



Switching On Power Box

Access the ADU modules inside the radome to check that the power switch is on through the radome hatch. Make sure that there is sufficient free space underneath the ADU to open the radome hatch.

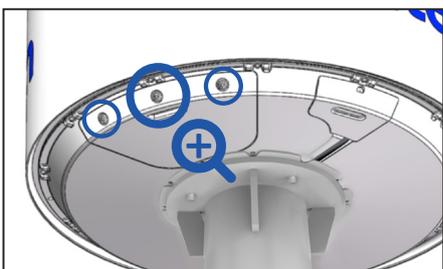
1. Bring the radome door key from the BDT box. Open the radome hatch by turning the fixed bolts counterclockwise by using the radome door key.



2. The power box switch was turned on and shipped from the factory. Check the power box inside the radome is switch on. If not, switch on the power box.



3. Put the radome hatch in the right place. Close the radome hatch by turning the fixed bolts clockwise by using the radome door key.



Door Key Provided



NOTE

After using the door key, store it in a safe place for future use.

Installing Below Deck Unit (BDU)

Selection of BDU Installation Site

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

- Dry, cool and ventilated.
- The front panel should be easily accessible to users.

BDT Dimensions

Confirm the dimension of the BDT before installing it.

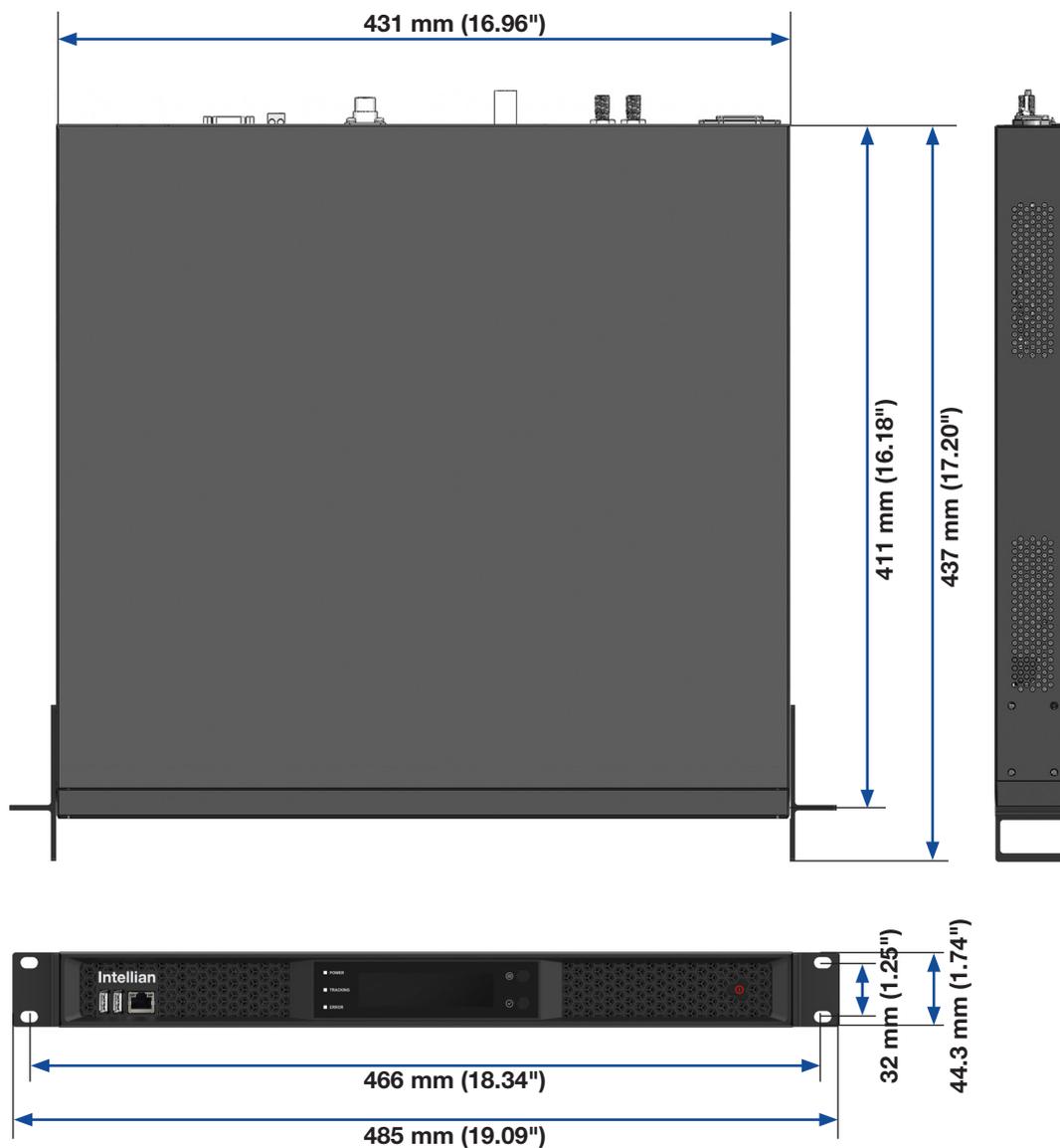


Figure: BDT Dimensions

Mounting BDT

Intellian supplies 19" Rack Mounting Brackets to mount the BDT in a rack.

19" Rack Mount Type

The BDT 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 BDT. Place the BDT in the location where it is going to be installed. Connect the cables to the rear of the BDT.



Figure: 19" Rack Mount Type BDT



WARNING

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

ACU Dimensions (Optional: For Dual Antenna System)

Confirm the dimension of the ACU before installing it.

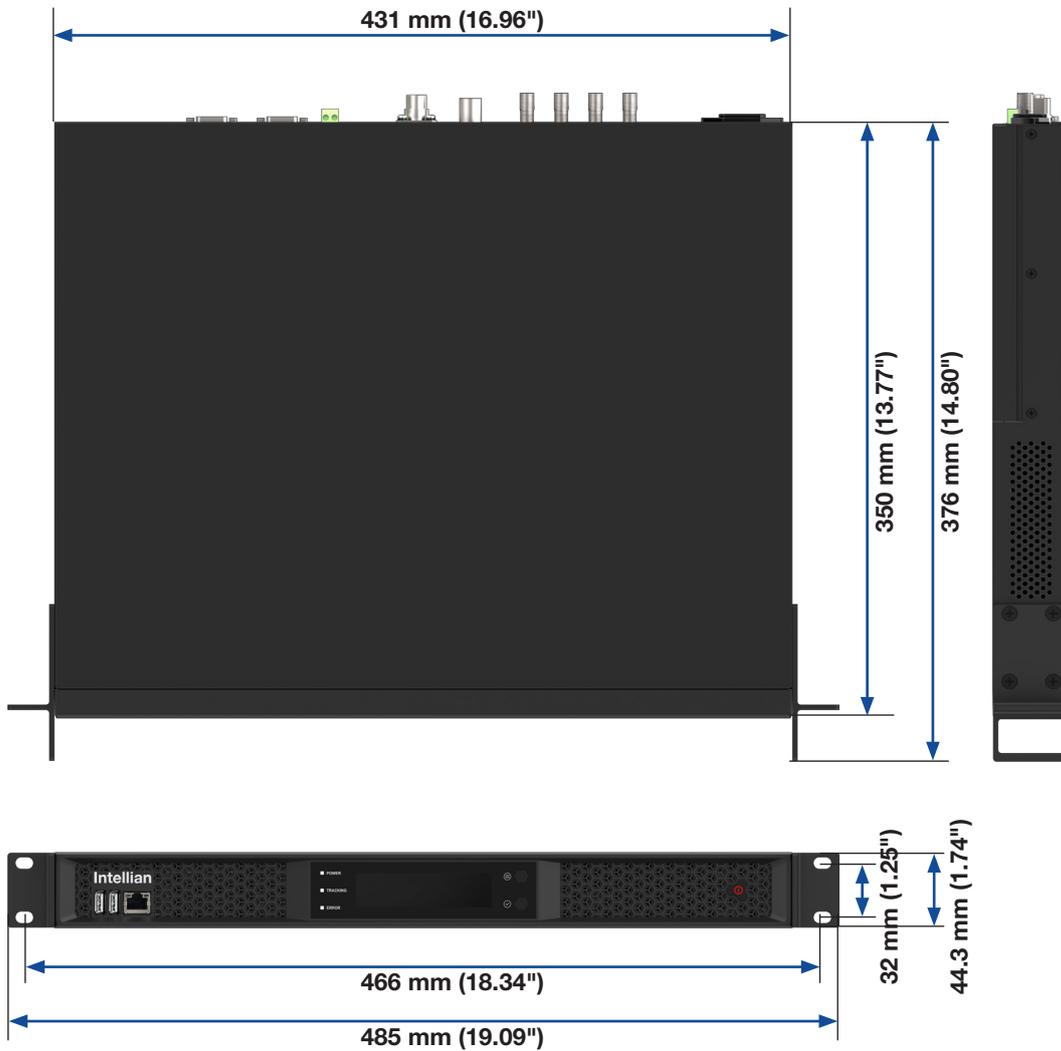


Figure: ACU Dimensions

Mounting ACU (Optional: For Dual Antenna System)

Intellian supplies 19" Rack Mounting Brackets to mount the ACU in a rack.

19" Rack Mount Type

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.



Figure: 19" Rack Mount Type ACU



WARNING

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

System Configurations

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 switch router and ship's gyrocompass may be required.

Single Antenna System Configuration (Basic Antenna System)

The Basic system consists of one VSAT antenna and one BDU. As shown in the configuration below, connect the cables correctly.

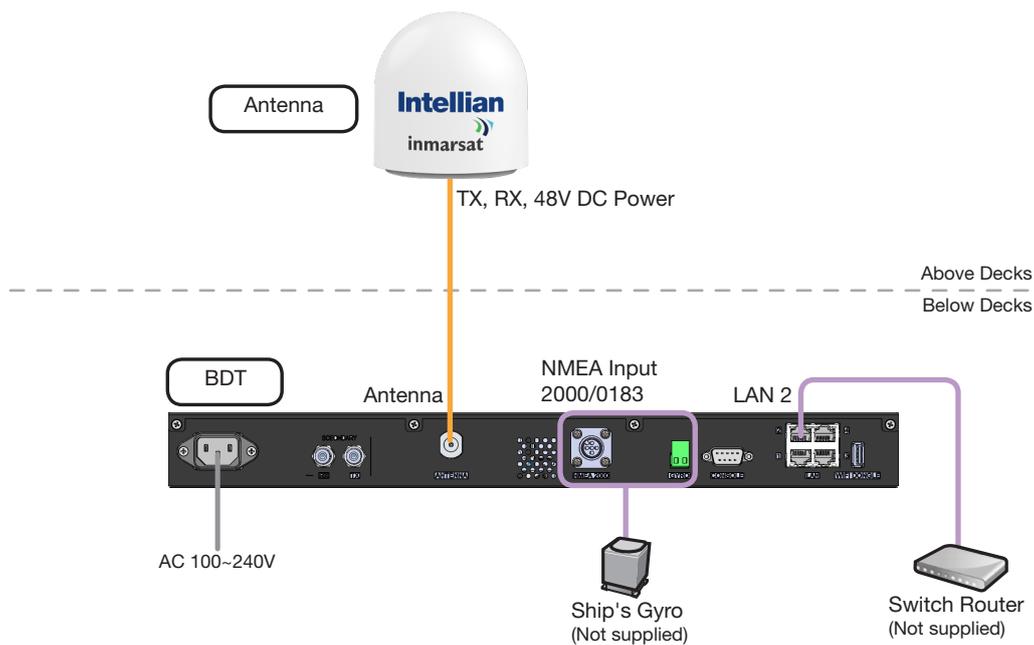


Figure: Single Antenna System Configuration (Basic Antenna System)

Dual Antenna System Configuration (Optional)

The dual system configuration consists of two VSAT antennas, one BDT, one ACU. The BDT has embedded Dual Antenna Mediator function, which is capable of controlling and managing two VSAT antenna systems simultaneously. As shown in the configuration below, connect the cables correctly.

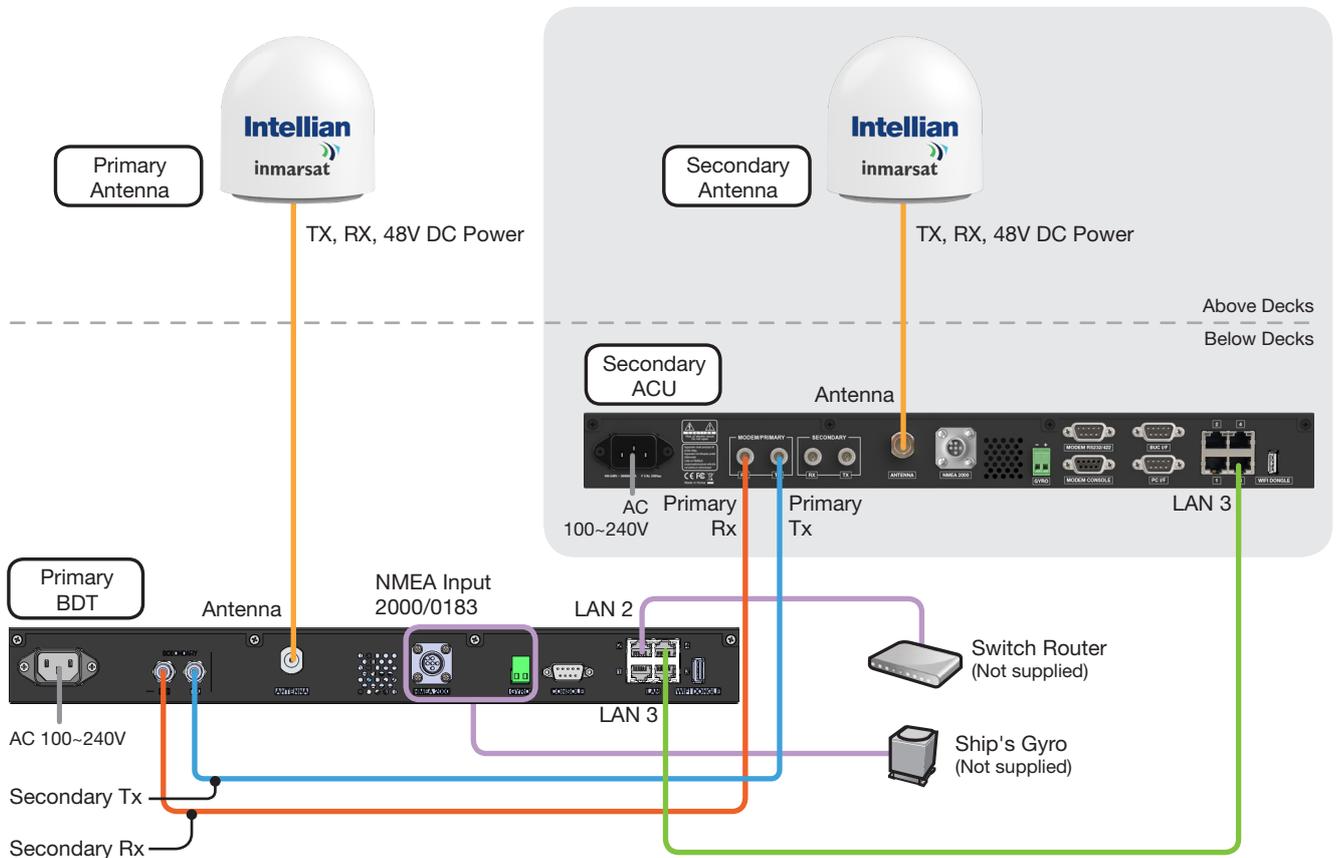


Figure: Dual Antenna System Configuration



NOTE

The description of this Dual Antenna System is written on the "Appendix A" chapter. Refer to the "Using Dual Antenna System (Optional)" on page 116 for more details.

BDT Cable Connection

Name of BDT Rear Panel

The following figure shows the BDT's rear panel.

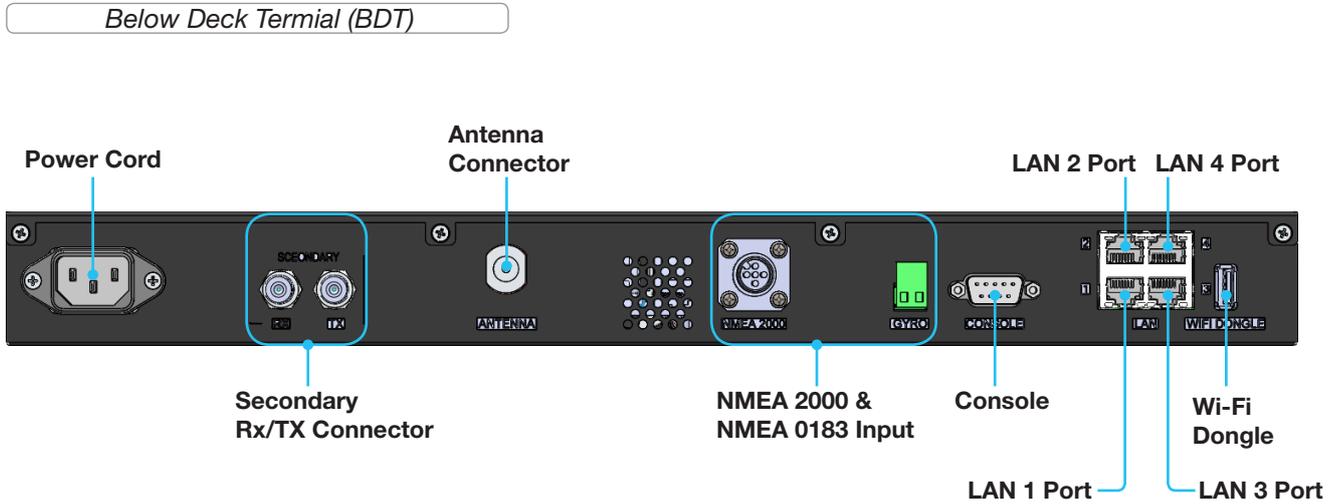


Figure: Name of BDT Rear Panel

Connecting to Antenna

Connect the "RF Cable (not supplied by Intellian)" from the "ANTENNA" connector on the rear of the BDT to the "RF Connector" inside cable entry of radome (Antenna).

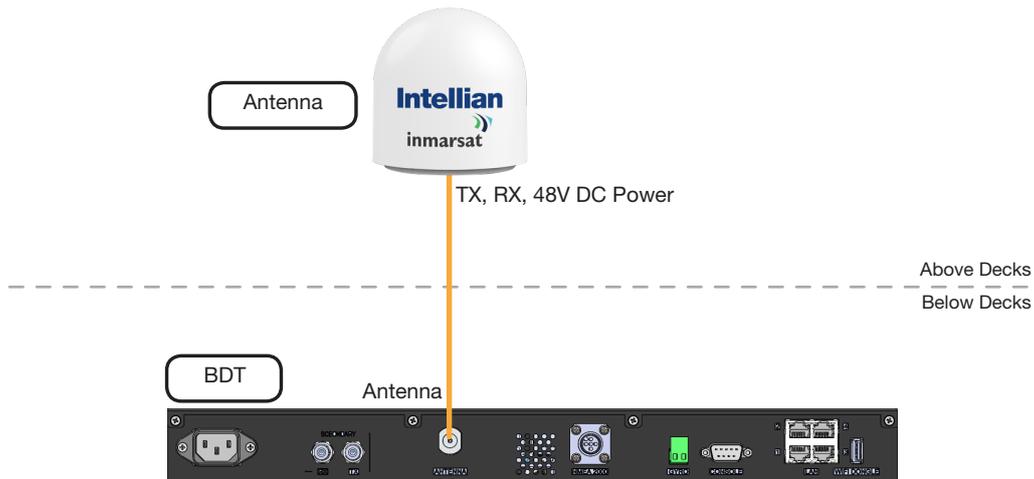


Figure: BDT to Antenna Cable Connection

Connecting to the Switch Router

Connect the "Ethernet cable" from the "LAN 2" port on the rear of the BDU to the "LAN" port on the Switch Router.



Figure: BDU to Switch Router Cable Connection

Connecting 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 BDU. Intellian's BDU supports NMEA 0183 and NMEA 2000 gyrocompass inputs. If the ship's gyrocompass output uses a different standard, a compass converter should be installed to supply the required NMEA input. The NMEA 2000 gyrocompass needs to be purchased separately, please refer to the "BDU Connector Pinouts Guide" on page 43 for pin configuration.

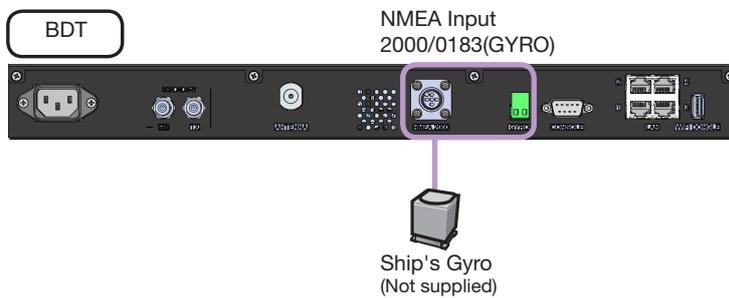


Figure: BDU to Ship's Gyrocompass Cable Connection

How to Connect NMEA 0183 Gyrocompass Cable

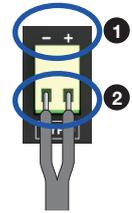
1. Turn the screw located on the top of the 2-position terminal block counterclockwise enough using the Phillips Screwdriver.
2. Connect NMEA 0183 Gyrocompass Cable to the terminal block.



NOTE

When connecting the NMEA 0183 gyrocompass cable:

1. The positive and negative marks are shown on the top of the terminal block. Check the positive and negative and correctly connect the cables.
2. Strip the end of the cables up to 5 mm (0.2"). Do not solder the cables.



3. Fully turn the screw clockwise to secure the cable. Apply equally to both positive and negative cables.

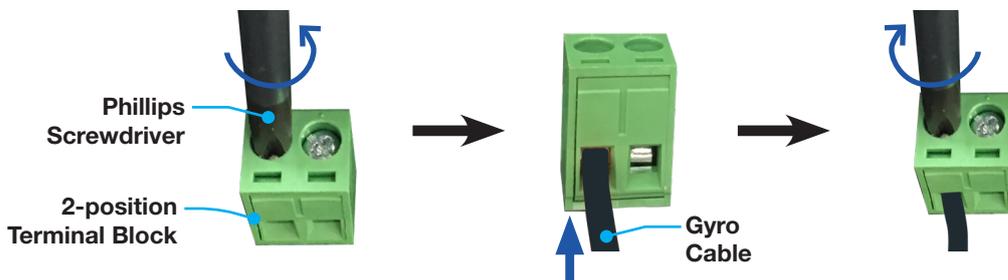


Figure: NMEA 0183 Gyrocompass Cable Connection

Connecting to Additional Secondary ACU (Optional: For Dual Antenna System)

To use the Dual Antenna System, the antenna system needs to be installed with the BDT and an additional ACU, which connected to each antenna to support the Dual Antenna System operation. The Primary BDT is connected to the additional Secondary ACU as follows.

Connect the "RG-6 RF cable" from the "SECONDARY-Rx" connector on the rear of the "Primary BDT" to the "PRIMARY-Rx" connector on the rear of the "Secondary ACU".

Connect the "RG-6 RF cable" from the "SECONDARY-Tx" connector on the rear of the "Primary BDT" to the "PRIMARY-Tx" connector on the rear of the "Secondary ACU".

Connect the "Ethernet cable" to the each "LAN 3" connector on the rear of the "Primary BDT" and "Secondary BDT".

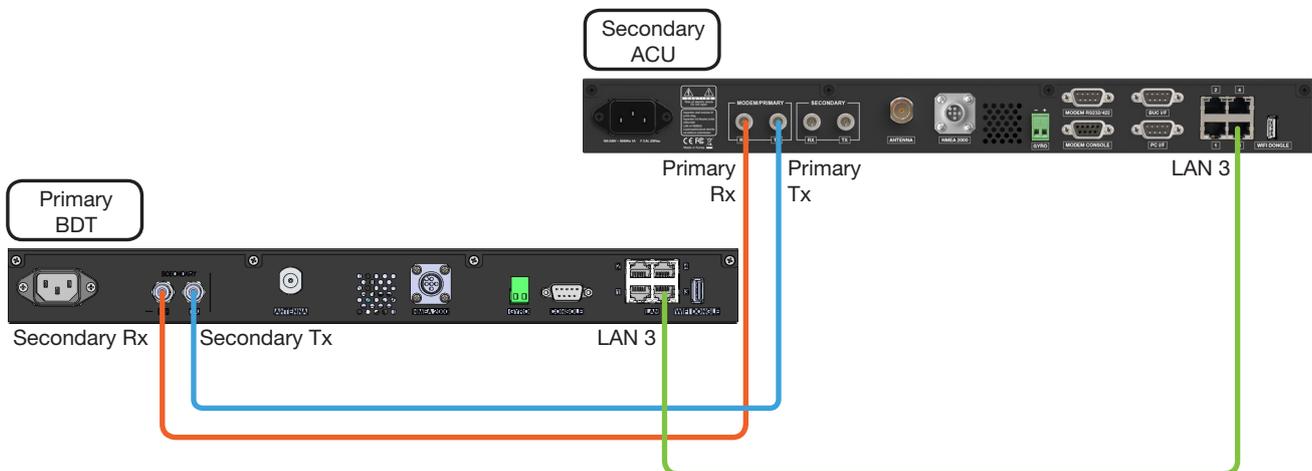


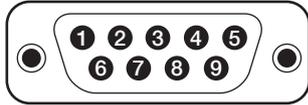
Figure: Additional Secondary ACU Cable Connection for Dual Antenna System

BDT Connector Pinouts Guide

The BDT connector pins and their corresponding descriptions are shown in the figure and table.

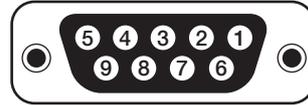
RS232 Connector (iARM Interface)

Below Deck Terminal (BDT):



*D-Sub 9 Pin: PC I/F
(Male Connector Type)*

Cable Connector:

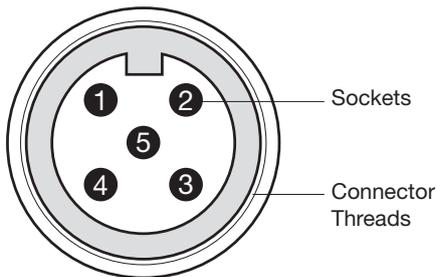


*D-Sub 9 Pin
(Female Connector Type)*

Pin	Signal
1	NC
2	DBG RX (iARM)
3	DBG TX (iARM)
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

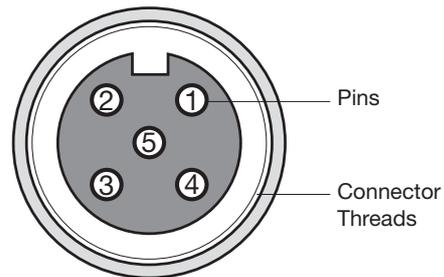
NMEA 2000 Connector

Below Deck Terminal (BDT):



*NMEA 2000 Connector
(Male Connector Type)*

Cable Connector:

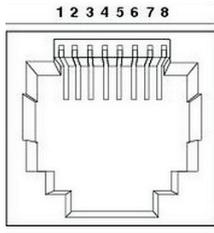


*NMEA 2000 Connector
(Female Connector Type)*

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)

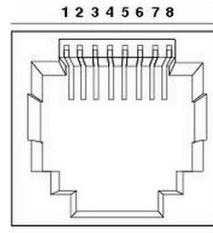
LAN 1~4 Ports

Below Deck Terminal (BDT):



LAN Ports

Cable Connector:



LAN Ports



Pin	Signal
1	Tx-
2	Tx+
3	Rx-
4	NC
5	NC
6	Rx+
7	NC
8	NC

BDT to PC Communication Setup

You can establish data communication between the Below Deck Terminal (BDT) and a PC the using one of the following methods.

TCP/IP Connection

Connection through Front Panel Management Port

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

1. Connect an Ethernet cable from the Management LAN port on the front of the BDT to the LAN port of PC.
2. The network connection is established automatically.
3. Use the following IP address to access Intellian AptusNX page.

- **IP Address: 192.168.2.1 (Default)**

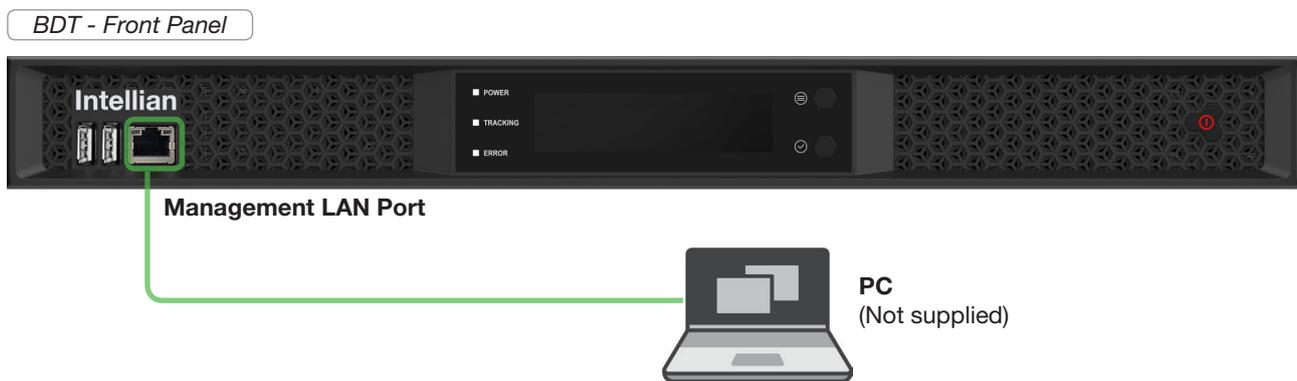


Figure: Front Panel Management LAN Port Connection

USB Connection:

Connection through Front Panel Right USB Port

The "Right USB port" just allows the USB device to be connected to each other for log download, backup/restore antenna settings, and firmware upgrade. The "Left USB port" is only for a service engineer.



CAUTION

CAUTION

Make sure that the USB is connected to the "Right USB port" to communicate with the antenna. Do not connect to the "Left USB port".



Figure: Front Panel Right USB Port Connection

Wi-Fi Connection

Connection through Rear Panel Wi-Fi Dongle

Intellian provides the Wi-Fi Dongle for Wi-Fi connection. You can connect to the BDU via Wi-Fi for easy management and control whenever you are on the vessel.

1. Connect an Ethernet cable from the Management LAN port on the front of the BDU to the LAN port of PC. The network connection is established automatically.
2. Bring the Wi-Fi Dongle located in the BDU package. Plug the Wi-Fi Dongle into the USB port on the rear of the BDU.

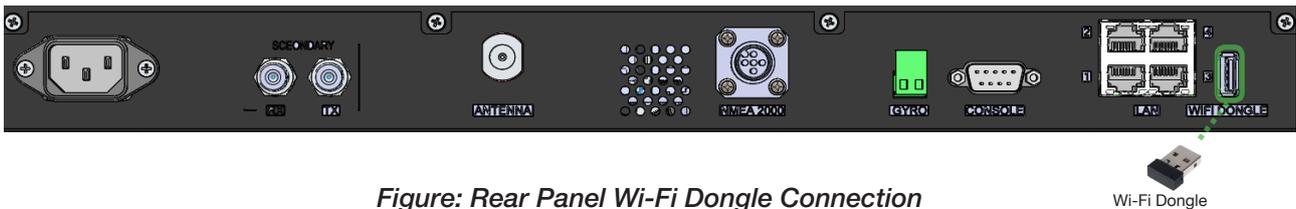
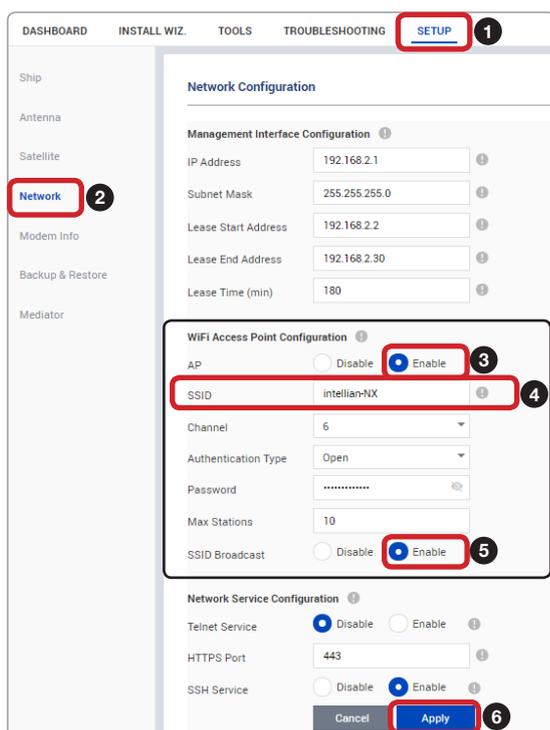


Figure: Rear Panel Wi-Fi Dongle Connection

3. Use the following IP address to access Intellian AptusNX page.
 - **IP Address: 192.168.2.1 (Default)**
4. Log into the AptusNX by typing in User Name and Password information. If this system has not been changed from the factory default:
 - **User Name: intellian**
 - **Password: 12345678**
5. Select the "SETUP" on the main menu then select the "Network" menu. Choose the AP "Enable" button on the "Wi-Fi Access Point Configuration". If you don't want to use Wi-Fi Connection, choose the AP "Disable" button.
6. Check the "SSID (Wi-Fi AP Name)" information.
7. Choose the SSID Broadcast "Enable" button to show the SSID (Wi-Fi AP Name) on the Wi-Fi list.
8. Click the "Apply" button to apply the settings to the system. Then perform the "iARM Save & Reboot" on page 93.
9. After rebooting, connect to the Wi-Fi.



Operating Install Wizard

Turning On System

Make sure the antenna has a clear view of the sky. Press the Power button on the front of the Below Deck Terminal (BDT) then wait a few minutes for system startup. Once the antenna finds the satellite, the "POWER" status lights will be lit Green.

Accessing AptusNX

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

1. Connect an Ethernet cable from the Management LAN port on the front of the BDT to the LAN port of PC.
2. The network connection is established automatically.
3. Use the following IP address to access Intellian AptusNX page.
 - **IP Address: 192.168.2.1 (Default)**
4. Log into the AptusNX by typing in User Name and Password information. If this system has not been changed from the factory default:
 - **User Name: intellian**
 - **Password: 12345678**

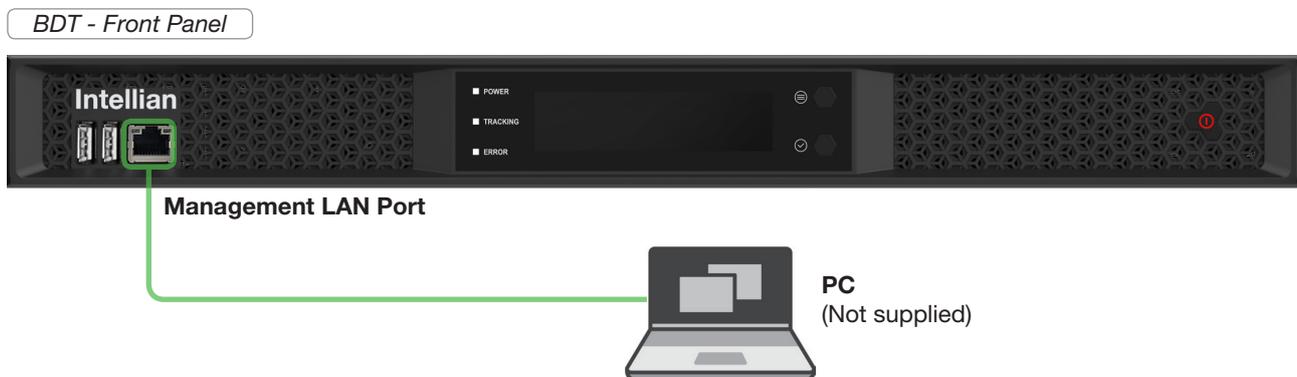


Figure: Front Panel Management LAN Port Connection

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 BDT properly. This wizard includes a brief explanation of the purpose and action buttons to set the values. After accessing the AptusNX main page, go to the "INSTALL WIZ." on the main menu then follow these steps.

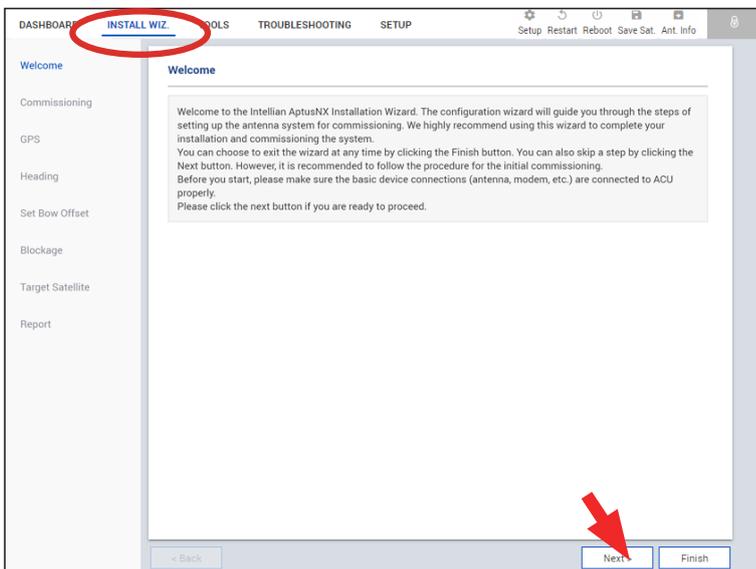


NOTE

The detailed description of each function is written on the "Using AptusNX" chapter on page 80.

NOTE

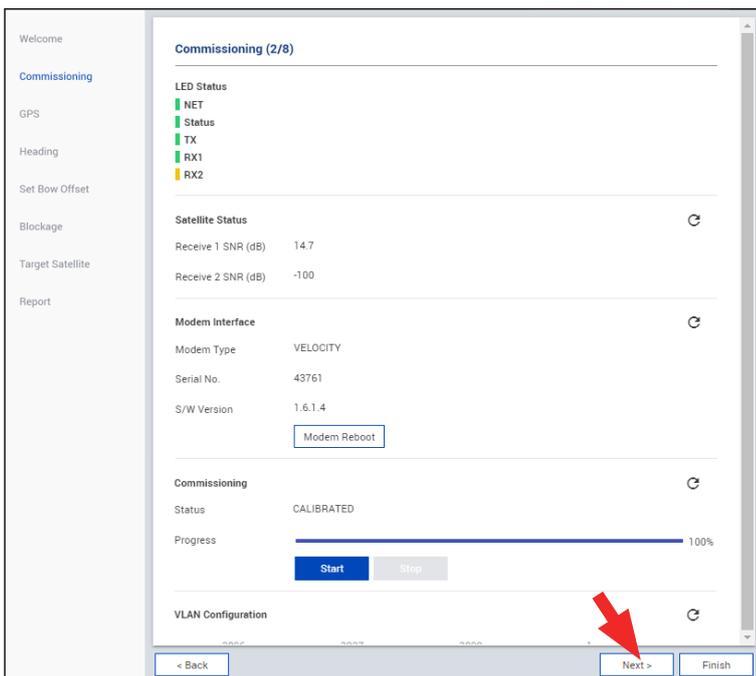
✓ **Welcome Page**



Description

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

✓ **Step 1: Commissioning**



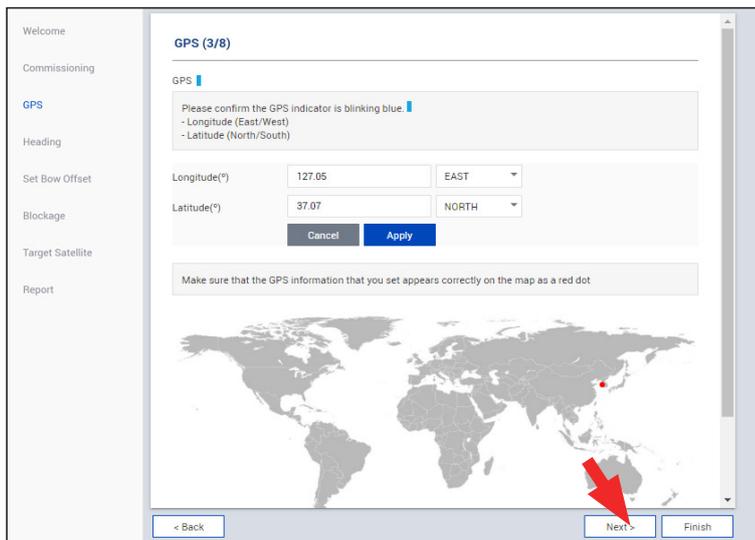
Description

Performs the commissioning test to calibrate the modem to receive the optimal signal. The RF uplink frequency, the BUC LO frequency, the TX frequency, and the attenuator will calibrate automatically. Click the 'Start' button to perform the commissioning test automatically.

Ensure that the commissioning test is performed after the first-time connection of the GX terminal, the BDT/cable replacement, or band conversion.

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

✓ **Step 2: GPS**



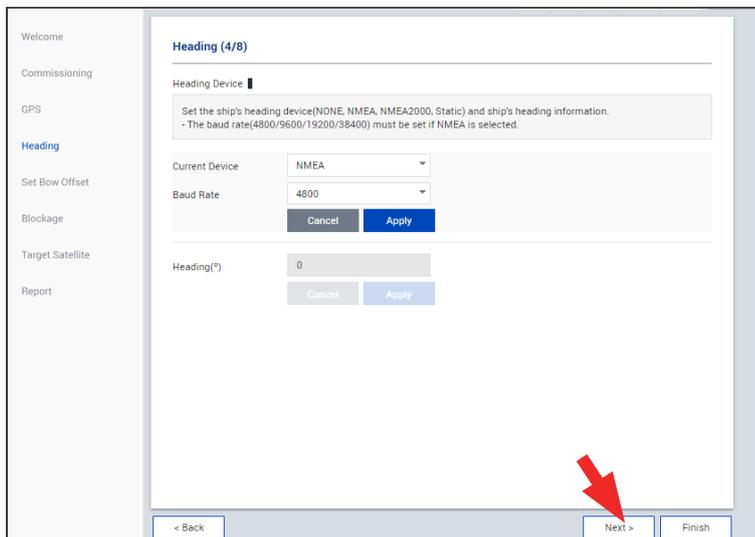
Description

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 3: Heading**



Description

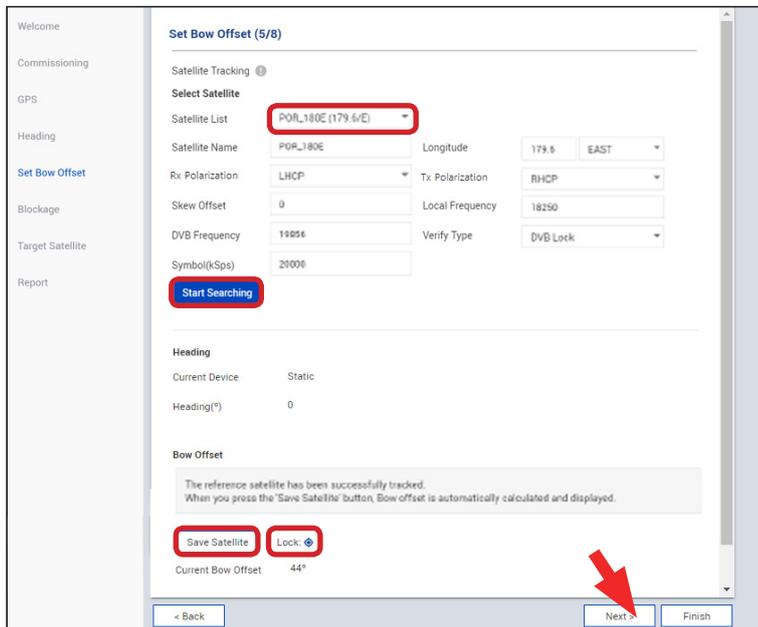
Set the ship's heading device. Choose the device type from the "Current Device" drop-down list. The indicator right of the title shows the device connection status.

- 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 4: Set Bow Offset**

For setting bow offset, a trackable satellite must be selected. When Antenna tracks the selected satellite, the bow offset will be set up automatically based on the GPS information.



Description

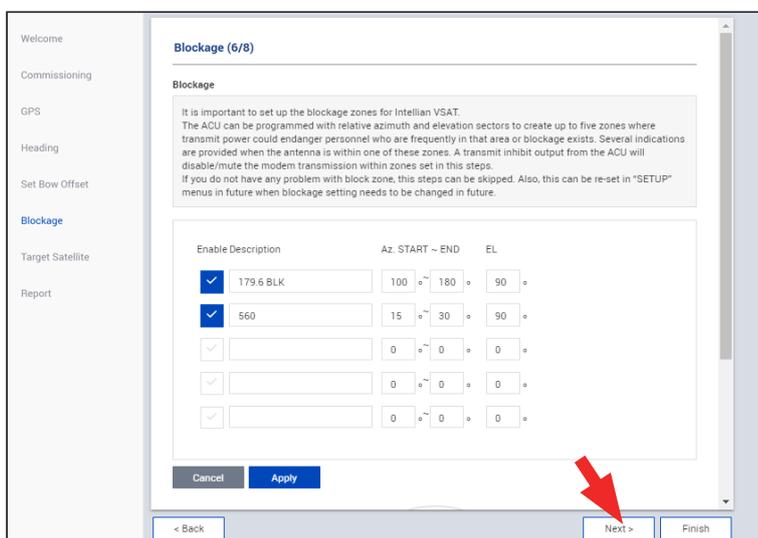
- **Step 1:** select a satellite in satellite list then click the "Start Searching" button.

Please wait until antenna terminal is tracking the satellite. The bow offset will be set up automatically.

- **Step 2:** check the "Lock On" mark and click the "Save Satellite" button in the "Bow Offset" menu to save the bow offset information to BDT.

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

✓ **Step 5: Blockage**



Description

It is important to set up the blockage zones for Intellian VSAT. The BDT 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. Several indications are provided when the antenna is within one of these zones. A transmit inhibit output from the ACU will disable/mute the modem transmission within zones set in this steps. If you do not have any problem with block zone, this steps can be skipped. Also, this can be re-set in "SETUP" menus in future when blockage setting needs to be changed in future.

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.

(Option 1: Using Controlled by Modem)

The screenshot shows the 'Target Satellite (7/8)' configuration window. The 'Current Satellite' section has the 'Controlled by Modem' radio button selected. Below this, there are sections for 'Satellite Information' and 'NBD Information'. The 'Satellite Information' section includes fields for Satellite Name (SAT_062E), Longitude (62.6), Local Frequency (18250 MHz), RX Polarization (LHCP), and TX Polarization (RHCP). The 'NBD Information' section includes fields for Frequency (1490000 kHz) and Reserved Parameter (31999). At the bottom right, a red arrow points to the 'Next >' button.

Description

This method is recommended.

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)

The screenshot shows the 'Target Satellite (7/8)' configuration window. The 'Current Satellite' section has the 'Manual Setup' radio button selected. The 'Satellite Information' and 'NBD Information' sections are identical to the previous screenshot. At the bottom right, a red arrow points to the 'Next >' button.

Description

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: Report****NOTE****NOTE**

The following image in this step shows when the system is using the Open AMIP modem.

The screenshot shows the 'Report (8/8)' screen with the following data:

Antenna Information	
Antenna Size	100 cm / 41 inch
Antenna Voltage	43.5V
ACU Voltage	23.4V
Antenna Product	V5-11G-U1TC
ACU Product	VP-T84G1
Antenna Serial Number	12345678
ACU Serial Number	PVP19030001
System Polarization	none
System Band	Ka Band

S/W Version Information	
ACU Main	-

Description

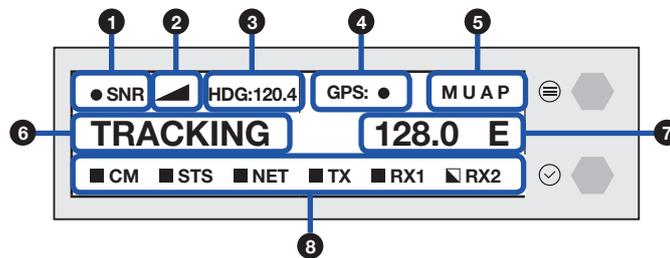
Displays the configuration report. You can save the results to the BDT by clicking the "Save Report" button and download the report file (.json) by clicking the "Export" button.

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.

BDT Display Menu

The following figure shows the BDT display menu.



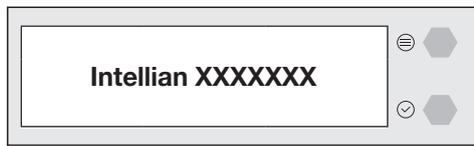
The following table shows the function of each touch key.

No.	Item	Description										
①	Satellite Lock	Displays the satellite lock status.										
②	Signal Level	Displays the antenna signal level.										
③	Heading Information	Displays heading information (e.g. gyrocompass).										
④	GPS Lock Status	Displays the GPS lock status.										
⑤	Antenna System Status	Displays the antenna system status.										
		<table border="1"> <thead> <tr> <th>Display</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>M</td> <td><i>This function is available when using the Dual Antenna System.</i> Displays that the antenna system is in manual mode.</td> </tr> <tr> <td>U</td> <td>Displays that the antenna system is in progress firmware upgrades.</td> </tr> <tr> <td>A</td> <td><i>This function is available when using the Dual Antenna System.</i> Displays the antenna's active state. The active antenna (either primary or secondary antenna) is communicating (Tx/Rx) with a target satellite. <ul style="list-style-type: none"> A (Active): the active antenna is displayed on the screen. </td> </tr> <tr> <td>P</td> <td><i>This function is available when using the Dual Antenna System.</i> Displays the antenna's role status. <ul style="list-style-type: none"> P: the BDT is connected to the primary role's antenna. The primary antenna's role is to communicate with the target satellite. </td> </tr> </tbody> </table>	Display	Description	M	<i>This function is available when using the Dual Antenna System.</i> Displays that the antenna system is in manual mode.	U	Displays that the antenna system is in progress firmware upgrades.	A	<i>This function is available when using the Dual Antenna System.</i> Displays the antenna's active state. The active antenna (either primary or secondary antenna) is communicating (Tx/Rx) with a target satellite. <ul style="list-style-type: none"> A (Active): the active antenna is displayed on the screen. 	P	<i>This function is available when using the Dual Antenna System.</i> Displays the antenna's role status. <ul style="list-style-type: none"> P: the BDT is connected to the primary role's antenna. The primary antenna's role is to communicate with the target satellite.
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⑥	Antenna Status	Displays the antenna status (TRACKING, SEARCH 1, SEARCH 3, BEAM S/W, BLOCKING).										
⑦	Target Satellite	Displays the target satellite (E: East, W: West).										

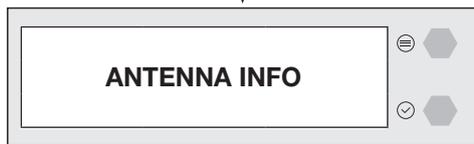
No.	Item	Description																																					
⑧	Modem Indicator	<p><i>Below Deck Terminal (BDT) includes built in Satellite Modem.</i> Displays the modem status.</p>																																					
		<table border="1"> <thead> <tr> <th data-bbox="531 338 624 383">Item</th> <th data-bbox="624 338 810 383">LED Display</th> <th data-bbox="810 338 1441 383">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="531 383 624 421">CM</td> <td data-bbox="624 383 810 421">■ On</td> <td data-bbox="810 383 1441 421">The modem is powered on.</td> </tr> <tr> <td data-bbox="531 421 624 539" rowspan="2">STS</td> <td data-bbox="624 421 810 459">■ On</td> <td data-bbox="810 421 1441 459">The modem is in normal operating conditions.</td> </tr> <tr> <td data-bbox="624 459 810 539">☒ Warning</td> <td data-bbox="810 459 1441 539">The modem has a serious fault or failure in software, hardware, or configuration.</td> </tr> <tr> <td data-bbox="531 539 624 725" rowspan="3">NET</td> <td data-bbox="624 539 810 613">■ On</td> <td data-bbox="810 539 1441 613">The modem is connected to a target satellite and acquired a network.</td> </tr> <tr> <td data-bbox="624 613 810 651">▣ Abnormal</td> <td data-bbox="810 613 1441 651">The modem network is in abnormal conditions.</td> </tr> <tr> <td data-bbox="624 651 810 725">□ Off</td> <td data-bbox="810 651 1441 725">The modem is not connected to a target satellite and not acquired a network.</td> </tr> <tr> <td data-bbox="531 725 624 846" rowspan="3">TX</td> <td data-bbox="624 725 810 763">■ On</td> <td data-bbox="810 725 1441 763">The modem Tx services are active.</td> </tr> <tr> <td data-bbox="624 763 810 801">▣ Abnormal</td> <td data-bbox="810 763 1441 801">The modem Tx is in abnormal conditions.</td> </tr> <tr> <td data-bbox="624 801 810 846">□ Off</td> <td data-bbox="810 801 1441 846">The modem Tx services are not active.</td> </tr> <tr> <td data-bbox="531 846 624 967" rowspan="3">RX1</td> <td data-bbox="624 846 810 884">■ On</td> <td data-bbox="810 846 1441 884">The modem Rx 1 services are active.</td> </tr> <tr> <td data-bbox="624 884 810 922">▣ Abnormal</td> <td data-bbox="810 884 1441 922">The modem Rx 1 is in abnormal conditions.</td> </tr> <tr> <td data-bbox="624 922 810 967">□ Off</td> <td data-bbox="810 922 1441 967">The modem Rx 1 services are not active.</td> </tr> <tr> <td data-bbox="531 967 624 1048" rowspan="2">RX2</td> <td data-bbox="624 967 810 1005">▣ Abnormal</td> <td data-bbox="810 967 1441 1005">The modem Rx 2 services are active.</td> </tr> <tr> <td data-bbox="624 1005 810 1048">□ Off</td> <td data-bbox="810 1005 1441 1048">The modem Rx 2 services are not active.</td> </tr> </tbody> </table>	Item	LED Display	Description	CM	■ On	The modem is powered on.	STS	■ On	The modem is in normal operating conditions.	☒ Warning	The modem has a serious fault or failure in software, hardware, or configuration.	NET	■ On	The modem is connected to a target satellite and acquired a network.	▣ Abnormal	The modem network is in abnormal conditions.	□ Off	The modem is not connected to a target satellite and not acquired a network.	TX	■ On	The modem Tx services are active.	▣ Abnormal	The modem Tx is in abnormal conditions.	□ Off	The modem Tx services are not active.	RX1	■ On	The modem Rx 1 services are active.	▣ Abnormal	The modem Rx 1 is in abnormal conditions.	□ Off	The modem Rx 1 services are not active.	RX2	▣ Abnormal	The modem Rx 2 services are active.	□ Off	The modem Rx 2 services are not active.
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		RX2	▣ Abnormal	The modem Rx 2 services are active.																																			
			□ Off	The modem Rx 2 services are not active.																																			

Startup

With the system is installed and power is applied, the BDT display will show the following sequence.



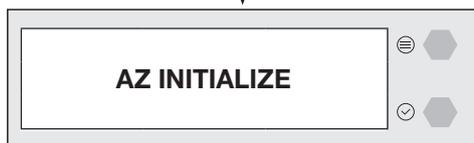
✓ **Startup**
 ("Intellian XX..." will appear. The "XX..." is the model name.)



✓ **Initialize Antenna Information**



✓ **Initialize Elevation Angle**

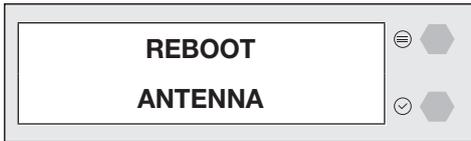


✓ **Initialize Azimuth Angle**



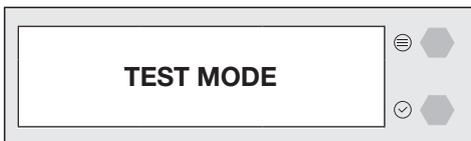
✓ **Antenna's Status**
 (in Search 1 (Global Search), Search 3 (Local Search), Tracking, Beam Switching, Blocking)

When the antenna is controlled by AptusNX, the BDT displays the control mode status.

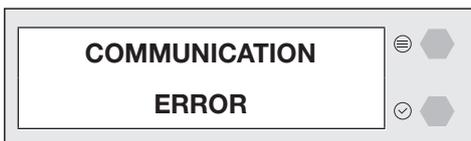


✓ **Control Mode Status**

(in Reboot Mode, Setup Mode, Test Mode, One Touch Commissioning)

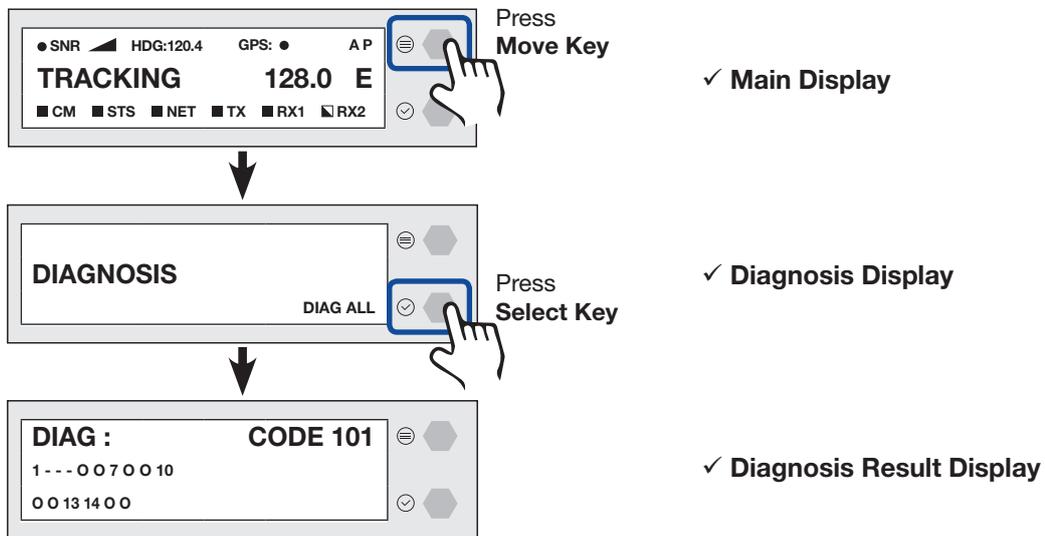


If the antenna is not communicating with BDT, the "COMMUNICATION ERROR" message will appear.

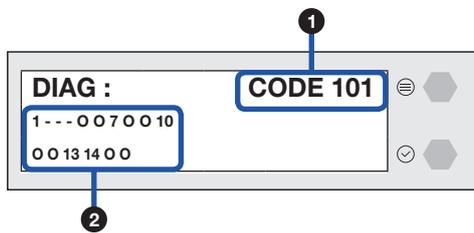


Diagnosis

Executes antenna Diagnosis test and shows the real-time diagnosis result.



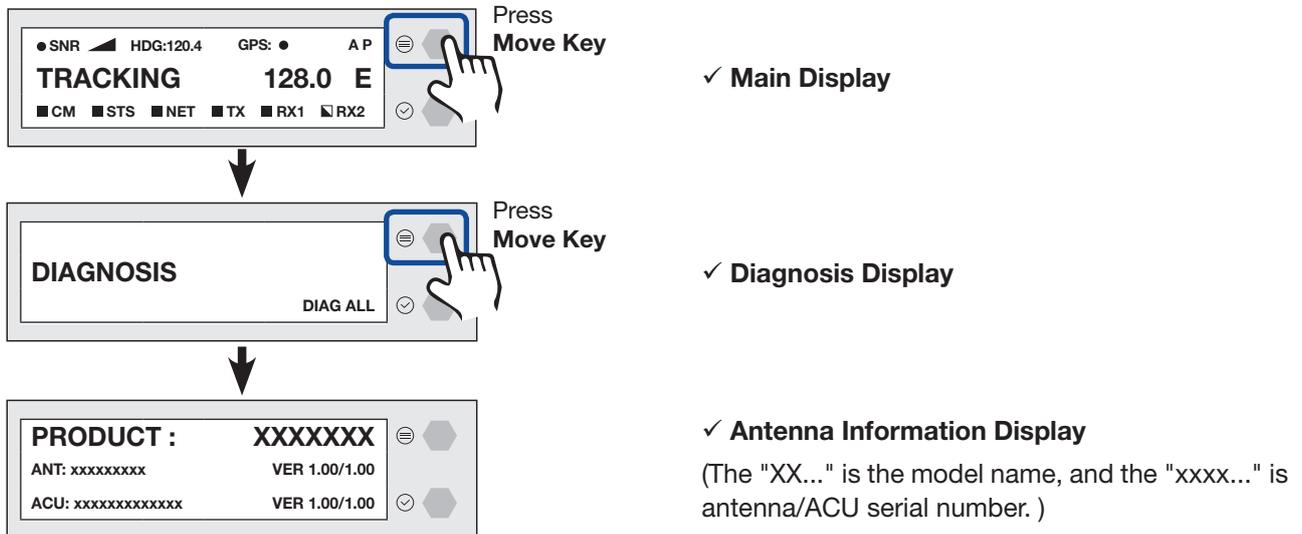
Refer to the diagnosis codes for the test results.



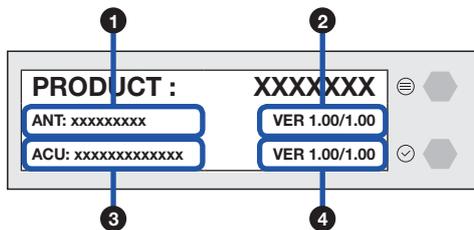
No.	Item	Description																																		
①	Diagnosis Code	<p>Displays the diagnosis code.</p> <table border="1" data-bbox="544 320 1370 1037"> <thead> <tr> <th data-bbox="544 320 647 356">Code</th> <th data-bbox="647 320 1370 356">Test</th> </tr> </thead> <tbody> <tr> <td data-bbox="544 356 647 434">101</td> <td data-bbox="647 356 1370 434">The data communication between the antenna and the ACU is tested.</td> </tr> <tr> <td data-bbox="544 434 647 470">102</td> <td data-bbox="647 434 1370 470">The azimuth axis is tested.</td> </tr> <tr> <td data-bbox="544 470 647 506">103</td> <td data-bbox="647 470 1370 506">The elevation axis is tested.</td> </tr> <tr> <td data-bbox="544 506 647 542">104</td> <td data-bbox="647 506 1370 542">The cross-level axis is tested.</td> </tr> <tr> <td data-bbox="544 542 647 577">105</td> <td data-bbox="647 542 1370 577">Not Available</td> </tr> <tr> <td data-bbox="544 577 647 613">106</td> <td data-bbox="647 577 1370 613">Not Available</td> </tr> <tr> <td data-bbox="544 613 647 649">107</td> <td data-bbox="647 613 1370 649">The rate sensor is tested.</td> </tr> <tr> <td data-bbox="544 649 647 685">108</td> <td data-bbox="647 649 1370 685">Not Available</td> </tr> <tr> <td data-bbox="544 685 647 721">109</td> <td data-bbox="647 685 1370 721">Not Available</td> </tr> <tr> <td data-bbox="544 721 647 757">110</td> <td data-bbox="647 721 1370 757">The LNB / NBD is tested.</td> </tr> <tr> <td data-bbox="544 757 647 792">111</td> <td data-bbox="647 757 1370 792">Not Available</td> </tr> <tr> <td data-bbox="544 792 647 828">112</td> <td data-bbox="647 792 1370 828">Not Available</td> </tr> <tr> <td data-bbox="544 828 647 864">113</td> <td data-bbox="647 828 1370 864">The antenna power is tested.</td> </tr> <tr> <td data-bbox="544 864 647 900">114</td> <td data-bbox="647 864 1370 900">The ACU power is tested.</td> </tr> <tr> <td data-bbox="544 900 647 936">115</td> <td data-bbox="647 900 1370 936">Not Available</td> </tr> <tr> <td data-bbox="544 936 647 972">116</td> <td data-bbox="647 936 1370 972">The home sensor is tested.</td> </tr> </tbody> </table>	Code	Test	101	The data communication between the antenna and the ACU is tested.	102	The azimuth axis is tested.	103	The elevation axis is tested.	104	The cross-level axis is tested.	105	Not Available	106	Not Available	107	The rate sensor is tested.	108	Not Available	109	Not Available	110	The LNB / NBD is tested.	111	Not Available	112	Not Available	113	The antenna power is tested.	114	The ACU power is tested.	115	Not Available	116	The home sensor is tested.
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115	Not Available																																			
116	The home sensor is tested.																																			
②	Diagnosis Result	<ul style="list-style-type: none"> • An example of diagnosis result: <table border="1" data-bbox="579 1111 842 1189" style="margin-left: 20px;"> <tr> <td style="border: 1px dashed red;">1 - - - 0 0 7 0 0 1 0</td> <td style="border: none;">← Diagnosis Result of Code 101~110</td> </tr> <tr> <td style="border: none;">0 0 1 3 1 4 0 0</td> <td style="border: none;">← Diagnosis Result of Code 111~116</td> </tr> </table> - ' - ' : The test was passed. Code 102, 103, 104 and 111 were passed. - Last 1 or 2 digits of diagnosis code : The test was failed. Code 101, 107, 110, 113 and 114 were failed. - ' 0 ' : The test was not performed. Code 105, 106, 108, 109, 111, 112, 115 and 116 were not performed. 	1 - - - 0 0 7 0 0 1 0	← Diagnosis Result of Code 101~110	0 0 1 3 1 4 0 0	← Diagnosis Result of Code 111~116																														
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0 0 1 3 1 4 0 0	← Diagnosis Result of Code 111~116																																			

Antenna Information

Displays the Antenna/BDT serial number, PCU/STAB/BDT/iARM Version of the product.



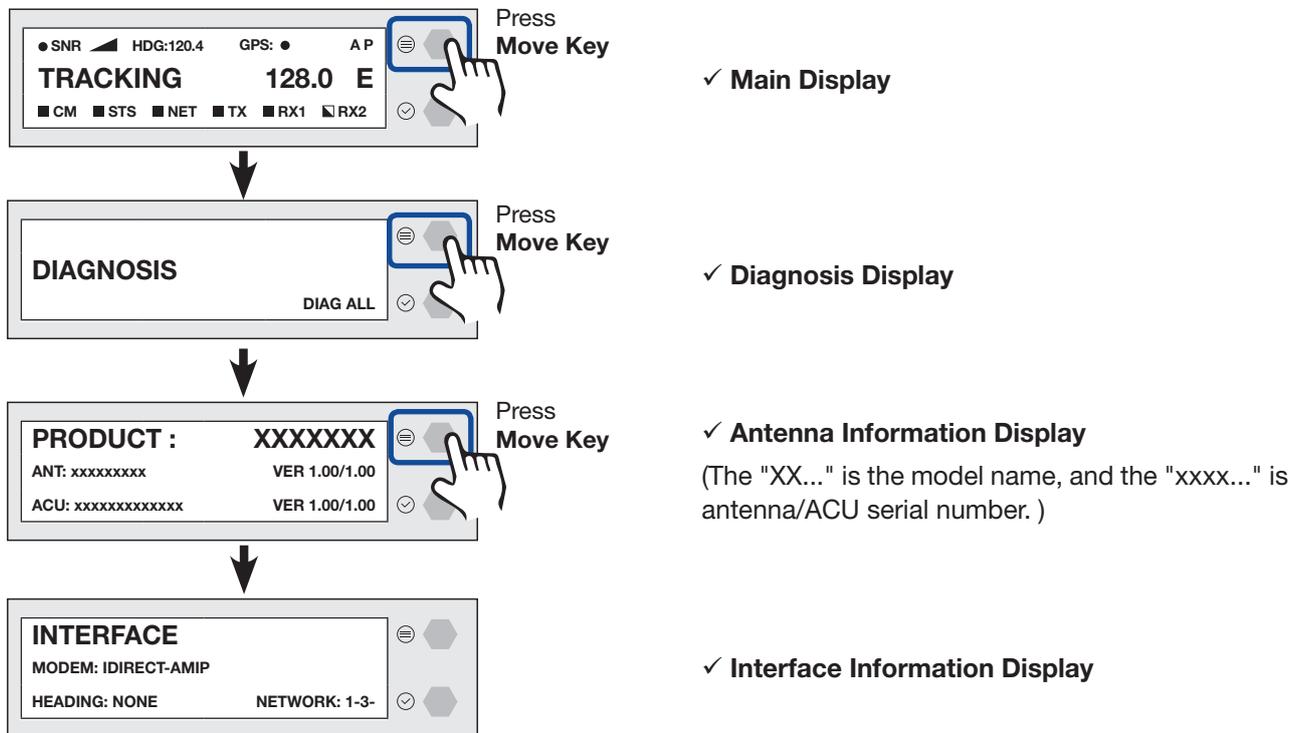
Refer to the Antenna Information display.



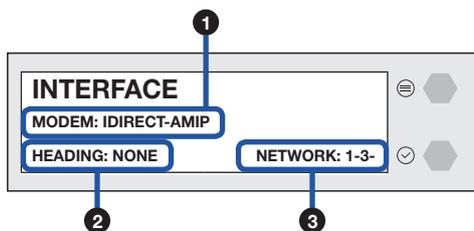
No.	Item	Description
①	Antenna Serial Number	Displays the Antenna serial number. The serial number is displayed depending on the product.
②	PCU Version/ STAB Version	Displays the PCU version, Stabilizer version.
③	ACU Serial Number	Displays the ACU (BDT) serial number. The serial number is displayed depending on the product.
④	ACU Version/ iARM Version	Displays the ACU Main firmware version, iARM version.

Interface Information

Displays the modem/heading type in use and the network connection status.



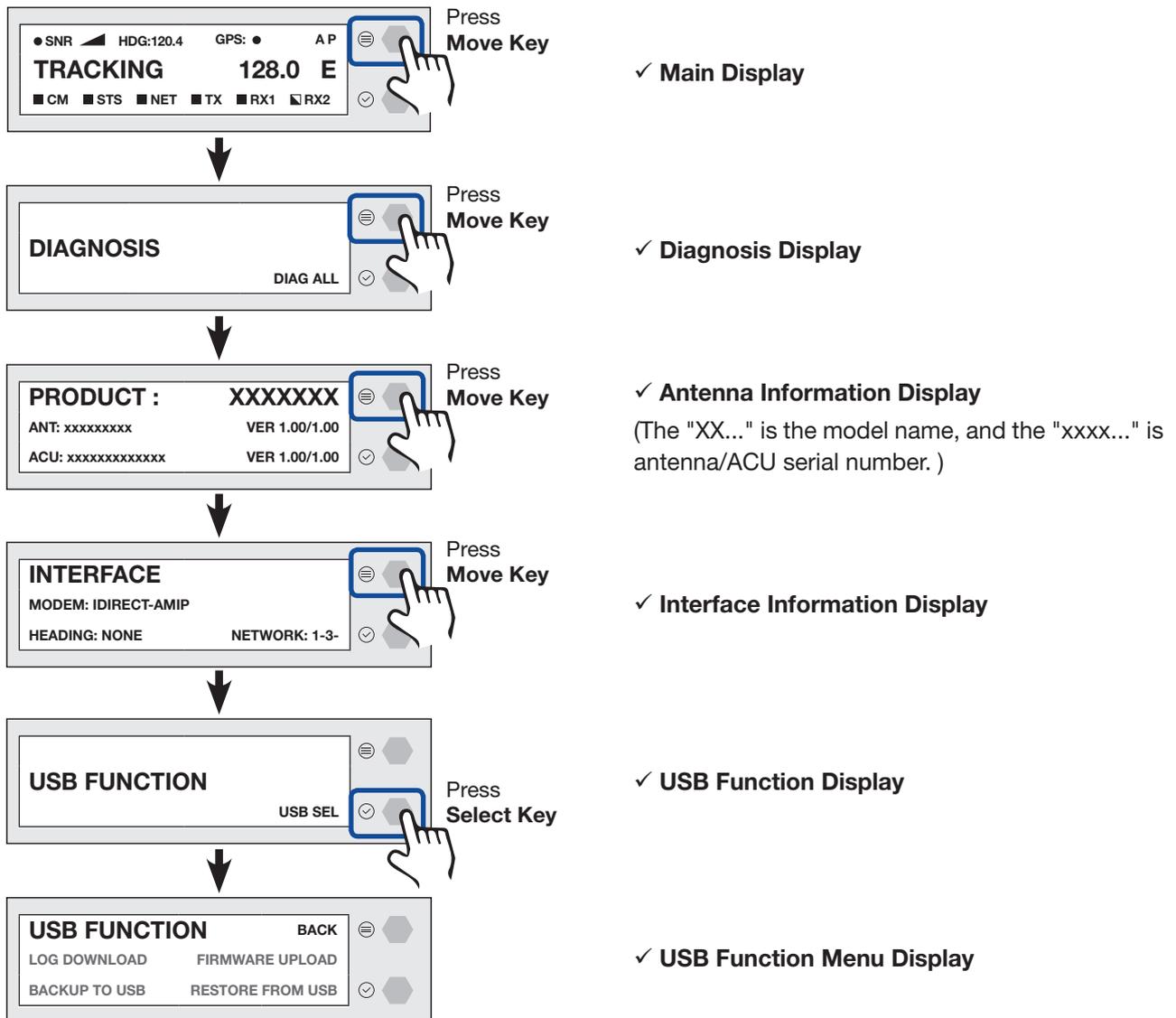
Refer to the Interface Information.



No.	Item	Description
①	MODEM	Displays the modem type in use. (IDIRECT-AMIP)
②	HEADING	Displays the heading type in use (NONE, NMEA0183, STATIC, NMEA2000).
③	NETWORK	Displays the network connection status with the BDT. <ul style="list-style-type: none"> • An example of network result: 1-3- - ' - ' : the network is not connected. - ' 1~4 ' : the number (1~4) of connected BDT port to network.

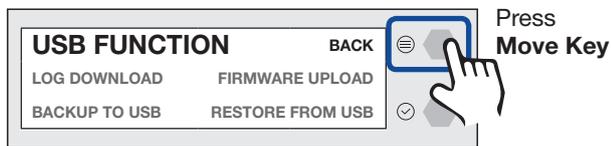
USB Function

To use this function, a USB Memory Stick must be connected to the USB port (the right USB port on the front of the BDT). The USB Function supports the four menus (LOG DOWNLOAD, FIRMWARE UPLOAD, BACKUP TO USB, RESTORE FROM USB). For detailed information about each function, refer to the next page.



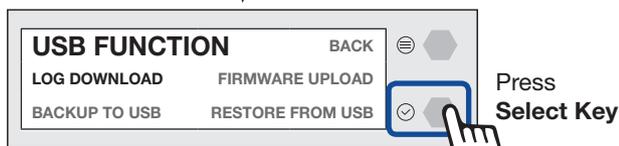
LOG DOWNLOAD

Downloads all data logs to the USB memory stick

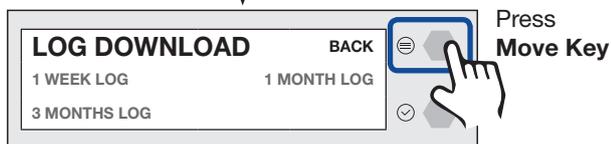


Press
Move Key

✓ USB Function Menu Display

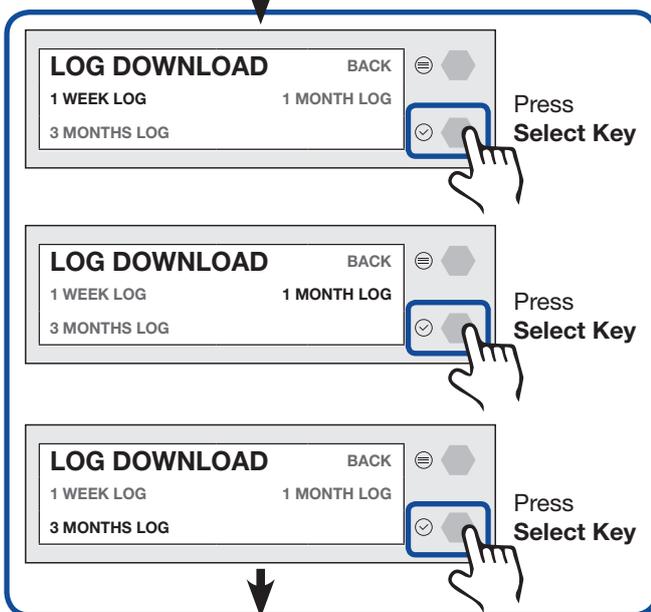


Press
Select Key



Press
Move Key

✓ Log Download Menu Display



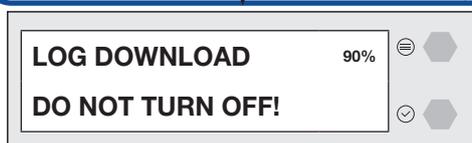
Press
Select Key

Press
Select Key

Press
Select Key

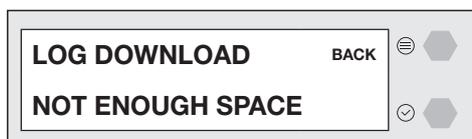
✓ Download Log File to USB

(Select one of three options: 1 WEEK LOG / 1 MONTH LOG / 3 MONTHS LOG)



✓ Download Process Display

If there is not enough space on the USB memory stick, the "NOT ENOUGH SPACE" message will appear.



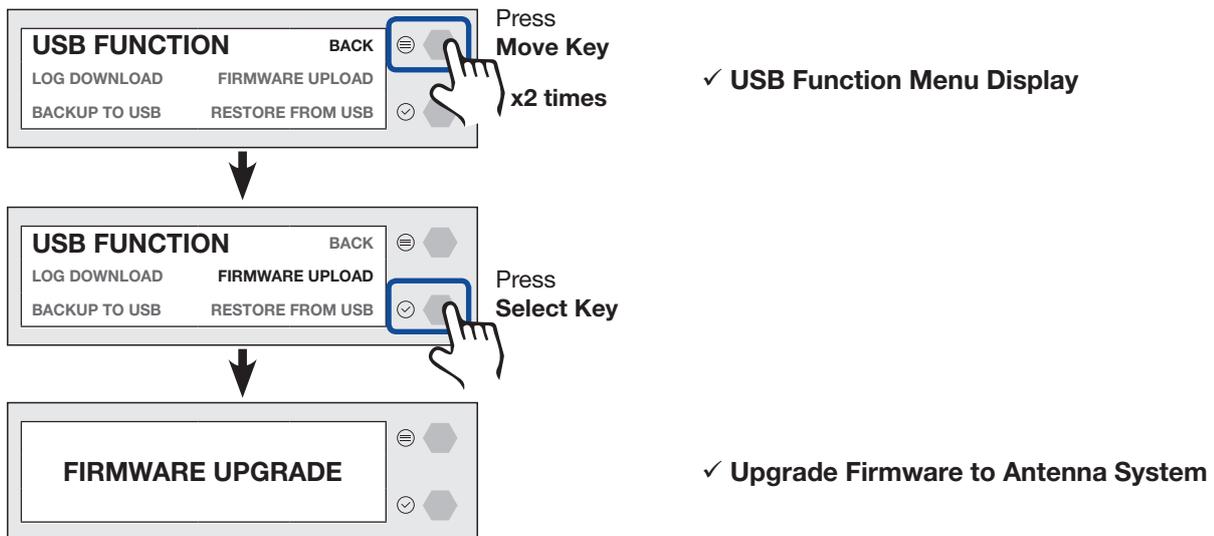
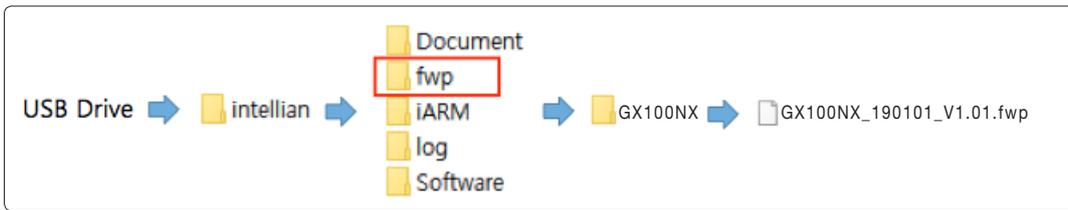
NOTE

NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

FIRMWARE UPLOAD

To use Firmware Upload function, you must follow the folder structure guide to configure the folders properly. It supports up to FAT32. The antenna system is upgraded with the FWP file in the designated folder of a USB memory stick.



If the firmware file does not match the file format, the "INVALID FILE FORMAT" message will appear.



If there is no firmware file on the USB memory stick, the "FILE NOT FOUND" message will appear.

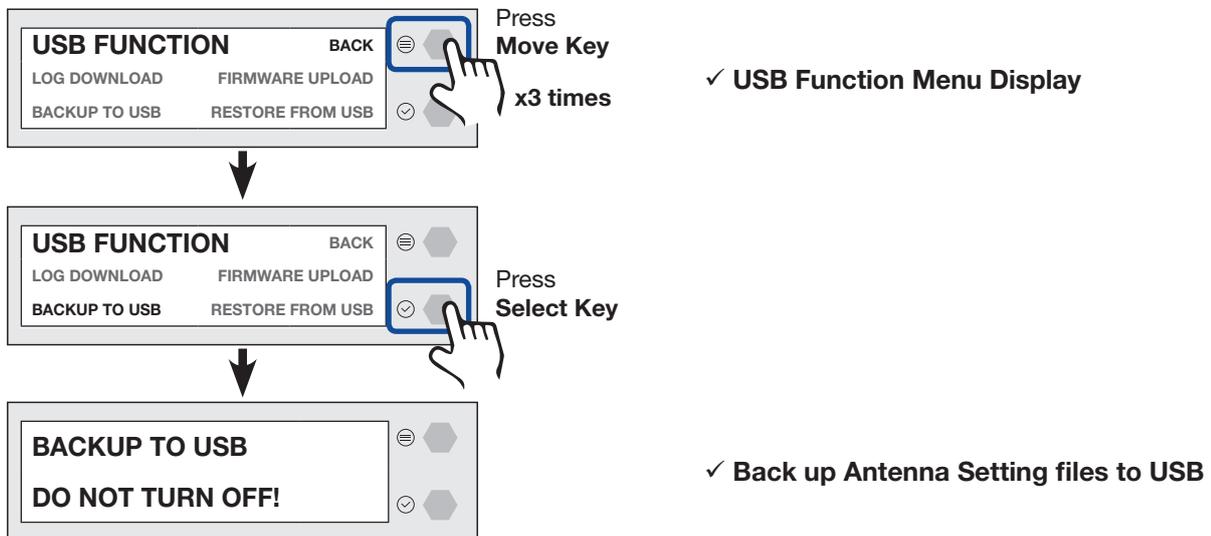


NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

BACKUP TO USB

Backs up the antenna setting files to the USB.



If there is not enough space on the USB memory stick, the "NOT ENOUGH SPACE" message will appear.

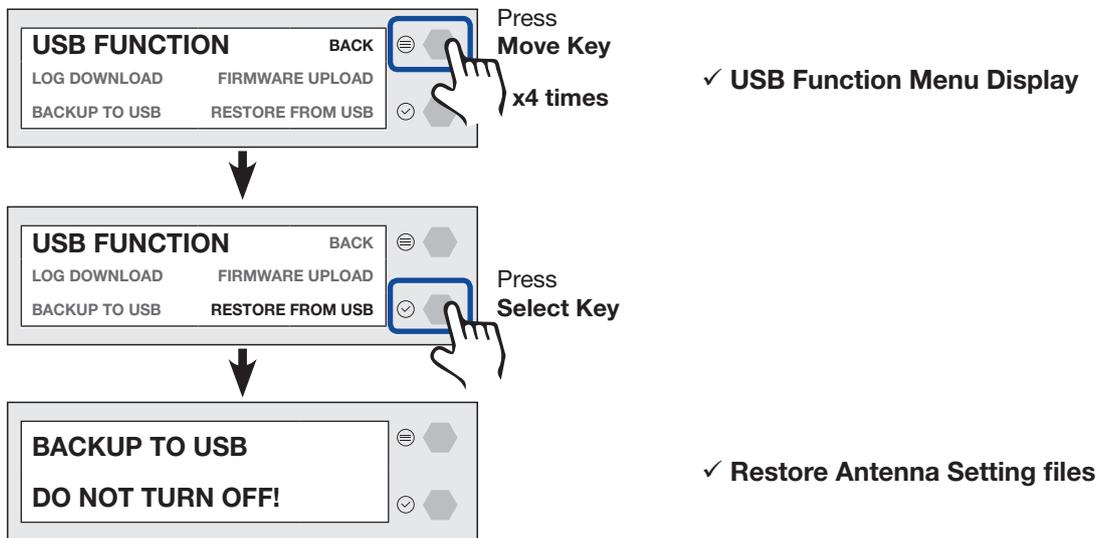


NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

RESTORE FROM USB

Restores the antenna setting by using the setting files saved in USB.



NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

Operating ACU (Optional)

Introduction

Antenna Control Unit (ACU)

To use the Dual Antenna System (optional), the antenna system needs an additional Secondary ACU and antenna to support the Dual Antenna System operation.

The Antenna Control Unit (ACU) controls the various settings of the antenna.

Antenna System Type	Target Antenna
Dual Antenna System (optional)	Controls and manages the secondary antenna .

ACU Front Panel

The following figure shows the ACU's front panel.

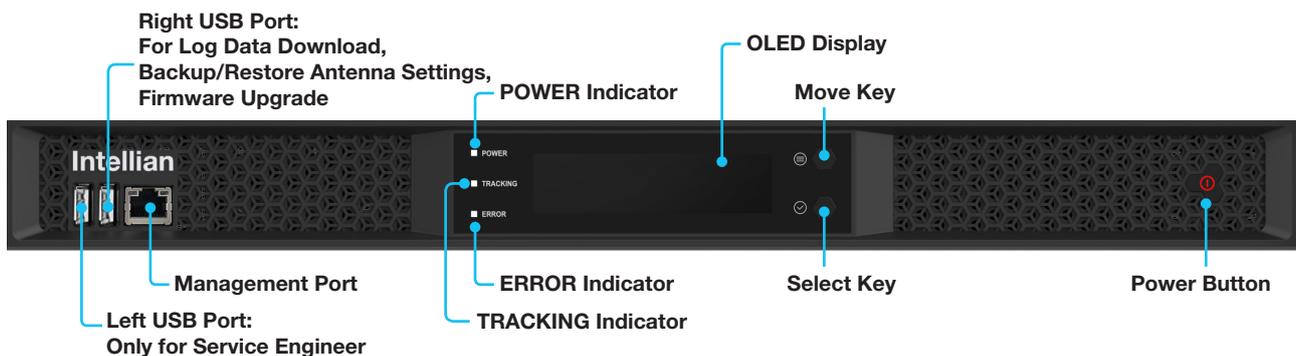


Figure: Name of ACU Front Panel

The following table shows the function of each touch key.

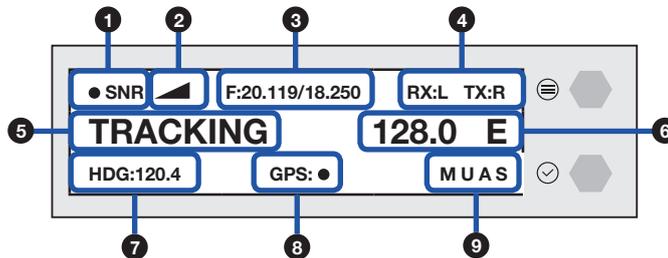
Touch key	Function
Power Button	Power on/off the ACU.
Move Key	Moves to the desired screen.
Select Key	Selects the desired screen.

The following table shows status indicators on the face of ACU.

LED Display	Color	Description
POWER	Steady Green	The ACU is powered on.
	Off	The ACU is powered off.
ERROR	Steady Red	The antenna is faulty.
TRACKING	Steady Green	The antenna is in tracking mode.

ACU Display Menu

The following figure shows the ACU display menu.



The following table shows the function of each touch key.

No.	Item	Description										
①	Satellite Lock	Displays the satellite lock status.										
②	Signal Level	Displays the antenna signal level.										
③	Frequency Information (Target/LNB Local)	Displays the frequency information (Target, LNB Local).										
④	Polarization	Displays the Rx/Tx polarization (H: Horizontal, V: Vertical, L: LHCP, R: RHCP).										
⑤	Antenna Status	Displays the antenna status (TRACKING, SEARCH).										
⑥	Target Satellite	Displays the target satellite (E: East, W: West).										
⑦	Heading Information	Displays heading information (e.g. gyrocompass).										
⑧	GPS Lock	Displays the GPS lock status.										
⑨	Antenna System Status	<p>Displays the antenna system status.</p> <table border="1"> <thead> <tr> <th>Display</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>M</td> <td>This function is available when using the Dual Antenna System. Displays that the antenna system is in manual mode.</td> </tr> <tr> <td>U</td> <td>Displays that the antenna system is in progress firmware upgrades.</td> </tr> <tr> <td>A</td> <td><i>This function is available when using the Dual Antenna System.</i> Displays the antenna's active state. The active antenna (either primary or secondary antenna) is communicating (Tx/Rx) with a target satellite. <ul style="list-style-type: none"> A (Active): the active antenna is displayed on the screen. </td> </tr> <tr> <td>S</td> <td><i>This function is available when using the Dual Antenna System.</i> Displays the antenna's role status. <ul style="list-style-type: none"> S (Secondary): the ACU is connected to the secondary role's antenna. The secondary antenna's role is on standby and ready to assume primary antenna role to provide better service in the event of tracking failure or low signal level status. </td> </tr> </tbody> </table>	Display	Description	M	This function is available when using the Dual Antenna System. Displays that the antenna system is in manual mode.	U	Displays that the antenna system is in progress firmware upgrades.	A	<i>This function is available when using the Dual Antenna System.</i> Displays the antenna's active state. The active antenna (either primary or secondary antenna) is communicating (Tx/Rx) with a target satellite. <ul style="list-style-type: none"> A (Active): the active antenna is displayed on the screen. 	S	<i>This function is available when using the Dual Antenna System.</i> Displays the antenna's role status. <ul style="list-style-type: none"> S (Secondary): the ACU is connected to the secondary role's antenna. The secondary antenna's role is on standby and ready to assume primary antenna role to provide better service in the event of tracking failure or low signal level status.
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Startup

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



✓ **Startup**
("Intellian XX..." will appear. The "XX..." is the model name.)



✓ **Initialize Antenna Information**



✓ **Initialize Elevation Angle**

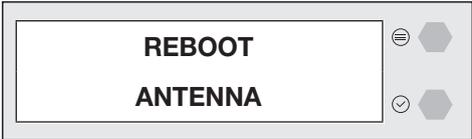


✓ **Initialize Azimuth Angle**



✓ **Antenna's Status**
(in Search 1 (Global Search), Search 3 (Local Search), Tracking, Beam Switching, Blocking)

When the antenna is controlled by AptusNX, the ACU displays the control mode status.



✓ **Control Mode Status**
(in Reboot Mode, Setup Mode, Test Mode)

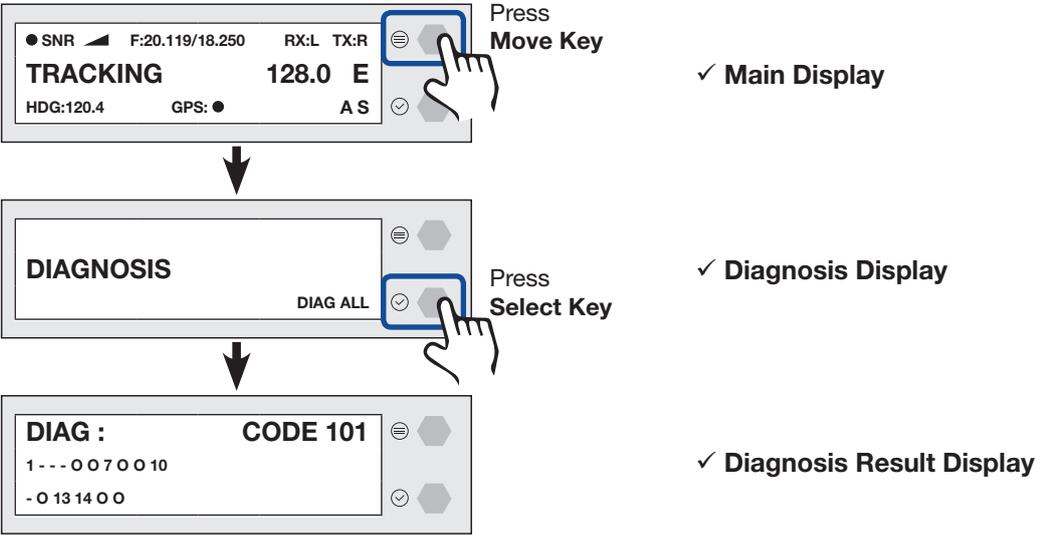


If the antenna is not communicating with ACU, the "COMMUNICATION ERROR" message will appear.

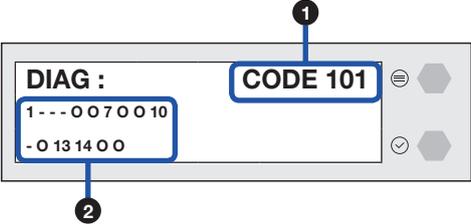


Diagnosis

Executes antenna Diagnosis test and shows the real-time diagnosis result.



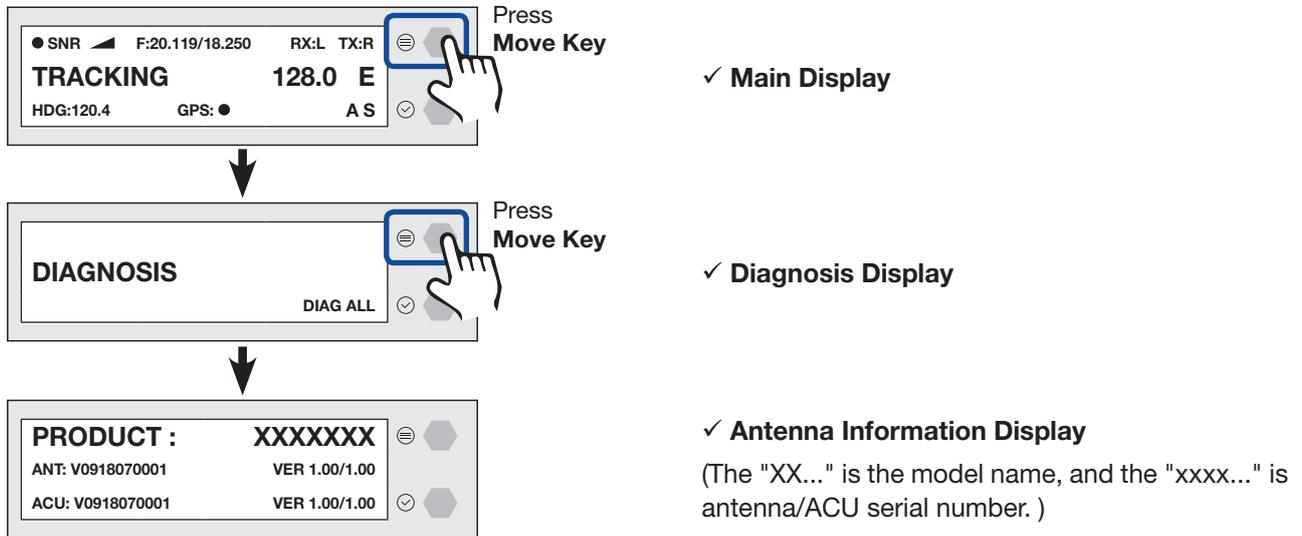
Refer to the diagnosis codes for the test results.



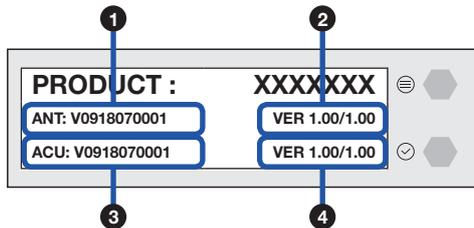
No.	Item	Description																																		
①	Diagnosis Code	<p>Displays the diagnosis code.</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Test</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>The data communication between the antenna and the ACU is tested.</td> </tr> <tr> <td>102</td> <td>The azimuth axis is tested.</td> </tr> <tr> <td>103</td> <td>The elevation axis is tested.</td> </tr> <tr> <td>104</td> <td>The cross-level axis is tested.</td> </tr> <tr> <td>105</td> <td>Not Available</td> </tr> <tr> <td>106</td> <td>Not Available</td> </tr> <tr> <td>107</td> <td>The rate sensor is tested.</td> </tr> <tr> <td>108</td> <td>Not Available</td> </tr> <tr> <td>109</td> <td>Not Available</td> </tr> <tr> <td>110</td> <td>The LNB / NBD is tested.</td> </tr> <tr> <td>111</td> <td>The LNB pol motor is tested.</td> </tr> <tr> <td>112</td> <td>Not Available</td> </tr> <tr> <td>113</td> <td>The antenna power is tested.</td> </tr> <tr> <td>114</td> <td>The ACU power is tested.</td> </tr> <tr> <td>115</td> <td>Not Available</td> </tr> <tr> <td>116</td> <td>The home sensor is tested.</td> </tr> </tbody> </table>	Code	Test	101	The data communication between the antenna and the ACU is tested.	102	The azimuth axis is tested.	103	The elevation axis is tested.	104	The cross-level axis is tested.	105	Not Available	106	Not Available	107	The rate sensor is tested.	108	Not Available	109	Not Available	110	The LNB / NBD is tested.	111	The LNB pol motor is tested.	112	Not Available	113	The antenna power is tested.	114	The ACU power is tested.	115	Not Available	116	The home sensor is tested.
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②	Diagnosis Result	<ul style="list-style-type: none"> An example of diagnosis result: <table border="1" style="margin-left: 20px;"> <tbody> <tr> <td style="border: 1px dashed red;">1 - - - 0 0 7 0 0 1 0</td> <td>← Diagnosis Result of Code 101~110</td> </tr> <tr> <td style="border: 1px dashed red;">- 0 1 3 1 4 0 0</td> <td>← Diagnosis Result of Code 111~116</td> </tr> </tbody> </table> ' - ' : The test was passed. Code 102, 103, 104 and 111 were passed. Last 1 or 2 digits of diagnosis code : The test was failed. Code 101, 107, 110, 113 and 114 were failed. ' 0 ' : The test was not performed. Code 105, 106, 108, 109, 112, 115 and 116 were not performed. 	1 - - - 0 0 7 0 0 1 0	← Diagnosis Result of Code 101~110	- 0 1 3 1 4 0 0	← Diagnosis Result of Code 111~116																														
1 - - - 0 0 7 0 0 1 0	← Diagnosis Result of Code 101~110																																			
- 0 1 3 1 4 0 0	← Diagnosis Result of Code 111~116																																			

Antenna Information

Displays the Antenna/ACU serial number, PCU/STAB/ACU/iARM Version of the product.



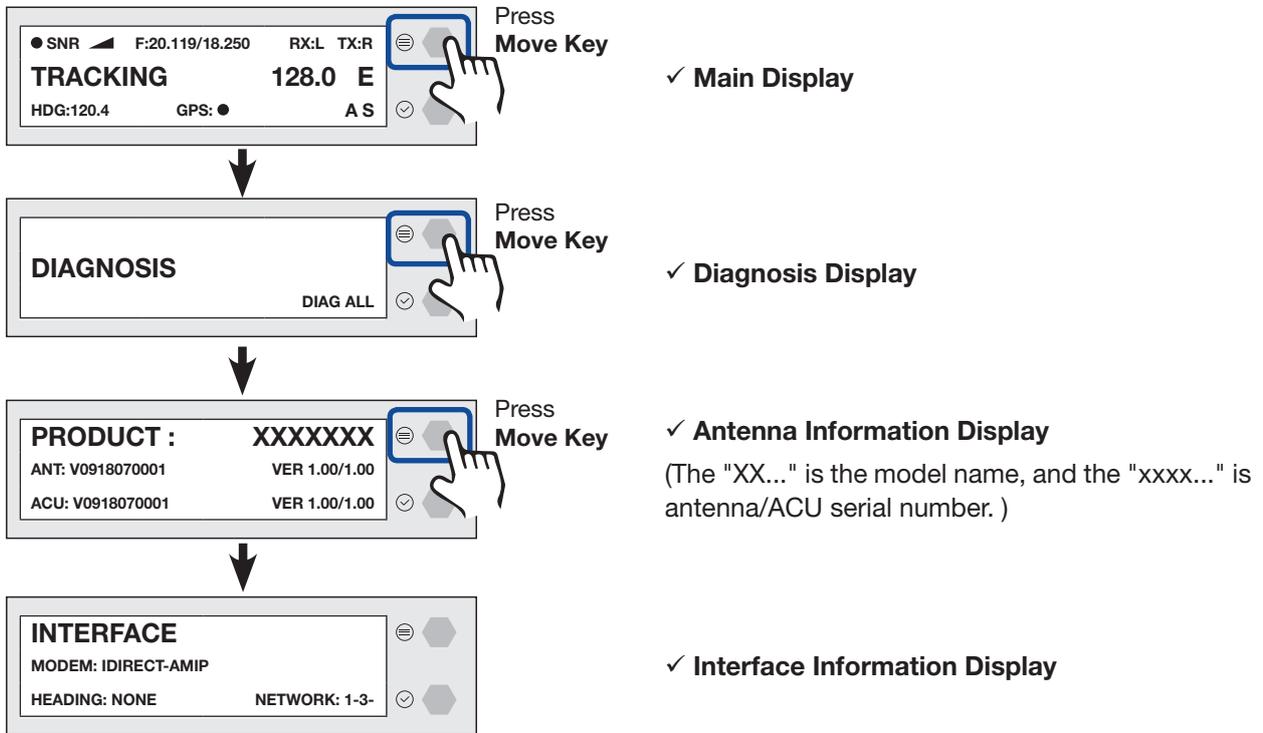
Refer to the Antenna Information display.



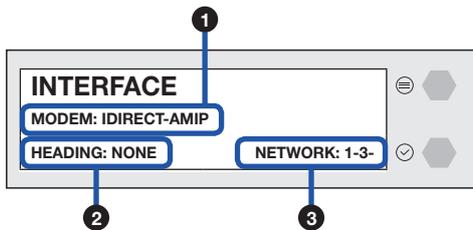
No.	Item	Description
①	Antenna Serial Number	Displays the Antenna serial number. The serial number is displayed depending on the product.
②	PCU Version/ STAB Version	Displays the PCU version / Stabilizer version.
③	ACU Serial Number	Displays the ACU serial number. The serial number is displayed depending on the product.
④	ACU Version/ iARM Version	Displays the ACU version / iARM version.

Interface Information

Displays the modem/heading type in use and the network connection status.



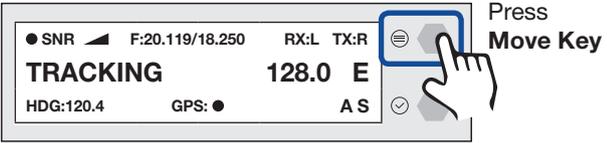
Refer to the Interface Information.



No.	Item	Description
①	MODEM	Displays the modem type in use. (IDIRECT-AMIP)
②	HEADING	Displays the heading type in use (NONE, NMEA0183, STATIC, NMEA2000).
③	NETWORK	Displays the network connection status with the ACU. <ul style="list-style-type: none"> • An example of network result: 1-3- - ' - ' : the network is not connected. - ' 1~4 ' : the number (1~4) of connected ACU port to network.

USB Function

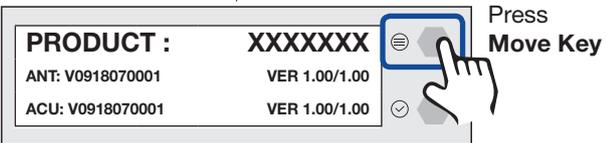
To use this function, a USB Memory Stick must be connected to the USB port (the right USB port on the front of the ACU). The USB Function supports the four menus (LOG DOWNLOAD, FIRMWARE UPLOAD, BACKUP TO USB, RESTORE FROM USB). For detailed information about each function, refer to the next page.



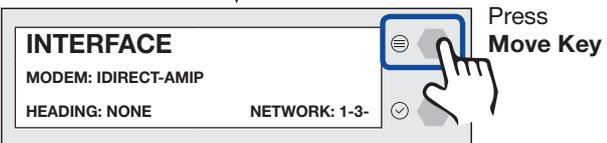
✓ Main Display



✓ Diagnosis Display



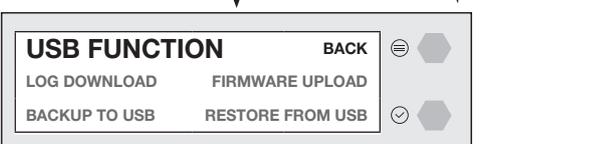
✓ Antenna Information Display
(The "XX..." is the model name, and the "xxxx..." is antenna/ACU serial number.)



✓ Interface Information Display



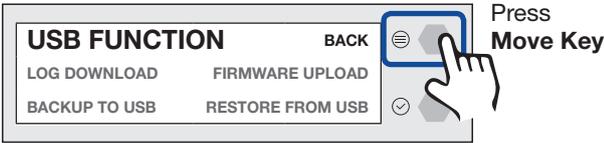
✓ USB Function Display



✓ USB Function Menu Display

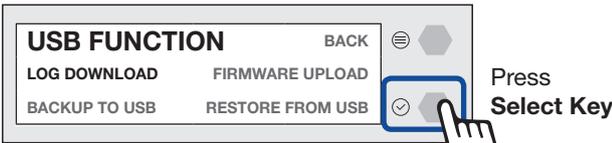
LOG DOWNLOAD

Downloads all data logs to the USB memory stick

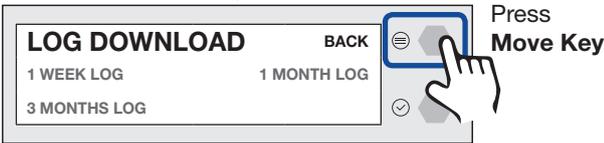


Press Move Key

✓ USB Function Menu Display

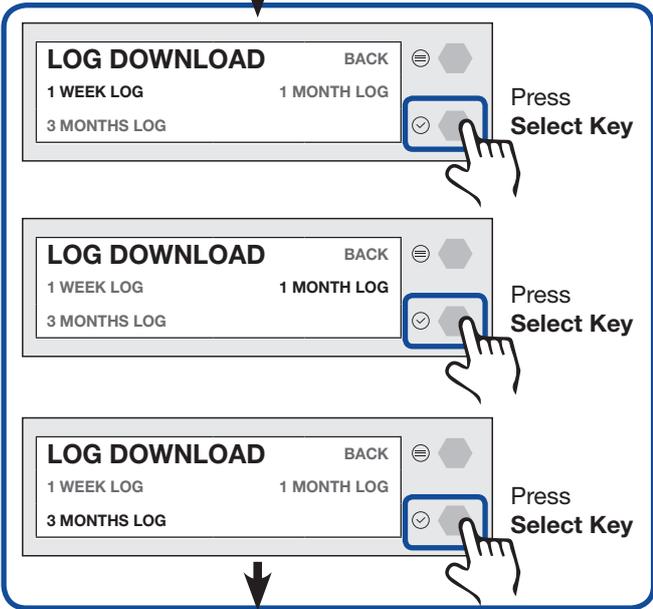


Press Select Key



Press Move Key

✓ Log Download Menu Display



Press Select Key

✓ Download Log File to USB

(Select one of three options: 1 WEEK LOG / 1 MONTH LOG / 3 MONTHS LOG)

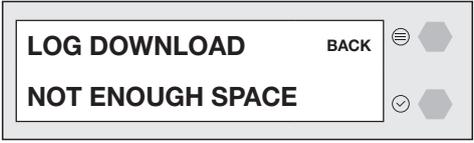
Press Select Key

Press Select Key

✓ Download Process Display



If there is not enough space on the USB memory stick, the "NOT ENOUGH SPACE" message will appear.

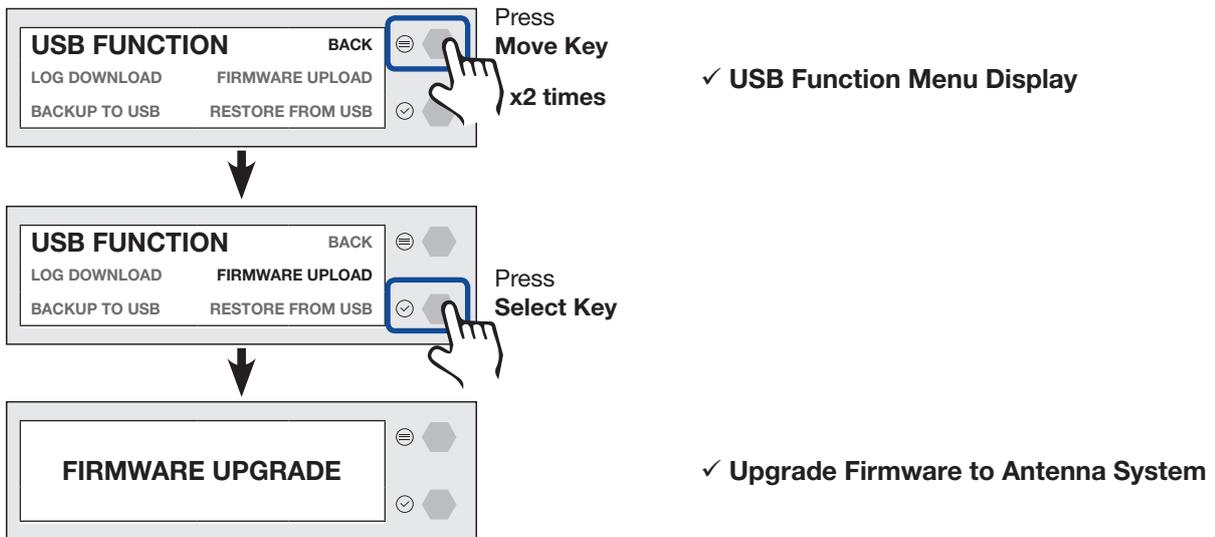
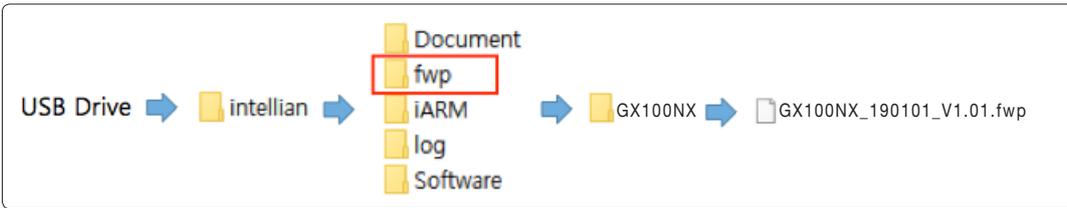


NOTE

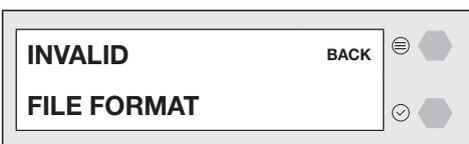
When you want to return to the previous display, select the "BACK" option then press the "Select" key.

FIRMWARE UPLOAD

To use Firmware Upload function, you must follow the folder structure guide to configure the folders properly. It supports up to FAT32. The antenna system is upgraded with the FWP file in the designated folder of a USB memory stick.



If the firmware file does not match the file format, the "INVALID FILE FORMAT" message will appear.



If there is no firmware file on the USB memory stick, the "FILE NOT FOUND" message will appear.

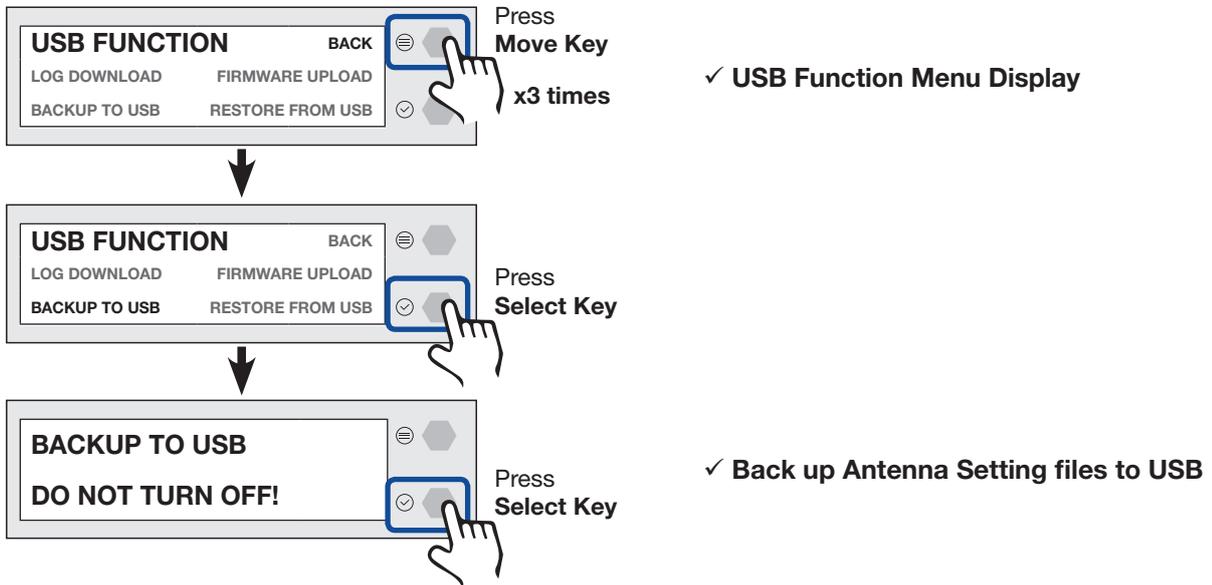


NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

BACKUP TO USB

Backs up the antenna setting files to the USB.



If there is not enough space on the USB memory stick, the "NOT ENOUGH SPACE" message will appear.

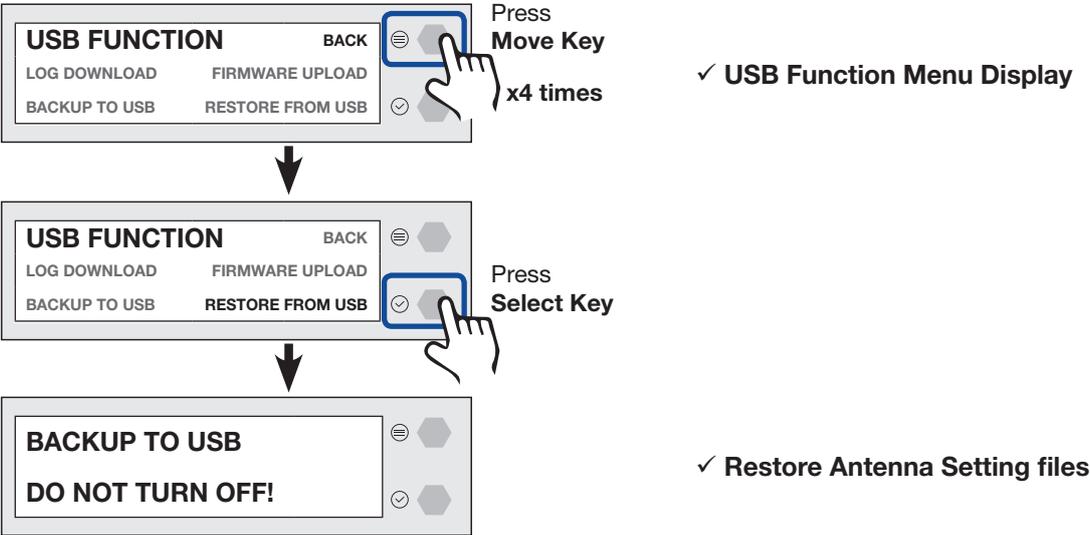


NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

RESTORE FROM USB

Restores the antenna setting by using the setting files saved in USB.



NOTE

When you want to return to the previous display, select the "BACK" option then press the "Select" key.

Using AptusNX

Introduction

With embedded AptusNX software, the antenna can be monitored, controlled, and diagnosed remotely from anywhere, anytime through 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 Diagnosis.

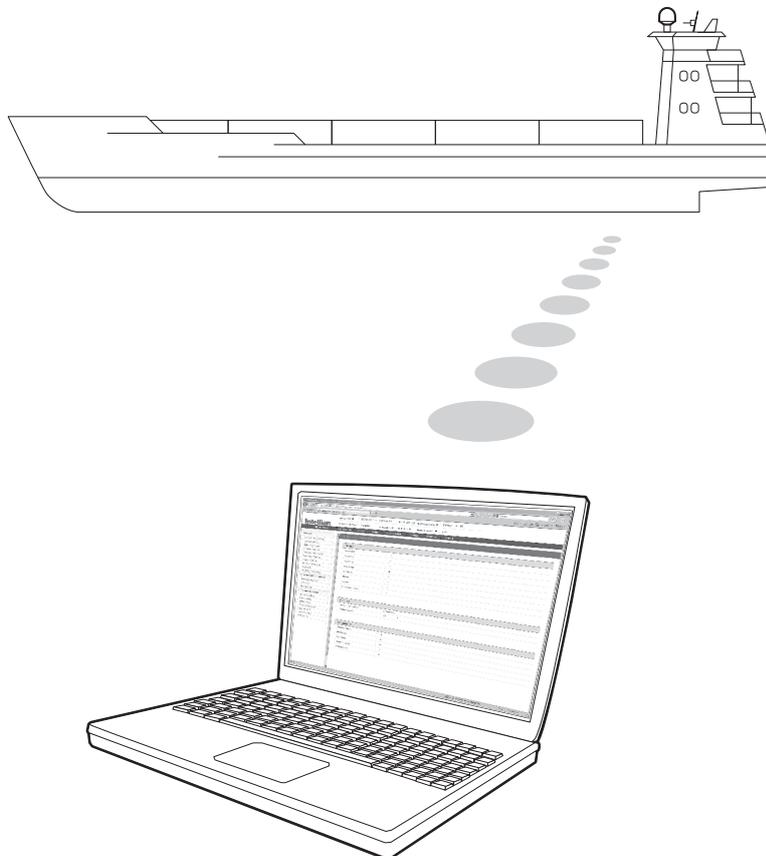
How to access AptusNX for BDT

1. Connect an Ethernet cable from the Management LAN port on the front of the BDT to the LAN port of PC. This method is most recommended.
2. Enter the BDT's IP address (**192.168.2.1**) into your web browser's address bar to login into the BDT's internal HTML page, if this system has not been changed from the BDT's factory default.



NOTE

AptusNX can be displayed on Internet Explorer 11 or later (Windows 7 or later), and is also compatible with Firefox, Microsoft Edge and Chrome web browsers.



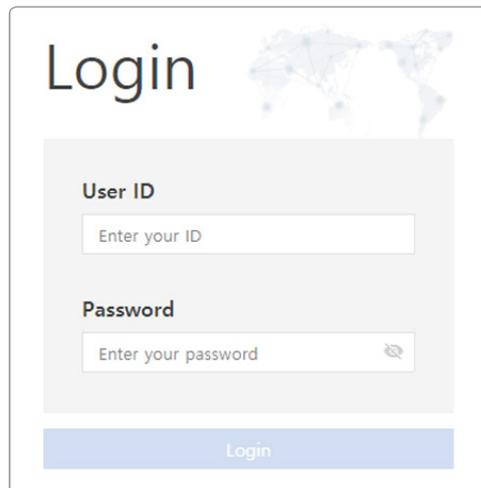
Main Page

Page Login

The Intellian software Aptus provides a different user level access to ensure safe operation of the system. Depending on the user level, a limited range or a full range of functions can be accessed and operational.

1. Log into the BDT by typing in User Name and Password information. If this system has not been changed from the factory default:

User Type	User ID	Password	Access Authority
Admin	<i>intellian</i>	<i>12345678</i>	Supports all menus for monitoring and setting.
	<i>captain</i>	<i>12345678</i>	Supports all menus for monitoring and setting. Can control and manage user permission separately.
User	<i>guest</i>	<i>guest</i>	Only some menus for monitoring are supported. (Dashboard, Tools, Troubleshooting)



The screenshot shows a login interface with the title 'Login' and a world map icon. Below the title are two input fields: 'User ID' with the placeholder text 'Enter your ID' and 'Password' with the placeholder text 'Enter your password' and a visibility toggle icon. A blue 'Login' button is positioned at the bottom of the form.



NOTE

After entering with the default password, the user must change the default password to a new password for security.

Top Menus

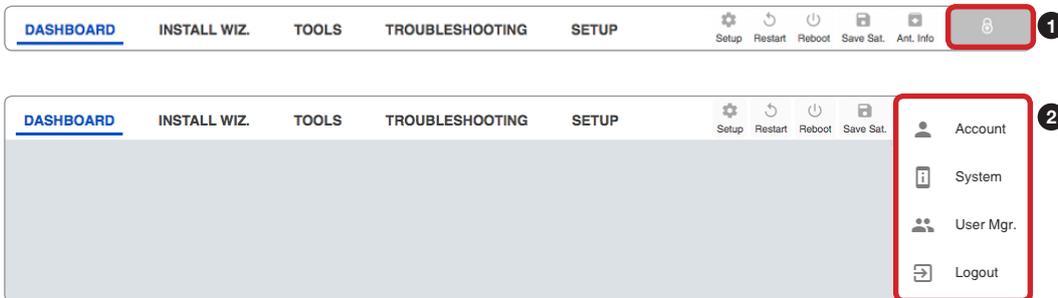
Once you log in, the following information and menus are displayed.



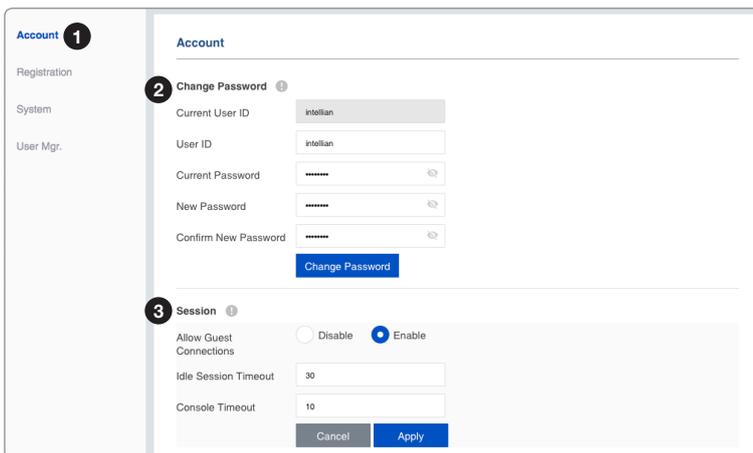
No.	Item	Description												
①	Target Satellite	Displays the name of the targeted satellite.												
②	Quick Status Screen Area	When clicking this top menu area (marked as red dots), the "Quick Status Screen" appears. You can quickly monitor each status of the four items (Enable Mode, Blockage, Pointing, Modem Lock) through the screen (Blue: enable, Black: disable). <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> <p>APTUS NX</p> <ul style="list-style-type: none"> ■ Enable Mode ■ Blockage ■ Pointing ■ Modem Lock <p style="text-align: right;">Close</p> </div> <p><Quick Status Screen></p>												
③	Antenna Status Info	Displays the antenna status through a yellow indicator in the SETUP mode. <ul style="list-style-type: none"> Initialize: the antenna system is initialized. Searching: the antenna is searching the target satellite. Tracking: the antenna is tracking the target satellite. 												
④	Signal Level	Displays the current signal level.												
⑤	Tx Status	Displays whether or not the antenna is able to transmit data.												
⑥	Lock	Displays whether or not the satellite is locked.												
⑦	Main Menu	Selects the Main Menu (DASHBOARD, INSTALL WIZ, TOOLS, TROUBLESHOOTING, SETUP). Each main menu offers side menus on the left of the screen.												
⑧	Setup	Enters the setup mode to modify settings. The following functions are available only in setup mode. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Main Menu</th> <th>Side Menu</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td rowspan="4">SETUP</td> <td rowspan="3">Antenna</td> <td>Antenna Angle</td> </tr> <tr> <td>Dish Scan Range Check</td> </tr> <tr> <td>Sensor Calibration <ul style="list-style-type: none"> Tilt Sensor Bias Rate Sensor Bias </td> </tr> <tr> <td>Antenna Mode <ul style="list-style-type: none"> Set Idle Mode </td> </tr> <tr> <td></td> <td>Backup & Restore Setting</td> <td>Antenna Restore</td> </tr> </tbody> </table>	Main Menu	Side Menu	Function	SETUP	Antenna	Antenna Angle	Dish Scan Range Check	Sensor Calibration <ul style="list-style-type: none"> Tilt Sensor Bias Rate Sensor Bias 	Antenna Mode <ul style="list-style-type: none"> Set Idle Mode 		Backup & Restore Setting	Antenna Restore
Main Menu	Side Menu	Function												
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		Dish Scan Range Check												
		Sensor Calibration <ul style="list-style-type: none"> Tilt Sensor Bias Rate Sensor Bias 												
	Antenna Mode <ul style="list-style-type: none"> Set Idle Mode 													
	Backup & Restore Setting	Antenna Restore												
⑨	Restart	Restarts the antenna system.												
⑩	Reboot	Reboots the antenna system to become the normal mode when operating in Setup mode.												
⑪	Save Sat.	Saves bow offset.												
⑫	Ant. Info	Obtains current antenna information.												
⑬	Account Button	Select the "Account" button and enter the user management menu. The "Account" and the "Logout" menu will appear. Select the "Account" menu to manage your account details and select the "Logout" menu to log out of the AptusNX web page.												

Account Menu

1. Select the "Account" button and enter the user management menu.
2. The "Account", "System", "User Mgr.", and "Logout" menu options will appear. Select one of the first three options to manage or control details, or select the "Logout" menu to log out of the AptusNX web page.



Account



No.	Item	Description
①	Account	Updates your password and sets timeout.
②	Change Password	<p>You can change your password.</p> <ul style="list-style-type: none"> • Current User ID: displays your user ID. • User ID: enter the current user ID. • Current Password: enter the current password. • New Password: enter the new password. • Confirm New Password: re-enter the new password to verify that it was entered correctly. <p>Click the "Change Password" button to change to the new password. At the next login, the new password is required.</p>
③	Session	<p>You can set guest connection and timeout.</p> <ul style="list-style-type: none"> • Allow Guest Connections: sets up the guest access option (Disable / Enable). • Idle Session Timeout: sets the Idle timeout. • Console Timeout: sets the console timeout. <p>Click the "Apply" button to apply the settings to the system.</p>

Registration

The screenshot shows the 'Registration' page in the AptusNX interface. On the left is a navigation menu with 'Registration' selected and numbered 1. The main content area is titled 'Registration' and contains the following sections:

- Section 1 (Registration):** A message box stating, "For better customer service, please register your product information and customer information. Thank you."
- Section 2 (Product):** Contains two input fields: 'Antenna' with the value 'V5-85-U1JW' and 'Serial Number' with the value 'V0918070001'.
- Section 3 (Vessel):** Contains a radio button group for 'Has IMO Number' with 'Yes' selected and 'No' unselected, followed by an empty 'IMO Number' input field.
- Section 4 (Service Provider):** Contains three empty input fields labeled 'Service Provider 1', 'Service Provider 2', and 'Service Provider 3'.

At the bottom of the form are two buttons: 'Cancel' and 'Register(Update)'.

No.	Item	Description
①	Registration	Enters product registration information for the convenient use of a product. Click the "Register (Update)" button to apply the settings to the system.
②	Product	Displays the antenna information. <ul style="list-style-type: none"> • Antenna: displays the antenna name. • Serial Number: displays the antenna serial number.
③	Vessel	Enters the vessel information. There are two options whether using the IMO number or not. When you have the IMO number select the "Yes" button and enter the IMO Number. When you do not have the IMO number select the "No" button and enter the Ship Name, Type, and Owner information. <ul style="list-style-type: none"> • Has IMO Number: selects whether using the IMO number or not. • IMO Number: enters the IMO number.
④	Service Provider	Enters the service provider information. <ul style="list-style-type: none"> • Service Provider 1/2/3: enters the name of the service provider.

System

Account
Print

Registration

System ①

User Mgr.

System

② Antenna Information

Antenna Size 100 cm / 41 inch

Antenna Voltage 45.4V

ACU Voltage 23.4V

Temperature 13.9°C

Antenna Product V5-11G-U1TC

ACU Product VP-T84G1

Antenna Serial Number 12345678

ACU Serial Number PVP19030001

System Polarization none

System Band Ka Band

③ S/W Version Information

ACU Main v1.00

Antenna PCU v1.00

Antenna Stabilizer v1.00

Antenna Skew v1.00

Antenna Stacker v1.00

ACU Display v1.00

Lib Ver v1.00

④ Network Information

Control IP 192.168.2.1

Current IP 10.1.101.174

Idle Session Timeout 29:18

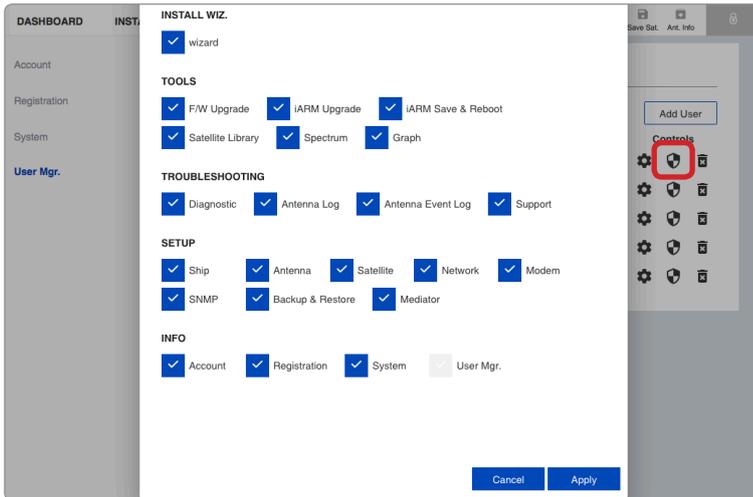
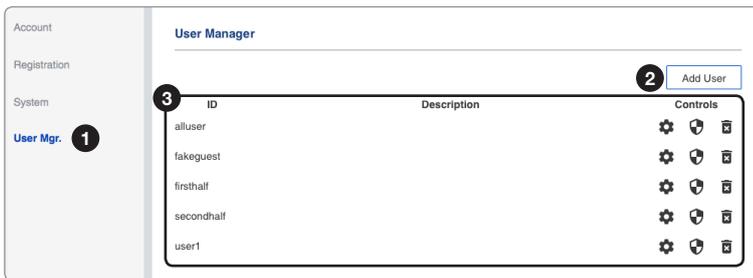
Date 2019-04-08

Time 12:53:51

Wifi Off

No.	Item	Description
①	System	Displays system information such as the antenna, S/W version, and network IP address.
②	Antenna Information	Displays antenna information.
③	S/W Version Information	Displays S/W version information.
④	Network Information	Displays network information.

User Manager

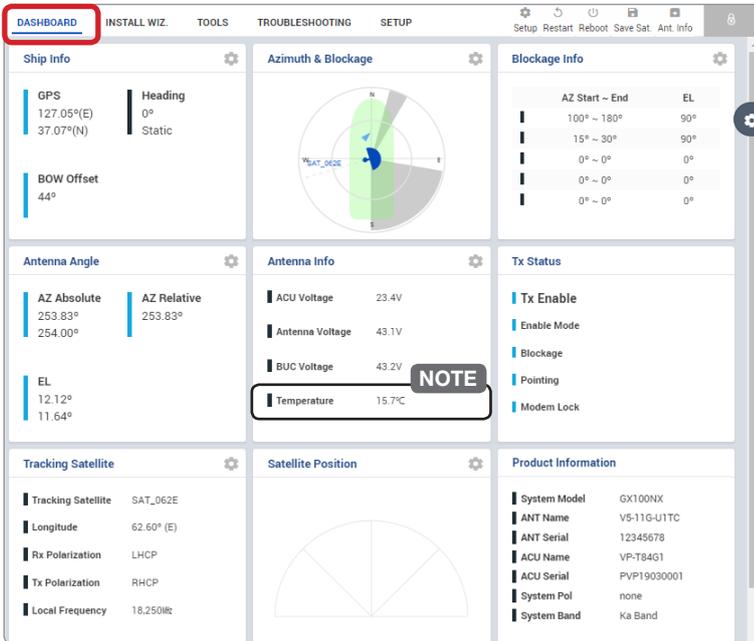


Editable User Permissions Menu

No.	Item	Description
①	User Manager	The captain with admin permissions can control and manage user permissions separately.
②	Add User	To add a new user, click the "Add User" button. The registration window will appear in the pop-up window. Enter the new user ID and password then click the "Add User" button.
③	User Management List	<p>Displays the user management state and can control and manage through the control buttons.</p> <ul style="list-style-type: none"> • ID: displays the registered user ID. • Description: displays the user's description. • Controls: each user can be controlled and managed by individual settings. <ul style="list-style-type: none"> - User Setting: reset the user ID by clicking the "Update User" button, and changes the password by clicking the "Reset Password" button. - Edit Menu Permission: choose user permissions by clicking the checkbox. After selecting the options, click the "Apply" button. The user can only access the selected menus. - Delete User: deletes the user.

Dashboard

The Dashboard menu is displayed as below to provide quick monitoring of the antenna status. The Dashboard helps you arrange panels on a single screen while providing you with a broad view of a variety of information at once. The dashboard contains multiple panels, which can easily customize the structure of your dashboard and arrange your panels in various ways to make them more readable and user-friendly.



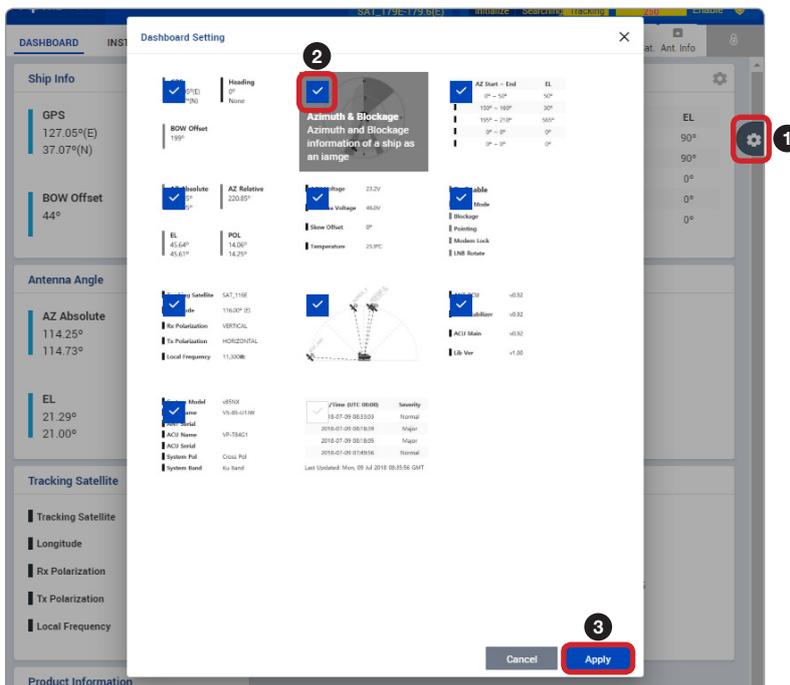
NOTE

The measured temperature may differ from the actual temperature.

How to Add & Remove Panels (Dashboard Setting)

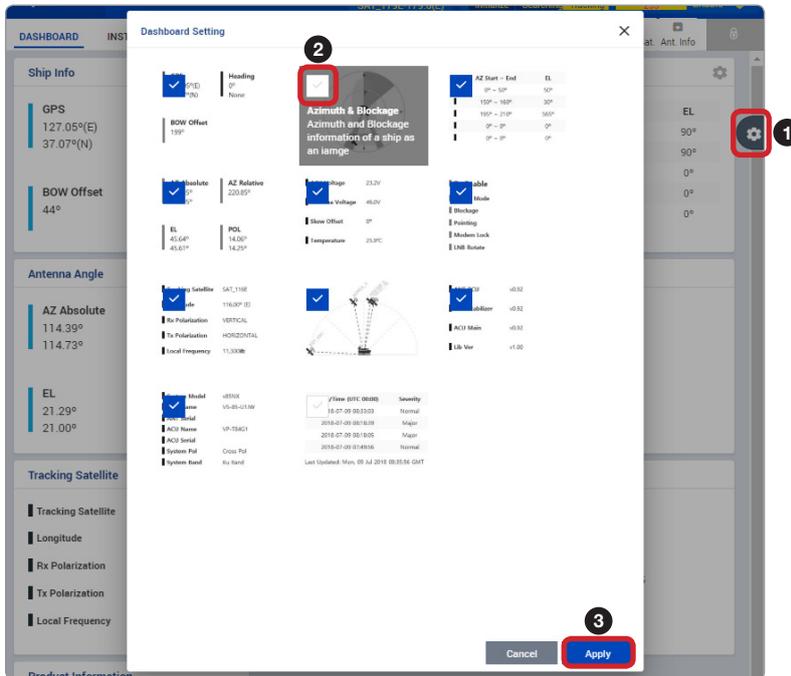
Adding Panels

1. On the right side of the page, you will see the gear icon to edit your dashboard. To start editing, click on the gear icon.
2. Check the box of the panel that you wish to add to the dashboard.
3. Click the "Apply" button to apply the settings to the system.
4. Once the panel is added, it will be automatically placed at the bottom of the page.



Removing Panels

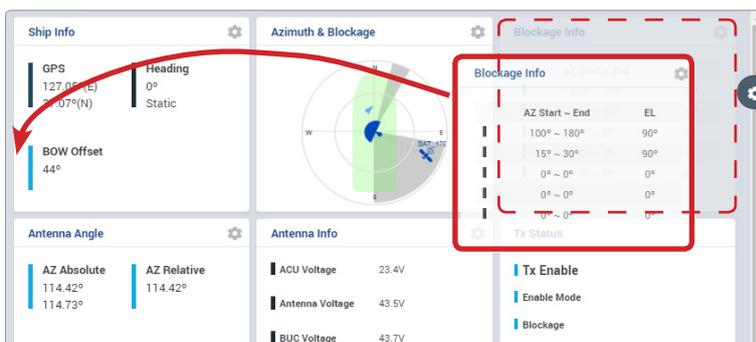
1. On the right side of the page, you will see the gear icon to edit your dashboard. To start editing, click on the gear icon indicated by the red mark.
2. Uncheck the box of the panel that you wish to remove from the dashboard.
3. Click the "Apply" button to apply the settings to the system.



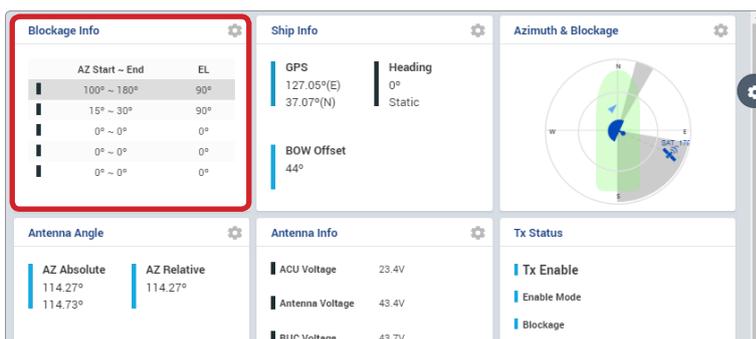
How to Arrange Dashboard Layout

You can customize the dashboard by rearranging panels as you wish.

1. Click and hold the left mouse button on a panel's title and then drag-and-drop in the desired position.



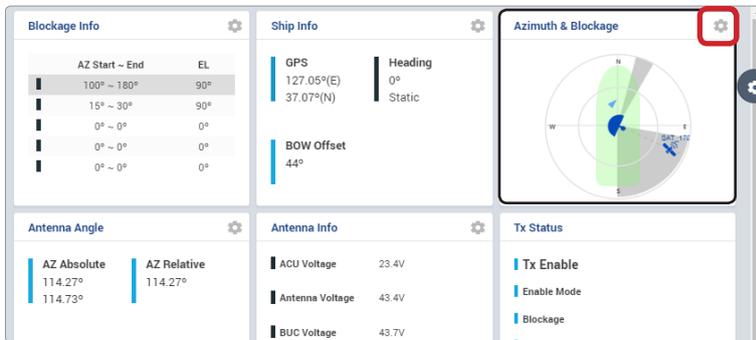
2. This time, the selected panel will be moved to the desired position. You can also move multiple panels into a customized layout in the same manner.



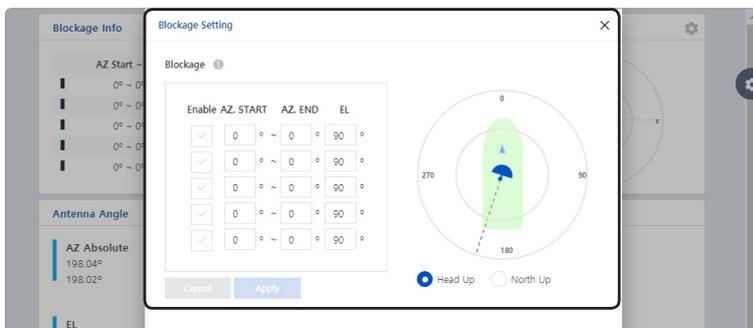
How to Use Shortcut Settings

Each panel on the dashboard provides a shortcut function. Using the "Shortcut" button on right side of the panel, you can easily access the detailed information and manage the each panel's settings.

1. Click the "Shortcut" button indicated by the red mark to open the setting page.

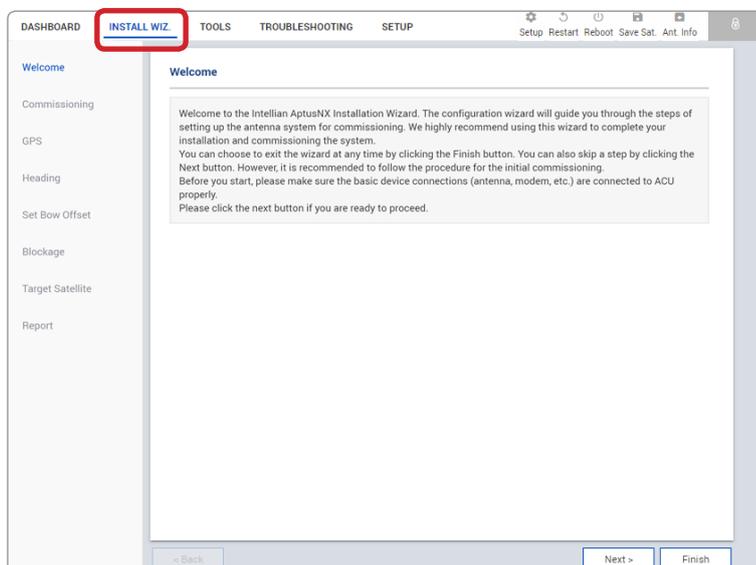


2. The setting page will appear on the individualized web page. You can check the detailed information and quickly apply settings that you wish.



Install Wizard

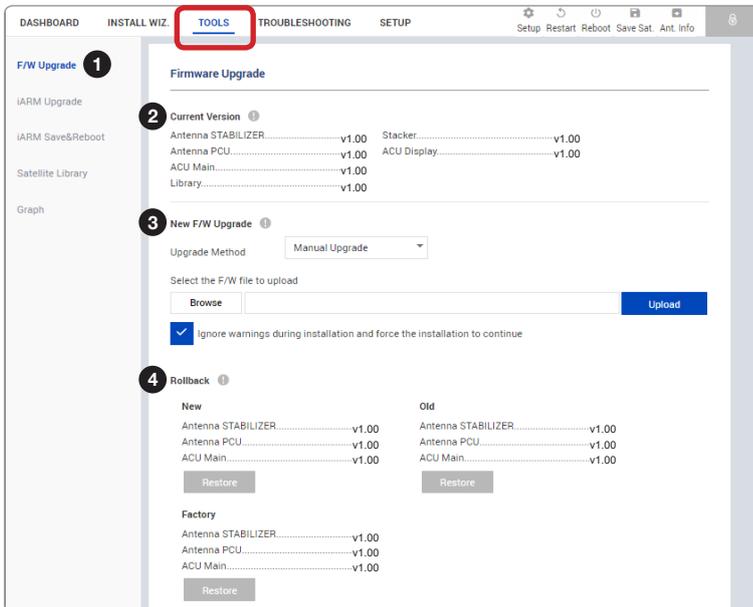
The description of this menu is written on the previous page. Refer to the "Starting Install Wizard" on page 48 for more details.



System Tools

This menu sets and displays the F/W Upgrade, iARM Upgrade, iARM Save&Reboot, Satellite Library, and Graph function.

Firmware Upgrade



No.	Item	Description
①	Firmware Upgrade	Displays current firmware versions and upgrades antenna firmware.
②	Current Version	Displays current firmware versions (Antenna STABILIZER, Antenna PCU, ACU Main, Library, Stacker, ACU Display)
③	New F/W Upgrade	Upgrades antenna firmware. 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. Uploading an incorrect firmware file may cause serious damage to your antenna and BDT. Please check firmware version before uploading firmware. <ul style="list-style-type: none"> Upgrade Method: selects an upgrade method between "Manual Upgrade" or "Auto Upgrade". <p>NOTE: when using the "Manual Upgrade" method, refer to the following "Antenna Firmware Update (Manual Upgrade method) Procedures" page for more details.</p>
④	Rollback	Displays previous/latest firmware package versions and rollback firmware to previous/latest version. Other function cannot be operated while rollback is in progress.

Antenna Firmware Upgrade (Manual Upgrade method) Procedures:

1. Choose "Manual Upgrade" from the pull-down menu of Upgrade Method. Browse and select the upgrade package file to upload. Click on the "Upload" button to transfer the Firmware package file (*.fwp) to iARM module.

New FW Upgrade

Upgrade Method: Manual Upgrade

Select the FW file to upload

Browse Upload

Ignore warnings during installation and force the installation to continue



NOTE

NOTE

When selecting the box "Ignore warnings during installation and force the installation to continue" before performing the upgrade, the warning messages do not appear during the upgrade.

2. The antenna firmware state will appear in the pop-up window. Check the current version and the new version. Click the "Start Upgrade" button.

Type	Current Ver.	New Ver.
STAB	v1.03	v1.02
PCU	v1.01	v1.01
ACU Main	v1.04	v1.03
SKEW	v1.01	v1.00
STACKER	v1.02	v1.00
ACU Display	v1.00	v1.00

Cancel Start Upgrade

3. During the upgrade process, the window will display process status.

Please do not turn off the power during the upgrade.

Type	Current Ver.	New Ver.	Result
STAB	v1.03	v1.03	Success
PCU	v1.01	v1.01	Success
ACU Main	v1.04	v1.04	24 %
SKEW	v1.01	v1.01	Ready
STACKER	v1.02	v1.02	Ready
ACU Display	v1.00	v1.00	Ready

Ok

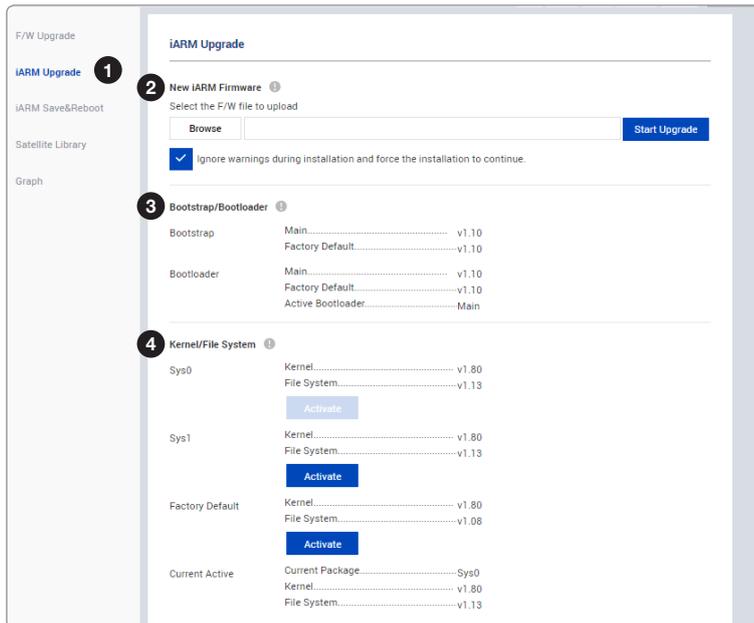
4. If the firmware is successfully upgraded, it will display as the "Success". Click the "Ok" button to close the pop-up window.

Please do not turn off the power during the upgrade.

Type	Current Ver.	New Ver.	Result
STAB	v1.03	v1.03	Success
PCU	v1.01	v1.01	Success
ACU Main	v1.04	v1.04	Success
SKEW	v1.01	v1.01	Success
STACKER	v1.02	v1.02	Success
ACU Display	v1.00	v1.00	Success

Ok

iARM Upgrade



No.	Item	Description
①	iARM Upgrade	Upgrades the firmware of iARM module.
②	New iARM Firmware	<p>Browse and select the iARM firmware file to upload and click "Start Upload" button. 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. Uploading an incorrect firmware file may cause serious damage to your antenna and BDT. Please check firmware version before uploading firmware.</p> <p>NOTE: refer to the following "iARM Upgrade Procedures" page for more details.</p>
③	Bootstrap/Bootloader	<p>Displays current bootstrap and bootloader version.</p> <ul style="list-style-type: none"> Bootstrap: displays the Bootstrap Version (Main, Factory Default). Bootloader: displays the Bootloader Version (Main, Factory Default, Active Bootloader)
④	Kernel/File System	<p>The BDT has three storage parts the Sys0, the Sys1 and the Factory Default. Selects the desired storage part and click the "Activate" button. Then perform the "iARM Save & Reboot" on page 93 to apply the settings to the system.</p> <ul style="list-style-type: none"> Sys0: displays the Sys0 version. Sys1: displays the Sys1 version. Factory Default: displays the Factory Default version. <p>The "Current Active" displays activated storage part Information.</p> <ul style="list-style-type: none"> Current Active <ul style="list-style-type: none"> Current Package: displays the activated storage part's name (Sys0, Sys1 or Factory Default). Kernel, File System: displays the activated storage part's file version.

iARM Upgrade Procedures:

1. Browse and select the iARM firmware file (.tgz) that you wish to upgrade. Click on "Start Update" button to update the iARM firmware. Wait until the page is loaded.



NOTE

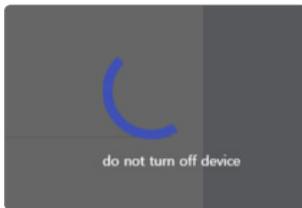
When selecting the box "Ignore warnings during installation and force the installation to continue" before performing the upgrade, the warning messages do not appear during the upgrade.

2. Once the update starts, the update process will be displayed on the screen. It will take about two minutes to complete the firmware upgrade.

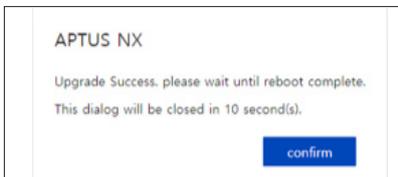


WARNING

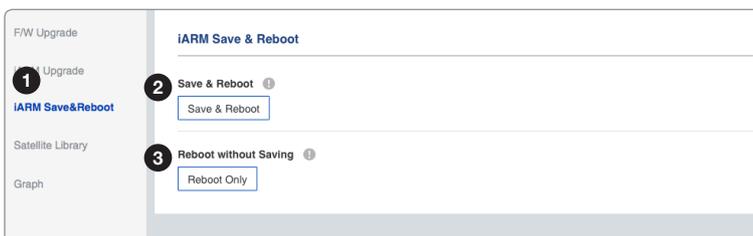
Do not turn off the device power if the firmware upgrade page is displayed. Failure to comply may lead to damage and/or malfunction of the system.



3. Once the upgrade is completed, the iARM module will automatically reboot in 10 seconds.



iARM Save & Reboot



No.	Item	Description
①	iARM Save & Reboot	Saves settings to the BDT and reboot or reboot the system without saving.
②	Save & Reboot	Saves the modified settings, and reboots the iARM. All configuration changes made will be saved in the BDT and effective upon reboot. Click the "Save & Reboot" button.
③	Reboot without Saving	Reboots the iARM without saving the modified settings. All configuration changes made will be lost upon reboot. Click the "Reboot Only" button.

Satellite Library

The screenshot shows the 'Satellite Library' configuration window. On the left is a sidebar with options: F/W Upgrade, IARM Upgrade, IARM Save&Reboot, **Satellite Library** (highlighted with a circled 1), and Graph. The main area is titled 'Satellite Library' and contains several sections:

- 2 Satellite List**: A list of satellites with columns for name and coordinates. Buttons for 'Get Library from ACU', 'Save to PC(Download)', 'Get Library from PC', and 'Save to ACU' are present.
- 4 Common Information**: Fields for Satellite Name (SAT_179E), Longitude (179.6 EAST), Skew Offset (0), Identify (Modem Lock selected), Rx Polarization (LHCP), and Tx Polarization (RHCP).
- 5 DVB Information**: Fields for Frequency (19740), Symbol (20000), NID (0x 0001), and Verify Type (DVB Lock).
- 6 NBD Information**: Fields for Frequency (1490000), Bandwidth (31999), and Base Local (18250).

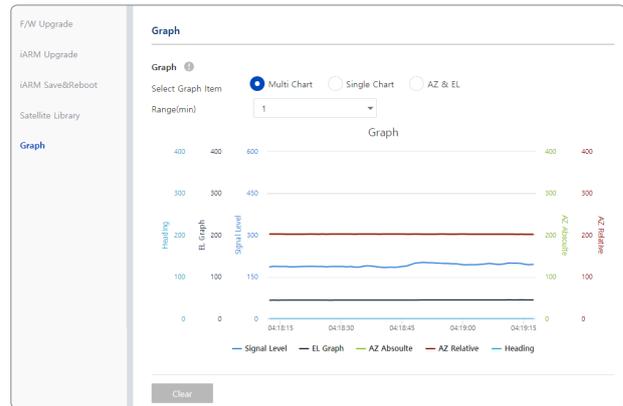
A 'Load Satellite' button is located at the bottom of the Common Information section.

No.	Item	Description
①	Satellite Library	Sets the satellite library information.
②	Satellite List	Reads or manages satellite information from the library. <ul style="list-style-type: none"> Get Library from ACU: obtains satellite library file from the BDT. Get Library from PC: obtains the satellite library file from the PC. Save to PC (Download): saves the current library file to the PC. Save to ACU: saves the current library file to the BDT.
③	Satellite Information	Select one of the satellites in the "Satellite List" then Click the "Load Satellite" button to load the satellite information.
④	Common Information	Displays selected satellite information. <ul style="list-style-type: none"> Satellite Name: displays the satellite name. Longitude(°): displays satellite orbit position. Skew Offset: this function is not available. Identify: displays the lock setting type (Modem Lock / DVB Lock) for satellite tracking. Rx Polarization: displays the current RX polarization. Tx Polarization: displays the current TX polarization.
⑤	DVB Information	This function is not available.
⑥	NBD Information	Displays NBD mode's tracking information. <ul style="list-style-type: none"> Frequency (kHz_IF): sets the tracking frequency. Bandwidth (kHz): sets the detection bandwidth. Base Local (MHz): sets the base local.

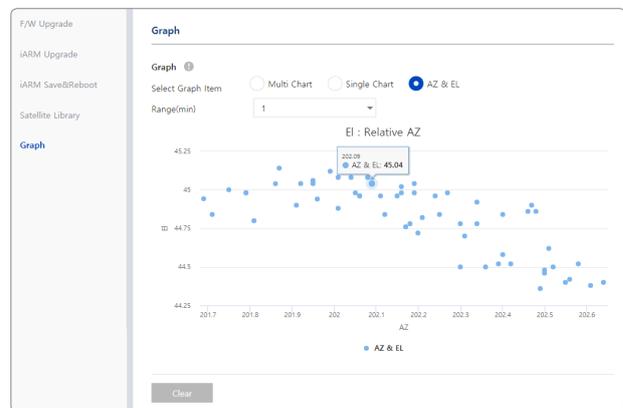
Graph



Single Chart View



Multi Chart View



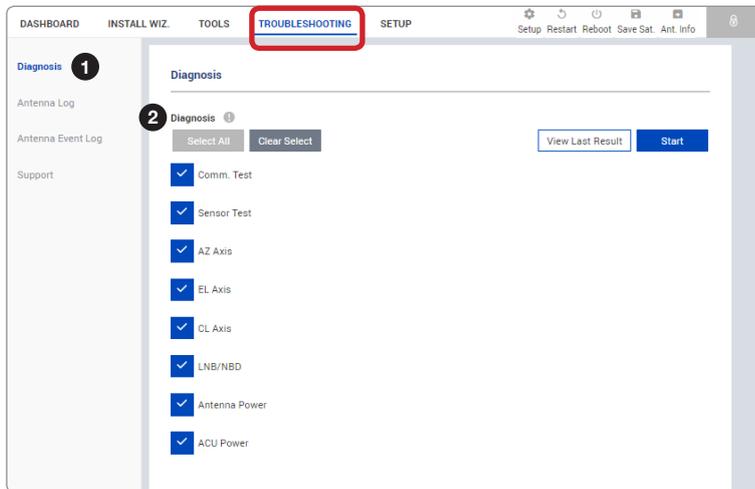
AZ & EL View

No.	Item	Description
①	Graph	This view provides information on the Signal Level, EL Graph, AZ Absolute, AZ Relative, Heading in the Multi Chart, Single Chart or AZ & EL formats.
②	Graph	<p>Sets detailed options for the graph.</p> <ul style="list-style-type: none"> Select Graph Item: shows the graphs of only the checked item(s) in the Multi Chart, Single Chart or AZ & EL formats. - Multi Chart: displays multiple graph Items in one graph View. - Single Chart: displays the checked graph Item in each graph View. - AZ & EL: displays the AZ / EL angle value in one graph View. • Range(min): displays the data for the set time. <p>By clicking the "Clear" button, the existing displayed graph is cleared and a new graph is displayed.</p>

System Troubleshooting

This menu sets and displays the Diagnosis, Antenna Log, Antenna Event Log and Support function.

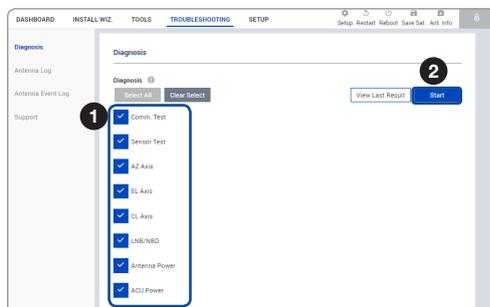
Diagnosis



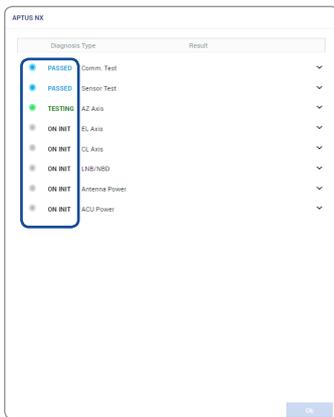
No.	Item	Description
①	Diagnosis	Executes antenna diagnosis test to check the antenna status.
②	Diagnosis	<p>Select the checkbox (full diagnosis test or single diagnosis test) before modifying the settings.</p> <ul style="list-style-type: none"> • Select All: select to run a full diagnosis test. • Clear Select: select to run a single diagnosis test. • View Last Result: displays the recently saved diagnosis result. • Start: executes the diagnosis test.

Diagnosis Procedures:

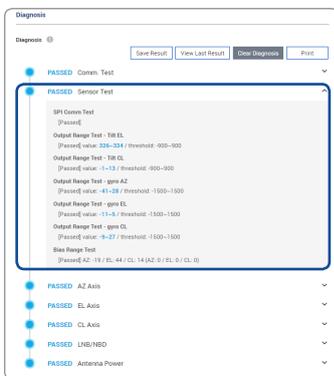
1. Select the checkbox (full diagnosis test or single diagnosis test) before modifying the settings. Click on the "Start" button to run the diagnostic test.



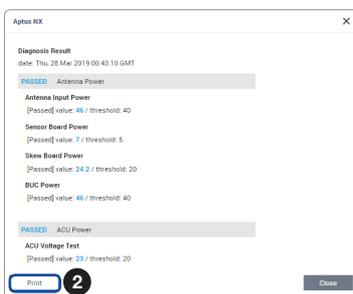
- Once the diagnosis starts, the page will indicate test status. It should take a few minutes to complete the test.



- After the diagnosis is completed the system shows the diagnosis results of each item. You can save the results to the BDT by clicking the "Save Result" button and print this page by clicking the "Print" button. To remove the result, click the "Clear Diagnosis" button.



- When you want to check the recently saved diagnosis results, click the "View Last Report" button. The pop-up page of the diagnosis results, including the save date and time, will appear. You can print this page by clicking the "Print" button.



Antenna Log

Diagnosis

Antenna Log 1

Antenna Event Log

Support

2 GPS Log Option 1

Turn On Off On

3 Antenna Log Download 1

Duration

Include Backup/Report File Compress

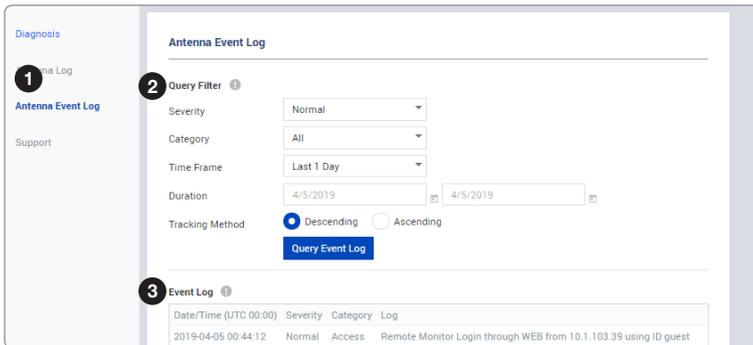
[Start Download](#)

4 Antenna F/W Log

Date/Time (UTC 00:00)	STAB	PCU	Main
Thu, 04 Apr 2019 07:23:49	0.91 Success	0.91 Success	9.15 Success

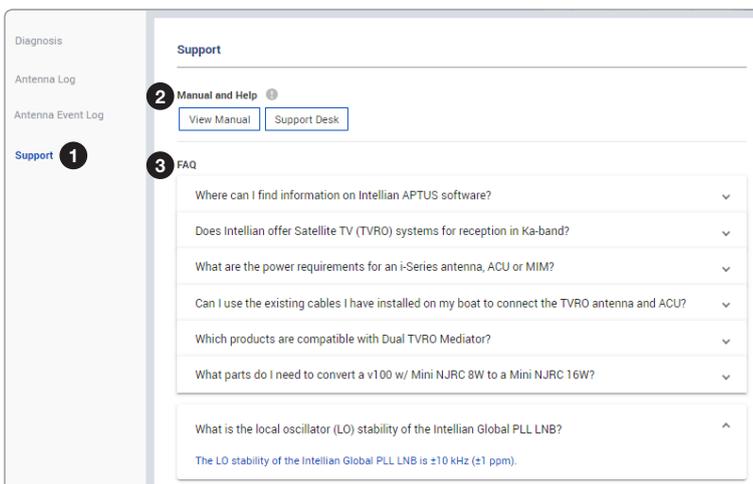
No.	Item	Description
①	Antenna Log	Displays the antenna log data.
②	GPS Log Option	Turns on/off the GPS log download option. Click the "Apply" button to apply the settings to the system.
③	Antenna Log Download	Any log data within three months can be downloaded. Select the duration on the calendar view that you want to show. Then click the "Start Download" button. NOTE: when selecting the box "Include Backup/Report File" before downloading, the Backup/Report File will download together. When selecting the box "Compress" before downloading, log files are downloaded in a compressed format.
④	Antenna F/W Log	Displays log information about firmware upgrade.

Antenna Event Log



No.	Item	Description
①	Antenna Event Log	Displays the antenna system and user log information by setting urgency level.
②	Query Filter	<p>Sets the log message option to display the event log.</p> <ul style="list-style-type: none"> Severity: sets the urgency level. Category: sets the target that caused the message. Time Frame: sets the time limit that you want to show. Duration: sets the duration on the calendar view that you want to show. Tracking Method: sets the sorting type (Descending / Ascending). <p>Click the "Query Event Log" button to apply the settings to the system.</p>
③	Event Log	Displays event log information.

Support

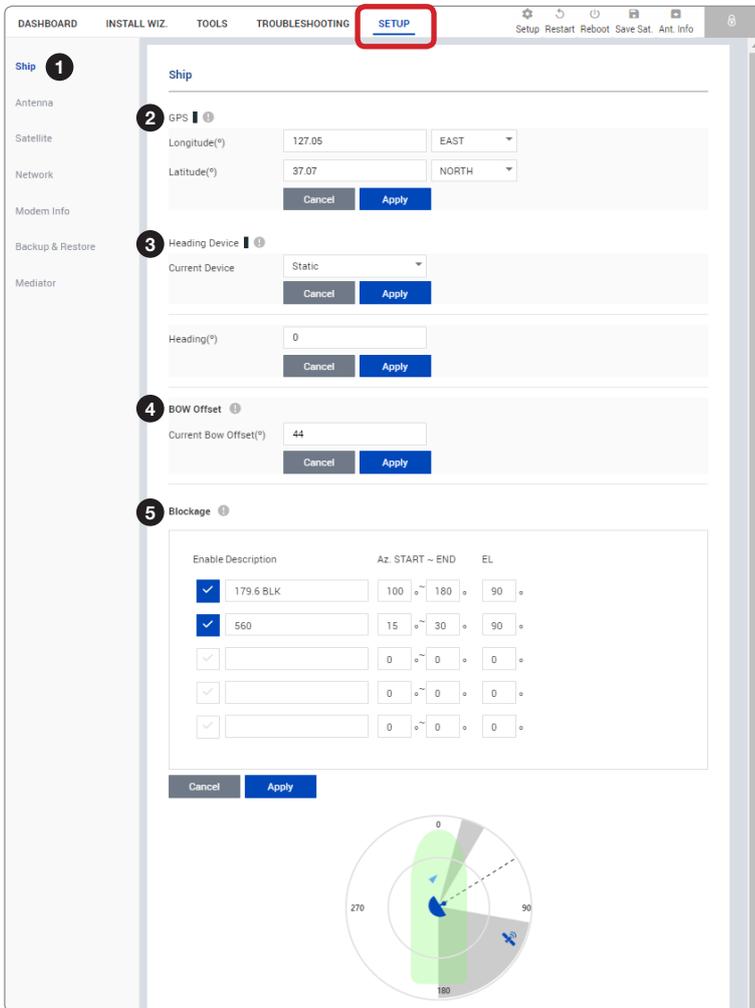


No.	Item	Description
①	Support	Supports the manual web page, support desk and FAQ list.
②	Manual and Help	<p>Shows the manual web page and support desk information.</p> <ul style="list-style-type: none"> View Manual: click the "View Manual" button to open the manual web page. Support Desk: click the "Support Desk" button to open Intellian's contact details for support.
③	FAQ	Provides answers to frequently asked questions about the product.

System Setting

This menu sets and displays the Ship, Antenna, Satellite, Network, Modem Info, SNMP, Backup & Restore and Mediator function.

Ship Setting



No.	Item	Description
①	Ship	Sets the ship information and block zone.
②	GPS	<p>Sets the GPS position of the vessel for searching for a satellite. Check the GPS status connected to the antenna system. The indicator left of the help button shows the GPS status. Please confirm the GPS indicator is Blue (blinking). (Blue (blinking): the system received a correct GPS input. Black: the system has not received a GPS input. You can enter the GPS value manually to set the GPS position.)</p> <ul style="list-style-type: none"> Longitude(°): sets Longitude information (East / West). Latitude(°): sets Latitude information (North / South). <p>Click the "Apply" button to apply the settings to the system.</p>

No.	Item	Description
③	Heading Device	<p>Sets the ship's heading device. Choose the device type from the "Current Device" drop-down list. The indicator left of the help button shows the device connection status. (Blue: a ship's heading device is connected. Black: a ship's heading device is not connected.)</p> <ul style="list-style-type: none"> • Current Device: select the heading device (None, NMEA, NMEA 2000, Static). • Baud Rate: select the band rate (4800, 9600, 19200, 38400). It must be set when "NMEA" is selected on the "Current Device" list. • Sentence: displays the sentence information. When "NMEA" is selected on the "Current Device" list, this item appears. • Heading(°): enter the heading information. <p>Click the "Apply" button to apply the settings to the system.</p>
④	BOW Offset	<p>For setting bow offset, you need to select a satellite which is trackable in satellite library information. When the antenna tracks the selected satellite, bow offset will be set up automatically.</p> <ul style="list-style-type: none"> • Current Bow Offset(°): enter the Bow Offset Range: 0 – 360°. <p>Click the "Apply" button to apply the settings to the system.</p>
⑤	Blockage	<p>It is important to set up the blockage zones for Intellian VSAT. The BDT 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. Several indications are provided when the antenna is within one of these zones. A transmit inhibit output from the BDT will disable/mute the modem transmission within zones set in this steps The AZ. The START is where the relative azimuth starts and AZ. END is where the relative azimuth ends (Range: 0 - 360°). EL is where the elevation blockage starts (Range 0 - 90°).</p> <p>Click the "Apply" button to apply the settings to the system.</p>

Antenna Setting



NOTE
The "Set Rate Sensor Bias" function must be used by experienced engineers only.

No.	Item	Description
①	Antenna Setting	Sets current antenna position and search parameters. These parameters should only be changed by an authorized service technician. Improper setting of these parameters will render your system inoperable.

No.	Item	Description
②	Antenna Angle	<p>Enter "Setup Mode" to modify settings.</p> <p>Sets current antenna position. You can move the antenna's azimuth and elevation position by using the arrows or inputting a value to find the desired satellite manually.</p> <ul style="list-style-type: none"> • Relative Azimuth: displays the antenna relative azimuth angle. • Absolute Azimuth: sets the antenna absolute azimuth angle. • Elevation: sets the elevation angle.
③	Thresholds Setting	<p>Sets current detect level threshold and tracking level threshold.</p> <ul style="list-style-type: none"> • Detect Level: sets the current detect level threshold. • Tracking Level: sets the current tracking level threshold. • Tx Enable: sets the TX enable threshold. <p>Click the "Apply" button to apply the settings to the system.</p>
④	Search Parameter	<p>Sets the time-out, search step and search range.</p> <ul style="list-style-type: none"> • Wait Time (sec): sets the time-out for automatic initiation of a search after the signal level drops below the pre-defined threshold value. • Search Step(°): sets increment step size. • Search1/3: sets Search 1 & 3 search range. Search is conducted in a two-axis pattern consisting of alternate movements in azimuth and elevation to form an expanding square. • Search2: this is reserved for future use. <p>Click the "Apply" button to apply the settings to the system.</p>
⑤	Conical Range	<p>The relative force of the motors controlling azimuth and elevation. Sets the conical range while the antenna is in tracking mode.</p> <p>Click the "Apply" button to apply the settings to the system.</p>
⑥	Conical Range Check	<p>Enter "Setup Mode" to modify settings.</p> <p>Monitors the Azimuth and the elevation value when the conical range is modified.</p> <ul style="list-style-type: none"> • Switch Activation: choose whether to use the switch activation function or not. (On / Off) <p>Click the "Apply" button to apply the settings to the system.</p>
⑦	Sensor Calibration	<p>Enter "Setup Mode" to modify settings.</p> <p>Adjusts the elevation to offset the angle difference between the mechanical elevation angle and actual elevation angle.</p> <p>Click the "Apply" button to apply the settings to the system.</p>
⑧	Tilt Sensor Bias	<p>NOTE: <i>The tilt values of the elevation and cross-level axes were calibrated to the optimal condition at the factory prior to shipment. However, when the antenna MCU unit or fixed sensor unit is replaced, the elevation and the cross-level axes must be checked by adjusting tilt and rate sensor value. Refer to the replacement manual for detailed procedures. The separate device (e.g. level indicator) for manual adjustment is not provided by Intellian.</i></p> <p>Enter "Setup Mode" to modify settings.</p> <p>Maintain the elevation and the cross-level axes in order to keep the pedestal parallel to the horizon.</p> <ul style="list-style-type: none"> • Ready: click the "Ready" button to bring the elevation and cross-level to 0. • EL/CL: select "EL"/"CL" and click the Up and Down arrow keys to adjust the elevation and cross-level. <p>Click the "Restart" button on the top menu to restarts the antenna system.</p>

No.	Item	Description
⑨	Rate Sensor Bias	<p>NOTE: The rate values of the azimuth, elevation, and cross-level axes were calibrated to the optimal condition at the factory prior to shipment. If the additional rate adjustment is required, make sure that the antenna is placed on a rigid and flat platform. During the calibration process, the antenna must avoid any motion as it can affect the antenna's performance.</p> <p>Enter "Setup Mode" to modify settings manually.</p> <p>Calibrates DC voltage output from the three rate sensors used to sense antenna motion in azimuth, elevation and cross-level axes. 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.</p> <ul style="list-style-type: none"> • Rate Sensor Calibration: click the "Rate Sensor Calibration" button to calibrate the rate sensor automatically. The indicator left of the help button shows the rate sensor calibration status. (Black: the calibration is ready to start. Blue: the calibration is completed. Red: the calibration is failed. Green: the calibration is in process.) • Save Sensor Bias: click the "Save Sensor Bias" button to save the calibrated value of the rate sensor to the system.
⑩	Antenna Mode	<p>Sets the motor to idle mode to check the antenna's balance.</p> <ul style="list-style-type: none"> • Set Idle Mode: Enter "Setup Mode" to modify settings. Releases the elevation and cross-level motor. • Reboot: reboots the system.

Tracking Satellite Setting

The screenshot shows the 'Tracking Satellite Setting' window. On the left is a sidebar with menu items: Ship, Antenna, Satellite (1), Network, Modem Info, Backup & Restore, and Mediator. The main area is titled 'Tracking Satellite Setting' and contains four sections:

- 2 Satellite Information:** Includes input fields for 'Satellite Name' (SAT_179E), 'Longitude(°)' (179.6), and a dropdown for 'EAST'. Below are dropdowns for 'Local Frequency(MHz)' (18250), 'RX Polarization' (LHCP), and 'TX Polarization' (RHCP).
- 3 NBD Information:** Includes input fields for 'Frequency(kHz_IF)' (1490000) and 'Reserved Parameter' (31999).
- 4 Modem Lock Use for Verification:** Includes radio buttons for 'On' (selected) and 'Off', and a 'Modem Verify' label.

'Cancel' and 'Apply' buttons are present at the bottom of each section.

No.	Item	Description
①	Tracking Satellite Setting	Sets the current tracking satellite settings.
②	Satellite Information	<p>Sets the current tracking satellite settings.</p> <ul style="list-style-type: none"> • Satellite Name: sets the satellite name. • Longitude(°): sets the satellite orbit position. • Skew Offset(°): sets the skew offset. • Local Frequency (MHz): sets the local frequency. • RX Polarization: sets the current RX polarization. • TX Polarization: sets the current TX polarization. <p>Click the "Apply" button to apply the settings to the system.</p>
③	NBD Information	<p>Sets NBD mode's tracking information.</p> <ul style="list-style-type: none"> • Frequency (kHz_IF): sets the tracking frequency. • Reserved Parameter(kHz): sets the reserved parameter. <p>Click the "Apply" button to apply the settings to the system.</p>
④	Modem Lock Use for Verification	<p>Verifies modem lock status (modem lock function: active/inactive).</p> <ul style="list-style-type: none"> • Modem Verify: choose whether to use the modem lock function or not. (On / Off) <p>Click the "Apply" button to apply the settings to the system.</p>

Network Configuration

This function is available after performing the "iARM Save & Reboot" on page 93.

APTUS NX

All configuration changes made will be saved in the ACU and effective upon reboot.

Automatically Save&Reboot upon apply.

Cancel Confirm

NOTE

When clicking the "Apply" button after editing the system settings, this pop-up message will appear. If you want to automatically save and reboot the system, select the checkbox and click the "Confirm" button.



NOTE

No.	Item	Description
①	Network Configuration	Sets the BDT's Internal IP address and ports.
②	Management Interface Configuration	<p>Sets the Management Port's network configuration. The Management Port is located on the BDT front panel.</p> <ul style="list-style-type: none"> • IP Address: sets the network IP address (Factory default: 192.168.2.1). • Subnet Mask: sets the subnet mask (Factory default: 255.255.255.0). • Lease Start Address: sets the lease IP address start range. • Lease End Address: sets the lease IP address end range. • Lease Time: sets the lease IP address update time. <p>Click the "Apply" button to apply the settings to the system.</p>

No.	Item	Description
③	Wi-Fi Access Point Configuration	<p>Sets the Wi-Fi access point configuration.</p> <ul style="list-style-type: none"> • AP: sets the AP status (Disable / Enable). • 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: selects 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: the module supports an authentication mode that the 802.11 device uses when it authenticates and associates with an access point or IBSS cell. • Password: sets the Wi-Fi access password. • Max Stations: sets the max stations. • Disable SSID Broadcast: sets the disable SSID broadcast status (Disable / Enable). <p>Click the "Apply" button to apply the settings to the system.</p>
④	Network Service Configuration	<p>Sets the network service configuration</p> <ul style="list-style-type: none"> • Telnet Service: sets the telnet service (Disable / Enable). • HTTPS Port: sets the HTTPS port number. • SSH Service: sets the SSH service status (Disable / Enable). <p>Click the "Apply" button to apply the settings to the system.</p>
⑤	Sys Log Configuration	<p>Sets the system log configuration. Antenna sends log messages according to the emergency level. Enabling this function sends the message to your management server.</p> <ul style="list-style-type: none"> • Management Server: sets the management server status (No / Yes). • Server IP: sets the management server IP address. • UDP Port: sets the management port. • Message Type: selects message type (Intellian message level) to send to the management server (Lower number indicates higher emergency). • Syslog Target Level: if you select this target level, the management server receives a log message equal to or less than this level. <p>Click the "Apply" button to apply the settings to the system.</p>
⑥	Radius Configuration	<p>This menu is used when the network administrator needs to authorize user connections using Radius server.</p> <ul style="list-style-type: none"> • Client: sets the Radius authentication (Disable / Enable). • Server IP: sets the Radius server IP Address. • Timeout: sets the Timeout value in seconds for the authentication process. • Server Secret: sets the Pass-Phase. This should be matched between server and BDT. <p>Click the "Apply" button to apply the settings to the system.</p>
⑦	Switch Port Configuration	<p>Sets the switch port (LAN port) mode, which is located in the rear of the BDT.</p> <ul style="list-style-type: none"> • Port 1/2/3/4: each port can select the MGMT (Modem Management Port (VLAN 1)) or the number (1 ~ 5) to which VLAN Port ID controlled by the modem. <p>Click the "Apply" button to apply the settings to the system.</p>

Modem Info

Ship

Antenna

Satellite

Network

Modem Info 1

Backup & Restore

Mediator

2 LED Status

- NET
- Status
- TX
- RX1
- RX2

3 Satellite Status ↻

Receive 1 SNR (dB)	14.5
Receive 2 SNR (dB)	-100

4 Modem Interface ↻

Modem Type	VELOCITY
Serial No.	43761
S/W Version	1.6.1.4

[Modem Reboot](#)

5 Commissioning ↻

Status	CALIBRATED
Progress	<div style="width: 100%; height: 10px; background-color: #007bff; position: relative;"> 100% </div> <div style="display: flex; justify-content: flex-end; margin-top: 5px;"> Start Stop </div>

6 VLAN Configuration ↻

3898	3927	1
------	------	---

IP Interface

IP Address	10.98.2.33
Subnet Mask	255.255.255.248

DHCP Config

DHCP Mode	
Lease Range Start	-
Lease Range End	-
Lease Time	
Primary DHCP	
Secondary DHCP	
Default Gateway	

DHCP Cache Config

Local DNS Name	Ins
Local IP Address	192.168.1.6
Primary DNS Name	-
Primary IP Address	-
Secondary DNS Name	-
Secondary IP Address	-

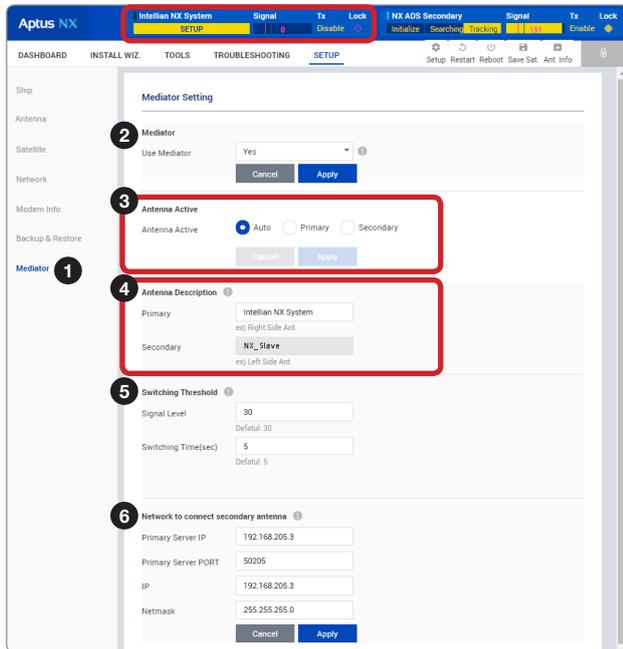
No.	Item	Description																																						
①	Modem Info	<i>Below Deck Terminal (BDT) includes built in Satellite Modem.</i> Displays the modem's operating status and information.																																						
②	LED Status	<p>Each indicator is displayed modem's operating status as colors.</p> <table border="1"> <thead> <tr> <th>Item</th> <th>LED Display</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="4">NET</td> <td>Steady Green</td> <td>The modem is connected to a target satellite and acquired a network.</td> </tr> <tr> <td>Flashing Green</td> <td>The modem is acquiring a network.</td> </tr> <tr> <td>Steady Yellow</td> <td>The modem network is in abnormal conditions.</td> </tr> <tr> <td>Off</td> <td>The modem is not connected to a target satellite and not acquired a network.</td> </tr> <tr> <td rowspan="3">Status</td> <td>Steady Green</td> <td>The modem is in normal operating conditions.</td> </tr> <tr> <td>Flashing Green</td> <td>The modem is in booting</td> </tr> <tr> <td>Steady Red</td> <td>The modem has a serious fault or failure in software, hardware, or configuration.</td> </tr> <tr> <td rowspan="3">TX</td> <td>Steady Green</td> <td>The modem Tx services are active.</td> </tr> <tr> <td>Steady Yellow</td> <td>The modem Tx is in abnormal conditions.</td> </tr> <tr> <td>Off</td> <td>The modem Tx services are not active.</td> </tr> <tr> <td rowspan="3">RX1</td> <td>Steady Green</td> <td>The modem Rx 1 services are active.</td> </tr> <tr> <td>Steady Yellow</td> <td>The modem Rx 1 is in abnormal conditions.</td> </tr> <tr> <td>Off</td> <td>The modem Rx 1 services are not active.</td> </tr> <tr> <td rowspan="2">RX2</td> <td>Steady Yellow</td> <td>The modem Rx 2 services are active.</td> </tr> <tr> <td>Off</td> <td>The modem Rx 2 services are not active.</td> </tr> </tbody> </table>	Item	LED Display	Description	NET	Steady Green	The modem is connected to a target satellite and acquired a network.	Flashing Green	The modem is acquiring a network.	Steady Yellow	The modem network is in abnormal conditions.	Off	The modem is not connected to a target satellite and not acquired a network.	Status	Steady Green	The modem is in normal operating conditions.	Flashing Green	The modem is in booting	Steady Red	The modem has a serious fault or failure in software, hardware, or configuration.	TX	Steady Green	The modem Tx services are active.	Steady Yellow	The modem Tx is in abnormal conditions.	Off	The modem Tx services are not active.	RX1	Steady Green	The modem Rx 1 services are active.	Steady Yellow	The modem Rx 1 is in abnormal conditions.	Off	The modem Rx 1 services are not active.	RX2	Steady Yellow	The modem Rx 2 services are active.	Off	The modem Rx 2 services are not active.
Item	LED Display	Description																																						
NET	Steady Green	The modem is connected to a target satellite and acquired a network.																																						
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RX2	Steady Yellow	The modem Rx 2 services are active.																																						
	Off	The modem Rx 2 services are not active.																																						
③	Satellite Status	Displays the receive 1/2 SNR(dB) of the satellite.																																						
④	Modem Information	Displays modem information (Modem Type, Serial Number, Software Version). <ul style="list-style-type: none"> Modem Reboot: Sets the modem reboot. 																																						
⑤	Commissioning	<p>Performs the commissioning test to calibrate the modem to receive the optimal signal. The RF uplink frequency, the BUC LO frequency, the TX frequency, and the attenuator will calibrate automatically.</p> <ul style="list-style-type: none"> Status: Displays the current commissioning test status. Start/Stop: Click the 'Start' button to perform the commissioning test automatically. <p>NOTE: Ensure that the commissioning test is performed after the first-time connection of the GX terminal, the BDT/cable replacement, or band conversion.</p>																																						
⑥	VLAN Configuration	Displays the assigned port and information.																																						

Backup & Restore Setting

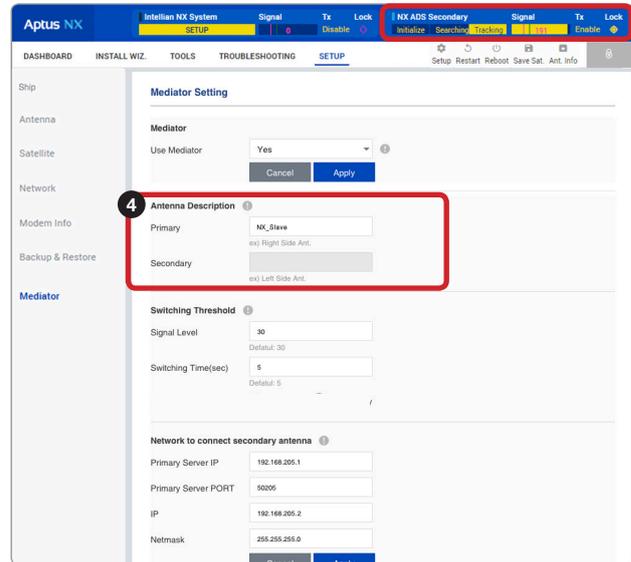
No.	Item	Description
①	Backup & Restore Setting	Backs up & Restores the antenna setting files and the iARM files.
②	Antenna Backup & Restore	<ul style="list-style-type: none"> Antenna Backup: Backs up antenna setting files to BDT or PC. Click the "Backup" button to apply the settings to the system. Antenna Restore: Enter "Setup Mode" to modify settings. Restores the antenna setting by using the setting files saved from BDT or PC. Click the "Restore" button to apply the settings to the system.
③	iARM Backup & Restore	<ul style="list-style-type: none"> iARM Backup: Backs up iARM files to Flash (internal BDT) or PC. Click the "Backup" button to apply the settings to the system. iARM Restore: Restores the iARM files by using the setting files saved from Flash (internal BDT) or PC. Click the "Restore" button to apply the settings to the system then the iARM will automatically reboot.

Mediator Setting (Optional: For Dual Antenna System)

This function is available when using Dual Antenna System.



Primary Antenna's AptusNX View



Secondary Antenna's AptusNX View

No.	Item	Description
①	Mediator Setting	Intellian's new BDT has embedded Dual Antenna Mediator function, which can be utilized to switch between two Intellian VSAT antenna systems simultaneously. When one antenna is blocked by obstacles or has suddenly lost service, another antenna will immediately provide fail-safe operation to maintain the highest levels of system performance and reliability.
②	Mediator	Sets whether or not to use the dual antenna mediator function. <ul style="list-style-type: none"> • Yes: enable the mediator function to use the Dual Antenna System. The submenu is shown for detailed function settings. • No: disable the mediator function. Click the "Apply" button to apply the settings to the system. Then perform the "iARM Save & Reboot" on page 93.
③	Antenna Active	This function is available in the Primary Antenna's AptusNX when both Primary Role's BDT and Secondary Role's ACU are connected to the system. Sets the method for selecting the active antenna. The active antenna (either primary or secondary antenna) is communicating (Tx/Rx) with a satellite. <ul style="list-style-type: none"> • Auto: this method is recommended. Automatically switch-over to the primary or secondary antenna which is no blockages and no errors. • Primary: manually switch-over to the primary antenna which is connected to the primary role's BDT and the gyrocompass. • Secondary: manually switch-over to the secondary antenna which is connected to the secondary role's ACU. Click the "Apply" button to apply the settings to the system.

No.	Item	Description
④	Antenna Description	<p>This menu is differently shown in the Primary Antenna's AptusNX and the Secondary Antenna's AptusNX.</p> <p>To clearly distinguish the primary antenna and the secondary antenna, enter a description to each antenna.</p> <ul style="list-style-type: none"> • Primary: you can enter the description in the primary antenna's AptusNX (Editable). This menu is not shown in the secondary antenna's AptusNX. • Secondary: you can enter the description in secondary antenna's AptusNX (Editable). This menu is only verified in the primary antenna's AptusNX (Read-only). <p>Click the "Apply" button to apply the settings to the system. Then perform the "iARM Save & Reboot" on page 93.</p>
⑤	Switching Threshold	<p>When two antennas are in Tracking mode and have no blockage, the allowable value will apply for the automatic switching.</p> <ul style="list-style-type: none"> • Signal Level: if the signal level is less than the set value, the active antenna is automatically switched (Default: 30). • Switching Time (sec): if the signal value difference between the active antenna and inactive antenna is more than the set value which is set in the "Signal Level" menu and the difference is maintained for a set time, the active antenna is automatically switched. Set the switching time value (Default: 5). <p>Click the "Apply" button to apply the settings to the system. Then perform the "iARM Save & Reboot" on page 93.</p>
⑥	Network to connect secondary antenna	<p>Sets the primary antenna's network information to transmit to the secondary antenna.</p> <ul style="list-style-type: none"> • Primary Server IP: enters the server IP address (Default: 192.168.205.1). • Primary Server PORT: sets a server port number for the primary antenna (master) and the secondary antenna, which must be the same number (Default: 50205). • IP: when the antenna role is primary, enter the same IP address with the "Primary Server IP". When the antenna role is secondary, enter a different IP address from the "Primary Server IP"; however, it must be assigned to the same network class as the primary (Default: 192.168.205.1). • Netmask: the primary and secondary netmasks must be the same (Default: 255.255.255.0). <p>Click the "Apply" button to apply the settings to the system. Then perform the "iARM Save & Reboot" on page 93.</p>

Specification

Technical Specification

Antenna System		
Antenna Radome Height	1454 mm (57.44")	
Antenna Radome Diameter	Ø1379 mm (54.29")	
Antenna Reflector Diameter	Ø1050 mm (41.33")	
Antenna Unit Weight (with Radome)	113 kg (249.12 lbs)	
Platform	3-axis: Azimuth, Elevation, Cross-level	
Positioning	3-axis Velocity Mode Servo Control: Azimuth, Elevation, Cross-Level	
Azimuth Range	Unlimited	
Elevation Range	-20° to +115°	
Cross-level Range	Up to ±37°	
Stabilization Accuracy	0.2° peak mispointing @max ship motion condition	
Motor Brake System	Dynamic Brake	
Ship's motion	Roll	±25° at 6 second
	Pitch	±15° at 6 second
	Yaw	±8° at 6 second
	Turning Rate	Up to 12°/sec & 5°/sec ²
RX	Frequency	19.2 GHz ~ 20.2 GHz Ka-band
	Gain	44 dBi @ 19.7 GHz (with radome)
Tx	Frequency	29 GHz ~ 30 GHz Ka-band
	Gain	47.7 dBi @ 29.5 GHz (with radome)
Above Deck IFL Termination	1 x 50 Ohm N-type female connector TX/RX: 10 MHz, 50 MHz, 400 MHz, 433 MHz L-band (950 MHz ~ 2150 MHz) DC power to BUC & pedestal (and LNB)	
G/T over Rx Range at Elevation Angle Min. 30 deg.	Min. 20.1 dB/K @ 19.7 GHz (with radome)	
Polarization	Circular (Rx: LHCP, Tx: RHCP)	
BUC	5 W (standard), 10 W (optional)	
BDT to ADU Cable (Antenna Cable)	Single 50 Ω coax cable for Rx, Tx, FSK, Reference and Power from BDT to ADU	
Input power	48 V DC (max 300 W) through Single RF Cable	
Below Deck Termial (BDT)		
BDT Size	431 mm x 411 mm x 44.3 mm	
BDT Weight	5.7 kg	
Display	256 x 64 Graphic OLED	
Key	Two Push Keys	
LED Indicator	Three LEDs for Power, Tracking and Error	
USB Port	2ea (front panel), 1ea (rear panel, for Wi-Fi dongle)	
Ship's Gyrocompass Interface	NMEA 2000, NMEA 0183	
Serial Interface	Console RS-232C (57600bps 8, N, 1)	

Ethernet port	RJ 45 (4ea), TCP/IP connection
Mediator Interface	Embedded in BDT
Input power	100 ~ 240 V AC, 50 ~ 60 Hz, 3 A
Antenna Control Unit (ACU) (Optional: For Dual Antenna System)	
ACU Size	431 mm x 350 mm x 44.3 mm
ACU Weight	5.2 kg
Display	256 x 64 Graphic OLED
Key	Two Push Keys
LED Indicator	Three LEDs for Power, Tracking and Error
USB Port	2ea (front panel), 1ea (rear panel, for Wi-Fi dongle)
Ship's Gyrocompass Interface	NMEA 2000, NMEA 0183 (GYRO)
GPS	NMEA Out
Serial Interface	RS-232C (57600 bps 8, N, 1)
Ethernet port	RJ 45 (4 ea), TCP/IP connection
Input power	100 ~ 240 V AC, 50 ~ 60 Hz, 3 A

Environmental Specification

Test	Intellian Standard	
Temperature (ADE)	Operational	IEC-60945 (-25 °C to +55 °C, Power On)
	Survival	IEC-60945 (-40 °C to +80 °C, Powered On and a non-functional state)
	Storage	IEC-60945 (-40 °C to +85 °C, Power off)
Temperature (BDT)	Operational	IEC-60945 (-15 °C to +55 °C)
	Survival	IEC-60945 (-25 °C to +70 °C)
	Storage	IEC-60945 (-40 °C to +85 °C)
Wind	56 m/sec (125 mph)	
Humidity	IEC-60068-2-30 Upper test Temp: +40 °C (-3), Humidity 98 % Lower test Temp.: +15 °C (+3), Humidity 71 % ~ 78 %	
Vibration	Operational	IEC-60945
	Survival	IEC-60721-3-6 Class 6M3 DNV Standard No. 2.4, Class C
Shock	Operational	IEC-60068-2-27 Method Ea 20g, 7ms
	Survival (Transient)	IEC-60721-3-6 Class 6M3 type II 30g, 6ms
	Survival (Bump)	IEC-60068-2-29 Method Eb 25g, 6ms
Salt mist	Saline solution : 5 ±1 % NaCl Storage period: 7 Days (IEC-60945)	
Waterproofing	IPX6 (IEC-60529)	
Solar	IEC 60945-Annex B. Operational +32 °C air temperature with the addition of 670 Watt/m ² solar radiation	

Warranty

Warranty Policy

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.

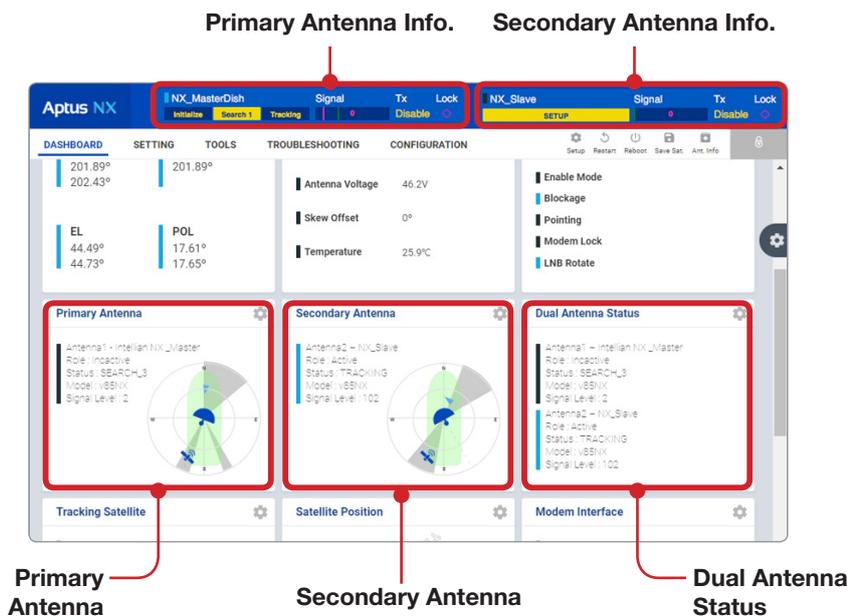
Appendix A

Using Dual Antenna System (Optional)

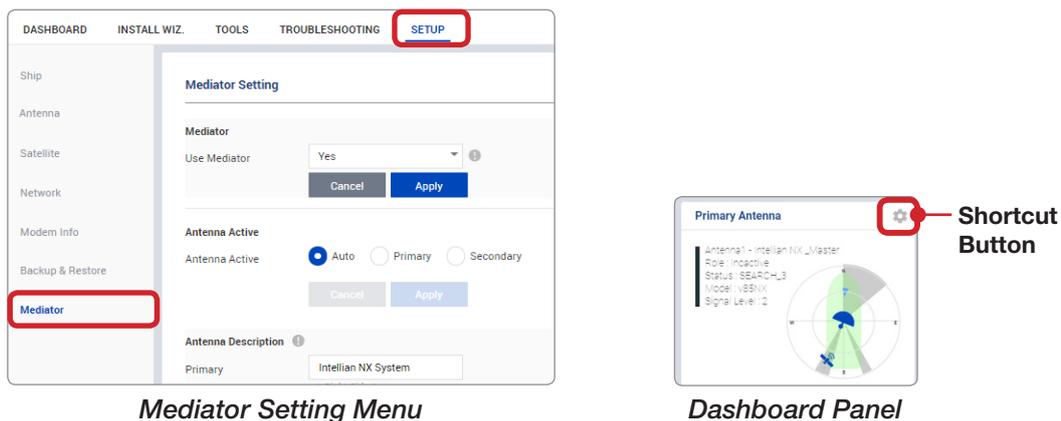
Intellian's new BDT has embedded Dual Antenna Mediator function, which can be utilized to switch between two Intellian VSAT antenna systems simultaneously. When one antenna is blocked by obstacles or has suddenly lost service, another antenna will immediately provide fail-safe operation to maintain the highest levels of system performance and reliability. It ensures always-on broadband service by reducing the out of service time.

To use the Dual Antenna System, make sure that the antenna system components are properly installed. Refer to the "Dual Antenna System Configuration (Optional)" on page 39 for more details.

Access the AptusNX (**IP Address: 192.168.2.1**) to manage and control the Dual Antenna System. You can check the status of Dual Antenna System via AptusNX. The information for two antennas (Primary and Secondary Antenna) is displayed on the Top Menu and the three panels (Dual Antenna Status, Primary Antenna and Secondary Antenna) is displayed on the dashboard screen.



To control and manage the Dual Antenna System, go to the "SETUP" → "Mediator" menu. Refer to the "Mediator Setting (For Dual Antenna System)" on page 111 for more details. Also using the "Shortcut" button on right side of the panel at the "DASHBOARD" menu, you can easily access the settings page.

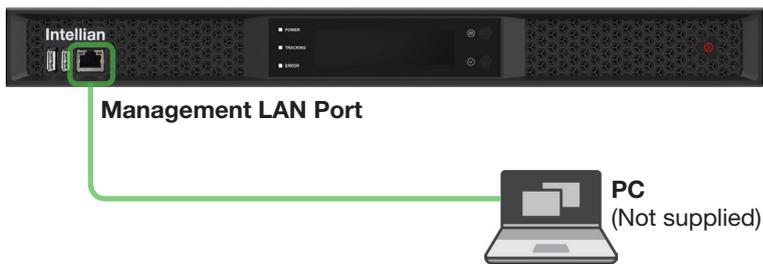


Appendix B

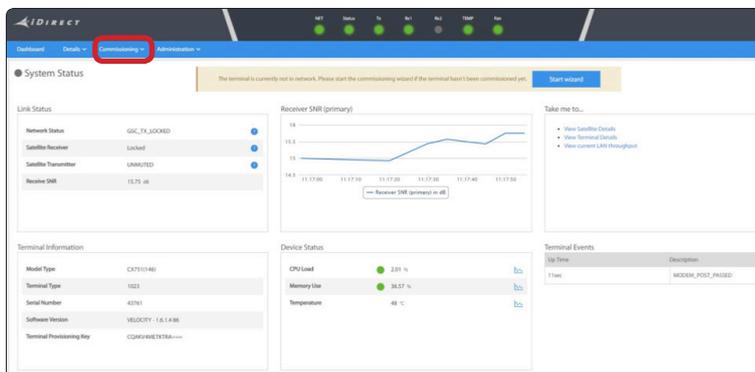
Performing One Touch Commissioning

Ensure to perform One Touch Commissioning after the first-time connection of the GX terminal and the BDT, after cable replacement or band conversion. Take the following steps for One Touch Commissioning.

1. Connect an Ethernet cable from the Management LAN port on the front of the BDT to the LAN port of PC.



2. Use the following IP address to access iDirect webpage.
 - Default IP: **192.168.1.1**
3. Login to the iDirect modem page using the below.
 - ID: **admin**
 - PW: **iDirect123! (or P@55w0rd!)**
4. Click "Commissioning", then the "Commissioning - One Touch Commissioning" page will appear.



5. Click "Start" button and monitor the progress of One Touch Commissioning.
6. When One Touch Commissioning is completed the "One Touch Commissioning Successfully Completed!" message is displayed.

