

GX100NX 2

1.05 m Maritime
Global Xpress Terminal



Installation & Operation User Guide

Serial number of the product

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



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Chapter 1. Precautions

1.1 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.

	WARNING WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION 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.
	NOTE A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.

1.2 General Precautions

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

	THIS WAY UP Place the boxes/crates on the floor with the arrow pointing up.
	FRAGILE Since the Radome is fragile, handle it with care. Do not apply excessive pressure or shock. These may cause surface cracking or other damage.
	DO NOT STACK Do not stack boxes/crates as there is a risk boxes/crates may fall and be damaged.
	KEEP DRY - Always make sure the antenna is stored on a dry surface in a dry, well-ventilated area. - The antenna is designed to withstand a normal rain shower; however, water resistance cannot be guaranteed if the antenna is submerged.

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

* **DO NOT STORE THE ANTENNA WRAPPED IN A TARP, TENT, VINYL, AND OTHERS:**

To avoid damage to radome paint, do not use a cover on the radome. Using any type of cover may cause paint damage. Intellian radomes are designed to withstand exposure to rain, humidity, and sun/UV rays when assembled according to Intellian instructions, and when the supplied approved hardware and sealants are used. Under no circumstances should an Intellian radome be covered by any protective covering that adheres, bonds, or clings to the surface, whether by self-adhesion or tension.

Chapter 2. 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 2, 105cm Ka-band Maritime VSAT Antenna System
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Test Result:

Standard	Test	Rule Section	Test Report Number	Result
FCC Part 15 Subpart B	AC Power line conducted emission	FCC Part 15.107(a), ICES-003, Section 3.2.1	DREKFCC2106-0100	Pass
	Radiated emission	FCC Part 15.109(a), ICES-003, Section 3.2.2	DREKFCC2106-0100	Pass

Supplementary Information:

Notified Body Involved: (Testing Organization)	DT&C Co., Ltd. 42 Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042
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 June 11, 2021

Authority: Kevin Eom
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Signature: 

Date: 30th June, 2021

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Doc Number IT21-DC0630-04

FCC Part 25 Declaration of Conformity

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

FCC §25.218 defines off-axis EIRP density envelopes for FSS earth stations transmitting in certain frequency bands. This section applies to applications for fixed and temporary-fixed FSS earth stations transmitting to geostationary space stations in the conventional C-band, extended C-band, conventional Ku-band, extended Ku-band, or conventional Ka-band, and applications for ESIMs transmitting in the conventional C-band, conventional Ku-band, or conventional Ka-band, except for applications proposing transmission of analog command signals at a band edge with bandwidths greater than 1 MHz or transmission of any other type of analog signal with bandwidths greater than 200 kHz. Earth station applications subject to this section may be routinely processed if they meet the applicable off-axis EIRP density envelopes set forth in this section. It defines the antennas radiation, and each article regulates the followings;

§25.218 (i) (1)(3): For co-polarized transmissions in the plane tangent to the GSO arc

§25.218 (i) (2)(3): For co-polarized transmissions in the plane perpendicular to the GSO arc

§25.218 (i) (4): For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc

Intellian Technologies, Inc. declares that GX100NX 2 complies with the threshold level as defined in §25.218(i) (1)(2)(4)

Product description	Intellian GX100NX 2, 105cm Ka-band Maritime VSAT Antenna System
EIRP spectral density limit	3.84dBW/Mhz

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

Signed by: Kevin Eom / CTO, R&D

Signature:  _____

Date: 30th June 2021

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Doc Number IT21-DC0630-05

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 2, 105cm Ka-band Maritime VSAT Antenna System
-------------------------	---

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	Test Report Number	Result
SAFETY (Art 3.1.a)	IEC 62368-1:2020+A11:2020	DRSCEL2106-0101	Pass
EMC (Art. 3.1.b)	EN 301 843-1 V2.2.1	DRECEE2106-0332	Pass
SPECRTUM (Art. 3.2)	EN 301-360 V2.1.1 EN 301-459 V2.1.1 EN 303-978 V2.1.2	DRTCET2106-0241(1) DRTCET2106-0242 DRTCET2106-0243	Pass

Supplementary Information:

Notified Body Involved: (Testing Organization)	DT&C Co., Ltd. 42, Yurim-ro, 154 beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do 449-935, Korea
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Place and Date of issue:	Gyeonggi-do, Korea on 24 June 2021

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Doc Number IT21-DC0630-06

UK-CA Declaration of Conformity

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Product Information:

Product Name(s):	Intellian GX100NX 2, 10 5cm Ka band Maritime VSAT Antenna System
Model Number(s):	V5-11G-XXXXX

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 62368-1	Pass
EMC (Art. 3.1.b)	EN 301 843-1	Pass
SPECTRUM (Art. 3.2)	EN 301-360 EN 301-459 EN 303-978	Pass

Authority: Yeonho.Kim
/ CTO, R&D

Signature: 

Date: January 6, 2022

Doc Number IT22-DC0719-02

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Chapter 3. Introduction

3.1 Intellian GX100NX 2 Introduction

Intellian GX100NX 2 is a Ka-band 3-axis stabilized VSAT maritime antenna system. The GX100NX 2 provides advanced VSAT solutions for 2.5GHz wide Ka-band satellite services. GX100NX 2 is equipped with a new mounting architecture RF module. GX100NX 2 supports dual-polarization and can transmit and receive both LHCP and RHCP of Ka-band circular polarization.

The GX100NX 2 terminal uses an integral unit of multi-band BUC and LNB arranged in a 4.5W Transceiver. The system with Transceiver can use dual-polarization for both Tx and Rx with several possible topologies. The GX100NX 2 can be easily upgraded with the 9W High Power Transceiver. There is no need to replace the BDT and no additional components are required. Simply and easy upgrade 9W Transceiver to benefit from high throughput service.

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 2 is designed to be easy to install and reduce costs for users. The system includes a single cable design, combining Tx, Rx, and DC power into one single solution. The single coaxial cable is connected externally on the base of the radome with no requirement to access the inside of the radome, reducing complexity for the customer during installation and maintenance.

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. AptusNX includes an intelligent installation Wizard to simplify system configuration so that users can become connected faster than ever before. The platform also includes a diagnosis function which enables accurate and enhanced antenna performance checks both on-board and remotely. This reduces the need for on-board maintenance and improves performance.

3.2 Intellian GX100NX 2 Features

2.5GHz Wide Ka-band Support

The GX100NX 2 has a full range-optimized reflector and radome supporting high-speed Ka-band services, which covers the entire commercial Ka 2.5GHz wide frequency band range. GX100NX 2 supports dual polarization and can transmit and receive both LHCP and RHCP of Ka-band circular polarization.

High Power Upgradable

The GX100NX 2 terminal uses an integral unit of multi-band BUC and LNB arranged in a 4.5W Transceiver. The system with Transceiver can use dual-polarization for both Tx and Rx with several possible topologies. The GX100NX 2 can be easily upgraded with the 9W High Power Transceiver. There is no need to replace the BDT and no additional components are required. Simply and easy upgrade 9W Transceiver to benefit from high throughput service.

Quick & Easy Installation

The GX100NX 2 is designed to be easy to install and reduce costs for users. The system includes a single cable design, combining Tx, Rx, and DC power into one single solution. The single coaxial cable is connected externally on the base of the radome with no requirement to access the inside of the radome, reducing complexity for the customer during installation and maintenance.

All-In-One Below Deck Terminal

All-In-One GX BDT integrates ACU, GX modem, power supply, 4-port switch, and GX Mediator. 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. This 19 "1U size BDT can be easy to install in the FX rack, reducing installation time and costs.

Embedded Dual Antenna Mediator Function

Intellian's new ACU fully supports dual antenna operation without additional hardware such as a separate mediator, RF splitters, and cables. Eliminate loss of signal due to blockage by using dual antenna systems.

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 2 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.

Chapter 4. Planning 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.

4.1 Selection of Installation Site

The system should be placed in an area onboard the vessel with little to no RF signal blockage. When the antenna is transmitting, obstacles in way of the beam path will cause 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.

4.1.1 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. Make sure there are no obstacles within the EL range -20° to $+115^{\circ}$ from the center of the antenna. Obstacles can interrupt the satellite signal transmission and reception of the antenna.

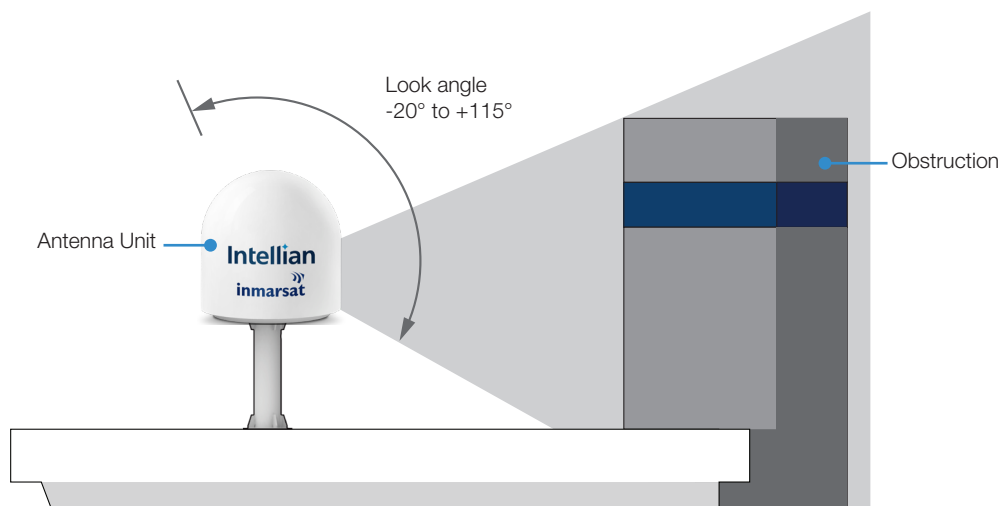


Figure 1: Elevation Limit of Obstacles

4.1.2 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.

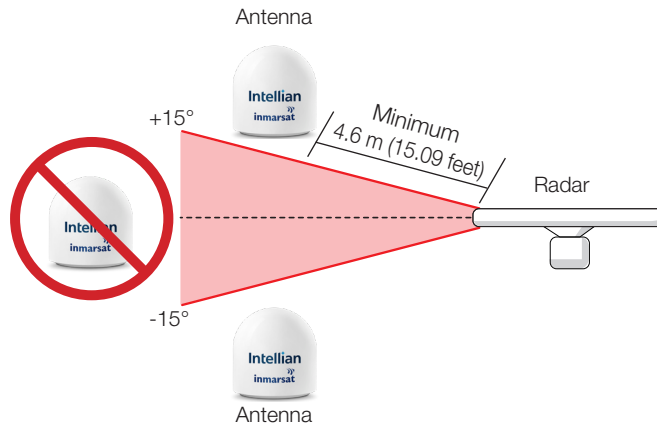


Figure 2: Potential RF Interference



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.

4.1.3 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 50 m (164 ft), based on a radiation level of 1 mW/cm² that applies under uncontrolled environment. No hazard exists $>20^{\circ}$ below the antenna's mounting plane.

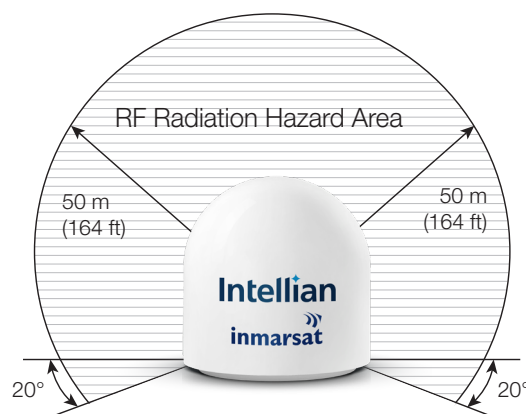


Figure 3: RF Hazard Precautions

4.2 System Package

4.2.1 Above Deck Unit (ADU)

The ADU 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 4: Radome and Pedestal

4.2.2 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 BDT.

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



Figure 5: Front Panel of BDT



Figure 6: Rear Panel of BDT

4.2.3 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 Transceiver
- Spectrum analyzer function included
- OLED display
- USB Log download & Firmware upgrade (No PC required)
- Wi-Fi access
- AptusNX Web application

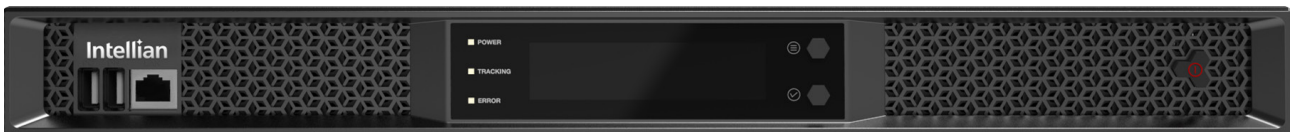


Figure 7: Front Panel of ACU



Figure 8: Rear Panel of ACU

4.2.4 Packing List

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

Above Deck Unit (ADU) Package				
Item	Q'ty	Size	Description	
Above Deck Unit (ADU)	1		Radome and Pedestal	
Quick Installation Guide (QIG)	1		Installation guide (A Copy)	The bolt kit is packed in a box separately.
RF Hazard Sticker	1		Radiation safety distance (30 m) label	
Mounting Template	1		Real size drawing of antenna mounting hole pattern	
Hex Bolt (BUMAX)	5	M12 x 60L	Bolt kit for antenna-deck (mast)assembly (1 spare set included)	
Flat Washer (BUMAX)	5	M12		
Spring Washer (BUMAX)	5	M12		
Hex-S Bolt_SF	5	M6 x 40L	Bolt kit for radome assembly (1 spare set included)	
Waterproof Foam	1		With an x-shaped cable hole	
Below Deck Terminal (BDT) Package				
Item	Q'ty	Size	Description	
Below Deck Terminal (BDT)	1	431 mm x 411 mm x 44 mm	Below Deck Terminal (BDT)	
Quick Installation Guide (QIG)	1		Installation guide	
BDT Rack Mount Bracket	2		For Installing BDT to 19-inch Rack	
Flat Head Screw	10	M4 x 12L	For mounting BDT Rack Mount Bracket on BDT	
USB Cable (A to A)	1	1.8 m	To connect BDT (front panel left USB port) to PC	
AC Power Cord (CEE7/7)	1	1.5 m	BDT power cord (220 V)	
Ethernet Cable (RJ45 to RJ45)	2	1 m	To connect BDT to PC / network device	
PC Serial Cable (DB-9 (F) to DB-9 (F))	1	1.8 m	To connect BDT (back panel) to PC	
Wi-Fi Dongle	1		For Wi-Fi connection	

ACU Components Box (Optional: for Dual Antenna System)

The ACU Components Box can be purchased separately.

Item	Q'ty	Size	Description
Antenna Control Unit (ACU)	1	431 mm x 350 mm x 44.3 mm	Antenna Control Unit (ACU)
Quick Installation Guide (QIG)	1		Installation guide
RF Hazard Sticker	1		Radiation safety distance (50 m) label
Mounting Template	1		Real size drawing of antenna mounting hole pattern
ACU Rack Mount Bracket	2		For installing ACU to 19-inch Rack
Flat Head Screw	10	M4 x 12L	For mounting ACU Rack Mount Bracket on ACU
USB Cable (A to A)	1	1.8 m	To connect ACU (front panel left USB port) to PC
AC Power Cord (CEE7/7)	1	1.5 m	ACU power cord (220 V)
RF Cable (F (M) to F (M))	2	1 m	To connect ACU to Modem (Tx / Rx)
Modem Interface Cable (DB-9 (M) to RJ45)	1	1.5 m	To connect ACU to Modem (iDirect Modem)
Ethernet Cable (RJ45 to RJ45)	2	1 m	To connect ACU to PC / network device
Wi-Fi Dongle	1		For Wi-Fi connection
Hex Bolt (BUMAX)	5	M12 x 80L	Bolt kit for antenna-deck (mast) assembly (1 spare set included)
Flat Washer (BUMAX)	5	M12	
Spring Washer (BUMAX)	5	M12	
Hex-S Bolt_SF	5	M6 x 40L	Bolt kit for radome assembly (1 spare set included)
Radome Door Key	2		To open the hatch
Waterproof Foam	1		With an x-shaped cable hole

4.3 System Cables (Customer Supplied)

4.3.1 Antenna RF Cable (Customer Supplied)

Due to the signal loss across the length of RF coaxial cable on L-Band, it must only use the RF cables using the 50 Ω coaxial cable types for standard system installation. The use of different type of cables (75 Ω coaxial types etc.) can cause problems. If you need RF cables that run longer than the maximum cable length recommended, contact Intellian Technical Support for assistance.

- **Cable Requirements**

Coaxial Cable Type	Connector	Max. DC Resistance	Attenuation @ 2 GHz	Max. Cable Length ($\leq$ 16 dB loss @ 2 GHz)
LMR400	N (M) to N (M)	0.8 Ω	0.196 dB/m	60 m
LMR600			0.128 dB/m	100 m

Note:

- Optimal tightening torque for N type RF connector: 1.5 N-m
- Maximum RF loss at 2 GHz: 16 dB including connectors

4.3.2 Gyrocompass Cable (Customer Furnished)

General types of gyrocompass cables are recommended for the compatible connection to Intellian antennas which are used in various environments of vessels.

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

4.4 Unpacking System Package

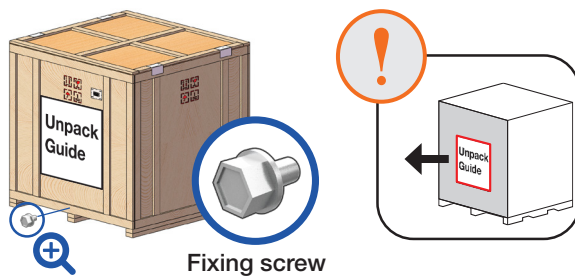


CAUTION

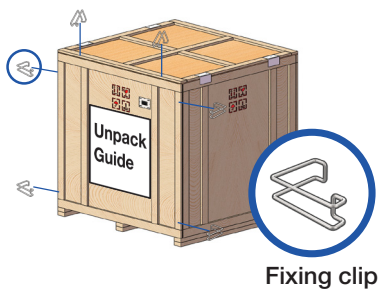
- The package box on the pallet should be lifted by a forklift.
- Follow the steps in order for easy and safe unpacking.

1. Open the side panel with an attached sticker paper (**Wooden Crate Unpack Guide**) by removing the fixing screw (1 ea) and clips (6 ea).

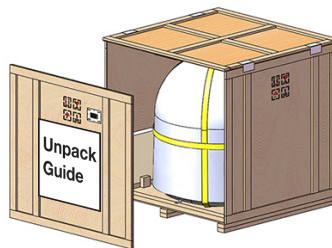
1-1 🛠 : 1 ea



1-2 📌 : 6 ea

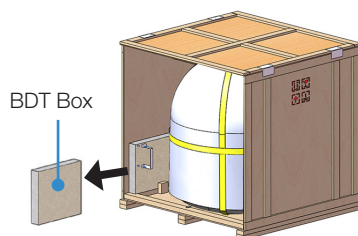


1-3



2. The BDT box is placed on a side panel inside the crate. Remove fixing screws (2 ea) from the BDT bracket, then take out the BDT box from the crate.

2-1



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

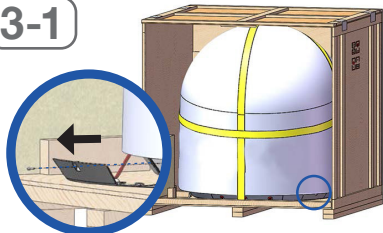
3-1. Remove the M4 x 15L Wrench Bolt using the wrench set, then open the cable entry cover.

3-2. Connect the RF Cable (customer supplied) from the **ANTENNA port** on the back of BDT to the RF connector inside the cable entry of the antenna.

3-3. Run the diagnostic tests (Full Diagnostic Test) via the BDT and check the real-time diagnostic result.

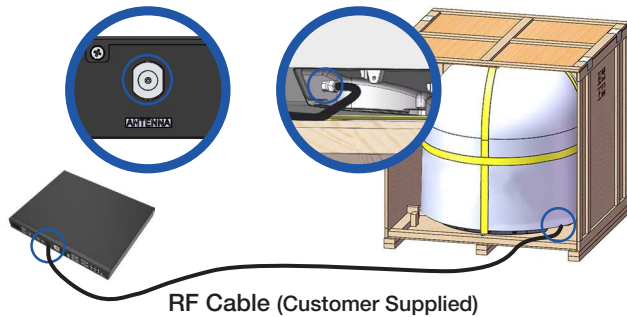
Optional

3-1



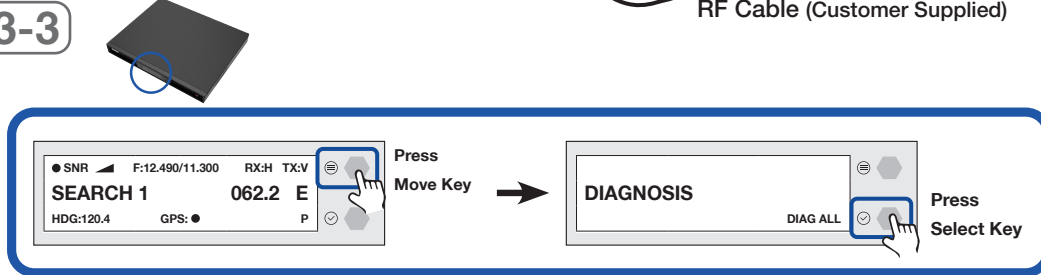
Cable Entry Cover

3-2



RF Cable (Customer Supplied)

3-3



4. Remove the clips (6 ea) that attach the top panel, then carefully slide the top panel out from the crate as shown.

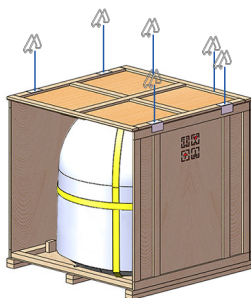


WARNING

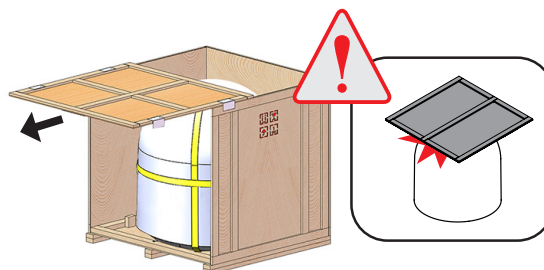
The brackets installed at top two edges help the top panel to move stably. When removing the top panel, ensure that it doesn't fall on the radome.

4-1

⚡: 6 ea

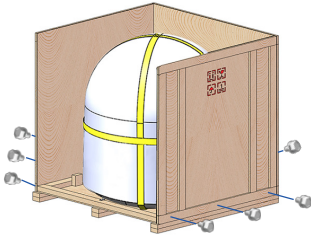


4-2

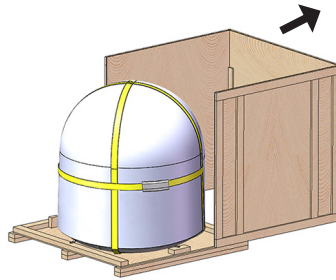


5. Remove the fixing screws (7 ea) that secures the three side panels, then detach all the panels remaining the antenna on the pallet.

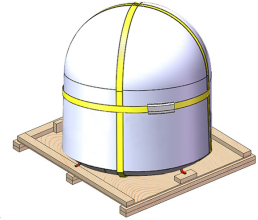
5-1  : 7 ea



5-2



5-3



Chapter 5. Installing Above Deck Unit (ADU)

5.1 Antenna Dimensions

Confirm the height and diameter of the antenna unit shown in the following figure before installing it. The mounting surface and overall space occupied by the antenna must be sufficient for the fully constructed radome on top of its base frame. Using a crane during the antenna installation is strongly suggested.

Unit: mm (inch)

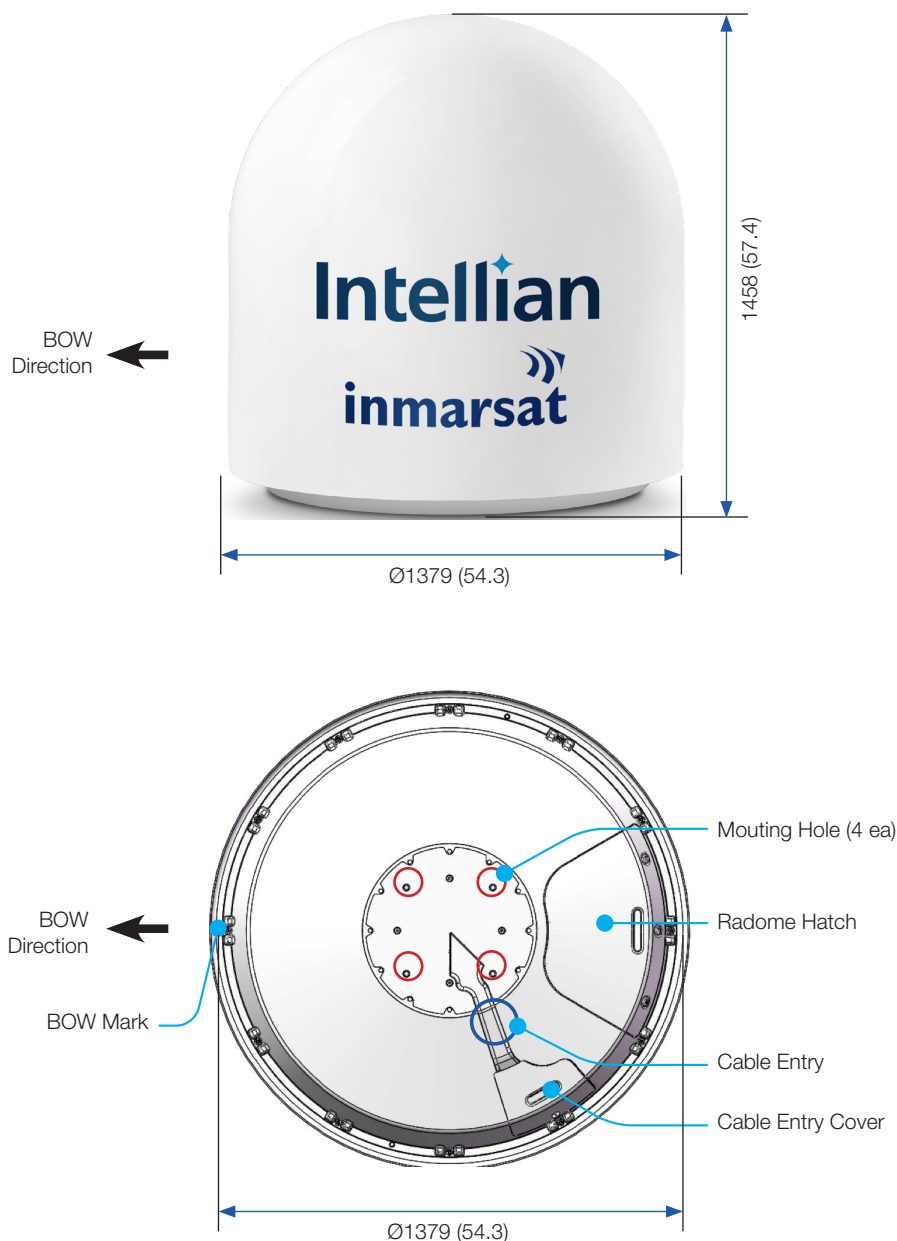


Figure 9: Antenna Dimensions



NOTE

Position the antenna with the BOW direction parallel to the center line of the ship.

5.2 Antenna Mounting Hole Pattern

Use the supplied mounting template when drilling mounting holes on the mast. The hole placement for the antenna must match the mounting hole pattern on the template.



WARNING

When reusing an existing mast, check the condition of holes on the mast and make sure those are proper to use compared to the hole locations and sizes printed on the mounting template.

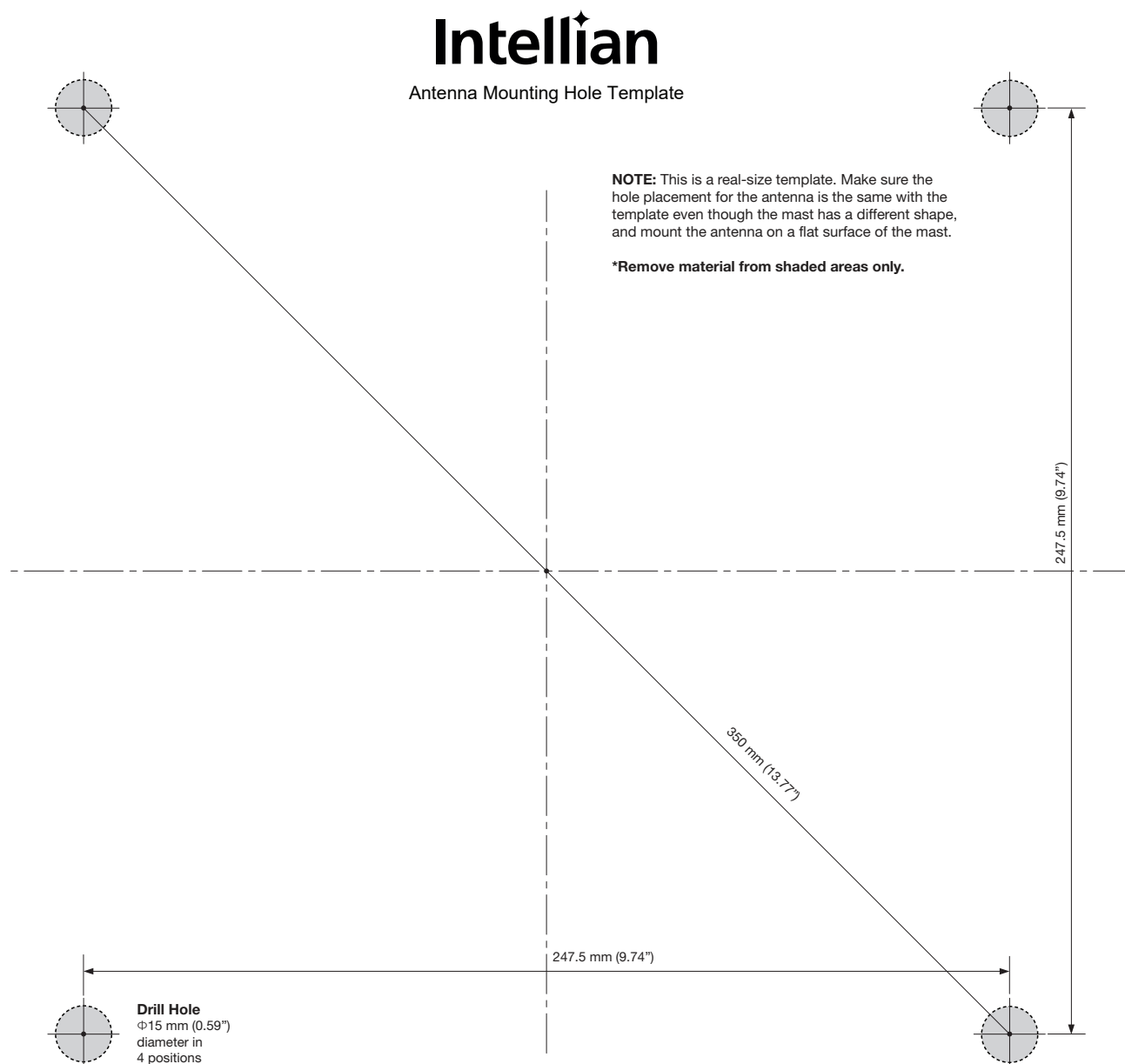


Figure 10: Antenna Mounting Hole Template

5.3 Designing Mast (Example Only)

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 drawings for more details.



NOTE

This is a general example of designing a mast. The shape of mast may differ depending on the ship's environment.



WARNING

- When designing a mast, consider the minimum and maximum thickness of the mast plate marked on the diagram. If the thickness of the mast plate is different from the recommended size (Min. 10.0 mm/ Max. 20.0 mm), choose right sized bolts for mounting antenna on the mast according to the table below.

Mast Plate Thickness	Recommended Bolt Size
10 ~ 28 mm (Recommended)	M12 x 80L (Supplied)
28 ~ 35 mm	M12 x 90L

- To use the supplied bolts (M12 x 80L) for mounting antenna on a mast, the thickness of mast plate must be 10 ~ 20 mm. The minimum thickness of the mast plate is 10 mm. If the mast plate is thicker than 20 mm, the supplied antenna-mast mounting bolts can be too short to mount the antenna on the mast securely.

Option 1. When Installing Cable on Outside of Mast

This method is generally recommended.

Unit: mm (inch)

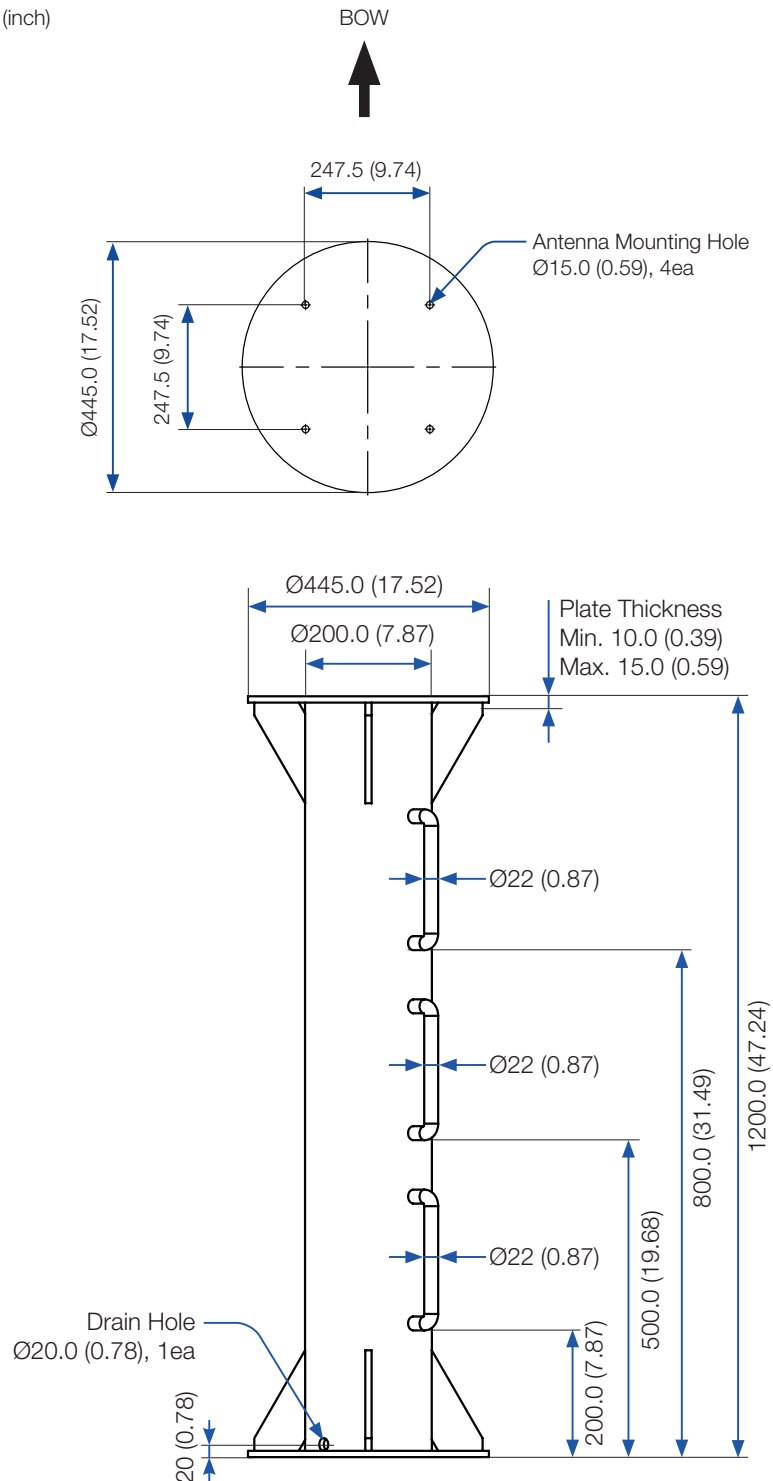


Figure 11: Recommended Size of Mast (Option 1)

Option 2. When Installing Cable Through Inside Mast

Unit: mm (inch)

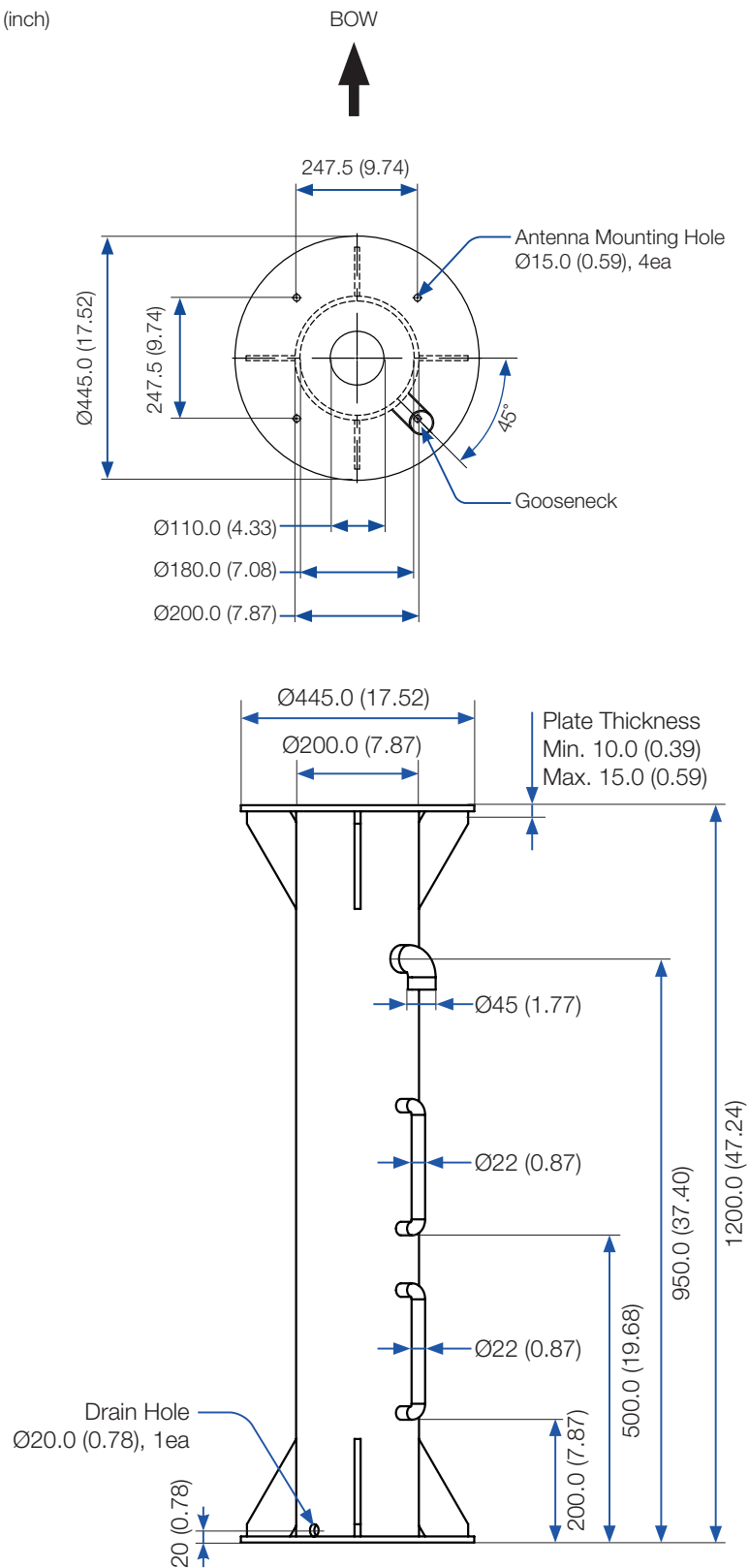


Figure 12: Recommended Size of Mast (Option 2)

5.4 Routing RF Cable on Mast (Example Only)

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.



NOTE

This is a general example of routing cables on the mast. The routing method is may differ depending on the ship's environment.

Option 1. Routing Cable on Outside of Mast

This method is generally recommended.

1. Route the cable from the gooseneck placed on the deck to the antenna as shown in the picture.
2. Maintain a sufficient cable length (at least 2 m) when routing the cable on the surface of the mast. After connecting the cable to the connector on the radome, adjust the length and fix the cable on the cable brackets using cable ties.

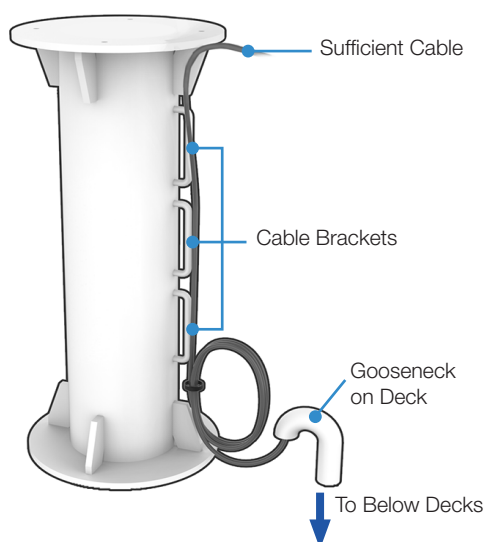


Figure 13: Routing Cable Through Outside of Mast

Option 2. Routing Cable Through Inside Mast

1. Before placing the radome on the mast, route the cable through the gooseneck on the deck and the built-in gooseneck on the mast for easier placing of the RF Cable through the inside of the mast as shown in the picture.
2. Maintain a sufficient cable length (at least 2 m) when routing the cable on the surface and inside of the mast. After connecting the cable to the connector on the radome, adjust the length and fix the cable on the cable brackets using cable ties.

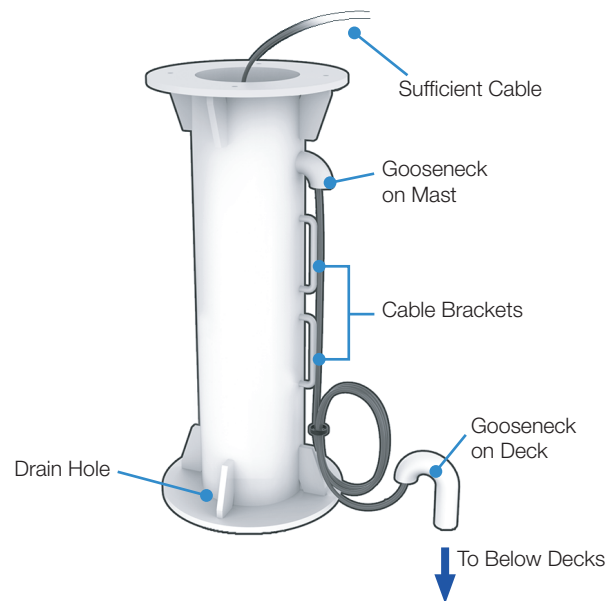


Figure 14: Routing Cable Through Inside of Mast

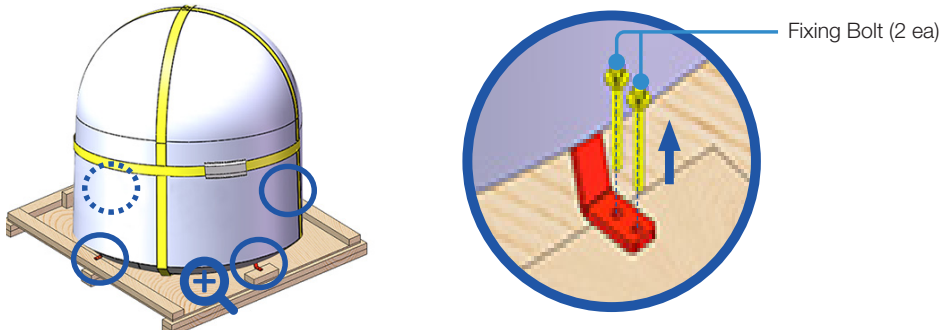
**CAUTION**

Do not leave the cables on the top surface of the mast. When putting down the antenna on the mast, there is a risk of damage to the cable connector if the cable is located on the top surface of the mast.

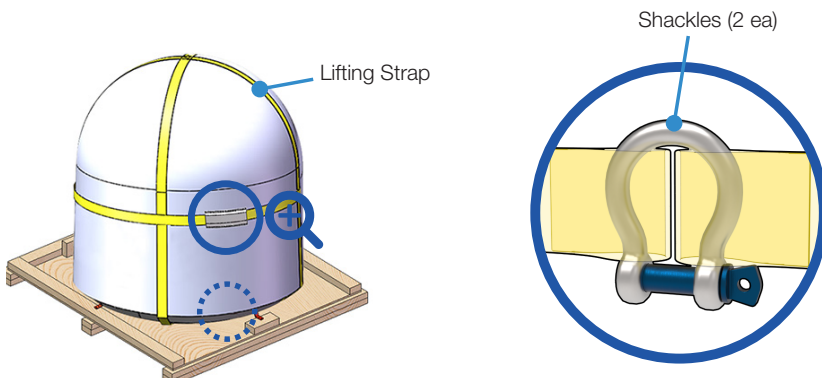
5.5 Removing Antenna from Wooden Pallet

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

1. Remove the hex head wrench bolts (2 ea) on each radome bracket 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.

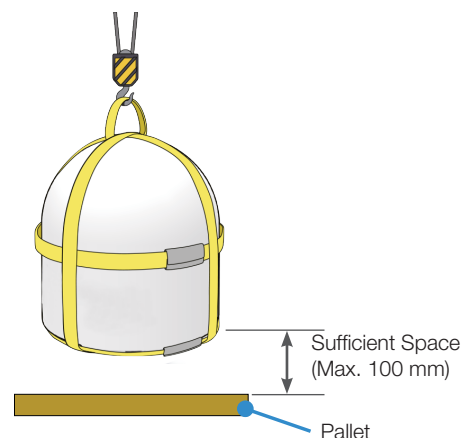


3. Lift the antenna above the pallet using a crane, and maintain a sufficient space (max. 100 mm) between the bottom of antenna and pallet to remove the shipping brackets.

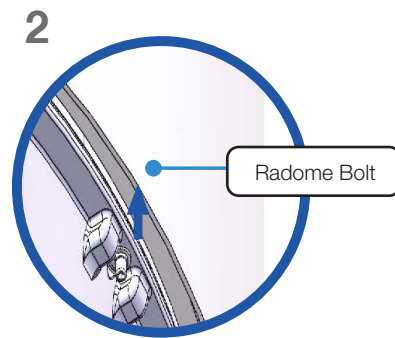
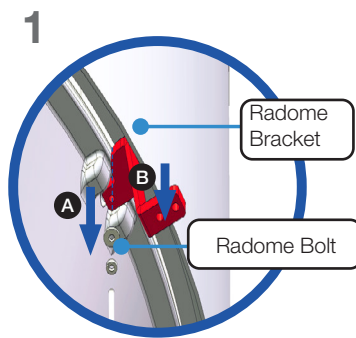


WARNING

- 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 heavy objects. Incorrect handling of heavy objects may lead to personal injury or significant equipment damage.



4. Remove the radome bracket bolt (1 ea) using a wrench, then detach the radome bracket from the radome.
5. Find the supplied Hex Head Wrench Bolts (M6 x 40L), Spring Washers, and Flat Washers from the BDT box. Apply Loctite #243 on the bolt, and assemble the bolt and washers to the radome by turning it clockwise using a wrench. DO NOT reuse the removed bolt and washers.
6. Repeat the procedure to remove all four radome brackets.



Fully Tighten Radome Bolt.

CAUTION



- Fully tighten the radome bolt.
- Use the radome bolt and washers supplied in the BDT box.
- DO NOT reuse the removed bolt and washers.

5.6 Placing Antenna Above Mast

The Intellian antenna comes with the lifting straps pre-mounted from the factory. Check the condition of the lifting strap and ensure the shackle is tightened up. Lift the antenna above the mast using a crane and carefully lower down the antenna toward the mast. Maintain sufficient space (at least 150 mm) between the bottom of radome and the mast for cabling work.



WARNING

When moving the antenna, it may sway by windy. Be careful when handling the antenna.



NOTE

Position the antenna with the BOW direction parallel to the center line of the ship

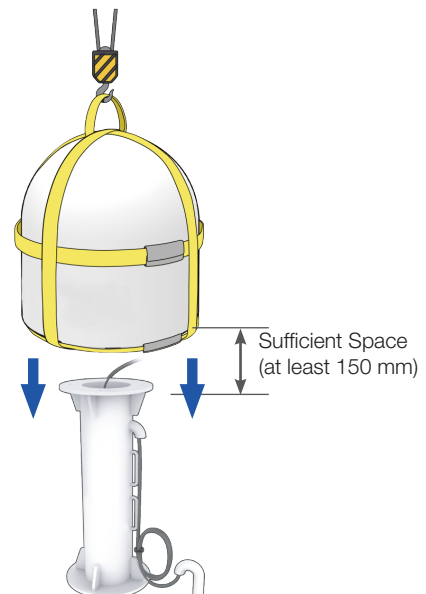


Figure 15: Placing Antenna Above Mast

5.7 Inserting Waterproof Foam

The supplied waterproof foam must be inserted to prevent water penetration into the radome before mounting the radome on the mast. Make sure the waterproof foam is positioned where the following picture shows.

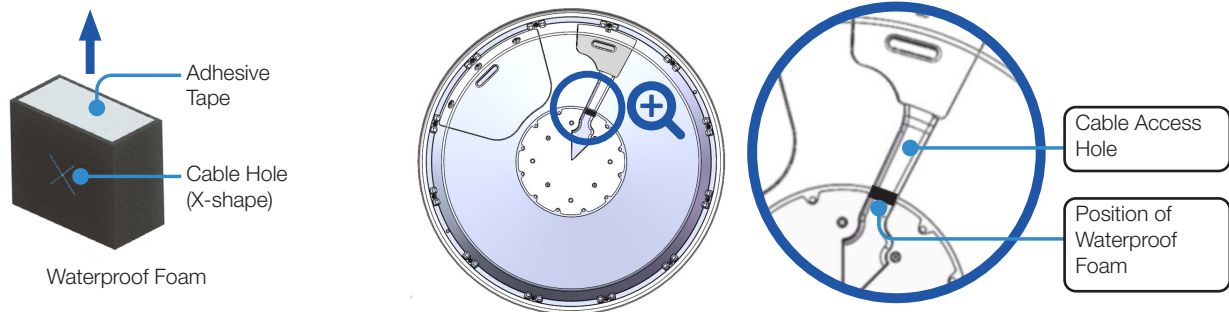
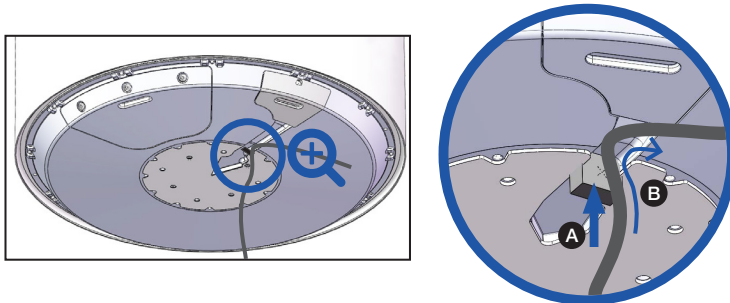


Figure 16: Attaching Position of Waterproof Foam

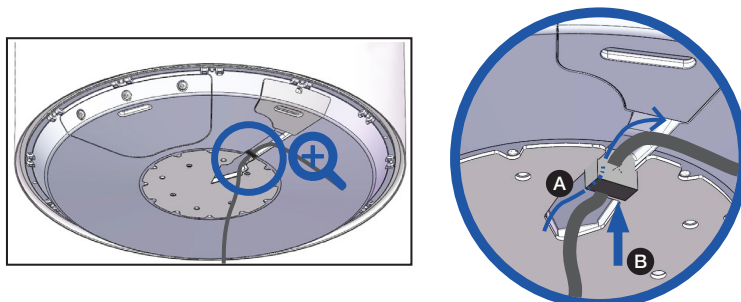
Option 1. When Installing Cable Through Inside Mast

1. Peel off the paper backing of the adhesive tape from the waterproof foam.
2. Extend the RF cable up to the radome from the mast, and pass the cable through the cable hole (X-shaped) of the waterproof form.
3. Then attach the adhesive side of waterproof foam firmly onto the surface of the cable access hole. When moving the radome, be careful with the waterproof foam and cable not to be detached.



Option 2. When Installing Cable on Outside of Mast

1. Peel off the paper backing of the adhesive tape from the waterproof foam.
2. Attach the adhesive side of waterproof foam firmly onto the surface of the cable access hole.
3. Extend the RF cable up to the radome from the mast.



5.8 Mounting Antenna on Mast

1. Bring M12 x 80L Hex Bolt sets (4 ea) for antenna-mast assembly from the BDT box.
2. Place the antenna on the mast and align the mounting holes of the antenna with those of the mast.
3. Before assembling bolts, apply Loctite #263 to the bolt threads to ensure the bolts are fastened firmly. Insert the bolts and washers from under the mast into the radome, and lightly tighten them by hand into the built-in nuts on the bottom of radome. Install 4 bolts in a criss-cross sequence as shown in the figure.
4. After installing all 4 bolt sets, fully tighten the bolts using a torque wrench.
5. After mounting the antenna on the mast, remove the lifting strap.

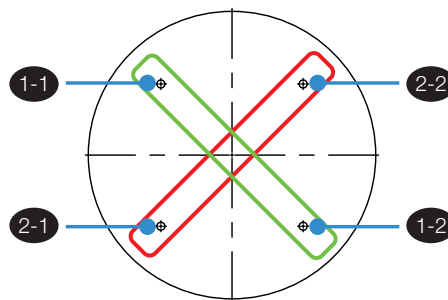


Figure 17: Installing Sequence of Bolts

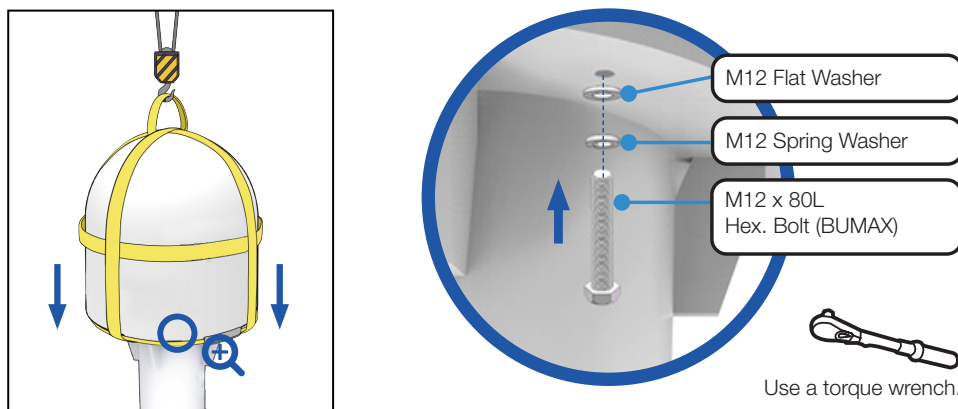


Figure 18: Installing Bolts for Antenna-Mast Assembly

NOTE



- Make sure the cable from the mast is aligned with the cable entry on the bottom of antenna for stable connection.
- Refer to "13.1 Appendix A. Tightening Torque Specification" on page 125 for the bolt tightening torque.

WARNING



If a bolt does not fit into the mounting hole when installing the bolt by hand, stop installing and check the bolt size. DO NOT tighten the bolts forcefully. It may cause damage to the inner threads of the mounting holes of antenna. In this case, the damage is not covered by the warranty.

5.9 Connecting RF Cable to Antenna

Connect the RF Cable (customer supplied) from the ANTENNA port of the BDT to the RF connector inside the cable entry of radome. Both side of the connection cable should be terminated using suitable tools. After the connection, securely fix the cable in place using cable ties.

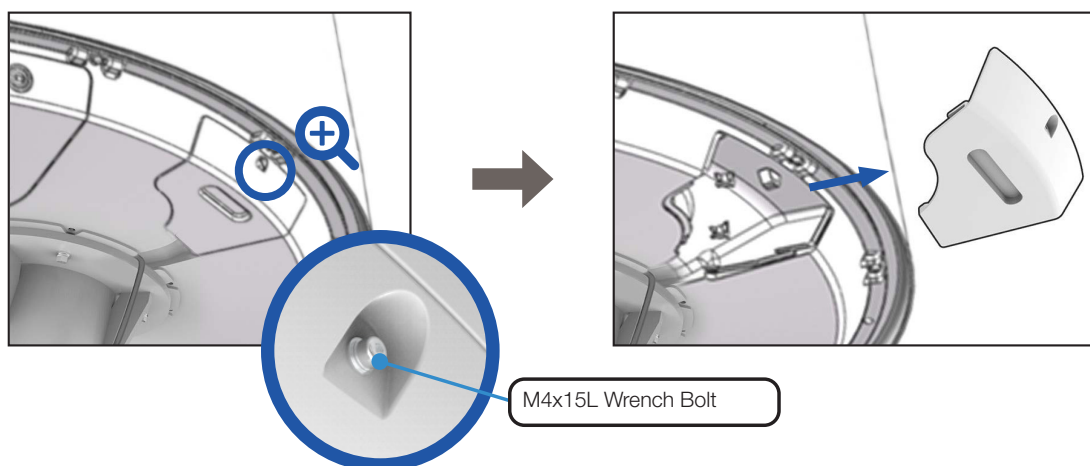


NOTE

Make sure the followings before installing system cables.

1. All cables need to be well clamped and protected from the physical damage and exposure to heat and humidity.
2. Don't use any acutely bent cable.
3. Use watertight glands or swan neck tubes at exposed bulkheads or deck heads where the cable passes through.
4. Install recommended size cables. Refer to "**4.3 System Cables (Customer Supplied)**" on **page 21** to see cable requirements.

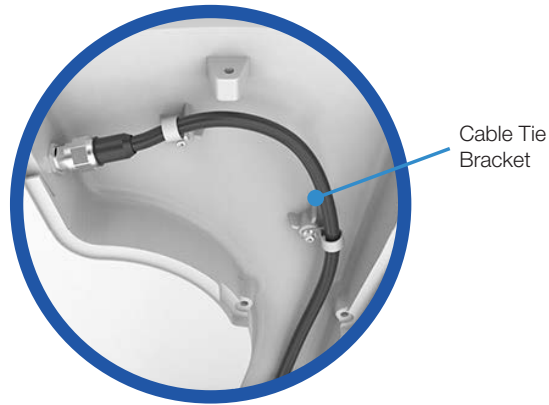
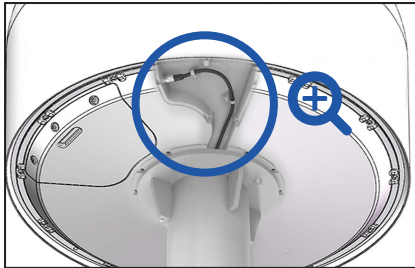
1. Loosen the M4 x 15L built-in wrench bolt by using the wrench set then open the cable entry cover.



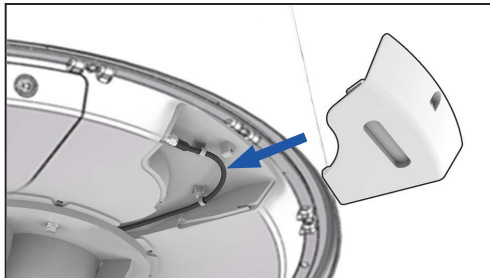
NOTE

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 of the radome as the following. Ensure the cable is firmly fastened to the connector. Fix the cable position along the routing path using cable ties, cable mounts or cable clamps.



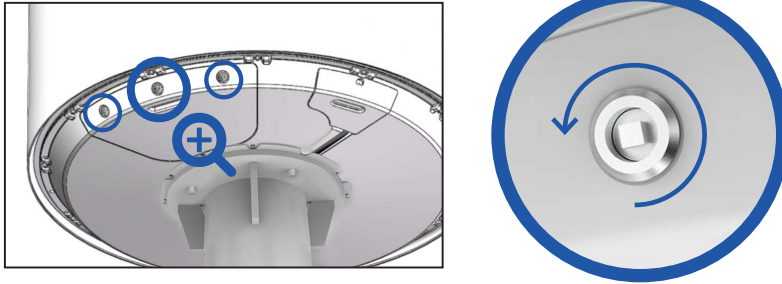
4. After completing cable connection, put the cover in the right place and close it by tightening the M4 x 15L built-in wrench bolt by using a wrench set.



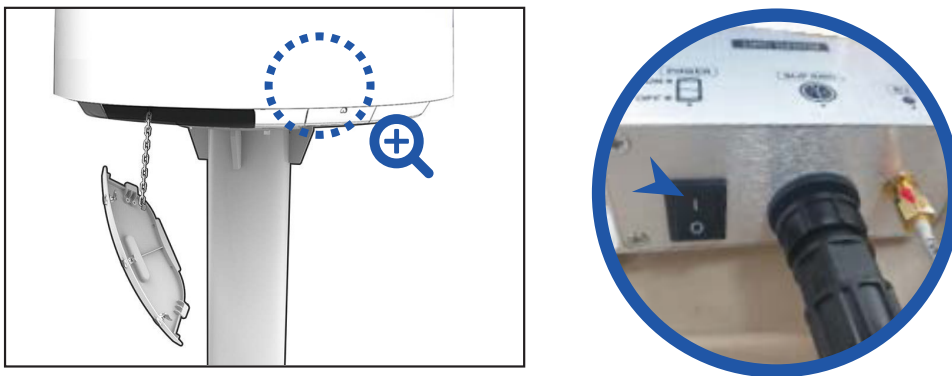
5.10 Switching On Power Box

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.

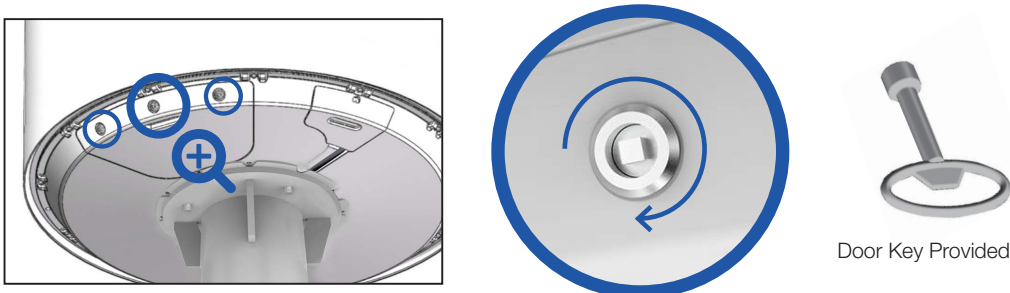
1. Bring the radome door key from the BDT box. Open the radome hatch by turning the fixed bolts counterclockwise by using the radome door key.



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.

Chapter 6. Installing Below Deck Unit (BDU)

6.1 Selection of BDU Installation Site

The BDU should be installed below the deck in a location that is dry, cool and ventilated. The front panel of BDU should be easily accessible to users.

6.2 BDT Dimensions

Confirm the dimension of the BDT before installing it.

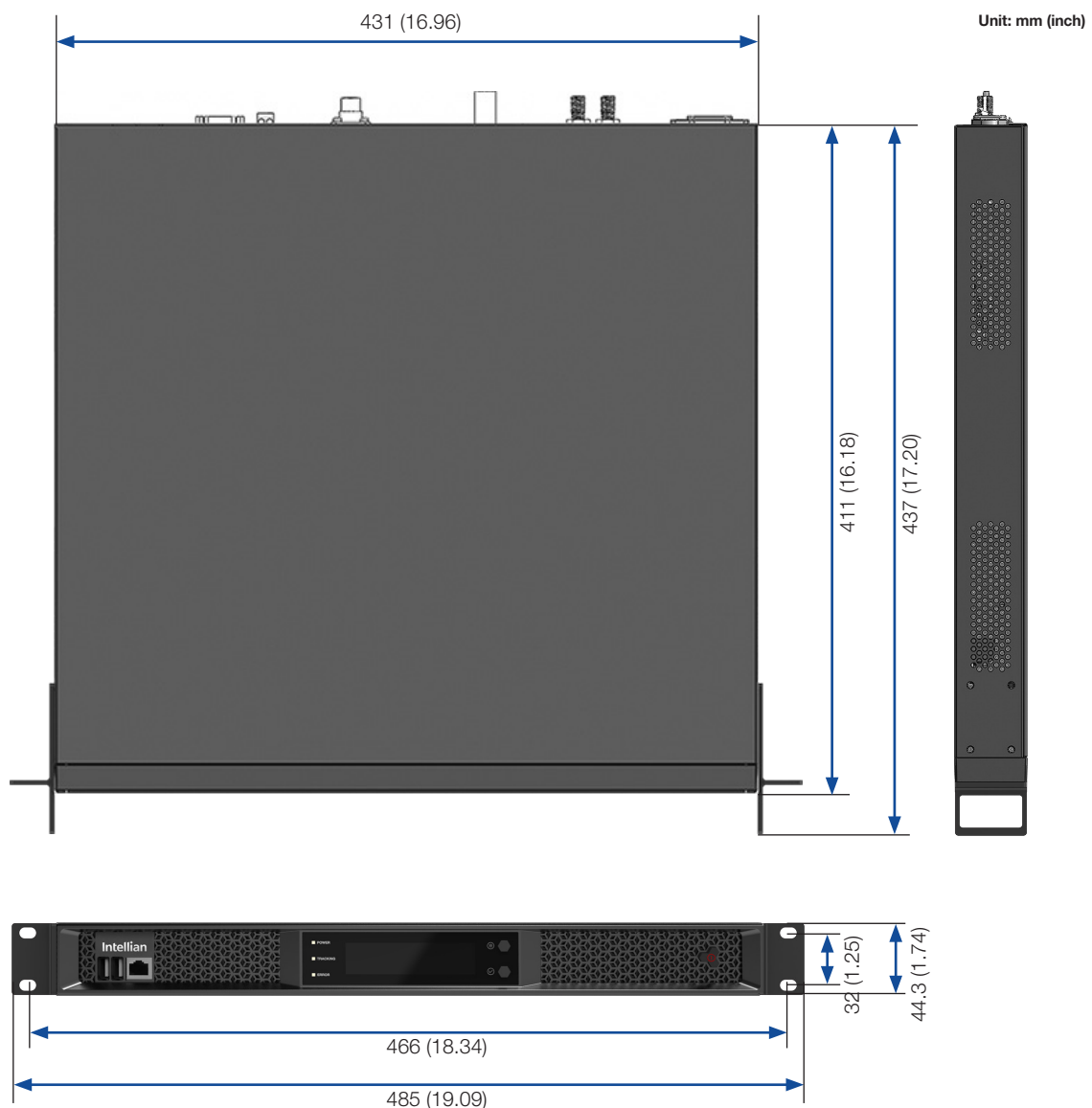


Figure 19: BDT Dimensions

6.3 Mounting BDT

Mounting BDT on 19-inch Rack

The BDT can be installed to 19" rack using the two rack mount brackets which can be found from the BDT box. Attach the rack mount brackets to the sides of the BDT using flat head screws. Connect cables to the back side of the BDT.



Figure 20: 19-inch Rack Mount 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.

6.4 ACU Dimensions (Optional: For Dual Antenna System)

Confirm the dimension of the ACU before installing it.

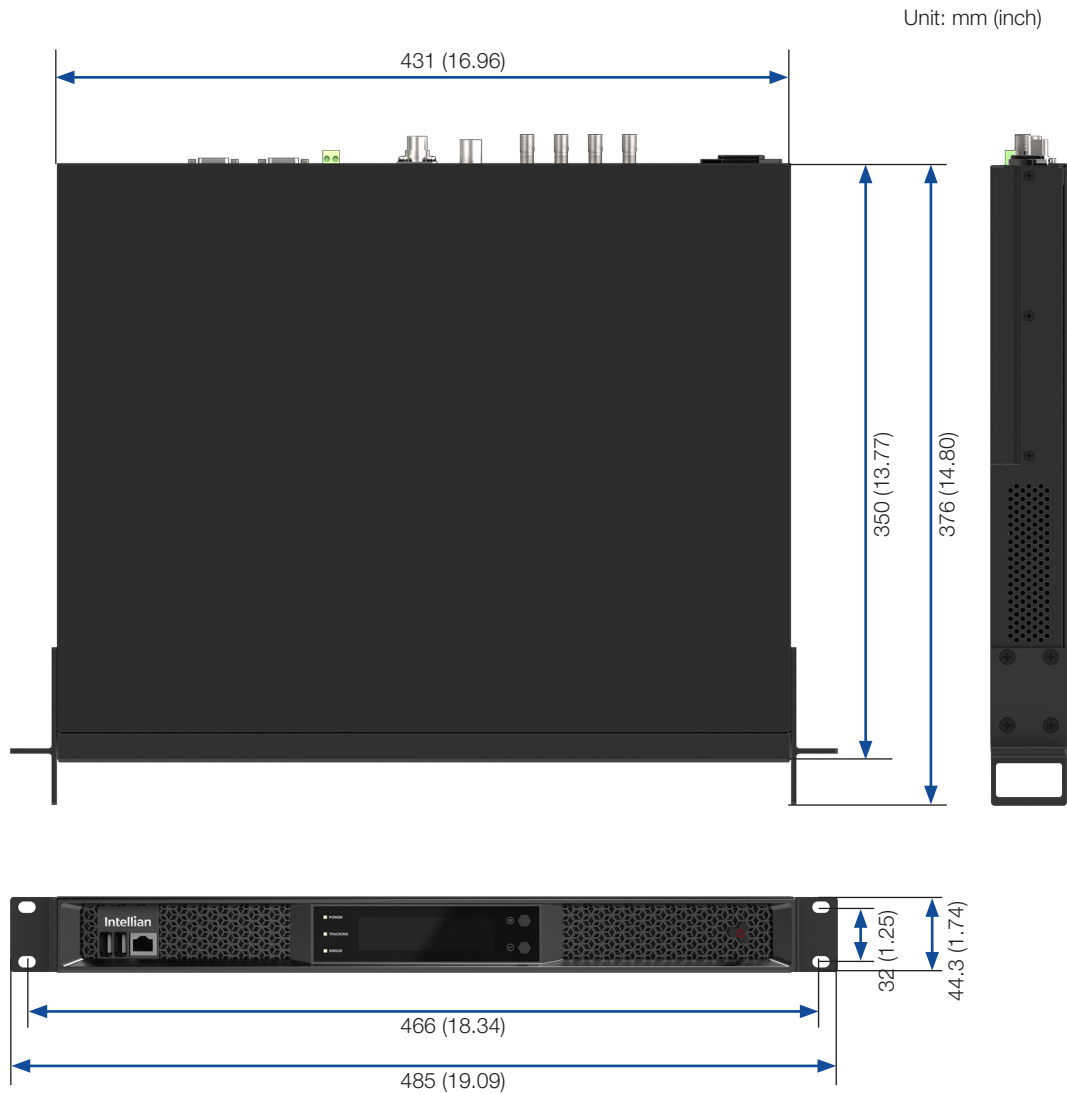


Figure 21: ACU Dimensions

6.5 Mounting ACU (Optional: For Dual Antenna System)

Mounting ACU on 19-inch Rack

The ACU can be installed to 19" rack using the two rack mount brackets which can be found from the ACU box. Attach the rack mount brackets to the sides of the ACU using flat head screws. Connect cables to the back side of the ACU.



Figure 22: 19-inch Rack Mount 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.

6.6 Antenna System Configurations

For the proper operation of the satellite communication system, the required components must be connected as shown in the figure. Separate purchase of a switch router and ship's gyrocompass may be needed.

6.6.1 Single Antenna System Configuration (Basic Antenna System)

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

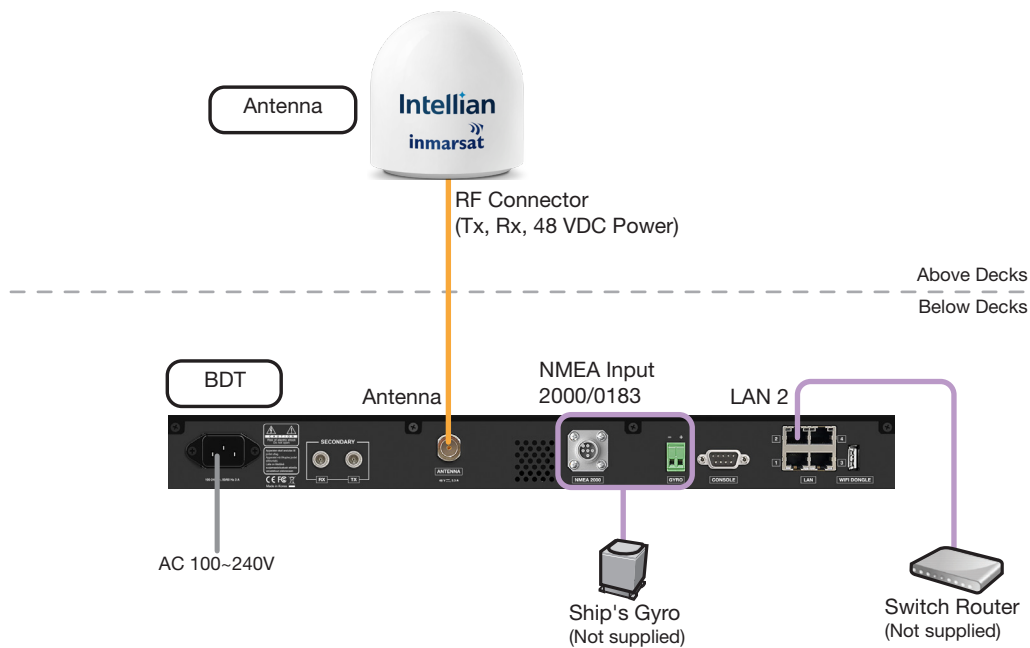


Figure 23: Single Antenna System Configuration (Basic Antenna System)

6.6.2 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, connect the cables correctly.

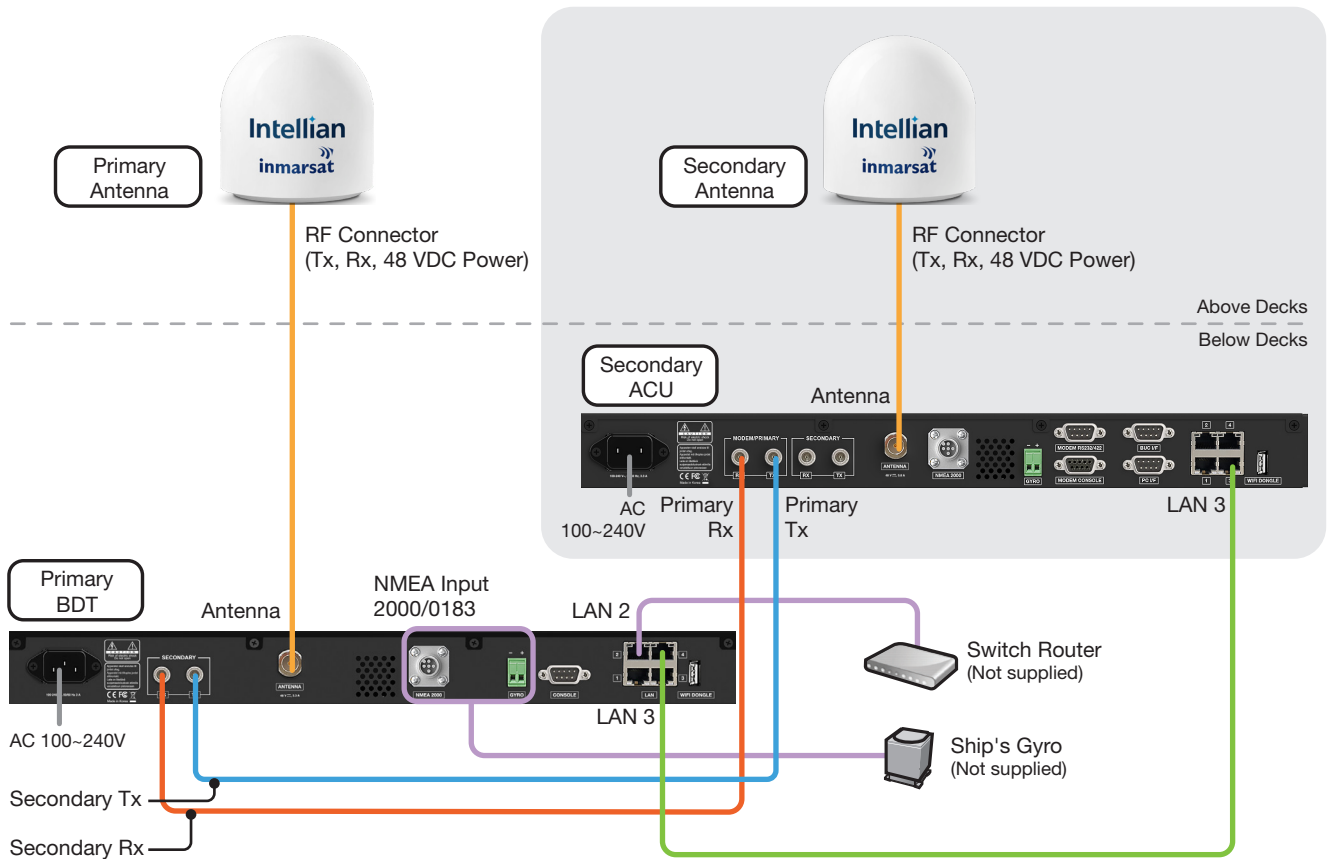


Figure 24: Dual Antenna System Configuration



NOTE

Refer to the "13.2 Appendix B. Starting Dual Antenna System (Optional)" on page 126 for more details.

6.7 BDT Cable Connection

6.7.1 BDT Back Panel Connectors

The following figure shows the BDT back panel.

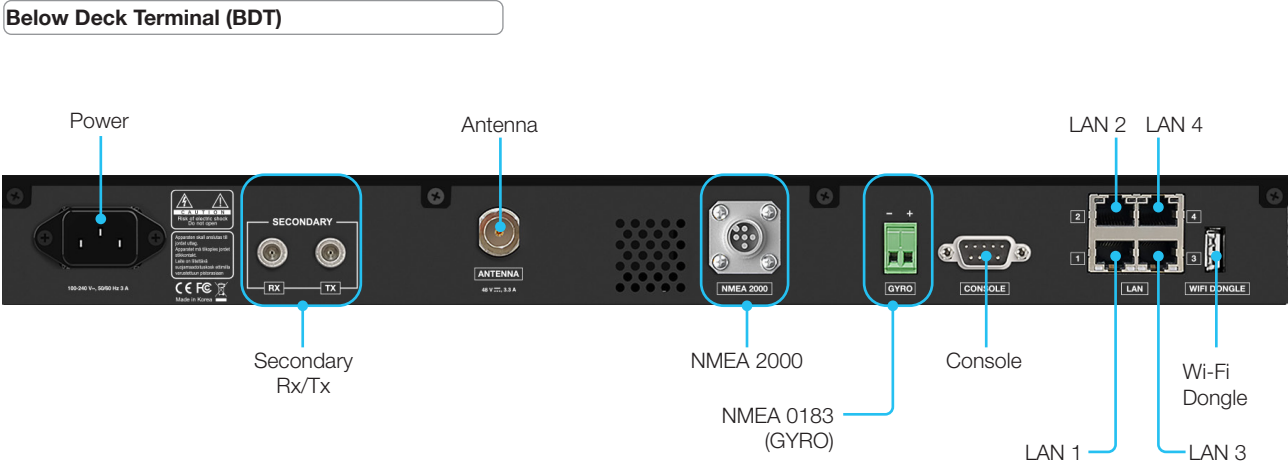


Figure 25: BDT Back Panel Connectors

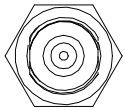
6.7.2 BDT Connector Pinout Guide

Check the following connector pinout information applied to the connection ports of the BDT.

Power Connector

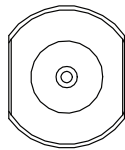


Pin	Signal
1	LIVE
2	GND
3	NEUTRAL

Secondary Rx and Tx Connectors

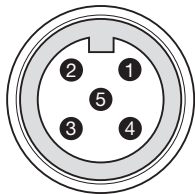
RF F Type Female

Conductor	Function
Inner	DATA
Outer	GND

Antenna Connector

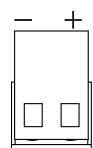
RF N Type Female

Conductor	Function
Inner	RX, TX, FSK, REFERENCE, POWER
Outer	GND

NMEA 2000 Input

Mini-C 5-Pin Male

Pin	Signal
1	N/C
2	N/C
3	N/C
4	NET-H (CAN-H)
5	NET-L (CAN-L)

NMEA 0183 Input

2-Pin Terminal Block

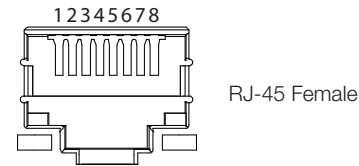
Pin	Signal
-	HEADING GND
+	HEADING IN

Console (iARM Interface) - RS232 Connector



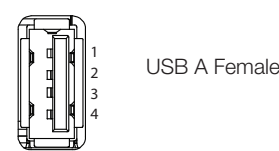
Pin	Signal
1	N/C
2	DBG Rx (iARM)
3	DBG Tx (iARM)
4	NC
5	GND
6	N/C
7	N/C
8	N/C
9	N/C

LAN Connectors (LAN 1~LAN 4)



Pin	Signal
1	TX-
2	TX+
3	RX-
4	N/C
5	N/C
6	RX+
7	N/C
8	N/C

Wi-Fi Dongle Connector



Pin	Signal
1	+5 V
2	DATA-
3	DATA+
4	GND

6.7.3 Connecting Power to BDT

Connect the power cord from the power supply to the power connector (100~240 VAC) of BDT.

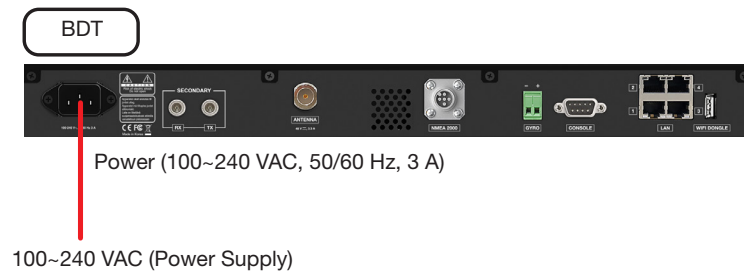


Figure 26: Connecting Power to BDT

6.7.4 Connecting BDT to Antenna

Connect an **Antenna RF cable (N to N)** (customer supplied) from the **ANTENNA (N) port** of the BDT to the **RF (N) port** of radome (antenna).

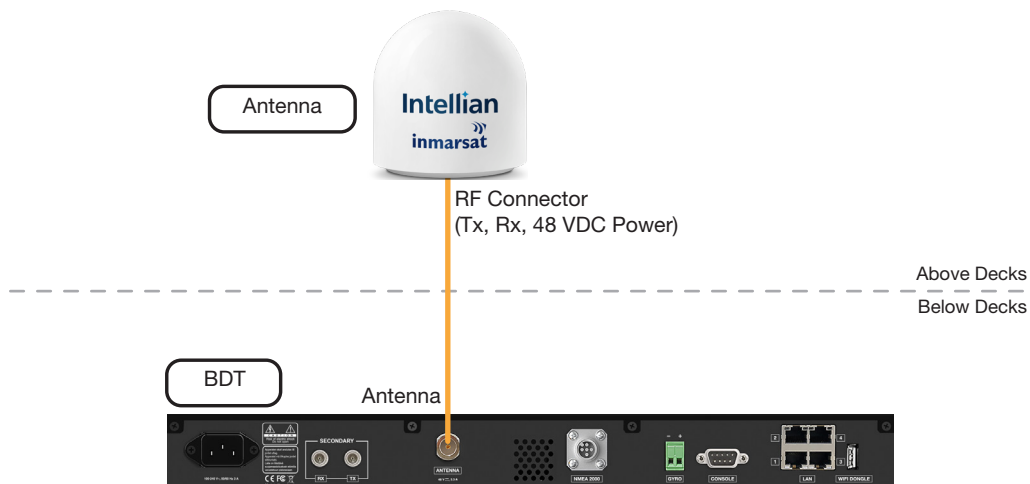


Figure 27: BDT to Antenna Cable Connection

6.7.5 Connecting BDT to the Switch Router

Connect an **Ethernet Cable** from the **LAN 2 (RJ45) port** of the BDT to a **LAN (RJ45) port** of the Switch Router.



Figure 28: BDU to Switch Router Cable Connection

6.7.6 Connecting BDT to Ship's Gyrocompass

For satellite tracking, connect a gyrocompass used on ship to the antenna system through the gyrocompass interface of the BDT. Intellian BDT supports NMEA 0183 and NMEA 2000 gyrocompass inputs. If the gyrocompass has a different output standard, a compass converter should be used to supply the required NMEA input. The NMEA 2000 gyrocompass needs to be purchased separately. Refer to "**6.7.2 BDT Connector Pinout Guide**" on page 45 for the pin configuration.

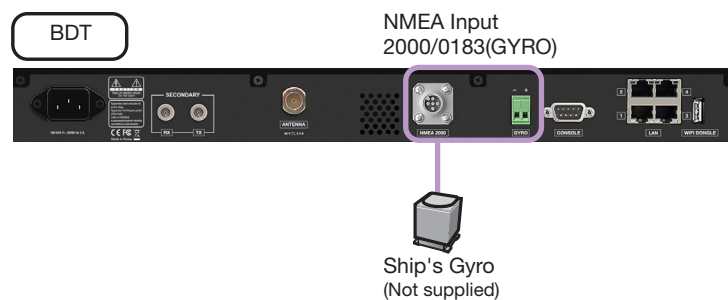
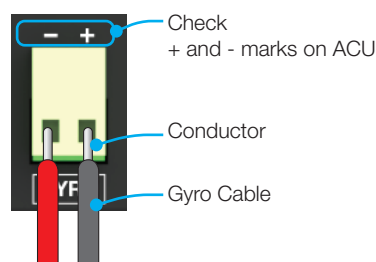


Figure 29: BDT to Ship's Gyrocompass Cable Connection

How to Connect NMEA 0183 Gyrocompass Cable

1. Using a Phillips screwdriver, loosen the two screw terminals by rotating them counterclockwise.
2. Strip wires up to 5 mm (0.2"). Do not solder the cables.
3. Insert conductor of gyro cable to the terminal block. The polarity of the terminal is indicated on the ACU with + and - marks. After checking the polarity, connect the cables correctly.



4. Fully tighten the screws by rotating them clockwise to clamp the wires securely.
5. Insert the terminal block with gyro cables to the **NMEA 0183(GYRO) port** of ACU.

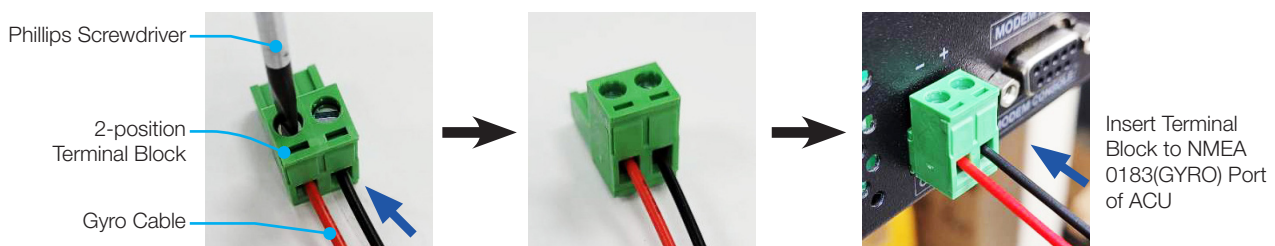


Figure 30: NMEA 0183 Gyrocompass Cable Connection

6.7.7 Connecting BDT to Additional Secondary ACU (Optional)

For the Dual Antenna System, the antenna system needs to be installed with a BDT (primary) and a ACU (secondary).

1. Connect a **RF cable (F to F)** from the **Secondary Rx (F) port** of the Primary BDT to the **Primary Rx (F) port** of Secondary ACU.
2. Connect another **RF cable (F to F)** from the **Secondary Tx (F) port** of the Primary BDT to the **Primary Tx (F) port** of Secondary ACU.
3. Connect an **Ethernet cable** between the **LAN 3 (RJ45) ports** of each Primary BDT and Secondary ACU.

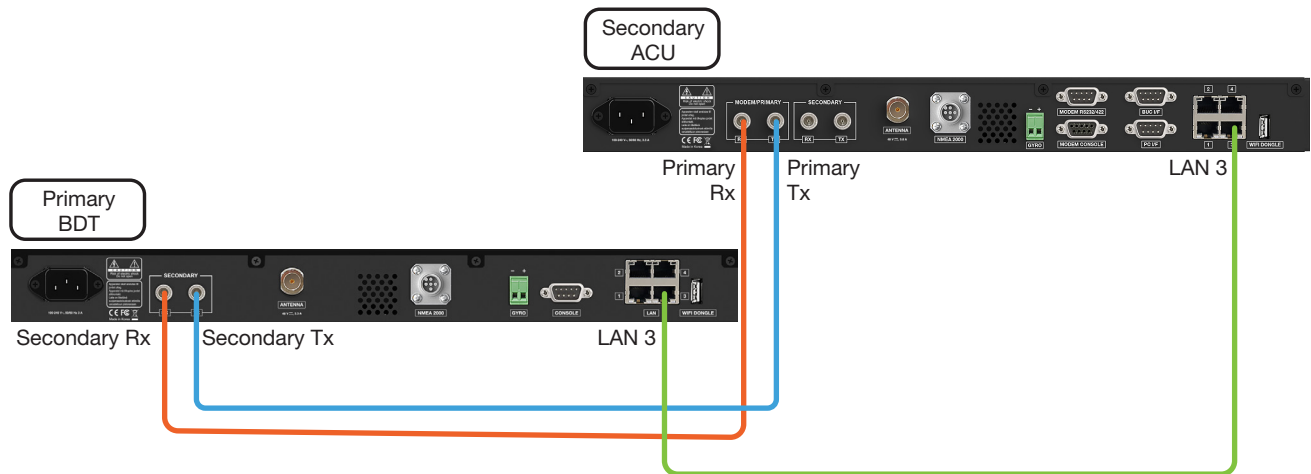


Figure 31: Additional Secondary ACU Cable Connection for Dual Antenna System

6.8 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.

6.8.1 TCP/IP Connection

Connection through Front Panel Management Port

The network is automatically configured by DHCP with no 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 32: Front Panel Management LAN Port Connection

6.8.2 USB Connection

- **Using Right Side USB Port on BDT Front Panel**

Connect a USB memory stick to the right side USB port on the front panel of BDT for the log download, backup/restore antenna settings, and firmware upgrade.

- **Using Left Side USB (Serial) Port on ACU Front Panel**

Connect the supplied USB Cable (A to A) from the left side USB (serial) port on the front panel of BDT to PC for monitoring and controlling the antenna system.

**NOTE**

- The left side USB port is only for certified engineers' use only.
- Accessing AptusNX and iARM upgrade are NOT supported through the serial USB connection.



Figure 33: Front Panel USB Port Connection

6.8.3 Wi-Fi Connection

Connection through Wi-Fi Dongle

Intellian provides the Wi-Fi Dongle for Wi-Fi connection. You can connect PC to the BDT 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 panel of BDT to a LAN port of PC. The network connection is established automatically.
2. Find the Wi-Fi Dongle from the BDT box. Plug the Wi-Fi Dongle into the USB port on the back panel of BDT.



Figure 34: Rear Panel Wi-Fi Dongle Connection

Use the following IP address to access Intellian AptusNX page.

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

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

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

4. Select the **SETUP** on the main menu, then select the **Network** menu. Under the **Wi-Fi Access Point Configuration**, choose **Enable** for the **AP**. If you don't want to use Wi-Fi connection, choose **Disable** for the **AP**.

5. Check the **SSID** (Wi-Fi AP Name) information.

6. Choose **Enable** for the **SSID Broadcast** to show the **SSID** (Wi-Fi AP Name) information.

7. Click the **Apply** button to apply the settings to the system. Then perform the "**10.8.3 iARM Save & Reboot**" on page 102.

8. After a reboot, connect to the Wi-Fi.

Chapter 7. Operating Install Wizard

7.1 Turning On System

Make sure the antenna has a clear view of the sky. Press the **POWER** button on the front panel of the Below Deck Terminal (BDT), then wait a few minutes for system startup. Once the antenna finds the satellite, the **POWER** indicator will turn Green.

7.2 Accessing AptusNX

The network is automatically configured by DHCP with no 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 entering User ID and Password.
 - **User ID: intellian (Default)**
 - **Password: 12345678 (Default)**

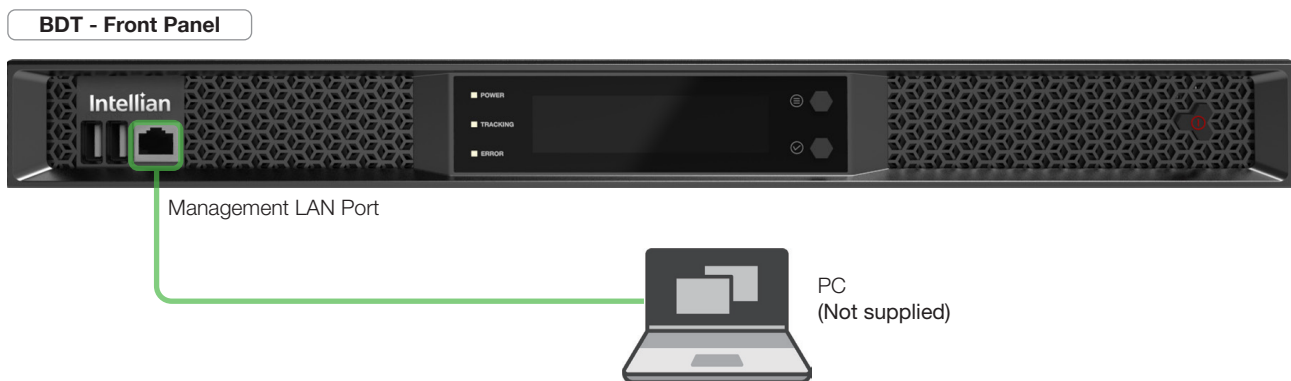


Figure 35: Front Panel Management LAN Port Connection

7.3 Starting Install Wizard

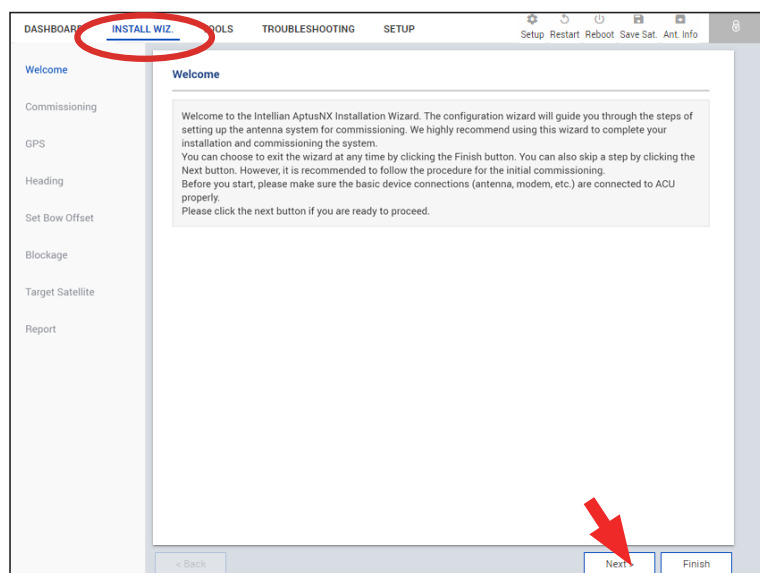
The Install Wizard will give you a guide by going through the steps of setup for the antenna system commissioning. We highly recommend using this wizard to complete the installation and commissioning of the system. You can exit the wizard at any time by clicking the **Finish** button. You can also skip steps by clicking the **Next** button. Before you start, make sure the basic devices (antenna, modem, etc) are connected to the **BDT** properly. After accessing the AptusNX main page, go to the **INSTALL WIZ.** on the main menu then follow these steps.



NOTE

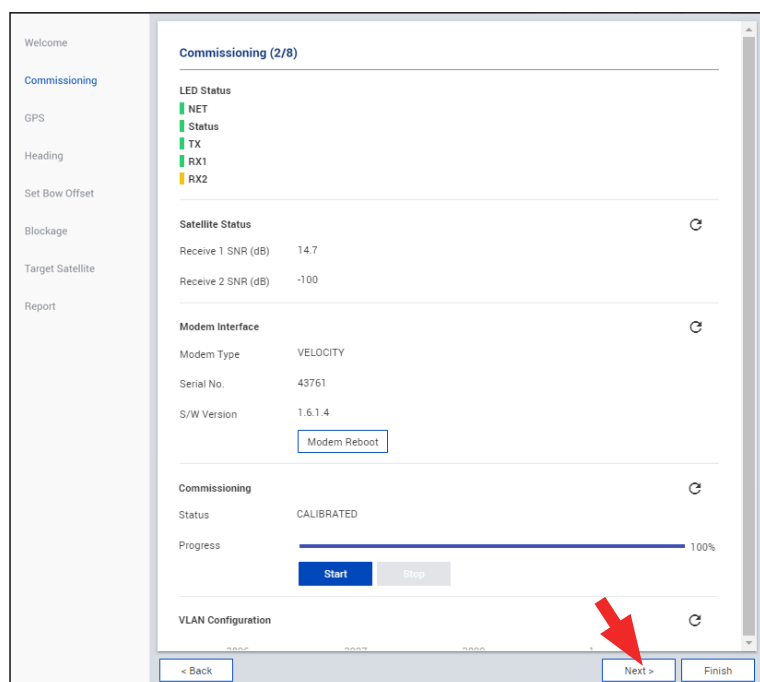
Refer to the "**Chapter 10. Using AptusNX**" on page 88 for detailed description of each function.

✓ Welcome Page



Welcome message is displayed.
Click the **Next** button.

✓ Step 1: Commissioning



Performs the commissioning test to calibrate the modem to receive the optimal signal. The RF uplink frequency, the Transceiver LO frequency, the Tx frequency, and the attenuator will be calibrated automatically. Click the **Start** button to perform the commissioning test automatically.

The commissioning test should be performed after the first-time connection of the GX terminal, BDT/cable replacement, or band conversion. Click the **Next** button to go to the next step.

✓ Step 2: GPS

Set the GPS position of the vessel for the satellite searching. Check the GPS status connected to the antenna system. The colored indicator next to the title shows the GPS status. Make sure 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 any GPS signal. You can enter the GPS value manually to set the GPS position. Click the **Next** button to go to the next step.

✓ Step 3: Heading

Set the ship's heading device.

The colored indicator next to the title shows the heading device connection status.

- Blue: Ship's heading device is connected.
- Black: Ship's heading device is not connected.

If a gyrocompass is connected, choose the device type from the **Current Device** drop-down list. Then, click the **Apply** button. If no gyrocompass is connected, choose **NONE** for the **Current Device** from the drop-down list. Then, click the **Apply** button.

NOTE: Skip "Step 4: Set Bow Offset" if no gyrocompass is connected.

Click the **Next** button to go to the next step.

✓ Step 4: Set Bow Offset

For setting BOW offset, select one of two satellite tracking types and a trackable satellite.

Welcome

Commissioning

GPS

Heading

Set Bow Offset

Blockage

Target Satellite

Report

Set Bow Offset (5/8)

Satellite Tracking ⓘ

Select Satellite

Satellite List: POR_180E (179.6/E)

Satellite Name: POR_180E Longitude: 179.6 EAST

Rx Polarization: LHCP Tx Polarization: RHCP

Skew Offset: 0 Local Frequency: 18250

DVB Frequency: 18056 Verify Type: DVB Lock

Symbol(kSps): 20000

Start Searching

Heading

Current Device: Static

Heading(°): 0

Bow Offset

The reference satellite has been successfully tracked.
When you press the 'Save Satellite' button, Bow offset is automatically calculated and displayed.

Save Satellite **Lock**

Current Bow Offset: 44°

< Back Next > Finish

- **Step 1:** Select a satellite under the **Satellite List**, then click the **Start Searching** button.

Wait while the antenna terminal tracks the satellite.

- **Step 2:** Make sure the **Lock** is on, then click the **Save Satellite** button in the **Bow Offset** menu to save the BOW offset information to BDT.

Click the **Next** button to go to the next step.

✓ Step 5: Blockage

Welcome

Commissioning

GPS

Heading

Set Bow Offset

Blockage

Target Satellite

Report

Blockage (6/8)

Blockage

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

Enable	Description	Az. START ~ END	EL
☒	179.6 BLK	100 ~ 180	90
☒	560	15 ~ 30	90
☐		0 ~ 0	0
☐		0 ~ 0	0
☐		0 ~ 0	0

Cancel Apply

< Back Next > Finish

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 the transmitted power can endanger whom frequently access the zone or where the blockage exists.

The **AZ START** is where the relative azimuth starts, and the **AZ END** is where the relative azimuth ends (Range: 0 ~ 360).

The **EL** is where the elevation block starts (Range: 0 ~ 90).

Click the **Next** button to go to the next step.

✓ Step 6: Target Satellite

Set the target satellite to track. There are two methods for selecting a target satellite.



NOTE

The following images in this step show when the Open AMIP modem is used.

(Option 1: Using Satellite Controlled by Modem)

This method is generally recommended.

Select the **Controlled by Modem** for the **Current Satellite**. Then, the current satellite and NBD information will be displayed automatically.

Click the **Next** button to go to the next step.

(Option 2: Using Manual Setup)

If you did not set the modem connection, select the **Manual Setup** for the **Current Satellite**. Then enter the satellite and NBD information manually to track a satellite. Click the **Apply** button.

Click the **Next** button to go to the next step.

✓ **Step 7: Report****NOTE**

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

Antenna Information	
Antenna Size	100 cm / 41 inch
Antenna Voltage	43.5V
ACU Voltage	23.4V
Antenna Product	V5-11G-U1TC
ACU Product	VP-TB4G1
Antenna Serial Number	12345678
ACU Serial Number	PVP19030001
System Polarization	none
System Band	Ka Band

S/W Version Information	
ACU Main	-

The configuration report is displayed.

You can save the results to the BDT by clicking the **Save Report** button and print this page by clicking the **Print** button. You can also download the report file (.json) by clicking the **Export** button. Click the **View Last Report** to check the recently saved report information including the saved date and time.

After complete the steps, click the **Finish** button.

Chapter 8. Operating BDT

8.1 Introduction

8.1.1 Below Deck Terminal (BDT)

The BDT has the embedded Dual Antenna Mediator function, which is capable of controlling and managing two VSAT antenna systems simultaneously in the dual antenna system.

The Below Deck Terminal (BDT) controls the various settings of the antenna.

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

8.1.2 BDT Front Panel View

The following figure shows the front panel the BDT.

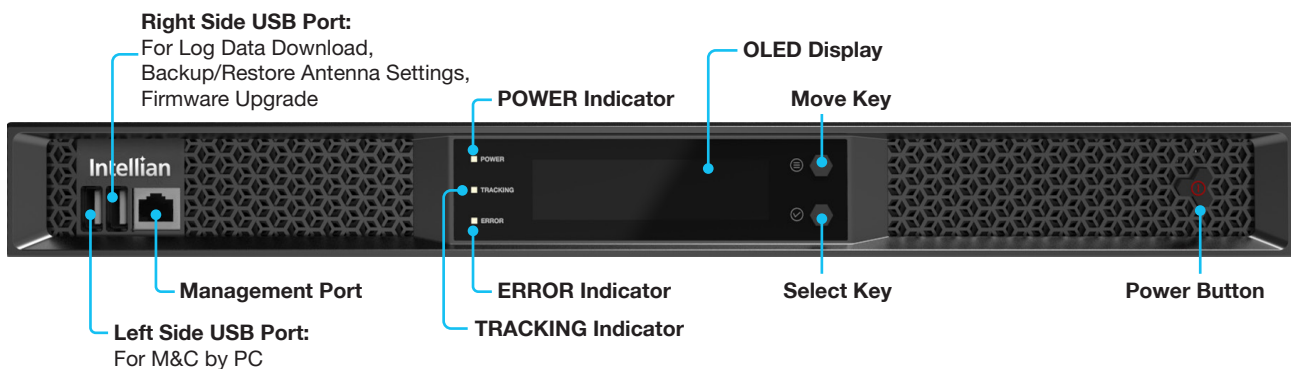


Figure 36: BDT Front Panel View

The following table shows the function of each touch key.

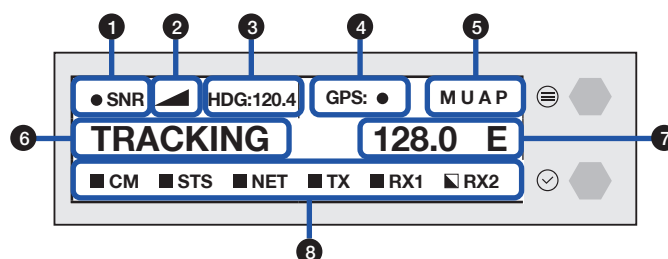
Touch key	Function
Power Button	Powers on/off the BDT.
Move Key	Moves to the desired screen.
Select Key	Selects the desired screen.

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

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

8.1.3 BDT Display Menu

The following figure shows the BDT display menu.



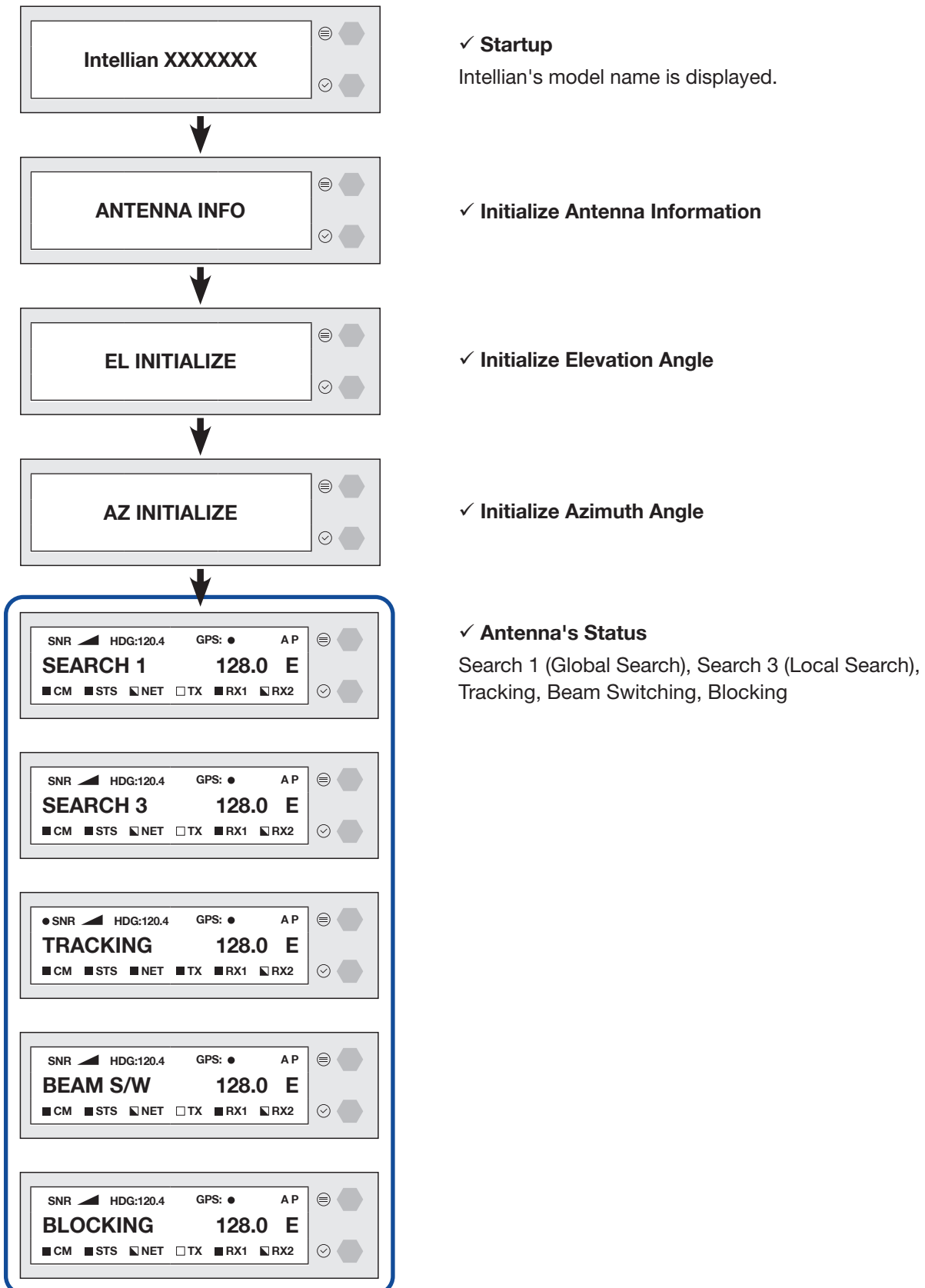
The following table shows the function of each touch key.

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.									
		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. 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. P: The BDT is connected to the primary antenna. The primary antenna's role is to communicate with the target satellite.
		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. 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. P: The BDT is connected to the primary antenna. The primary antenna's role is to communicate with the target satellite.										
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).									

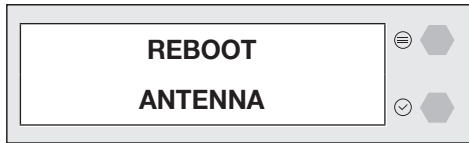
No.	Item	Description																																					
⑧	Modem Indicator	<i>Below Deck Terminal (BDT) includes built in Satellite Modem.</i> Displays the modem status.																																					
		<table> <tr> <th>Item</th><th>LED Display</th><th>Description</th></tr> <tr> <td>CM</td><td>■ On</td><td>The modem is powered on.</td></tr> <tr> <td rowspan="2">STS</td><td>■ On</td><td>The modem is in normal operating conditions.</td></tr> <tr> <td>☒ Warning</td><td>The modem has a serious fault or failure in software, hardware, or configuration.</td></tr> <tr> <td rowspan="3">NET</td><td>■ On</td><td>The modem is connected to a target satellite and acquired a network.</td></tr> <tr> <td>▣ Abnormal</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">TX</td><td>■ On</td><td>The modem Tx services are active.</td></tr> <tr> <td>▣ Abnormal</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>■ On</td><td>The modem Rx 1 services are active.</td></tr> <tr> <td>▣ Abnormal</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="3">RX2</td><td>■ On</td><td>The modem Rx 2 services are active.</td></tr> <tr> <td>▣ Abnormal</td><td>The modem Rx 2 is in abnormal conditions.</td></tr> <tr> <td>□ Off</td><td>The modem Rx 2 services are not active.</td></tr> </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	■ On	The modem Rx 2 services are active.	▣ Abnormal	The modem Rx 2 is in abnormal conditions.
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	■ On	The modem Rx 2 services are active.																																					
	▣ Abnormal	The modem Rx 2 is in abnormal conditions.																																					
	□ Off	The modem Rx 2 services are not active.																																					

8.2 Startup

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

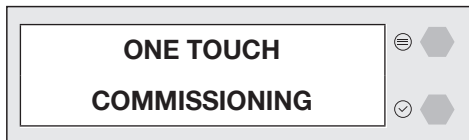
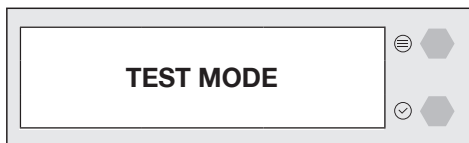
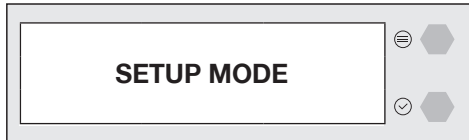


When the antenna is controlled by AptusNX, the BDT displays the control mode status.

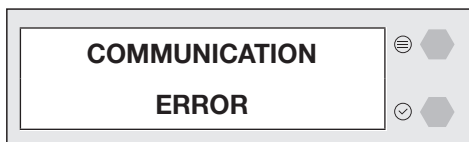


✓ **Control Mode Status**

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

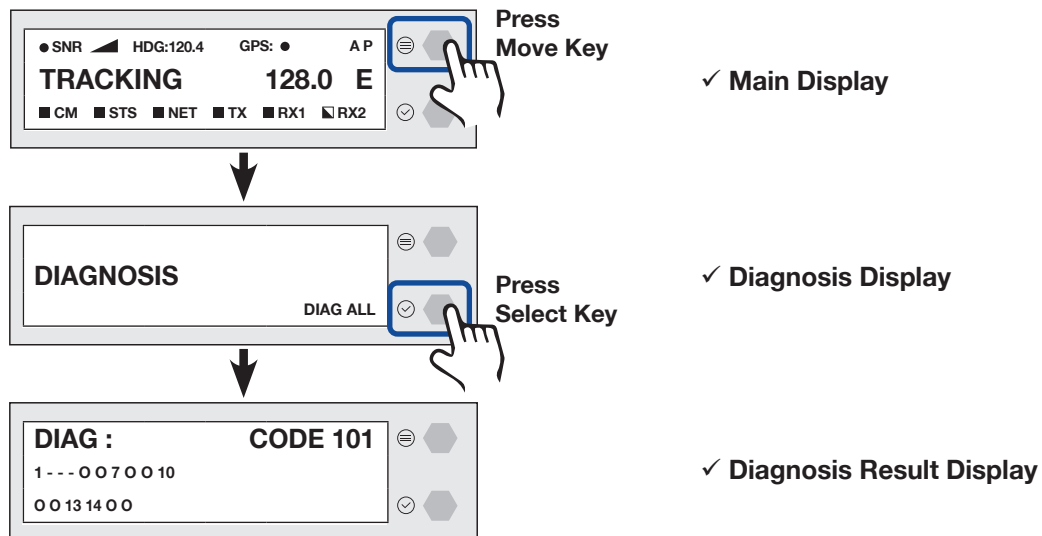


If the antenna does not communicate with BDT, the **COMMUNICATION ERROR** is displayed.

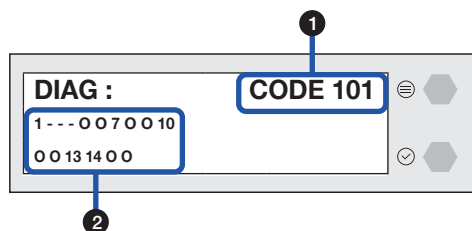


8.3 Diagnosis

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



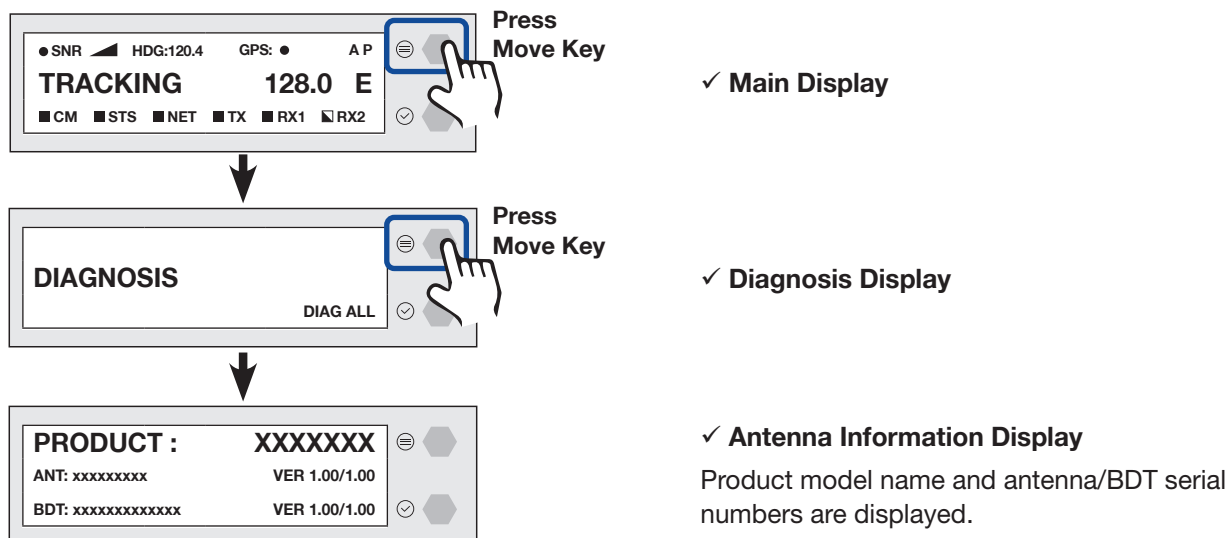
Refer to the diagnosis codes for the test results.



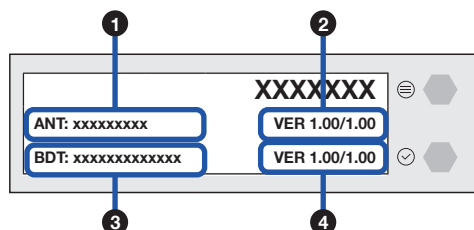
No.	Item	Description																																		
①	Diagnosis Code	Displays the diagnosis code.																																		
		<table><tr><th>Code</th><th>Test</th></tr><tr><td>101</td><td>The data communication between the antenna and the BDT is tested.</td></tr><tr><td>102</td><td>The azimuth 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>Not Available</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></table>	Code	Test	101	The data communication between the antenna and the BDT 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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		114	The ACU power is tested.																																	
115	Not Available																																			
116	The home sensor is tested.																																			
②	Diagnosis Result	• An example of diagnosis result: 1 - - - 0 0 7 0 0 10 0 0 13 14 0 0 ← Diagnosis Result of Code 101~110 ← Diagnosis Result of Code 111~116 - ' - ' : 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. - ' O ' : The test was not performed. Code 105, 106, 108, 109, 111, 112, 115 and 116 were not performed.																																		

8.4 Antenna Information

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



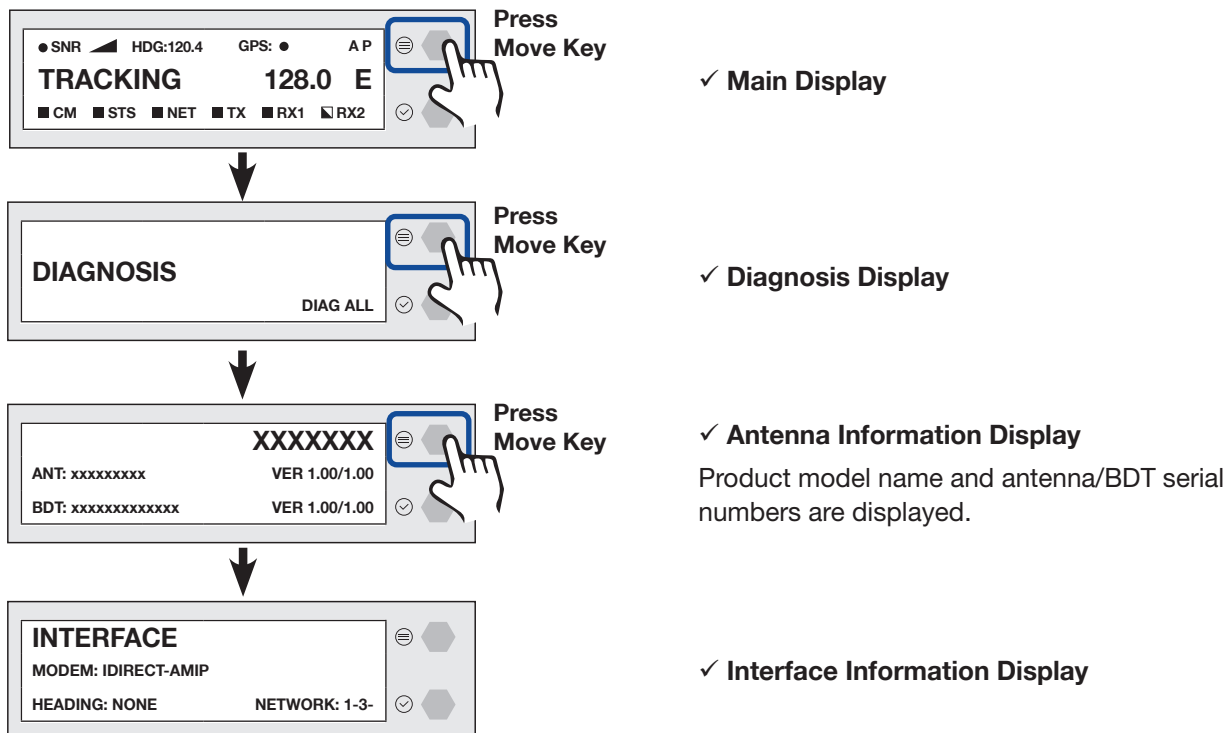
Refer to the Antenna Information display.



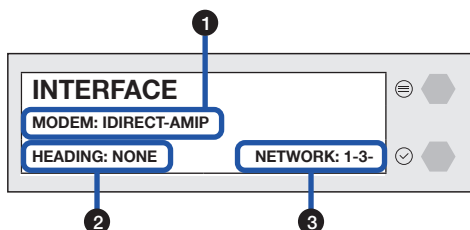
No.	Item	Description
①	Antenna Serial Number	Displays the Antenna serial number. The serial number is displayed depending on the product.
②	PCU Version/ STAB Version	Displays the PCU version, Stabilizer version.
③	BDT Serial Number	Displays the BDT (ACU) serial number. The serial number is displayed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

8.5 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. - An example of network result: 1-3- ' - ' : the network is not connected. ' 1~4 ' : the number (1~4) of connected BDT port to network.

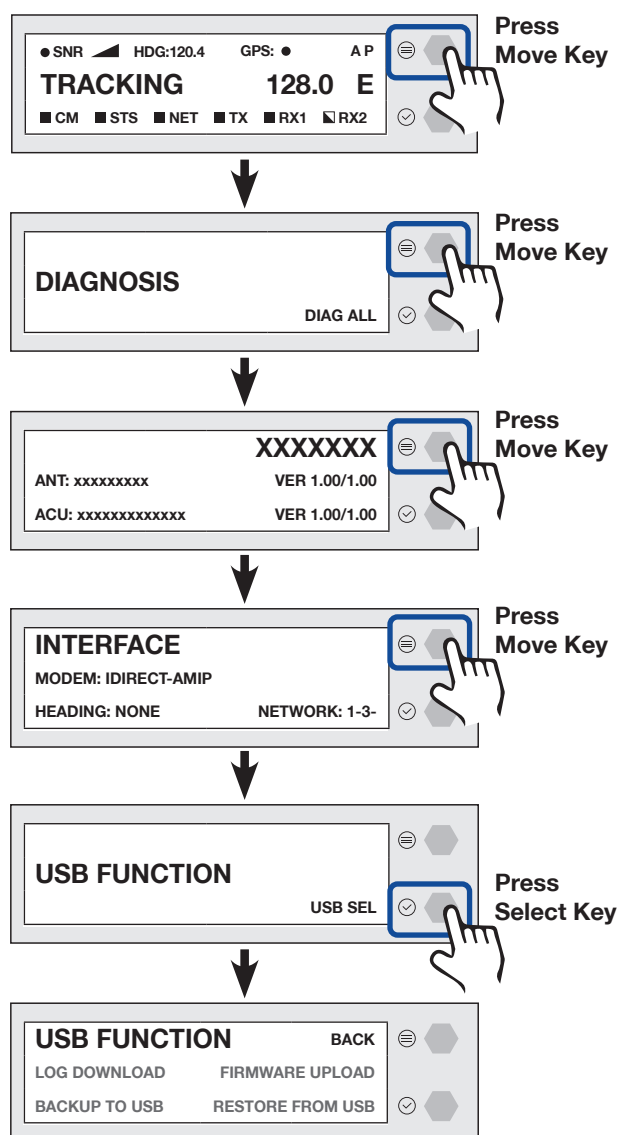
8.6 USB Function

To use this function, a USB Memory Stick must be connected to the USB port (the right side 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.



NOTE

The USB function is activated only when a memory stick is detected on the front panel USB port (right side).



✓ Main Display

✓ Diagnosis Display

✓ Antenna Information Display

Product model name and antenna/BDT serial numbers are displayed.

✓ Interface Information Display

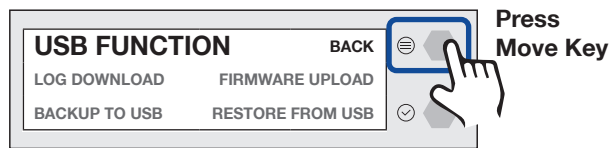
✓ USB Function Display

The USB function is activated only when a memory stick is detected on the front panel USB port (right side).

✓ USB Function Menu Display

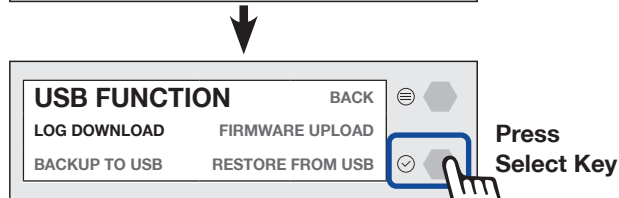
8.6.1 Log Download

Downloads all data logs to the USB memory.

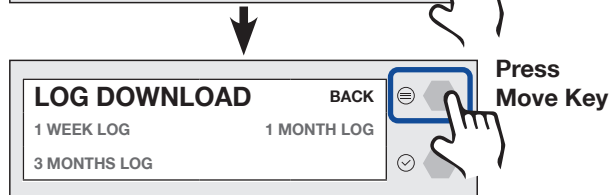


Press
Move Key

✓ USB Function Menu Display

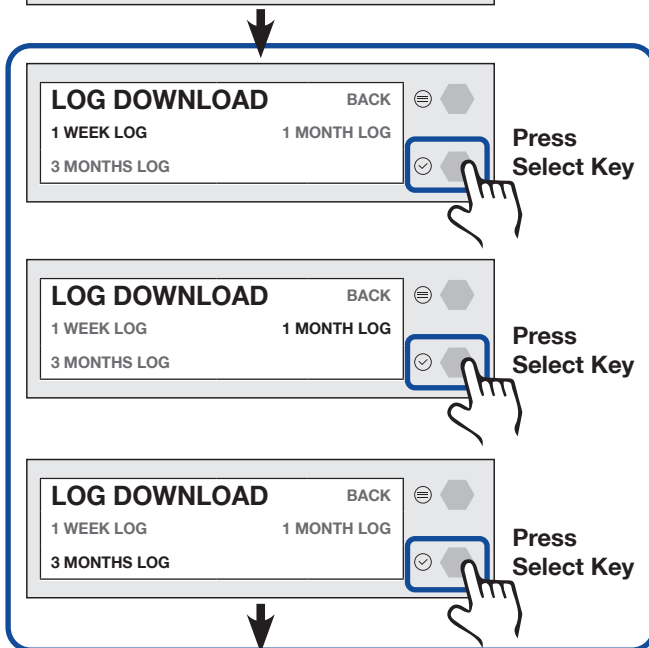


Press
Select Key



Press
Move Key

✓ Log Download Menu Display



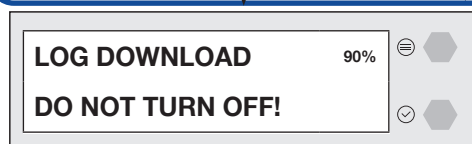
Press
Select Key

Press
Select Key

Press
Select Key

✓ Download Log File to USB

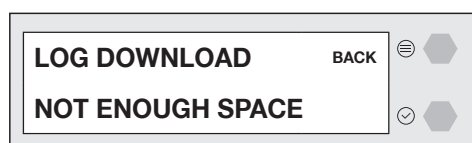
Select one of three options: 1 WEEK LOG / 1 MONTH LOG / 3 MONTHS LOG.



Press
Select Key

✓ Download Process Display

If there is not enough free space on the USB drive, **NOT ENOUGH SPACE** message is displayed.

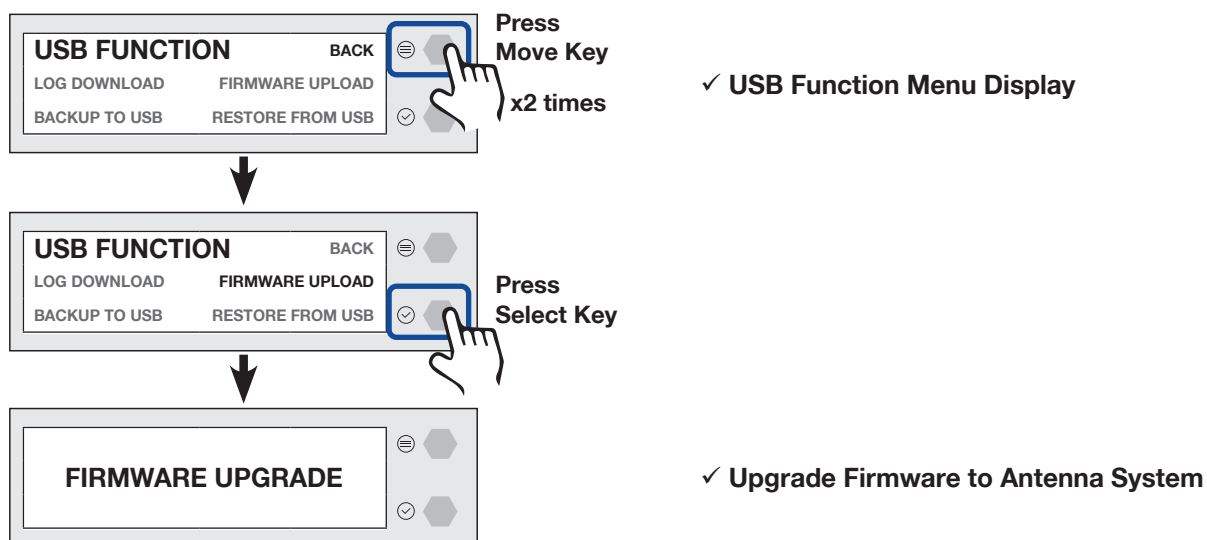
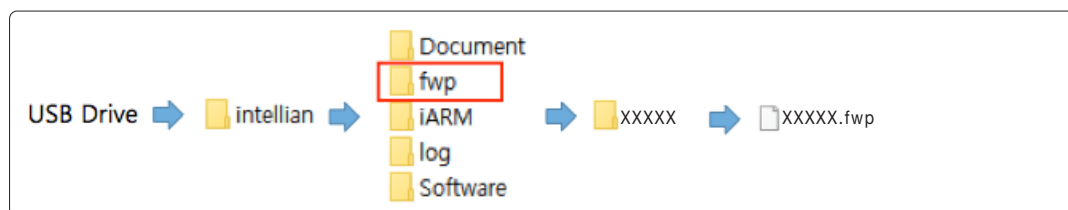


NOTE

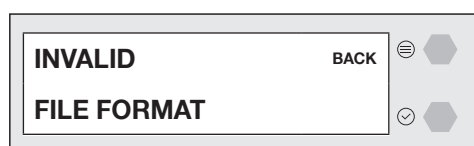
If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

8.6.2 Firmware Upload

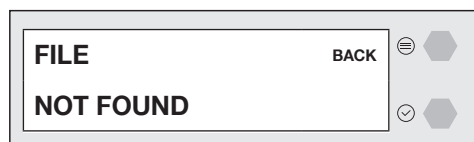
To use Firmware Upload function, you must follow the folder structure guide to configure the folders properly. It supports up to FAT32. The antenna system is upgraded with the FWP file in the designated folder of a USB memory.



If the firmware file in USB is in invalid format, **INVALID FILE FORMAT** message is displayed.



If any firmware file is not available on the USB drive, **FILE NOT FOUND** message is displayed.

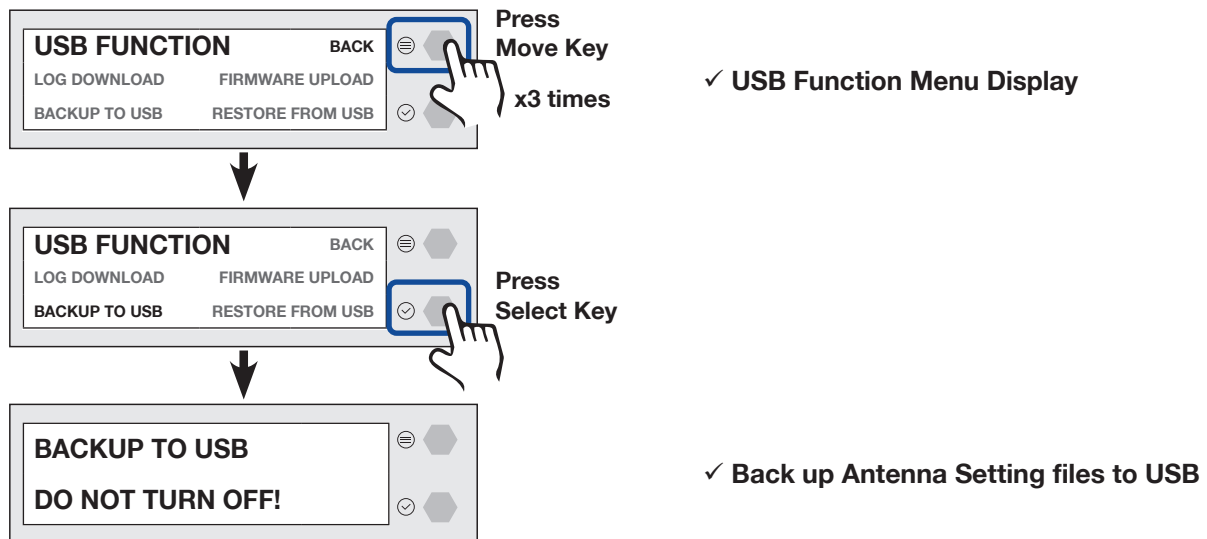


NOTE

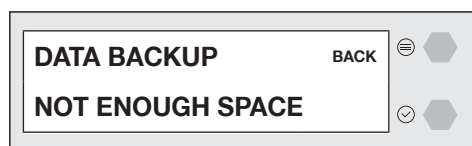
If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

8.6.3 Backup to USB

Backs up the antenna setting files to the USB.



If there is not enough free space on the USB drive, **NOT ENOUGH SPACE** message is displayed.

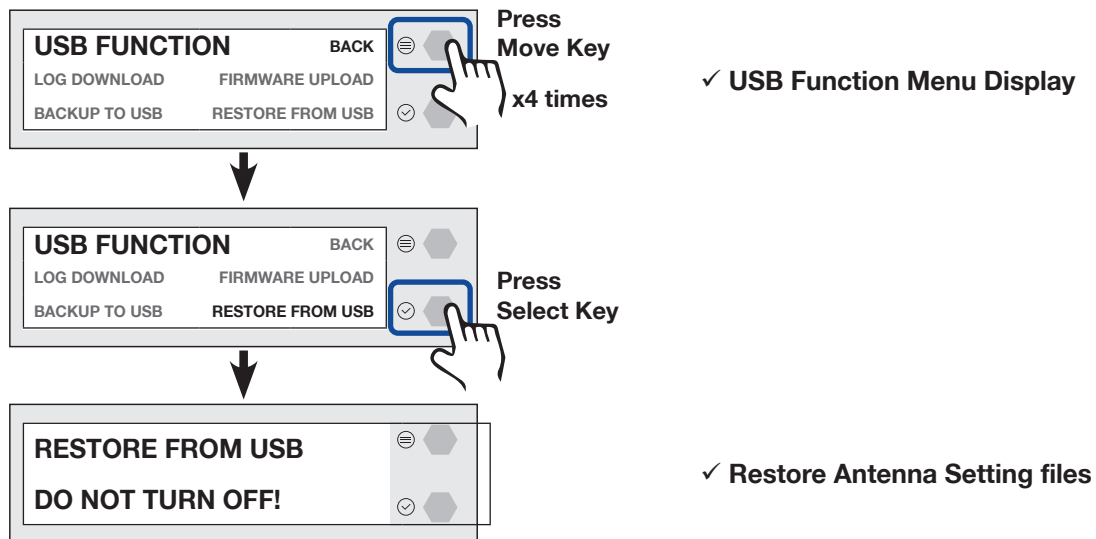


NOTE

If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

8.6.4 Restore From USB

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



NOTE

If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

Chapter 9. Operating ACU (Optional)

9.1 Introduction

9.1.1 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 .

9.1.2 ACU Front Panel View

The following figure shows the ACU's front panel.

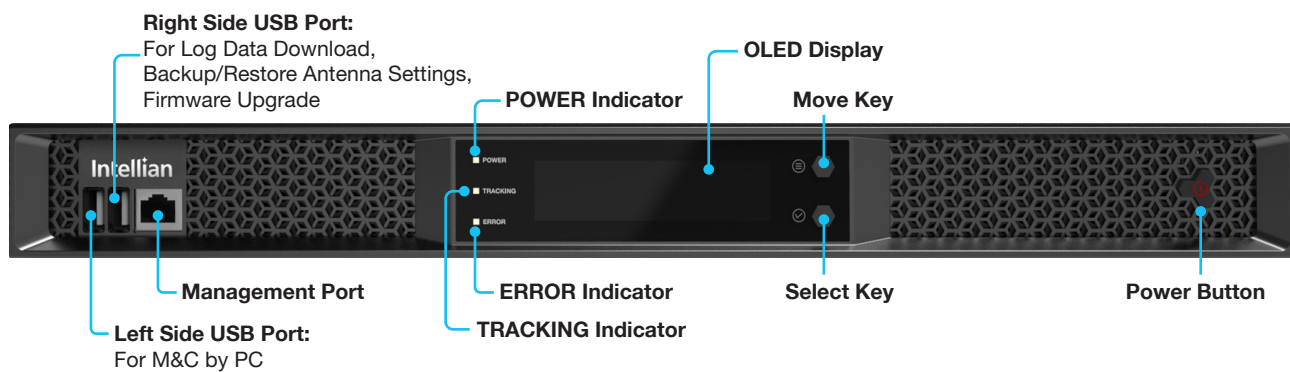


Figure 37: ACU Front Panel View

The following table shows the function of each touch key.

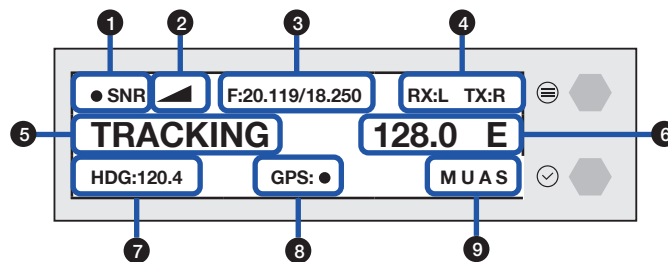
Touch key	Function
Power Button	Powers on/off the ACU.
Move Key	Moves to the desired screen.
Select Key	Selects the desired screen.

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 in error.
TRACKING	Steady Green	The antenna is in tracking mode.

9.1.3 ACU Display Menu

The following figure shows the ACU display menu.

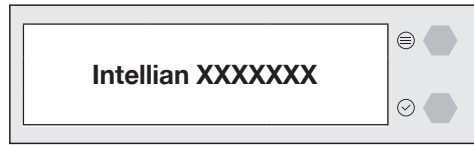


The following table shows the function of each touch key.

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	Displays the antenna system status.										
		<table><tr><th>Display</th><th>Description</th></tr><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. - 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. - S (Secondary): The ACU is connected to the secondary 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></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. 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. S (Secondary): The ACU is connected to the secondary 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.
		Display	Description									
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S	<i>This function is available when using the Dual Antenna System.</i> Displays the antenna's role status. S (Secondary): The ACU is connected to the secondary 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.											

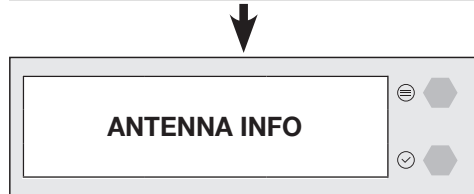
9.2 Startup

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

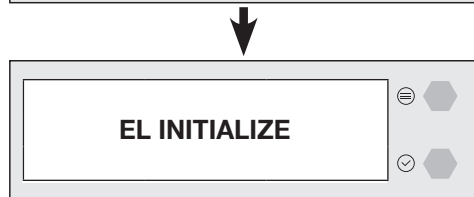


✓ Startup

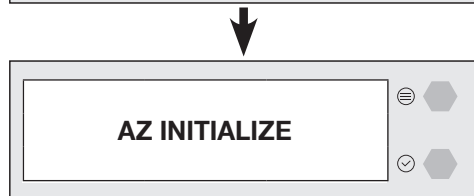
Intellian's model name is displayed.



✓ Initialize Antenna Information



✓ Initialize Elevation Angle



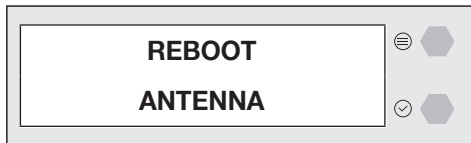
✓ Initialize Azimuth Angle



✓ Antenna's Status

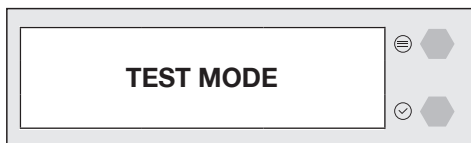
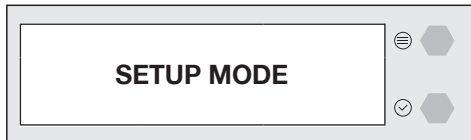
Search 1 (Global Search), Search 3 (Local Search), Tracking, Beam Switching, Blocking

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

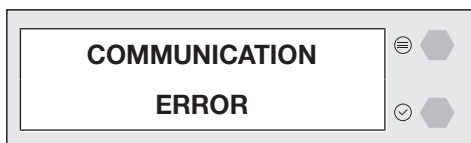


✓ **Control Mode Status**

Reboot Mode, Setup Mode, Test Mode

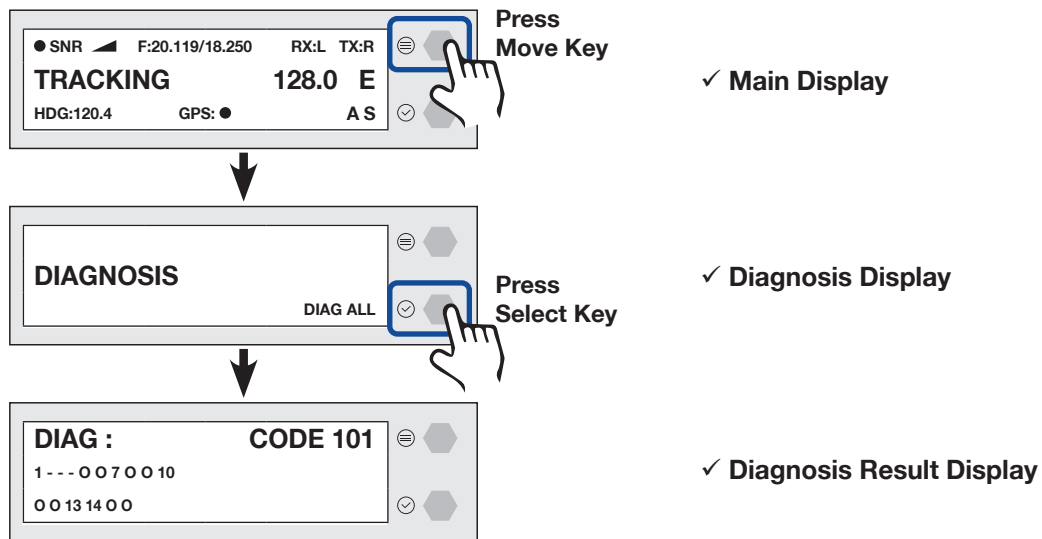


If the antenna does not communicate with ACU, the **COMMUNICATION ERROR** is displayed.

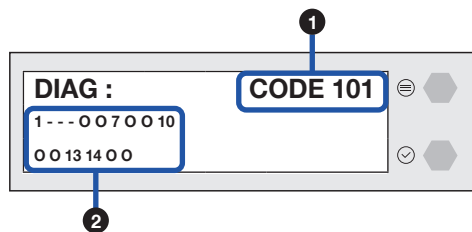


9.3 Diagnosis

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



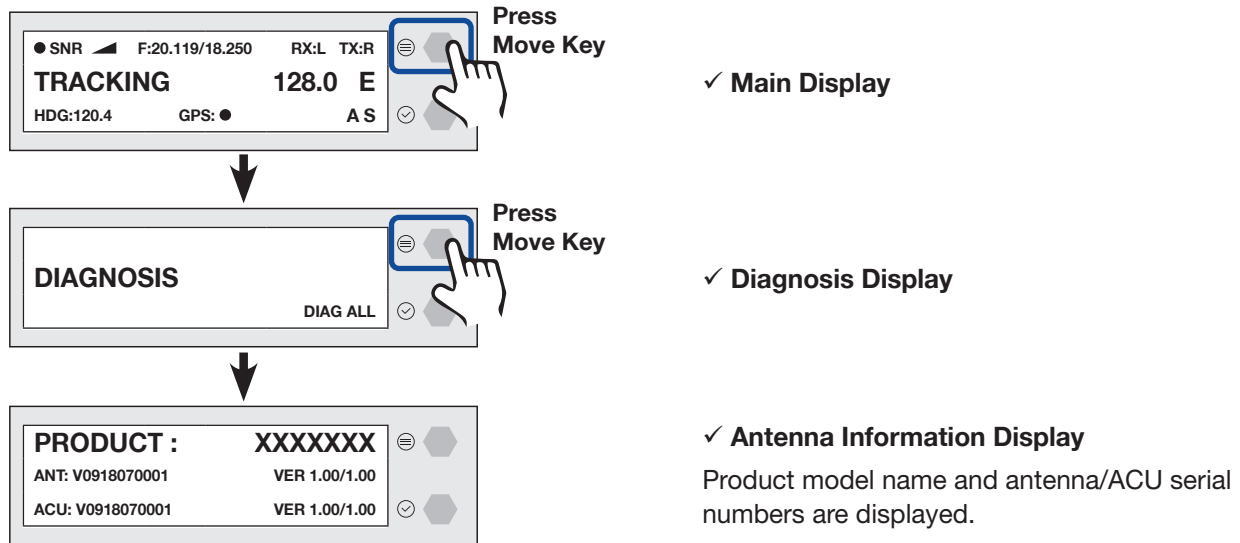
Refer to the diagnosis codes for the test results.



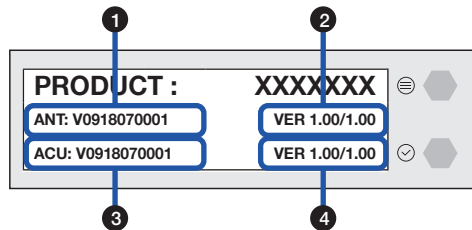
No.	Item	Description																																		
①	Diagnosis Code	Displays the diagnosis code.																																		
		<table><tr><th>Code</th><th>Test</th></tr><tr><td>101</td><td>The data communication between the antenna and the ACU is tested.</td></tr><tr><td>102</td><td>The azimuth 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>Not Available</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></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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		114	The ACU power is tested.																																	
115	Not Available																																			
116	The home sensor is tested.																																			
②	Diagnosis Result	1 - - - 0 0 7 0 0 10 0 0 13 14 0 0 ← Diagnosis Result of Code 101~110 ← Diagnosis Result of Code 111~116 - ' - ' : 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.																																		

9.4 Antenna Information

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



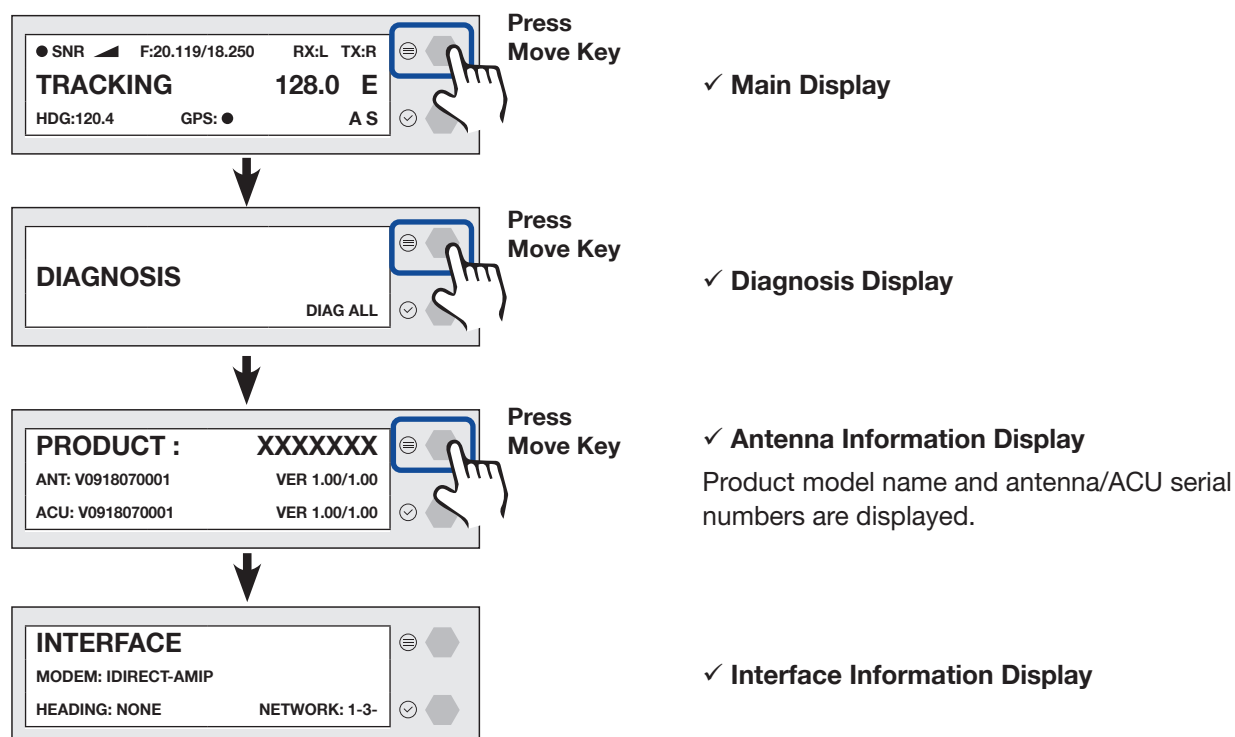
Refer to the Antenna Information display.



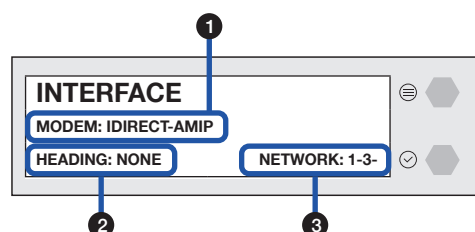
No.	Item	Description
①	Antenna Serial Number	Displays the Antenna serial number. The serial number is displayed depending on the product.
②	PCU Version/ STAB Version	Displays the PCU version / Stabilizer version.
③	ACU Serial Number	Displays the ACU serial number. The serial number is displayed depending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

9.5 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. - An example of network result: 1-3- ' - ' : the network is not connected. ' 1~4 ' : the number (1~4) of connected ACU port to network.

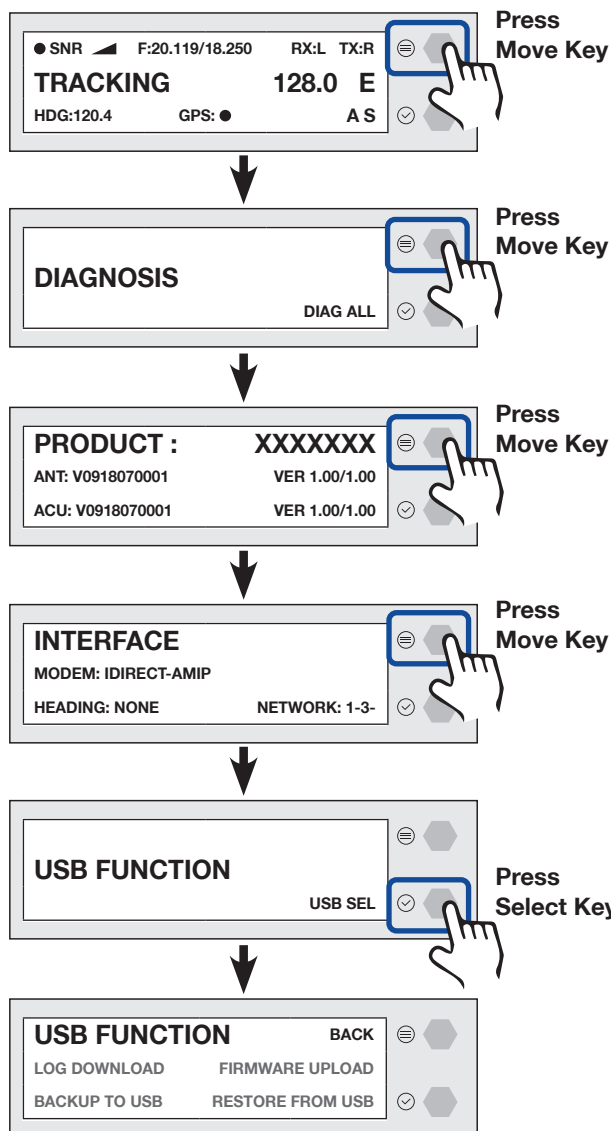
9.6 USB Function

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.



NOTE

The USB function is activated only when a memory stick is detected on the front panel USB port (right side).



✓ Main Display

✓ Diagnosis Display

✓ Antenna Information Display

Product model name and antenna/ACU serial numbers are displayed.

✓ Interface Information Display

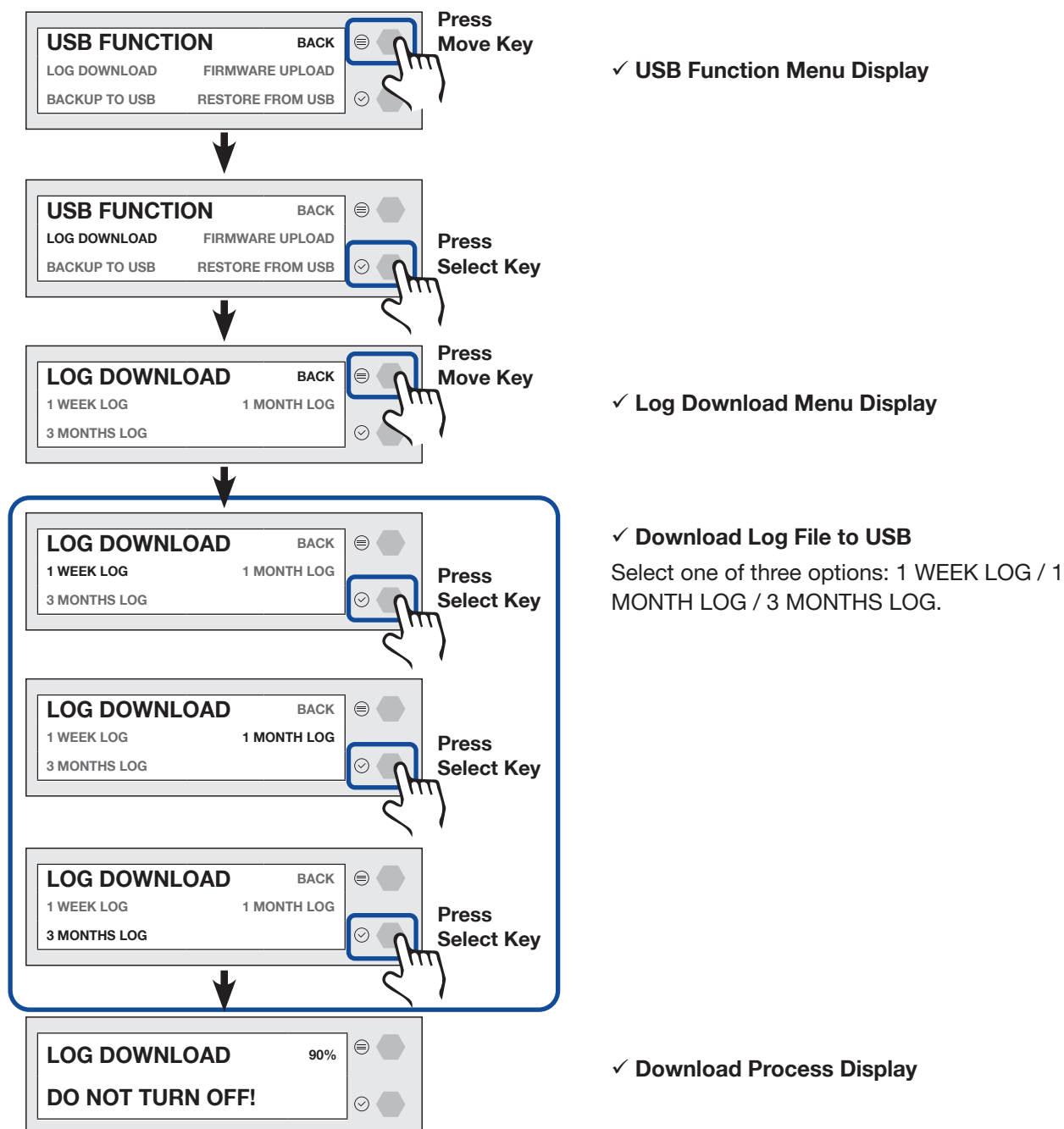
✓ USB Function Display

The USB function is activated only when a memory stick is detected on the front panel USB port (right side).

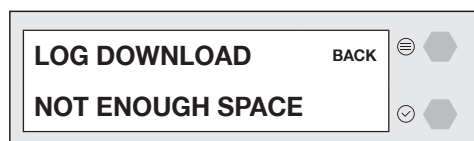
✓ USB Function Menu Display

9.6.1 Log Download

Downloads all data logs to the USB memory.



If there is not enough free space on the USB drive, **NOT ENOUGH SPACE** message is displayed.

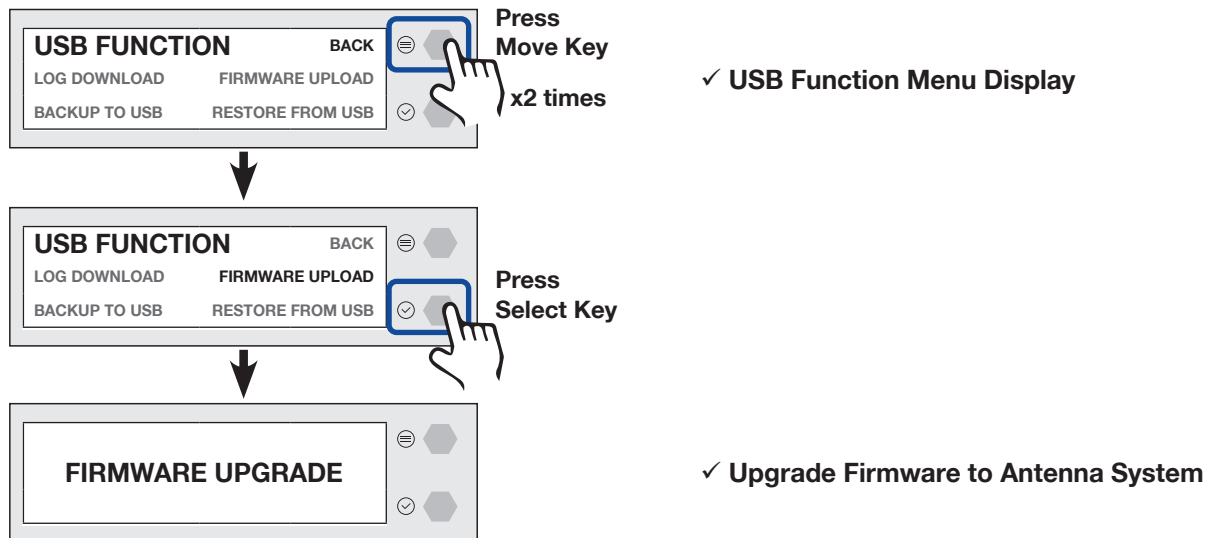
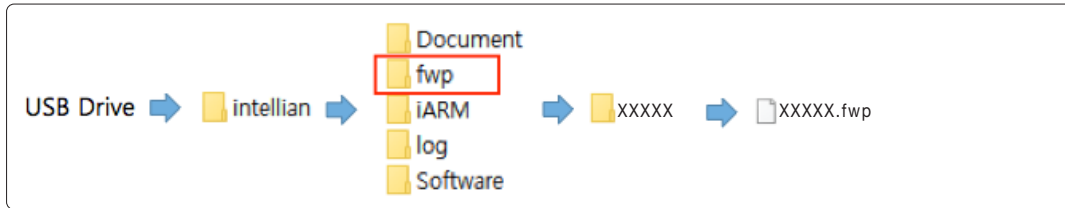


NOTE

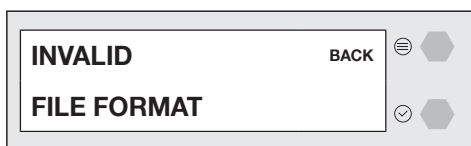
If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

9.6.2 Firmware Upload

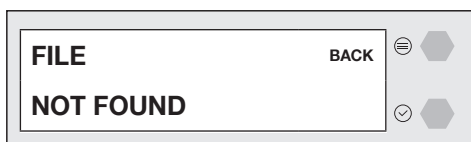
To use Firmware Upload function, you must follow the folder structure guide to configure the folders properly. It supports up to FAT32. The antenna system is upgraded with the FWP file in the designated folder of a USB memory.



If the firmware file in USB is in invalid format, **INVALID FILE FORMAT** message is displayed.



If any firmware file is not available on the USB drive, **FILE NOT FOUND** message is displayed.

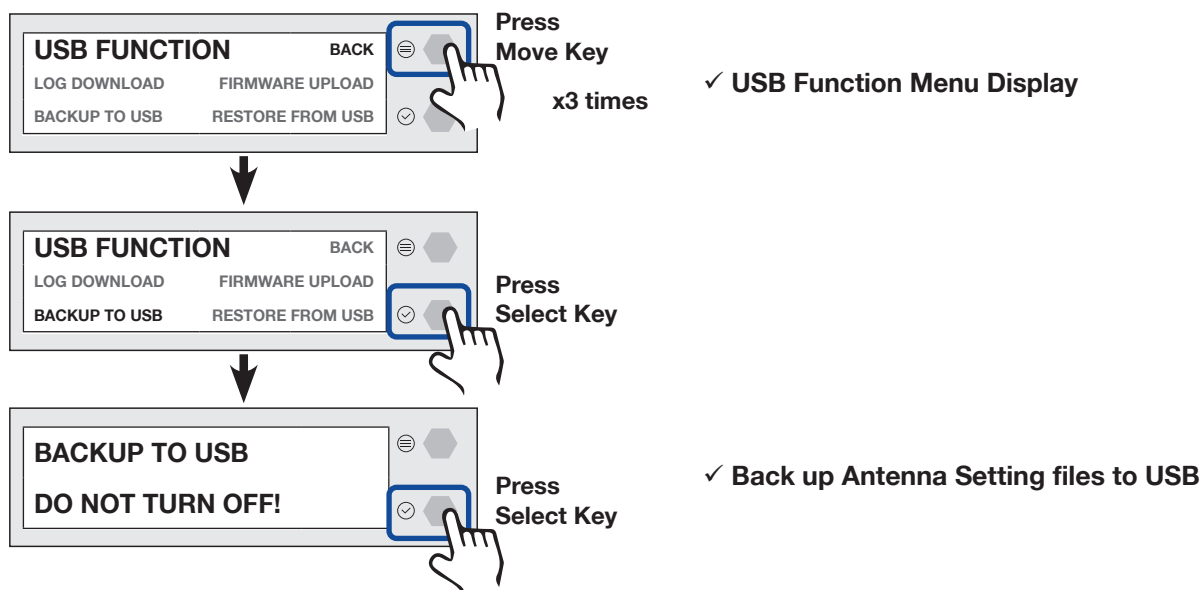


NOTE

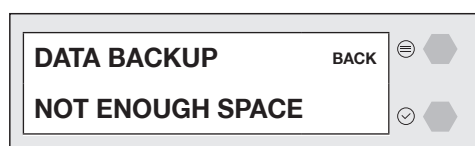
If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

9.6.3 Backup to USB

Backs up the antenna setting files to the USB.



If there is not enough free space on the USB drive, **NOT ENOUGH SPACE** message is displayed.

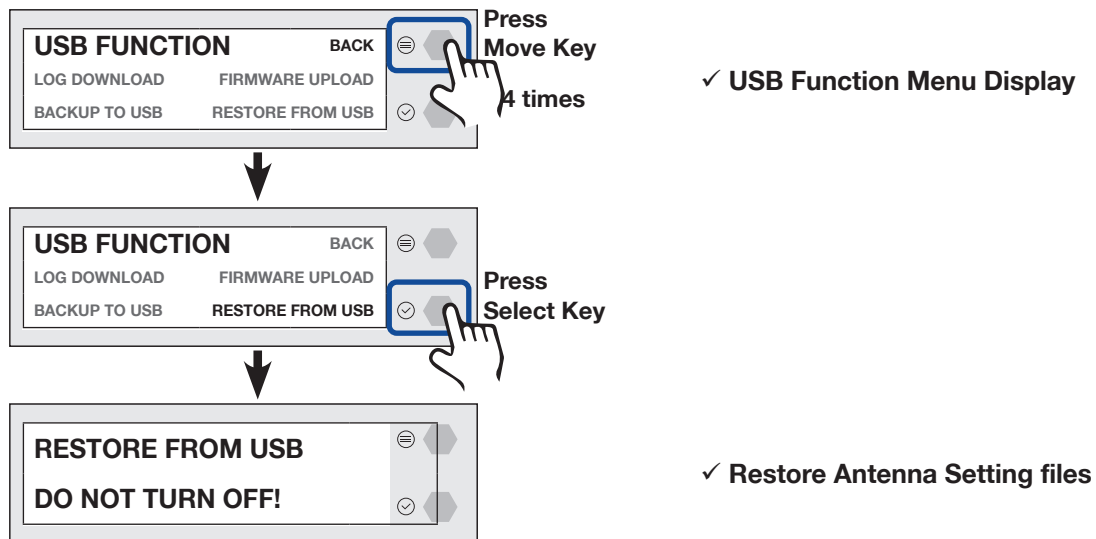


NOTE

If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

9.6.4 Restore From USB

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



NOTE

If you want to go back to the previous screen, select the **BACK** option then press the **Select** key.

Chapter 10. Using AptusNX

10.1 Introduction

With the embedded **AptusNX** software, the antenna can be monitored, controlled, and diagnosed remotely from anywhere, anytime through TCP/IP protocol. It saves your time and cost generated by various maintenance activities such as operating firmware upgrades, tracking parameter resets, and system diagnosis, etc..

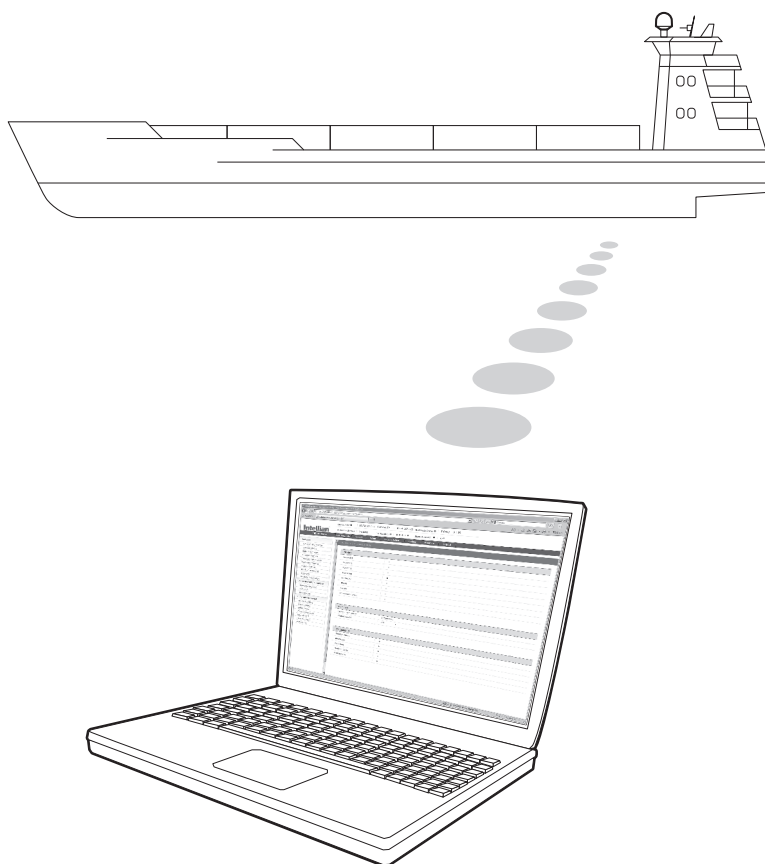
10.2 Accessing AptusNX for BDT

1. Connect an Ethernet cable from the Management LAN port on the front panel of the BDT to a LAN port of PC. This method is generally recommended.
2. Enter the BDT IP address (**Default: 192.168.2.1**) into the address bar of web browser to login into the internal HTML page of BDT.



NOTE

AptusNX works on Internet Explorer 11 or higher (Windows 7 or higher editions), Firefox, Microsoft Edge and Chrome web browsers.

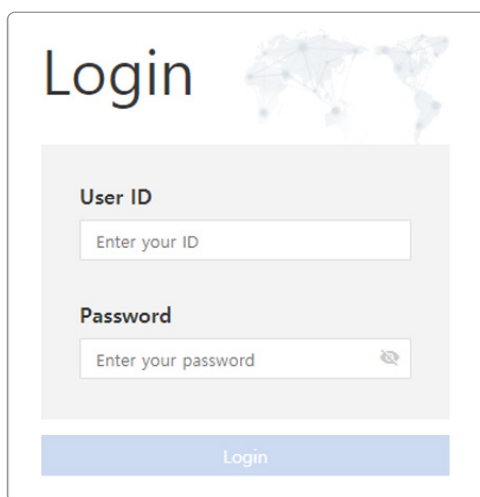


10.3 Main Page (Page Login)

The Intellian software Aptus provides different user access levels to protect the system for safe operation. Depending on the user level, the accessible range of function in the software can be limited.

Log into the BDT by typing in User ID and Password. The followings are the factory default values.

User Type	User ID	Password	Access Authority
Admin	intellian	12345678	All menus for monitoring and setting
	captain	12345678	All menus for monitoring and setting Assigns permissions to users
User	guest	guest	Limited menus for monitoring (Dashboard, Tools, Troubleshooting)

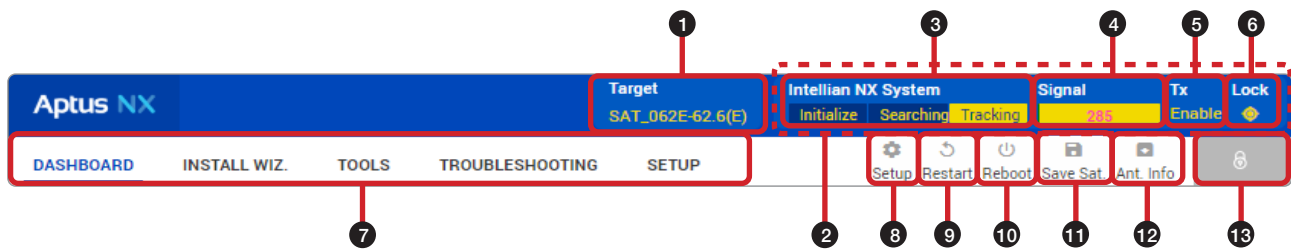


NOTE

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

10.4 Top Menus

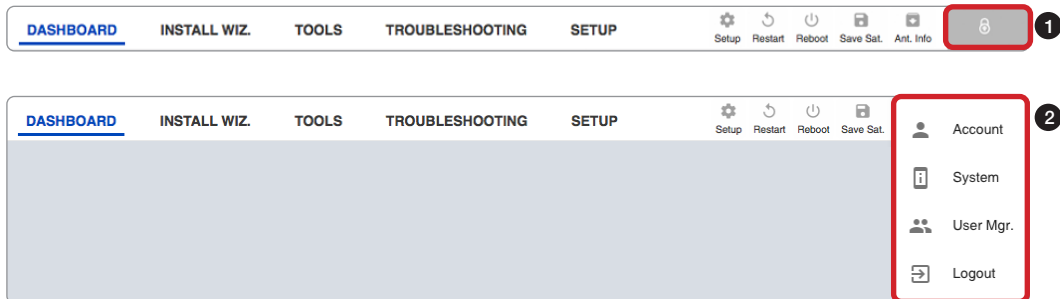
Once you log in, the following information and menus are displayed.



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 in the red dotted box), the "Quick Status Screen" appears. You can quickly monitor each status of the five items (Enable Mode, Blockage, Pointing, Modem Lock) through the screen (Blue: enable, Black: disable).  <Quick Status Screen>											
③	Antenna Status Info	Displays the antenna status through a yellow indicator in the SETUP mode. - 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 the antenna is able to transmit data or not.											
⑥	Lock	Displays whether the satellite is locked or not.											
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"> <thead> <tr> <th>Main Menu</th><th>Side Menu</th><th>Function</th></tr> </thead> <tbody> <tr> <td rowspan="5">SETUP</td><td rowspan="4">Antenna</td><td>Antenna Angle</td></tr> <tr> <td>Dish Scan Range Check</td></tr> <tr> <td>Sensor Calibration - Tilt Sensor Bias - Rate Sensor Bias </td></tr> <tr> <td>Antenna Mode - Set Idle Mode </td></tr> <tr> <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 - Tilt Sensor Bias - Rate Sensor Bias	Antenna Mode Set Idle Mode	Backup & Restore Setting	Antenna Restore
Main Menu	Side Menu	Function											
SETUP	Antenna	Antenna Angle											
		Dish Scan Range Check											
		Sensor Calibration - Tilt Sensor Bias - Rate Sensor Bias											
		Antenna Mode Set Idle Mode											
	Backup & Restore Setting	Antenna Restore											
⑨	Restart	The antenna system exits the Setup mode and switches to the normal mode (Searching/Tracking mode).											
⑩	Reboot	The antenna system powers off and restarts. After system initialization, the antenna switches to normal mode (Searching/Tracking mode).											
⑪	Save Sat.	Saves current satellite settings. Bow offset will be adjusted and saved automatically.											
⑫	Ant. Info	Obtains current antenna information.											
⑬	Account Button	Click the  button to manage the user account. The Account , System , and User Mgr. menus are for the user management. Click the Logout button to log- out of the AptusNX web page.											

10.5 Account Menu

1. Click the  button to manage the user account
2. The **Account**, **System**, and **User Mgr.** menus are for the user management. Click the **Logout** button to log-out of the **AptusNX** web page.



10.5.1 Account

No.	Item	Description
①	Account	Updates your password and sets time-outs.
②	Change Password	You can change your password. - 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. Click the Change Password button to set the password to the new password. For the next login, the new password is required.
③	Session	You can give guests the accessibility to the AptusNX and set time-outs. - Allow Guest Connections: Select the guest's accessibility to the system (Disable / Enable). - Idle Session Timeout: Set the idle session time-out. - Console Timeout: Set the console time-out. Click the Apply button to apply the settings to the system.

10.5.2 Registration

Account

Registration **1**

System

User Mgr.

Registration

For better customer service, please register your product information and customer information. Thank you.

2 Product

Antenna: xx-xxxx-xxxx

Serial Number: xxxxxxxxxx

3 Vessel

Has IMO Number: ☒ Yes ☐ No

IMO Number:

4 Service Provider

Service Provider 1:

Service Provider 2:

Service Provider 3:

Cancel 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. - Antenna: Displays the antenna name. - Serial Number: Displays the antenna serial number.
③	Vessel	Enter the vessel information. - Has IMO Number: Choose whether you have the IMO number or not. If you have the IMO number, select Yes and enter the number. If you do not have the IMO number, select No and enter the Ship Name, Type, and Owner information. - IMO Number: Enter the IMO number. - Ship Name: Enter the ship name. - Type: Enter the ship type. - Owner: Enter the owner's name.
④	Service Provider	Enter the information of your service provider. Service Provider 1/2/3: Enter the names of service providers.

10.5.3 System

Account
Registration
System ①
User Mgr.

System Print

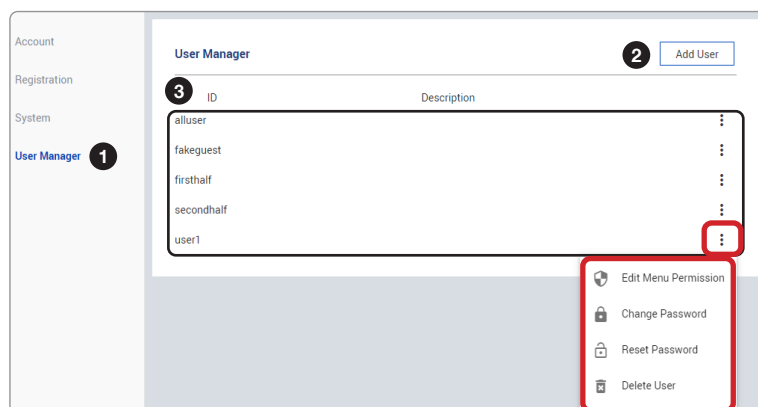
② Antenna Information
Antenna Size xx cm / xx inch
Antenna Voltage 45.4V
ACU Voltage 23.4V
Temperature 13.9°C
Antenna Product xx-xx-xxxx
ACU Product xx-xxxx
Antenna Serial Number xxxxxxxxxxxx
ACU Serial Number xxxxxxxxxxxx
System Polarization none
System Band Ka Band

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 192.168.2.1
Idle Session Timeout xxxxxx
Date xxxx-xx-xx
Time xx:xx:xx
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.

10.5.4 User Manager



INSTALL WIZ.

☐ wizard

TOOLS

☒ F/W Upgrade ☒ iARM Upgrade ☒ iARM Save & Reboot ☐ Satellite Library

☒ Graph

TROUBLESHOOTING

☐ Diagnosis ☐ Antenna Log ☐ Antenna Event Log ☒ Support

SETUP

☐ Ship ☐ Antenna ☐ Satellite ☐ Network ☐ Modem

☐ SNMP ☐ Backup & Restore ☐ Mediator

INFO

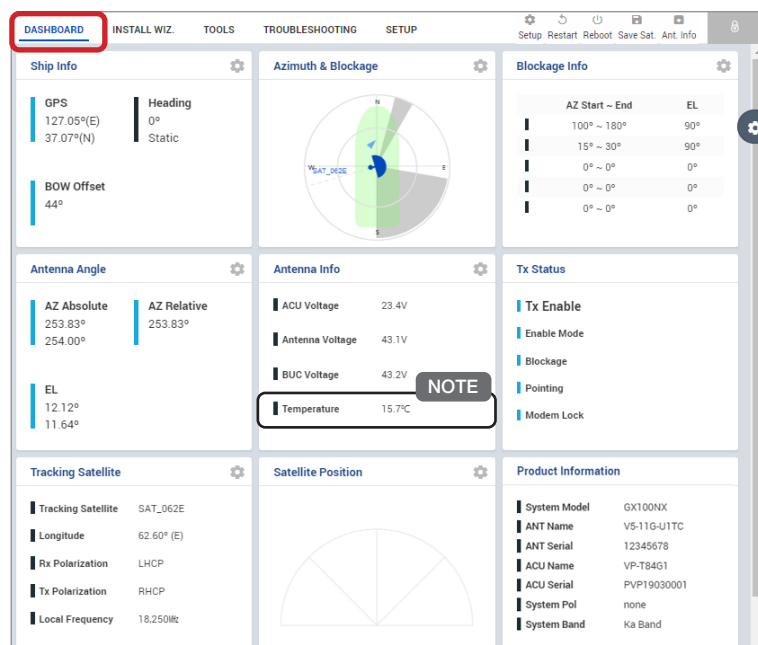
☐ Account ☒ Registration ☒ System ☐ User Mgr.

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 create a new user, click the Add User button. Then the pop-up window is opened. Enter the new user ID and password, then click the Add User .
③	User Management List	Displays the user management state and can control and manage through the control buttons. - ID: Displays the registered user ID. - Description: Displays the user's description. - Controls: Each user can be controlled and managed by individual settings. - 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 to give by selecting the checkboxes, then click the Apply button. The user can access only the permitted options. - Delete User: Deletes the user.

10.6 Dashboard

The Dashboard is displayed 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.



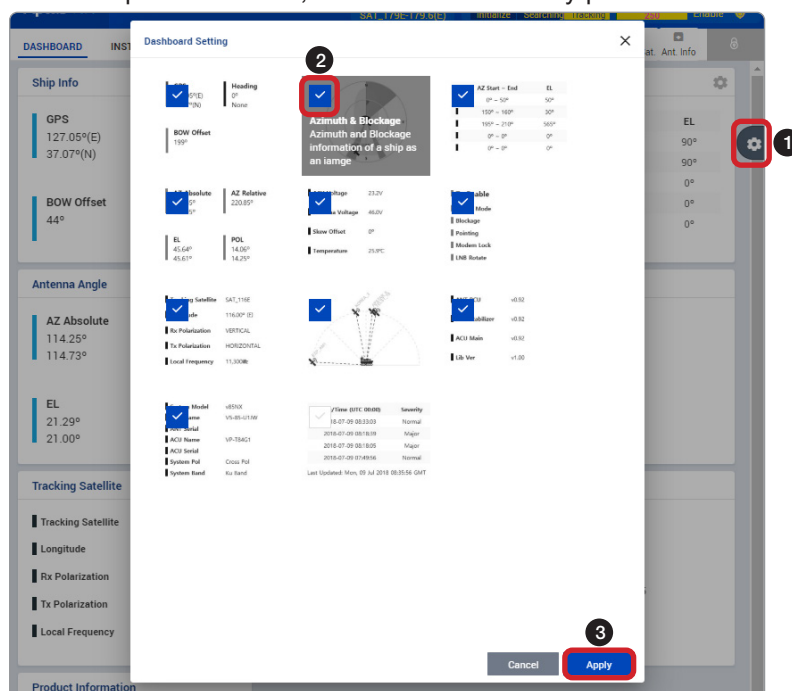
NOTE

The measured temperature can be different from the actual temperature.

10.6.1 How to Add & Remove Panels (Dashboard Setting)

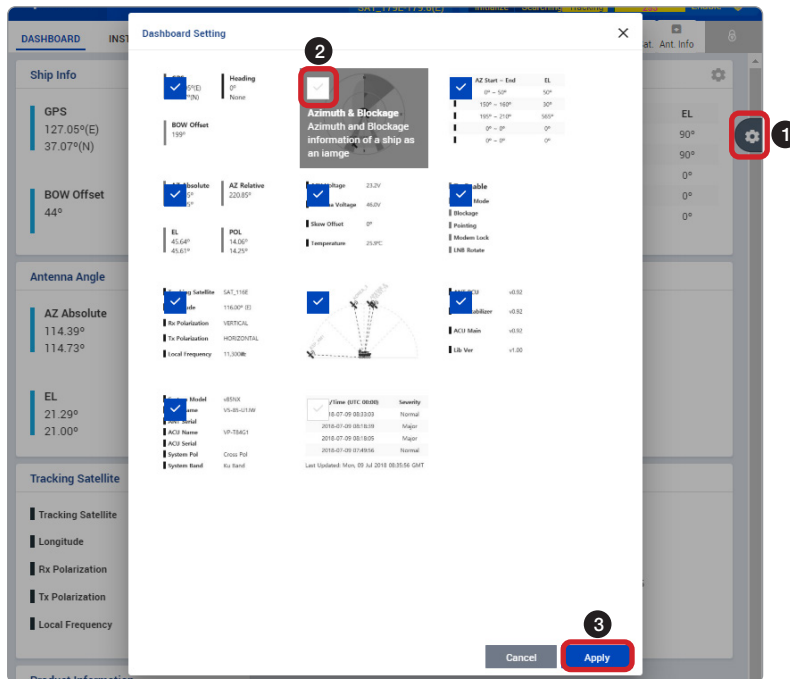
Adding Panels

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

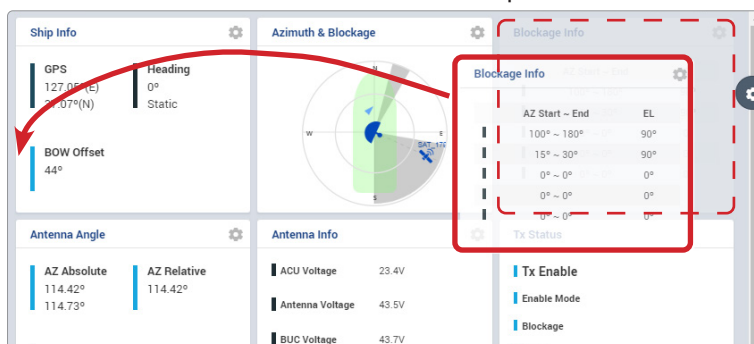
1. On the right side of the page, you will see the gear icon to edit your dashboard. To start editing, click on the gear icon indicated by the red mark.
2. Uncheck the box of the panel that you wish to remove from the dashboard.
3. Click the **Apply** button to apply the settings to the system.



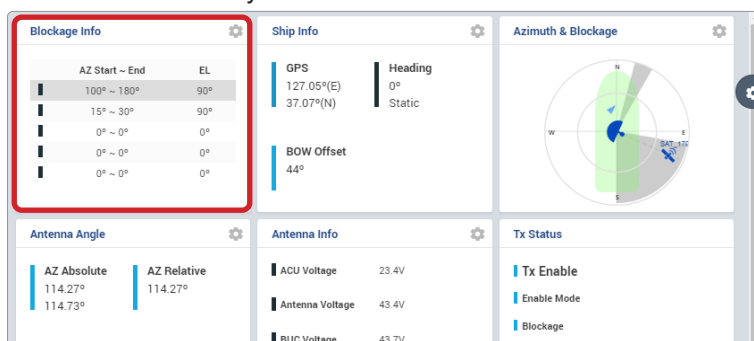
10.6.2 How to Arrange Dashboard Layout

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.



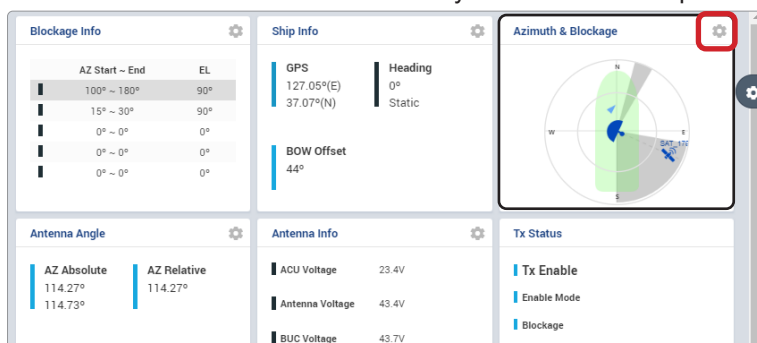
2. This time, the selected panel will be moved to the desired position. You can also move multiple panels into a customized layout in the same manner.



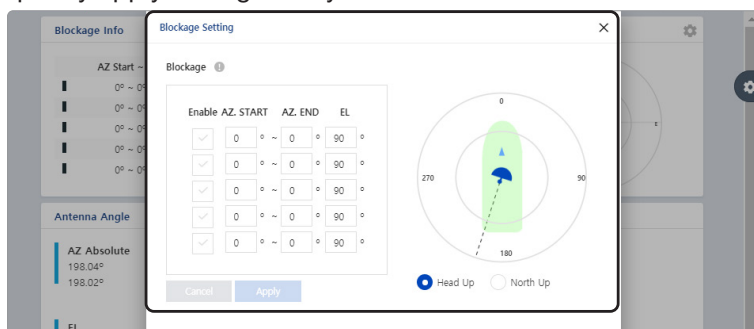
10.6.3 How to Use Shortcut Settings

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.

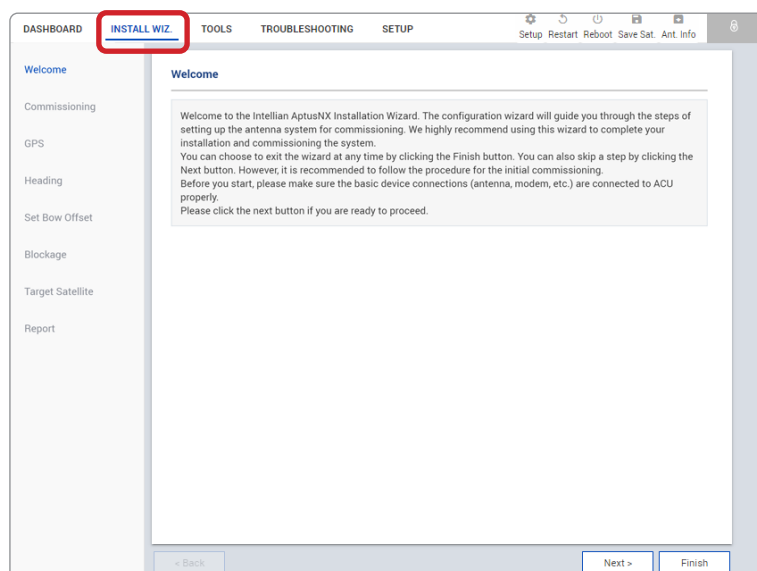


2. The setting page will appear on the individualized web page. You can check the detailed information and quickly apply settings that you wish.



10.7 Install Wizard

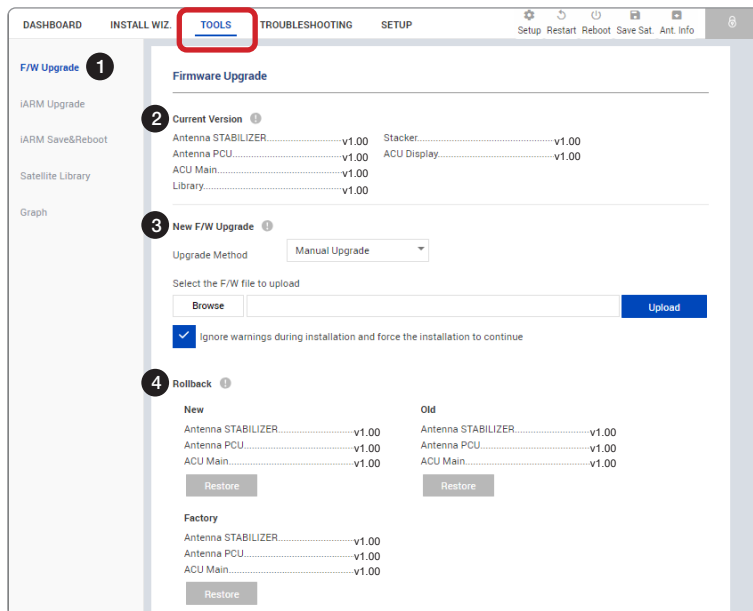
Refer to the "7.3 Starting Install Wizard" on page 56 for more details.



10.8 System Tools

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

10.8.1 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, BDT Main, Library, Stacker, BDT 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. Check firmware version before uploading firmware. Upgrade Method: selects an upgrade method between Manual Upgrade or Auto Upgrade. NOTE: when using the Manual Upgrade method, refer to the following "Antenna Firmware Update (Manual Upgrade method) Procedures" page for more details.
④	Rollback	Displays the previous and latest versions of the firmware package and restores them. Other function cannot be operated while rollback is in process. New: Most currently upgraded version of firmware Old: Previous version of firmware before the upgrade Factory: Initial version of firmware which was installed by the factory The new, old or factory version of firmware can be restored by clicking on the RESTORE button.

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 F/W Upgrade ⓘ

Upgrade Method: Manual Upgrade

Select the F/W file to upload

Browse

Upload

☒ Ignore warnings during installation and force the installation to continue



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. Uncheck "Live Upgrade" box.

AptusNX

During the firmware upgrade, the antenna system can restart automatically and it may take several minutes.

Type	Current Ver.	New Ver.
Antenna STABILIZER	v0.91.001	v0.91.002
Antenna PCU	v0.91.004	v0.91.005
ACU Main	v1.26	v1.27
Stacker	v1.05	v1.06
ACU Display	v1.05	v1.06

☒ Live Upgrade

Cancel Start Upgrade

3. Then "Skip the Same F/W Version" box will appear in the pop-up window. unbox "Skip the Same F/W Version" and press **Start Upgrade** button.

AptusNX

During the firmware upgrade, the antenna system can restart automatically and it may take several minutes.

Type	Current Ver.	New Ver.
Antenna STABILIZER	v0.91.001	v0.91.002
Antenna PCU	v0.91.004	v0.91.005
ACU Main	v1.26	v1.27
Stacker	v1.05	v1.06
ACU Display	v1.05	v1.06

☐ Live Upgrade

☒ Skip the Same F/W Version

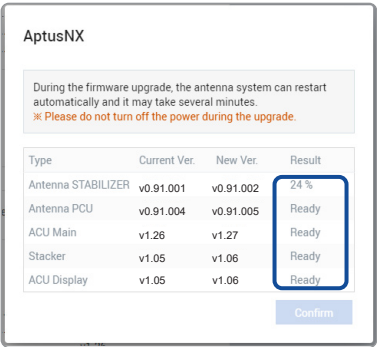
Cancel Start Upgrade



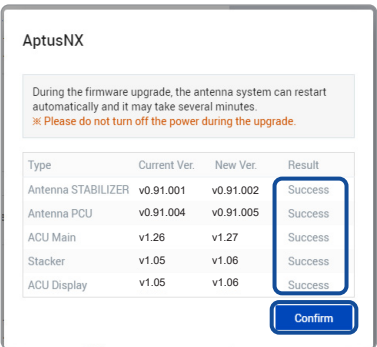
NOTE

If you want to skip the firmware upgrade the same version, check the "Skip the Same F/W Version" box depending on your preference.

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



5. If the firmware is successfully upgraded, it will display as the **Success**. Click the **Confirm** button to close the pop-up window.



10.8.2 iARM Upgrade

The screenshot displays the 'iARM Upgrade' window. On the left, a sidebar lists navigation options: 'F/W Upgrade', 'iARM Upgrade' (highlighted with a circled 1), 'iARM Save&Reboot', 'Satellite Library', and 'Graph'. The main area contains four numbered steps:

- Step 1: iARM Upgrade** - A header section.
- Step 2: New iARM Firmware** - Includes a 'Select the F/W file to upload' section with a 'Browse' button and a 'Start Upgrade' button. Below this is a checkbox labeled 'Ignore warnings during installation and force the installation to continue.' which is checked.
- Step 3: Bootstrap/Bootloader** - Displays version information for 'Bootstrap' and 'Bootloader'. Each has three entries: 'Main' (v1.00), 'Factory Default' (v1.00), and 'Active Bootloader' (Main).
- Step 4: Kernel/File System** - Displays version information for 'Sys0', 'Sys1', and 'Factory Default'. Each has two entries: 'Kernel' (v1.00) and 'File System' (v1.00). Below each pair is an 'Activate' button. At the bottom, a 'Current Active' section shows 'Current Package' as 'Sys0', 'Kernel' as 'v1.00', and 'File System' as 'v1.00'.

No.	Item	Description
①	iARM Upgrade	Upgrades the firmware of iARM module.
②	New iARM Firmware	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. Check firmware version before uploading firmware. NOTE: Refer to the following iARM Upgrade Procedure for more details.
③	Bootstrap/Bootloader	Displays current bootstrap and bootloader version. - Bootstrap: Displays the Bootstrap Version (Main, Factory Default). - Bootloader: Displays the Bootloader Version (Main, Factory Default, Active Bootloader)
④	Kernel/File System	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 "10.8.3 iARM Save & Reboot" on page 102 to apply the settings to the system. - Sys0: Displays the Sys0 version. - Sys1: Displays the Sys1 version. - Factory Default: Displays the Factory Default version. The Current Active displays activated storage part Information. - Current Active - 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.

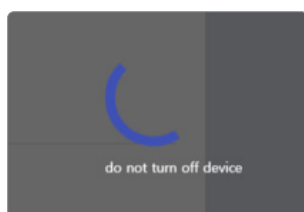
**NOTE**

If you select the box "Ignore warnings during installation and force the installation to continue", warning messages do not appear during the upgrade.

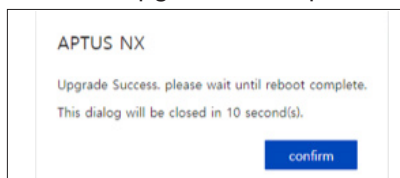
2. Once the update starts, the update process will be displayed on the screen. It will take about two minutes to complete the firmware upgrade.

**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.

**10.8.3 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 system without saving the modified settings of the iARM . All configuration changes made will be lost upon the reboot. Click the Reboot Only button.

10.8.4 Satellite Library

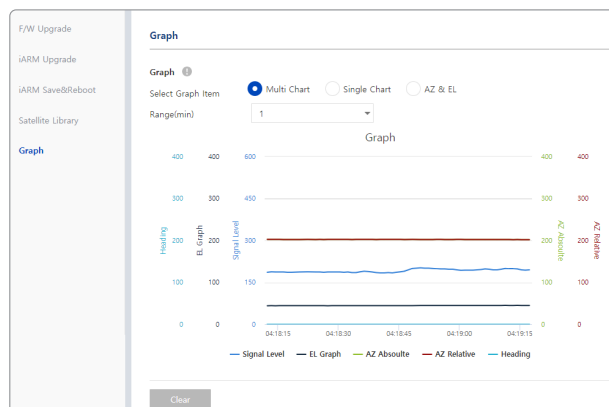
The screenshot shows the 'Satellite Library' interface. On the left, a sidebar contains navigation links: 'FW Upgrade', 'IARM Upgrade', 'IARM Save&Reboot', 'Satellite Library' (highlighted with a blue circle and the number 1), and 'Graph'. The main area is titled 'Satellite Library' and contains several sections. At the top, there's a 'Satellite List' (highlighted with a blue circle and the number 2) showing a list of satellites: IOR_062E / 62.5E, POR_180E / 179.6E, AOR_055W / 55W, and COMS_3D / 128.19E. To the right of this list are four buttons: 'Get Library from ACU', 'Save to PC(Download)', 'Get Library from PC', and 'Save to ACU'. Below the list is a 'Load Satellite' button. The main content area is divided into three sections: 'Common Information' (highlighted with a blue circle and the number 4), 'DVB Information' (highlighted with a blue circle and the number 5), and 'NBD Information' (highlighted with a blue circle and the number 6). A blue box highlights the 'Common Information', 'DVB Information', and 'NBD Information' sections, with a 'Load Satellite' button at the bottom. The 'Common Information' section includes fields for Satellite Name (SAT_179E), Longitude (179.6), Skew Offset (0), Identify (Modem Lock), Rx Polarization (LHCP), and Tx Polarization (RHCP). The 'DVB Information' section includes fields for Frequency (19740), Symbol (20000), NID (0x 0001), and Verify Type (DVB Lock). The 'NBD Information' section includes fields for Frequency (1490000), Bandwidth (31999), and Base Local (18250).

No.	Item	Description
①	Satellite Library	Sets the satellite library information.
②	Satellite List	Reads or manages satellite information from the library. - Get Library from BDT (ACU): Obtains satellite library file from the BDT (ACU). - 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 BDT (ACU): Saves the current library file to the BDT (ACU).
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. - Satellite Name: Displays the satellite name. - Longitude(°): Displays satellite orbit position. - Skew Offset: Displays the Skew offset. - 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. - Frequency (kHz_IF): Displays the tracking frequency. - Bandwidth (kHz): Displays the detection bandwidth. - Base Local (MHz): Displays the base local.

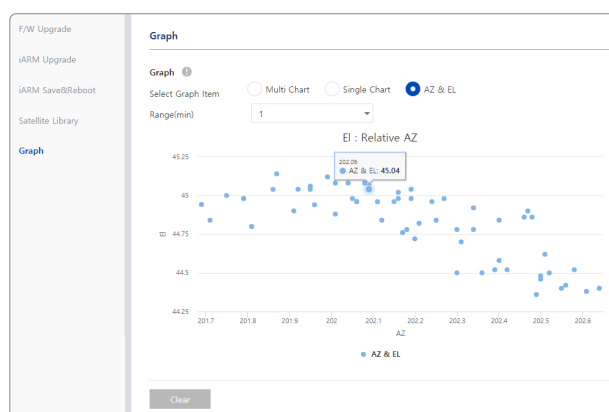
10.8.5 Graph



Single Chart View



Multi Chart View



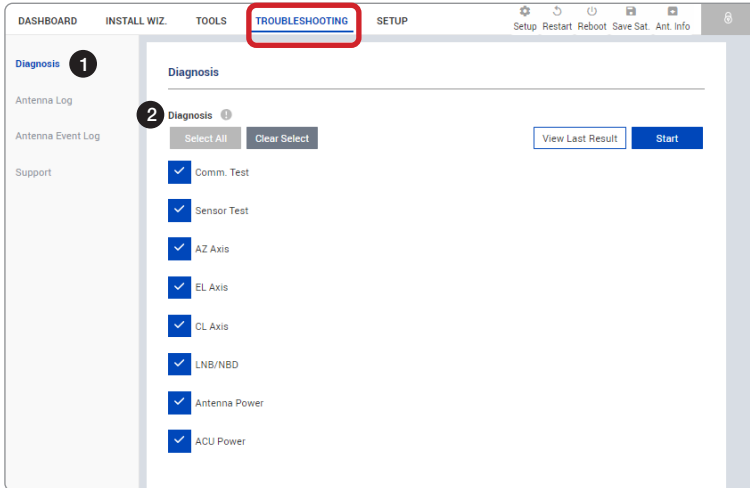
AZ & EL View

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	Sets detailed options for the graph. - Select Graph Item: Shows the graphs of 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. By clicking the Clear button, the currently displayed graph is cleared and a new graph is displayed.

10.9 System Troubleshooting

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

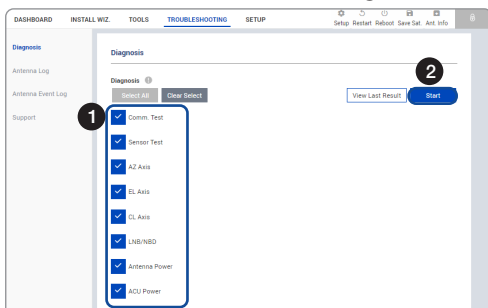
10.9.1 Diagnosis



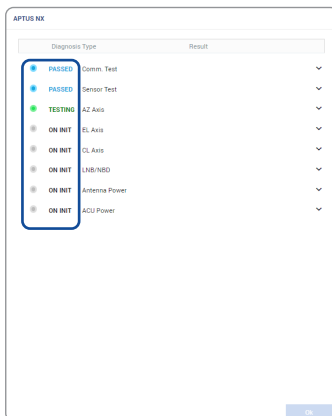
No.	Item	Description
①	Diagnosis	Executes antenna diagnosis test to check the antenna status.
②	Diagnosis	Select the checkbox (full diagnosis test or single diagnosis test) before modifying the settings. - Select All: Select to run a full diagnosis test. - Clear Select: Select to run a single diagnosis test. - View Last Result: Displays the recently saved diagnosis result. - Start: Executes the diagnosis test.

Diagnosis Procedures:

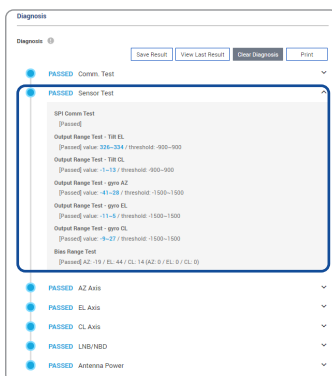
1. Select the checkbox (full diagnosis test or single diagnosis test) before modifying the settings. Click on the **Start** button to run the diagnostic test.



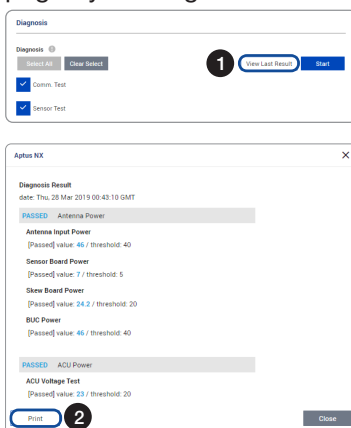
2. Once the diagnosis starts, the page will indicate test status. It should take a few minutes to complete the test.



3. 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.



4. 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.



10.9.2 Antenna Log

Diagnosis

Antenna Log 1

Antenna Event Log

Support

Antenna Log

2 GPS Log Option ⓘ

Turn On ☐ Off ☒ On

3 Antenna Log Download ⓘ

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.

10.9.3 Antenna Event Log

Date/Time (UTC 00:00)	Severity	Category	Log
2019-04-05 00:44:12	Normal	Access	Remote Monitor Login through WEB from 10.1.103.39 using ID guest

No.	Item	Description
①	Antenna Event Log	Displays the logged events of the antenna system filtered by the urgency level, category and time frame of the events.
②	Query Filter	Sets the filter options to show the logged events. - Severity: Choose the urgency level of event to show. - Category: Choose the event category to show. - Time Frame: Choose the time frame of event log to show. - Duration: Set the duration by selecting start and end dates in the calendar. - Tracking Method: Select the sorting method (Descending / Ascending). Click the Query Event Log button to show the logged events under the Event Log.
③	Event Log	Displays the list of logged events filtered by the Query Filter options in the previous step.

10.9.4 Support

No.	Item	Description
①	Support	Supports the manual web page, support desk and FAQ list.
②	Manual and Help	Shows the manual web page and support desk information. - 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.

10.10 System Setting

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

10.10.1 Ship Setting

The screenshot shows the 'SETUP' menu in AptusNX. The 'Ship' option is selected in the left sidebar. The main content area displays the 'Ship' configuration page. It includes sections for GPS settings (Longitude, Latitude, East/North), Heading Device settings (Current Device, Heading), BOW Offset settings (Current Bow Offset), and Blockage settings (Enable Description, Az. START - END, EL). A circular diagram at the bottom illustrates the ship's heading and blockage zones.

No.	Item	Description
①	Ship	Sets the ship information and block zone.

No.	Item	Description
②	GPS	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. Make sure 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.) • Longitude (°): Set Longitude information (East / West). • Latitude (°): Set Latitude information (North / South). Click the Apply button to apply the settings to the system.
③	Heading Device	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.) • Current Device: Select the heading device (None, NMEA (0183), Static). • Baud Rate: Select the band rate (4800, 9600, 19200, 38400). It must be set when NMEA is selected on the Current Device list. • Heading(°): Enter the heading information. Click the Apply button to apply the settings to the system.
④	BOW Offset	For setting the 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. • Current Bow Offset (°): Enter the Bow Offset Range (0 – 360°). Click the Apply button to apply the settings to the system.
⑤	Blockage	It is important to set up the blockage zones for Intellian VSAT. The VSAT system can be programmed with relative azimuth and elevation sectors to create up to five zones for transmission mute. It is indicated when the antenna is within one of the zones. A transmit inhibit output from the BDT will disable/mute the modem transmission within the blockage zones. The AZ START is the relative azimuth angle where the blockage starts, and the AZ END is the relative azimuth where the blockage ends (Range: 0 ~ 360). The EL is the elevation angle where the blockage is set (Range: 0 ~ 90). The blockage is activated below the elevation angle. Click the Apply button to apply the settings to the system.

10.10.2 Antenna Setting

Ship

Antenna 1

Satellite

Network

Modem Info

Backup & Restore

Mediator

Antenna Setting

2 Antenna Angle

Relative Azimuth 57.79°

Absolute Azimuth 57.79° / 114.73°

Elevation 45.29° / 21.00°

3 Tracking / Searching Parameter

3 Thresholds Setting

Detect Level 40

Tracking Level 20

Tx Enable 50

4 Search Parameter

Wait Time(sec) 5

Search Step(°) 0.5

Azimuth(°)

Search1	Search2	Search3
400	6	3

Elevation(°)

Search1	Search2	Search3
8	6	4

Cancel Apply

5 Conical Range

Azimuth 100 100

Elevation 80 80

Cancel Apply

6 Conical Range Check

Switch Activation ☒ Off ☐ On

Cancel Apply

AZ EL

No Data

7 Sensor Calibration

EI Adjust

EI Adjust(°) 0

Cancel Apply

8 Tilt Sensor Bias

Ready

EL 0 1

CL 0 1

9 Rate Sensor Bias

Azimuth 0

Elevation 0

Cross-level 0

Cancel **Set RateSensor Bias** NOTE

Rate Sensor Calibration Save Sensor Bias

10 Antenna Mode

Set Idle Mode Reboot



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	Enter Setup Mode to modify settings. 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. - Relative Azimuth: Displays the antenna relative azimuth angle. - Absolute Azimuth: Adjust the antenna absolute azimuth angle. - Elevation: Adjust the elevation angle.
③	Thresholds Setting	Sets current detect level threshold and tracking level threshold. - Detect Level: Enter the current detect level threshold. - Tracking Level: Enter the current tracking level threshold. - Tx Enable: Enter the Tx enable threshold. Click the Apply button to apply the settings to the system.
④	Search Parameter	Sets the time-out, search step and search range. - Wait Time (sec): Set the time-out for automatic initiation of a search after the signal level drops below the pre-defined threshold value. - Search Step(°): Set increment step size. - Search1/3: Set 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: It is reserved for the future use. Click the Apply button to apply the settings to the system.
⑤	Conical Range	The relative force of the motors controlling azimuth and elevation. Sets the conical range while the antenna is in tracking mode. Click the Apply button to apply the settings to the system.
⑥	Conical Range Check	Enter Setup Mode to modify settings. Monitors the Azimuth and the elevation value when the conical range is modified. Switch Activation: Choose whether you use the switch activation function or not (On / Off). Click the Apply button to apply the settings to the system.
⑦	Sensor Calibration	Enter Setup Mode to modify settings. Adjusts the elevation to offset the angle difference between the mechanical elevation angle and actual elevation angle. Click the Apply button to apply the settings to the system.
⑧	Tilt Sensor Bias	NOTE: 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. Enter Setup Mode to modify settings. Maintain the elevation and the cross-level axes in order to keep the pedestal parallel to the horizon. - 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. Click the Restart button on the top menu to restarts the antenna system.

No.	Item	Description
⑨	Rate Sensor Bias	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. Enter Setup Mode to modify settings manually. 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. - 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	Sets the motor to idle mode to check the antenna's balance. - Set Idle Mode: Enter Setup Mode to modify settings. Releases the elevation and cross-level motor. - Reboot: Reboots the system.

10.10.3 Tracking Satellite Setting

The screenshot shows the 'Tracking Satellite Setting' window. On the left, a sidebar lists 'Ship', 'Antenna', 'Satellite' (selected), 'Network', 'Modem Info', 'Backup & Restore', and 'Mediator'. The main panel has a 'Library' button at the top right. It contains three main sections, each with a numbered circle icon:
 1. **Satellite Information**: Includes input fields for 'Satellite Name' (SAT_179E), 'Longitude(°)' (179.6), and 'Local Frequency(MHz)' (18250). It also has dropdown menus for 'RX Polarization' (LHCP) and 'TX Polarization' (RHCP).
 2. **NBD Information**: Includes input fields for 'Frequency(kHz_IF)' (1490000) and 'Reserved Parameter' (31999).
 3. **Modem Lock Use for Verification**: Includes a 'Modem Verify' section with 'On' (selected) and 'Off' radio buttons.
 Each section has 'Cancel' and 'Apply' buttons at the bottom.

No.	Item	Description
①	Tracking Satellite Setting	Sets the current tracking satellite settings.
②	Satellite Information	Sets the current tracking satellite settings. • Satellite Name: Enter the satellite name. • Longitude (°): Enter the satellite orbit position. • Local Frequency (MHz): Select the local frequency. • Rx Polarization: Select the current Rx polarization. • Tx Polarization: Select the current Tx polarization. Click the Apply button to apply the settings to the system.
③	NBD Information	Sets NBD mode's tracking information. • Frequency (kHz_IF): Set the tracking frequency. • Reserved Parameter(kHz): Set the reserved parameter. Click the Apply button to apply the settings to the system.
④	Modem Lock Use for Verification	Verifies modem lock status (modem lock function: active/inactive). • Modem Verify: Turn on or off the modem lock function (On / Off) Click the Apply button to apply the settings to the system.

10.10.4 Network Configuration

This function is available after performing the "10.8.3 iARM Save & Reboot" on page 102.

Network Configuration

2 Management Interface Configuration

IP Address: 192.168.2.1
 Subnet Mask: 255.255.255.0
 Lease Start Address: 192.168.2.2
 Lease End Address: 192.168.2.30
 Lease Time (min): 180

3 WiFi Access Point Configuration

AP: ☒ Enable
 SSID: Intellian-NX
 Channel: 6
 Authentication Type: Open
 Password:
 Max Stations: 10
 SSID Broadcast: ☒ Enable

4 Network Service Configuration

Telnet Service: ☒ Disable
 HTTPS Port: 443
 SSH Service: ☒ Enable

5 Sys Log Configuration

Management Server: ☒ No
 Server IP: 192.168.1.1
 UDP Port: 514
 Message Type: ☒ Error, ☒ Major, ☒ Minor, ☒ Diagnosis, ☒ Periodic, ☒ Setting, ☒ Special, ☒ Notice
 Syslog Target Level: LOG NOTICE

6 Radius Configuration

Client: ☒ Enable
 Server IP: 192.168.1.10
 Timeout: 5
 Server Secret: testing123

7 Switch Port Configuration

Port 1: MGMT
 Port 2: MGMT
 Port 3: MGMT
 Port 4: 1

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.

No.	Item	Description
①	Network Configuration	Sets the BDT's Internal IP address and ports.
②	Management Interface Configuration	Sets the Management Port's network configuration. The Management Port is located on the BDT front panel. - IP Address: Set the network IP address (Factory default: 192.168.2.1). - Subnet Mask: Set the subnet mask (Factory default: 255.255.255.0). - Lease Start Address: Set the lease IP address start range. - Lease End Address: Set the lease IP address end range. - Lease Time: Set the lease IP address update time. Click the Apply button to apply the settings to the system.

No.	Item	Description
③	Wi-Fi Access Point Configuration	Set up for the Wi-Fi access point function of BDT. - AP: Enable or disable the Access Point (AP) function. - SSID: The SSID is the network name shared among all devices in a wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which may be any keyboard character. Make sure this setting is the same for all devices in your wireless network. - Channel: Select an appropriate channel from the list provided to correspond with your network settings. All devices in your wireless network must use the same channel in order to function correctly. Try to avoid conflicts with other wireless networks by choosing a channel where the upper and lower three channels are not in use. - Authentication Type: 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: Set the password for Wi-Fi access point. - Max Stations: Enter the maximum number of stations. - SSID Broadcast: Enable or disable the SSID broadcast function. Click the Apply button to apply the settings to the system.
④	Network Service Configuration	Sets the network service configuration - Telnet Service: Sets the telnet service (Disable / Enable). - HTTPS Port: Sets the HTTPS port number. - SSH Service: Sets the SSH service status (Disable / Enable). Click the Apply button to apply the settings to the system.
⑤	Sys Log Configuration	Sets the system log configuration. Antenna sends log messages according to the emergency level. Enabling this function sends the message to your management server. - 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. Click the Apply button to apply the settings to the system.
⑥	Radius Configuration	<i>This menu is used when the network administrator needs to authorize user connections using Radius server.</i> - 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. Click the Apply button to apply the settings to the system.
⑦	Switch Port Configuration	Sets the switch port (LAN port) mode, which is on the back panel of the BDT. Port 1/2/3/4: Each port can select the MGMT (Modem Management Port (VLAN 1)) or the number (1 ~ 3) to which VLAN Port ID controlled by the modem. Click the Apply button to apply the settings to the system.

10.10.5 Modem Info

Ship

Antenna

Satellite

Network

Modem Info

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

100%

Start

Stop

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

-

117

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	Each indicator is displayed modem's operating status as colors. <table> <tr> <th>Item</th><th>LED Display</th><th>Description</th></tr> <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> </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.																																						
	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.																																						
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). Modem Reboot: Sets the modem reboot.																																						
⑤	Commissioning	Performs the commissioning test to calibrate the modem to receive the optimal signal. The RF uplink frequency, the Transceiver LO frequency, the Tx frequency, and the attenuator will calibrate automatically. - Status: Displays the current commissioning test status. - Start/Stop: Click the 'Start' button to perform the commissioning test automatically. NOTE: Ensure that the commissioning test is performed after the first-time connection of the GX terminal, the BDT/cable replacement, or band conversion.																																						
⑥	VLAN Configuration	Displays the assigned port and information.																																						

10.10.6 Backup & Restore Setting

Ship

Antenna

Satellite

Network

Modem Info

Backup & Restore

Mediator

2 Antenna Backup & Restore

Antenna Backup ⓘ

Backup to PC **Backup**

Antenna Restore ⓘ

Browse **Restore**

3 iARM Backup & Restore

iARM Backup ⓘ

Backup to ☐ Flash ☒ PC **Backup**

iARM Restore ⓘ

Restore from ☐ Flash ☒ PC **Restore**

No.	Item	Description
①	Backup & Restore Setting	Backs up & Restores the antenna setting files and the iARM files.
②	Antenna Backup & Restore	- Antenna Backup: Back up antenna settings and parameters to PC by clicking on the Backup button. - Antenna Restore: Restore the antenna setting by uploading the saved backup file from PC. Browse the backup file, then click the Restore button to restore it.
③	iARM Backup & Restore	- iARM Backup: Back up iARM setting to internal Flash drive in BDT or PC by clicking the Backup button. - iARM Restore: Restore the iARM settings by uploading the saved backup file from internal Flash drive in BDT or PC. Browse the backup file, then click the Restore button to restore it. Then, the iARM will automatically reboot.

10.10.7 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 to use the dual antenna mediator function or not. - 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 "10.8.3 iARM Save & Reboot" on page 102.
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. - Auto: This method is recommended. Automatically switch-over to the primary or secondary antenna which has no blockages and no errors. - Primary: Manually switch-over to the primary antenna which is connected to the BDT and the gyrocompass. - Secondary: Manually switch-over to the secondary antenna which is connected to the ACU. Click the Apply button to apply the settings to the system.

No.	Item	Description
④	Antenna Description	This menu is differently shown in the Primary Antenna's AptusNX and the Secondary Antenna's AptusNX. To clearly distinguish the primary antenna and the secondary antenna, enter a description to each antenna. - Primary: Enter the description for the primary antenna in AptusNX (Editable). This menu is not shown for the secondary antenna in AptusNX. - Secondary: Enter the description for the secondary antenna in AptusNX (Editable). This menu is displayed as Read-only for the primary antenna in AptusNX. Click the Apply button to apply the settings to the system. Then perform the "10.8.3 iARM Save & Reboot" on page 102.
⑤	Switching Threshold	When two antennas are in Tracking mode and have no blockage, the allowable value will apply for the automatic switching. - 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). Click the Apply button to apply the settings to the system. Then perform the "10.8.3 iARM Save & Reboot" on page 102.
⑥	Network to connect secondary antenna	Sets the primary antenna's network information to transmit to the secondary antenna. - Primary Server IP: Enters the server IP address (Default: 192.168.205.1). - Primary Server PORT: Set 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). Click the Apply button to apply the settings to the system. Then perform the "10.8.3 iARM Save & Reboot" on page 102.

Chapter 11. Specification

11.1 Technical Specification

Antenna System		
Antenna Radome Height		1458 mm (57.4")
Antenna Radome Diameter		Ø1379 mm (54.3")
Antenna Reflector Diameter		Ø1050 mm (41.3")
Antenna Unit Weight (with Radome)		110 kg (242.5 lbs)
Platform		3-axis: Azimuth, Elevation, Cross-level
Azimuth Range		Unlimited
Elevation Range		-20° to +115°
Cross-level Range		Up to ±37°
Stabilization Accuracy		0.2° peak mis-pointing @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	17.7 GHz ~ 20.2 GHz Ka-band
	Gain	44.3 dBi @ 19.0 GHz (Excl. radome)
	G/T over Rx Range	Min. 19.6 dB/K @ Elevation 10 degree
	Axial Ratio	1.7 dB on Axis
Tx	Frequency	27.5 GHz ~ 30 GHz Ka-band
	Gain	47.7 dBi @ 29.0 GHz (with radome)
	EIRP	Min. 54.0 dBW @ 4.5 W Transceiver
	Axial Ratio	1.3 dB on Axis
Polarization		Circular Dual Polarization (Rx : RHCP/LHCP, TX : RHCP/LHCP)
Transceiver		4.5 W, 9 W Transceiver
Dual Antenna System		Embedded GX mediator function
BDT to ADU Cable (Antenna Cable)		Single 50 Ω coax RF cable connected from BDT to ADU for Rx, Tx, FSK, Reference and Power
Input power		48 V DC (max 300 W) through a single RF cable
Below Deck Terminal (BDT)		
BDT Size		431 mm x 411 mm x 44.3 mm (16.96" x 16.18" x 1.74")
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		2 ea (front panel), 1 ea (rear panel, for Wi-Fi dongle)
Ship's Gyrocompass Interface		NMEA 2000, NMEA 0183
Serial Interface		Console RS-232C (57600 bps 8, N, 1)
Ethernet port		RJ 45 (4 ea), TCP/IP connection
Mediator Interface		Embedded in BDT
Input power		100 ~ 240 V AC, 50/60 Hz, 3 A
Output power		48 V DC for ADU (Antenna)

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	2 ea (front panel), 1 ea (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, 3.3 A

11.2 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	

Chapter 12. Warranty

Warranty Policy

Intellian systems are warranted against defects in parts and workmanship, these warranties cover THREE (3) YEAR of parts and TWO (2) YEAR of factory repair labor to return the system to its original operational specification.

Warranty periods commence from the date of shipment from Intellian facility, or date of installation which is come sooner. Providing maximum 6 months Warranty additionally if submission of authorized form which is described installation occurs within 6 months from the shipment date.

Intellian Technologies 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. Intellian Technologies, will (at its sole discretion) repair or replace during the warranty period any product which is proven to be defective in materials or workmanship, in accordance with the relevant product warranty policy. All products returned to Intellian Technologies, during the warranty period must be accompanied by a Service Case reference number issued by the dealer/distributor from Intellian Technologies, and (where applicable) a copy of the purchase receipt as a proof of purchase date, prior to shipment. Alternatively, you may bring the product to an authorized Intellian Technologies, dealer/distributor for repair.

Chapter 13. Appendix

13.1 Appendix A. Tightening Torque Specification

This table shows the recommended values of tightening torques.

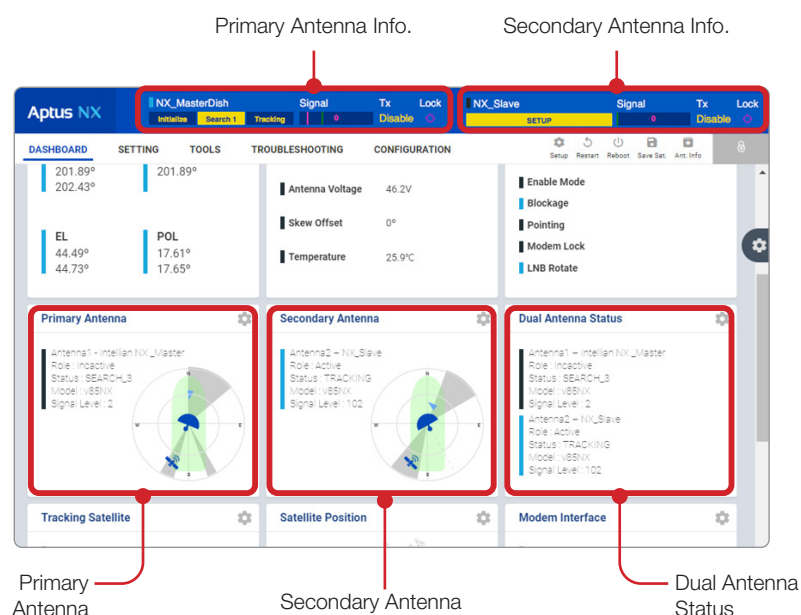
Bolt Size	Tightening Torque (N-m)
M2	0.5
M2.5	1
M3	1.5
M4	3
M5	6
M6	12
M8	27
M10	50
M12	85
M14	130
M16	200

13.2 Appendix B. Starting Dual Antenna System (Optional)

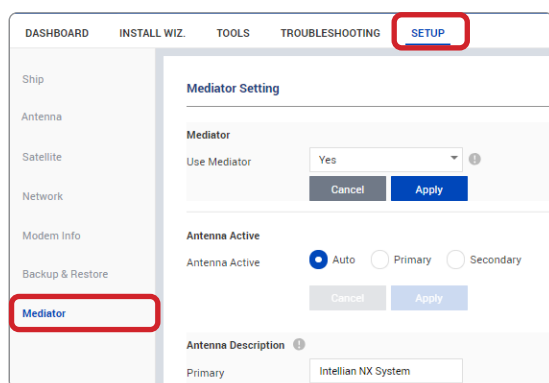
Intellian's new BDT has embedded Dual Antenna Mediator function, which can be utilized to switch between two Intellian VSAT antenna systems simultaneously. When one antenna is blocked by obstacles or has suddenly lost service, another antenna will immediately provide fail-safe operation to maintain the 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 "6.6.2 Dual Antenna System Configuration (Optional)" on page 44 for more details.

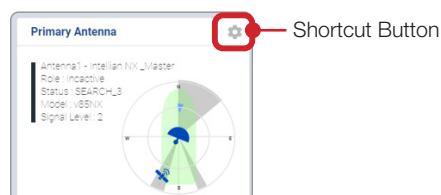
Access the AptusNX (IP Address: 192.168.2.1) to manage and control the Dual Antenna System. You can check the status of Dual Antenna System via AptusNX. The information for two antennas (Primary and Secondary Antenna) is displayed on the Top Menu and the three panels (Dual Antenna Status, Primary Antenna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



To control and manage the Dual Antenna System, go to **SETUP** → **Mediator** menu. Refer to the "10.10.7 Mediator Setting (Optional: For Dual Antenna System)" on page 120 for more details. Also by clicking the **Shortcut** button on right side of the DASHBOARD, you can easily access the setting page.



Mediator Setting Menu



Dashboard Panel

13.3 Appendix C. Performing One Touch Commissioning

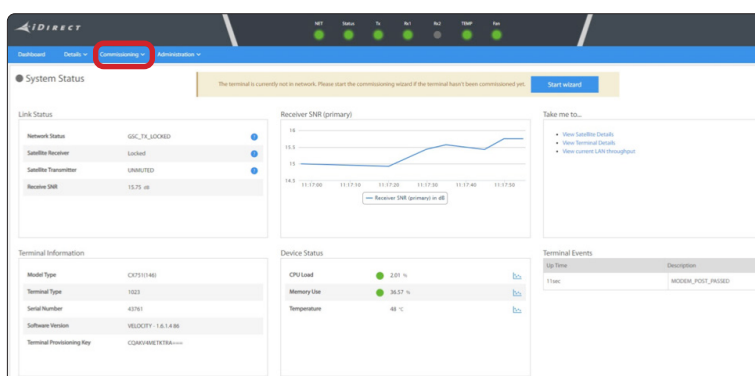
Perform the One Touch Commissioning after the first-time connection of the GX terminal and BDT, cable replacement or band conversion. Take the following steps for the One Touch Commissioning.

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

BDT - Front Panel



2. Use the following IP address to access iDirect web page.
 - Default IP: **192.168.1.1**
3. Login to the iDirect modem page using the below.
 - ID: **admin**
 - PW: **iDirect123! (or iDirect)**
4. Go to the **Commissioning** page to open "Commissioning - One Touch Commissioning".



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

