Intellian®

v60

Installation and Operation User Guide

Marine Satellite Communication Antenna System

Serial number of the product

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

Intellian®

Intellian Technologies Inc.

348-5 Chungho-Ri Jinwi-Myeon
Pyeongtaek-Si, Gyeonggi-Do
451-862 Korea

Tel +82 31 379 1000
Fax +82 31 377 6185
Email info@intelliantech.com

Intellian Technologies USA, Inc.

9004 Research Drive
Irvine, CA 92618, USA

Tel +1 949 727 4498
Fax +1 949 271 4183
Email info@intelliantech.com

March, 2011

Doc. No. MV60-110308

INDEX

CERTIFICATIONS	6
INTRODUCTION	
Introduction to Intellian v60	9
Features of Intellian v60	10
System Configurations	11
INSTALLING THE ANTENNA	
System Package	13
Planning the Installation	18
Antenna Installation	21
INSTALLING THE ACU	
Mounting the ACU	33
Ship Gyro Connection	35
OPERATING THE ACU	
Introduction	39
Normal Mode	40
Setup Mode	43
Installation Settings	44
Antenna Settings	46
Satellite Settings	57
System Settings	64
PC CONTROLLER SOFTWARE	
Introduction	73
PC to ACU Communication Setup	74
Main Menu	76
Controller Menus	78
REMOTE WEB ACCESS	
Introduction	85
Main Page	86
Antenna Settings	88
Antenna / ACU Firmware Upgrade	100
Ethernet to Serial Settings	104
WARRANTY	112
TECHNICAL SPECIFICATION	113

CERTIFICATIONS

Intellian®

R&TTE Declaration of Conformity (DoC)

We, Intellian Technologies, Inc. located at 2F Dongik Bldg., 98 Nonhyun-dong, Kangnam-gu, Seoul 135-080, 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 and Telecommunications Terminal Equipment(R&TTE) Directive (1999/5/EC).

Product Information:

Product Name(s):	Intellian v60, 60cm Ku-band Maritime VSAT Antenna System Intellian v110, 105cm Ku-band Maritime VSAT Antenna System Intellian v130, 125cm Ku-band Maritime VSAT Antenna System
Model Number(s):	V1-60-XXX, V1-110-XXX, V1-130-XXX

To provide the presumption of conformity in accordance to Annex III(encompassing Annex II) of Directive 1999/5/EC; 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 1999/5/EC.

1995/5/EC Article	**Standard(s) Applied in Full**	**Date of Withdraw**
SAFETY (Art 3.1.a)	IEC EN 60950-1: 2001 (1st Edition)	Not Referenced
EMC (Art. 3.1.b)	IEC EN 60945: 2002 ETSI EN 301 489-1 V1.8.1: 2008	Not Referenced
SPECTRUM (Art. 3.2)	ETSI EN 301 428 V1.3.1: 2006-02 ETSI EN 302 340 V1.1.1: 2006-04	Not Referenced

Supplementary Information:

Notified Body Involved: (Testing Organization)	Nemko USA, Inc. 11696 Sorrento Valley Rd. Suite F San Diego, CA 92121-1024, USA ERI EMC Research Institute 66-6, Jeil-RI, Yangji-Myun, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, Korea
Technical/Compliance File Held by:	Intellian Technologies, Inc. (R&D Department) 32-1-4 Block, Jinwi Industrial Park Jinwi-Myeon, Pyeongtaek-Si, Gyeonggi-Do, Korea
Place and Date of issue:	Seoul, Korea on 20 Oct 2010

Authority: **Steve Cha / Director, R&D**

Signature: 

Date: **20 Oct, 2010**

Intellian Technologies USA, Inc.
US Headquarters
9261 Irvine Blvd.
Irvine, CA 92618 USA
Tel: +1 949 916 4411

Intellian Technologies, Inc.
EMEA & APAC Headquarters
2F Dongik Bldg., 98 Nonhyun-dong
Kangnam-gu, Seoul 135-080, Korea
Tel: +82 2 511 2244

Doc Number IT10-DC1020-01

Intellian®

FCC Declaration of Conformity

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

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

§25.222 (a)(1)(i)(A):	Regulation for Azimuth Direction & Co Polarization
§25.222 (a)(2)(i)(B):	Regulation for Other Direction & Co Polarization
§25.222 (a)(1)(i)(C):	Regulation for Cross Polarization

Intellian Technologies, Inc. declares that the below identified products comply with the threshold level as defined in §25.222(a)(1)(i)(A):, and declares that the products are in accordance with all defined regulations from §25.222(a)(1)(i)(B) to §25.222(a)(1)(i)(C) at the below stated input power spectral density, with an N value of 1.

Product description	EIRP spectral density limit
Intellian v60, 60cm Ku-band maritime VSAT antenna system	-22.3 dBW/ 4KHz
Intellian v110, 105cm Ku-band maritime VSAT antenna system	-16.2 dBW/ 4KHz
Intellian v130, 125cm Ku-band maritime VSAT antenna system	-14.0 dBW/ 4KHz

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

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

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

Authority: **Steve Cha / Director, R&D**

Signature: 

Date: **Aug 01, 2010**

Intellian Technologies, Inc.
US Headquarters
9261 Irvine Blvd.
Irvine, CA 92618 USA
Tel: +1 949 916 4411

Intellian Technologies, Inc.
EMEA & APAC Headquarters
2F Dongik Bldg., 98 Nonhyun-dong
Kangnam-gu, Seoul 135-080, Korea
Tel: +82 2 511 2244

Doc Number IT10-DC0801-01

INTRODUCTION

Introduction to Intellian v60

Features of Intellian v60

System Configurations

Introduction to Intellian v60

The Intellian v60 is a 60-centimeter (23.6-inch) Ku-band, three-axis stabilized VSAT antenna system capable of receiving SCPC, MCPC, TDMA or Spread Spectrum transmissions. Designed for ocean vessels in the recreational, commercial or oil and gas market segments, as well as military vessels, the v60 offers "always on" high-quality broadband communications, in even the roughest weather and sea conditions.

The v60 provides seamless, uninterrupted broadband connectivity for worldwide on-demand communications, is compatible with a comprehensive list of service providers and ensures professional mariners and yacht owners reliable, unlimited connectivity at sea.

The v60 offers a wide minus 10-degrees to plus 100-degrees elevation range and unlimited azimuth, eliminating cable wrap and the lengthy loss of signal connection as the system unwinds. It is ideal for mission critical operations, such as surveillance or vessel monitoring, that require uninterrupted connectivity, or in Voice over Internet Protocol (VOIP) communication and information downloads where signal loss is unacceptable.

An open platform, the v60 is compatible with any modem and supports 4-, 6- and 8-Watt BUCs, providing owners the flexibility to choose the service and communications speeds that is right for their needs. The new antenna embraces Intellian's design philosophy that simplicity equals reliability.

The unit is designed to making it easier for owners, operators and installers to add new features when updating firmware, and even offers a "roll back" function that resets the firmware to a previous version. The v60 offers seamless remote monitoring and control and a power switch on the ACU's front panel for your convenience.

Features of Intellian v60

Enjoy always-on broadband connection at sea
Intellian v60 is the most modern communication system that offers a high-speed and always-on broadband connection at sea, where the atmospheric and environmental conditions are very harsh.

Best solution for all kinds of vessels
The v60 is the best solution for all kinds of vessels that require the satellite broadband connection around the globe. The major RF components are designed and manufactured by Intellian's solid in-house engineering to achieve superior antenna gain and xpol isolation recognized among the best performances in the industry.

Gyro-free satellite search capability
Intellian's new generation Gyro-fee satellite search function enables the v60 to acquire and lock onto the satellite without requiring a separate input from the ship's gyrocompass

Wide elevation range
The v60 has a wide elevation range from -10° to 100°, respectively which offer seamless signal reception while the vessel is traveling near the Equator or Polar Regions.

Remote management solution
The v60 can be accessed, monitored, and controlled from any location in the world through the embedded web server, which can save tremendous time and cost from the hundreds of routine maintenance activities. These solutions include operating firmware upgrade, tracking parameters resets and system diagnostic.

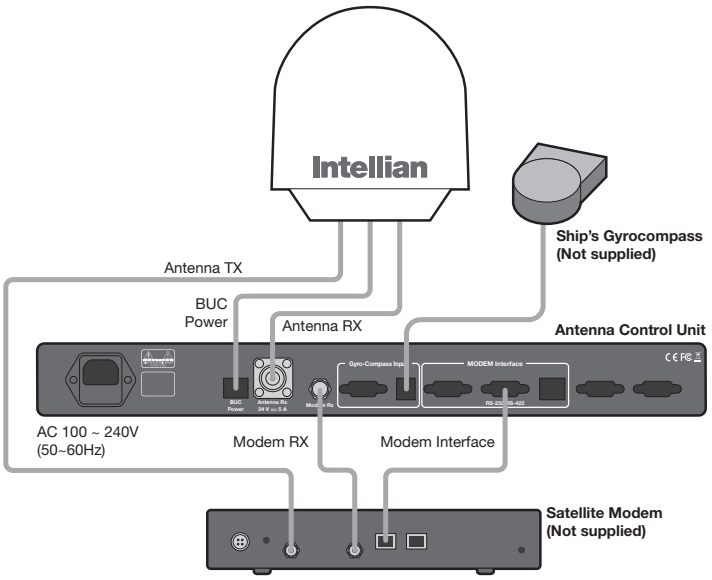
Save installation and maintenance time
Simple design allows users to install and setup the system without the need for a skilled engineer. The v60 provides the utmost in reliability resulting in time and cost savings in maintenance.

Various platform compatibility
The v60 is fully integrated with ABS(Automatic Beam Switching) function with leading service providers who use the embedded OpenAMIP protocol of the iDirect platform and v60 is also compatible with various platforms such as Hughes, Comtech, SatLink and more.

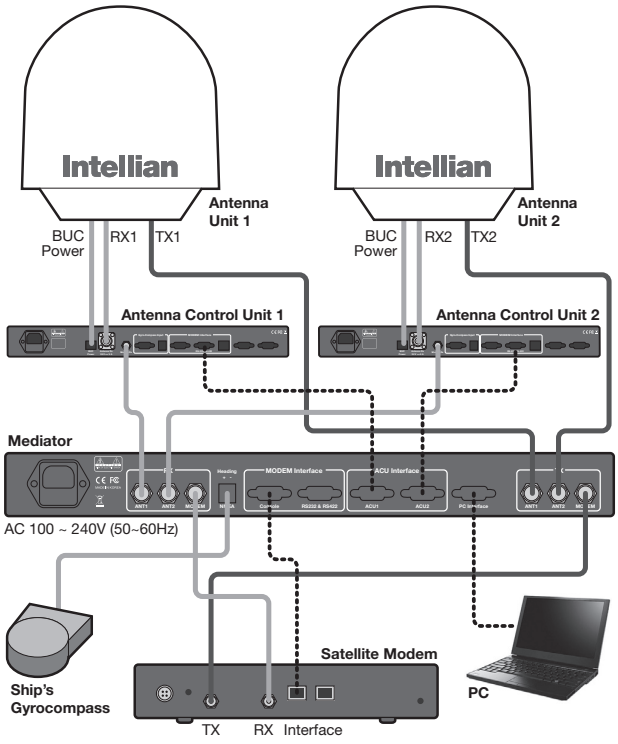
System Configurations

For your satellite communication system to work properly, the system will have to be connected with all of the provided components properly, as shown in the figure below. Separate purchase of a satellite modem, ship's gyrocompass, Intellian Dual VSAT Mediator are required.

Basic System Configuration



Dual System Configuration



INSTALLING THE ANTENNA

System Package

Antenna Unit
ACU (Antenna Control Unit)
Installation Kit

Planning the Installation

Selection of Antenna Installation Site
Configure Radiation Hazard/Blockage Zones
System Cables
Power Requirement
Tools Required for Installation

Installation

Unpacking the Wooden Crate
Antenna Dimensions
Antenna Mounting Templates
Position the Radome
Open the Radome Hatch
Mount the Radome
RF Cable Connections
Secure the RF Cables

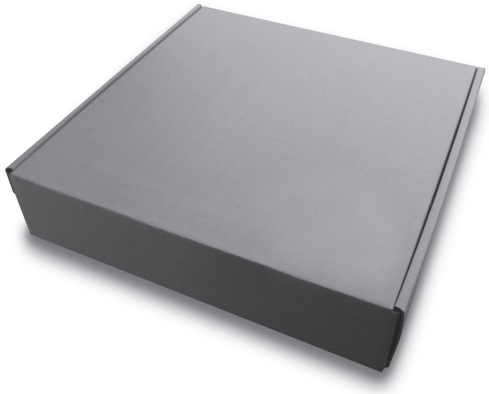
System Package

The package of Intellian v60 consists of antenna unit, ACU and installation kit box.

Antenna unit

ACU

Installation kit box



Antenna Unit

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

Antenna Unit

ACU (Antenna Control Unit)

ACU provides power to the antenna and BUC (Block Up Converter). The digital VFD (Vacuum Fluorescent Display) allows for easy operation of the ACU, even in the dark.

Antenna Control Unit

Front panel

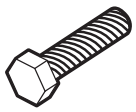
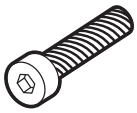
Rear panel

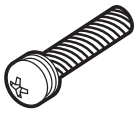
The functions of the ACU are as follows,

- System startup
- Setting the satellite
- Editing satellite information
- Setting the antenna parameter
- Setting the antenna manual search
- Setting the LNB local frequency
- Setting radiation hazard or blockage zone
- Setting modem connections
- Setting GPS and Gyrocompass
- Display versions
- Display power status
- Performing diagnostic tests
- Backup and restore the system settings
- Set up the interface with a PC

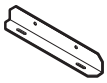
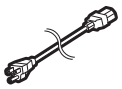
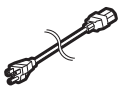
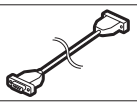
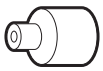
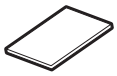
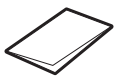
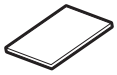
Installation Kit

Contains the items required for securing the antenna unit and ACU to the vessel.

Antenna	Q'ty	Description	Size	Remark
	x5	Hex. Bolt	M8 x 50L	Antenna-Deck
	x5	Flat Washer	M8	
	x5	Spring Washer	M8	
	x5	Hex Head Wrench Bolt	M6 x 30L	Radome (Spare Blots)
	x5	Dome Washer	M6	

ACU	Q'ty	Description	Size	Remark
	x5	Tapping Screw	ø 4 x 16	Table Mount Bracket
	x10	Flat Head Screw	M3 x 8L	Rack Mount Bracket ACU
	x5	Sem's Bolt	M3 x 12L	Table Mount Bracket ACU

Other Components

Item	Image	Q'ty	Description		Size	Remark
1		x2	ACU Bracket	Rack	-	ACU - 19 inch Rack
		x2		Table	-	ACU-Table
2		x1	RG6 Cable		3 m	ACU(Modem Rx) to Modem
3		x2	RG6 Cable		15 m	Antenna(Modem Tx) to Modem & Antenna(ACU Rx) to ACU(Antenna Rx)
4		x1	BUC Power Cable		15 m	Antenna(BUC In) to ACU(BUC Power)
5		x1	AC Power Cord (CEE7/7)		1.5 m	ACU Power
6		x1	AC Power Cord (USA)		1.8 m	ACU Power
7		x1	PC Serial Cable		1.8 m	ACU to PC
8		x1	USB Cable (A-A / M-M)		1.8 m	ACU to PC
9		x1	iDirect Interface Cable		1.5 m	ACU to Modem
10		x2	D-Sub 9 Pin Male Connector		-	ACU
11		x1	BUC Power Connector (AK950-2)		-	Antenna (BUC In)
12		x1	N to F Adapter		-	N(Male) to F(Female) Adapter
13		x1	Installation CD		-	-
14		x1	User Manual		-	-
15		x1	Mounting Template		-	-
16		x1	Unpack Wooden Crate Instruction Guide		-	-

Planning the Installation

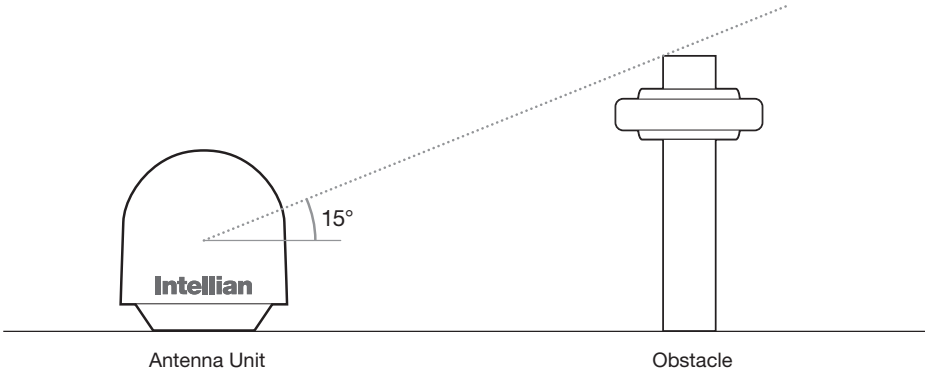
Selection of Antenna Installation Site

Install the antenna in accordance with the following procedures to insure maximum performance of the antenna. The ideal antenna site has a clear view of the horizon or satellite all around. Please be sure there are no obstacles within 15° above the center of the antenna. Any obstacles can prevent the antenna from transmitting and receiving the satellite signal.

Do not install the antenna near by the radar especially on the same plane as their energy levels may overload the antenna front-end circuits. It is recommended to position the antenna at least 4 feet (1.2 m) above or below the level of the radar and minimum of 15 feet (4.6 m) away from the high power short wave radars.

The mounting platform should be rigid enough and not subjected to excessive vibration. The movement of the antenna can be minimized by installing at the center of the vessel. If these conditions can be only partially satisfied, find the best compromised installation site between the various considerations.

Elevation Limit of Obstacles



Configure Radiation Hazard/Blockage Zones

It is important to setup the radiation hazard or blockage zones for Intellian VSAT communication systems. The ACU can be programmed with relative azimuth and elevation sectors to create up to five zones where transmit power would endanger personnel who are frequently in that area or blockage exists. Several things happen when the antenna is within one of these zones.

1. “BLOCK” will be displayed on the ACU screen.

2. Tracking continues as long as the signal level is greater than the predefined threshold value. When the signal level drops below the threshold value the antenna will wait “Search Wait Time” parameter amount of time and re-target the satellite you targeted last. The antenna will continue to re-target the satellite until the satellite is re-acquired and tracking can be resumed.

3. A transmit inhibit output from the ACU will disable/mute the modem transmit.

System Cables

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

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

• RF Cable (Customer Furnished)

Due to the voltage losses across the length of the RF coaxes at L-Band, Intellian recommends the following 50 ohm coax cable types for standard system installations. For cable runs longer than 120 meters, please consult Intellian Technologies.
Intellian provides a N to F type adapter to connect 75 ohm coaxial cables.

Recommended RF Cables

Run Length	Coaxial Cable Type
Up to 30 meters	LMR-300-50
Up to 70 meters	LMR-400-50
Up to 120 meters	LMR-600-50

• Gyro Compass / GPS Interface Cable (Customer Furnished)

Recommended RF Cables

Type	Multi-conductor, Shielded
Number of wires	5 conductors for Synchro
	2 conductors for NMEA

• BUC Power Cable

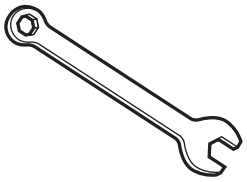
Recommended BUC Power Cables

Cable Length	mm^2 per conductor
Up to 30 meters	1.25 mm^2
Up to 50 meters	2.30 mm^2
Up to 70 meters	3.00 mm^2
Up to 120 meters	5.00 mm^2

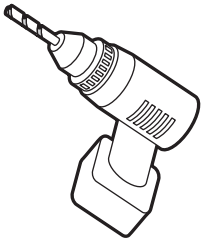
Power Requirement

Intellian v60 has been designed to work on a vessel's power supply rated at 100-240 V AC.

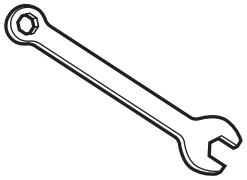
Tools Required for Installation



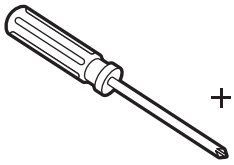
8 mm Spanner



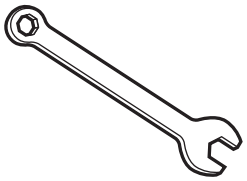
Power Drill



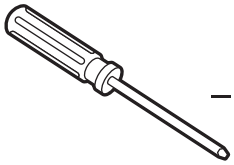
11 mm Spanner



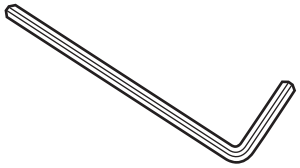
Cross-Head Screwdriver



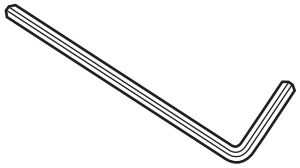
13 mm Spanner



Minus-Head Screwdriver



4 mm Allen key

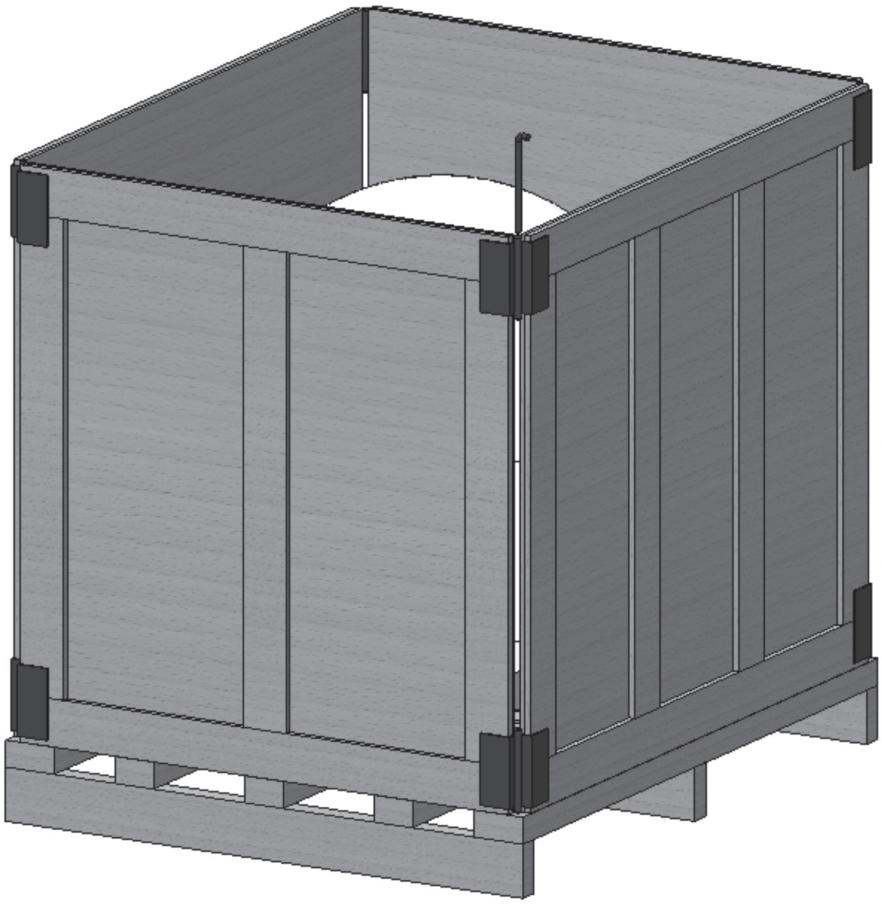


5 mm Allen key

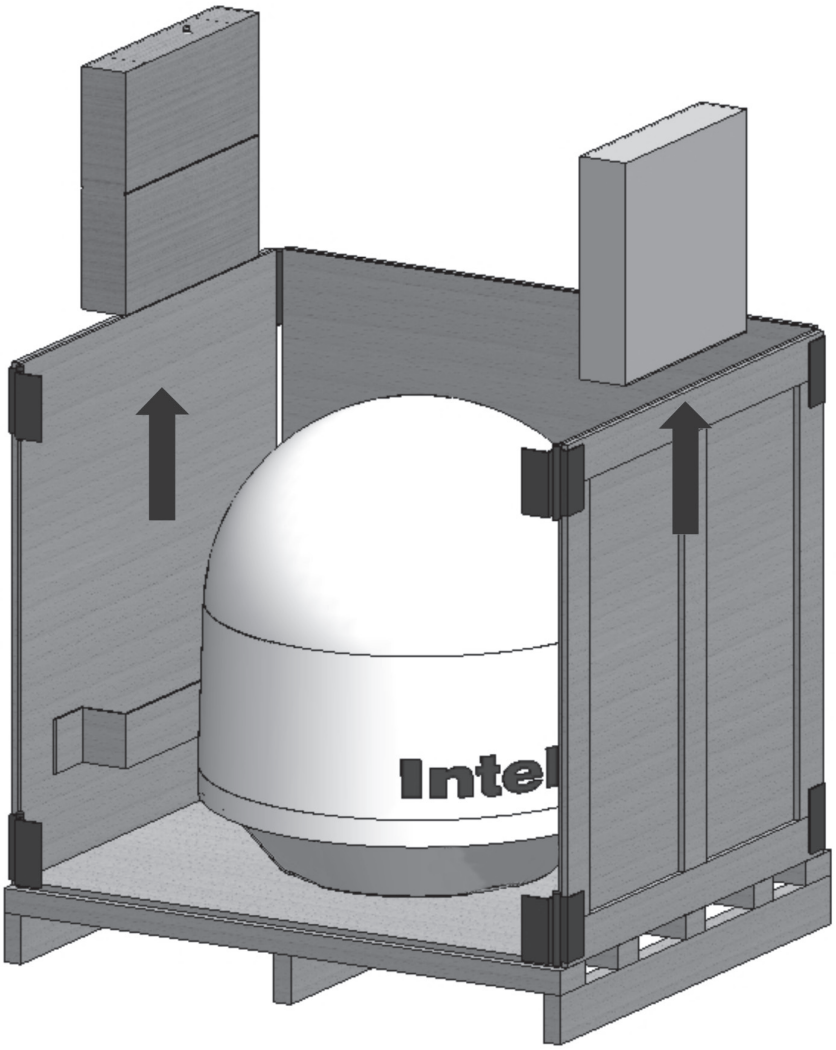
Antenna Installation

Unpacking the wooden crate of v60

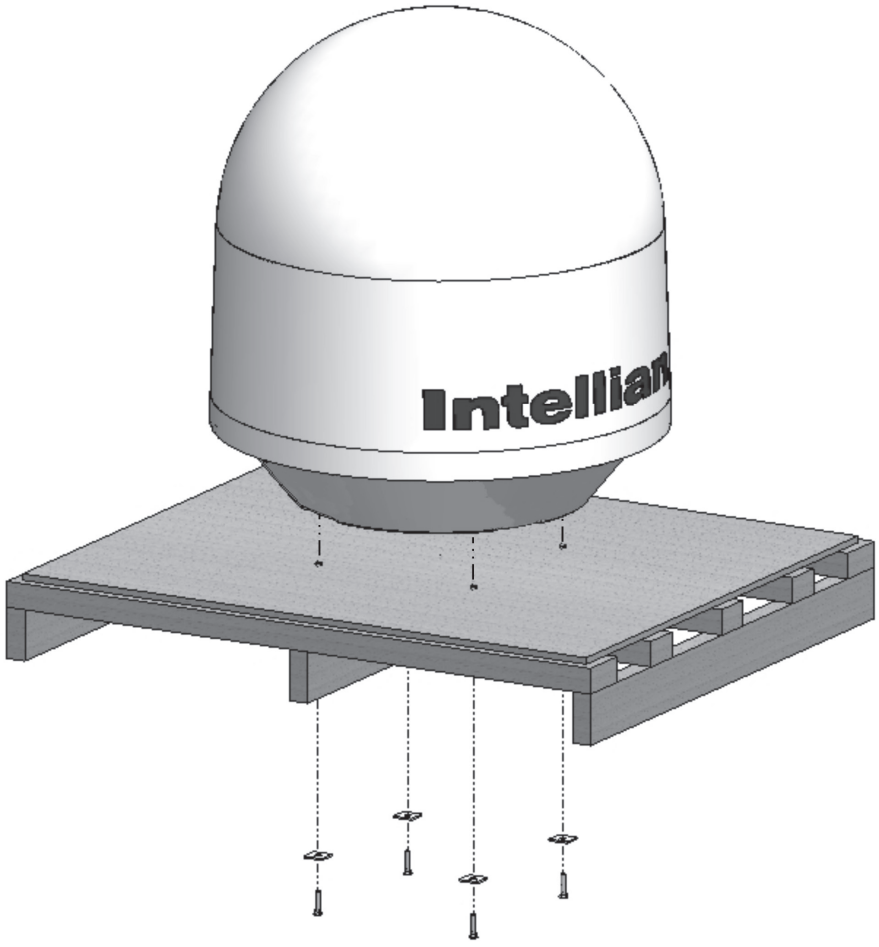
Step 1.
Remove the top panel and 8 pins from the hinges of the wooden crate.



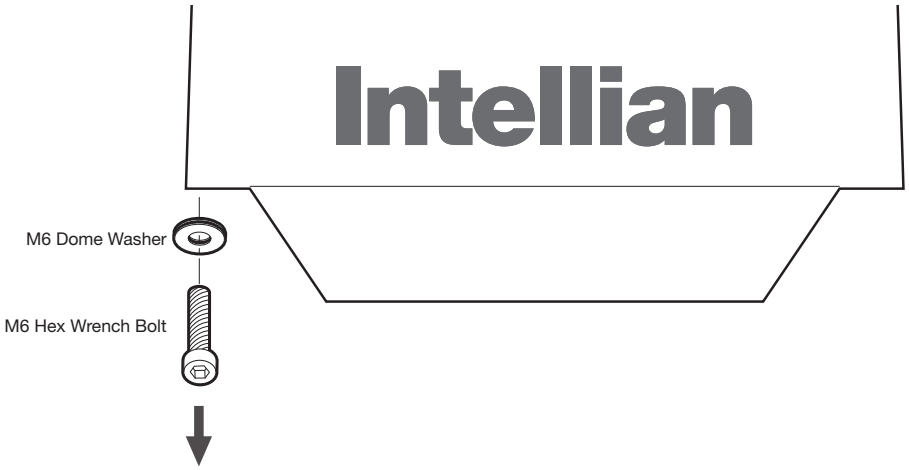
Step 2.
Remove ACU box and installation kit box.

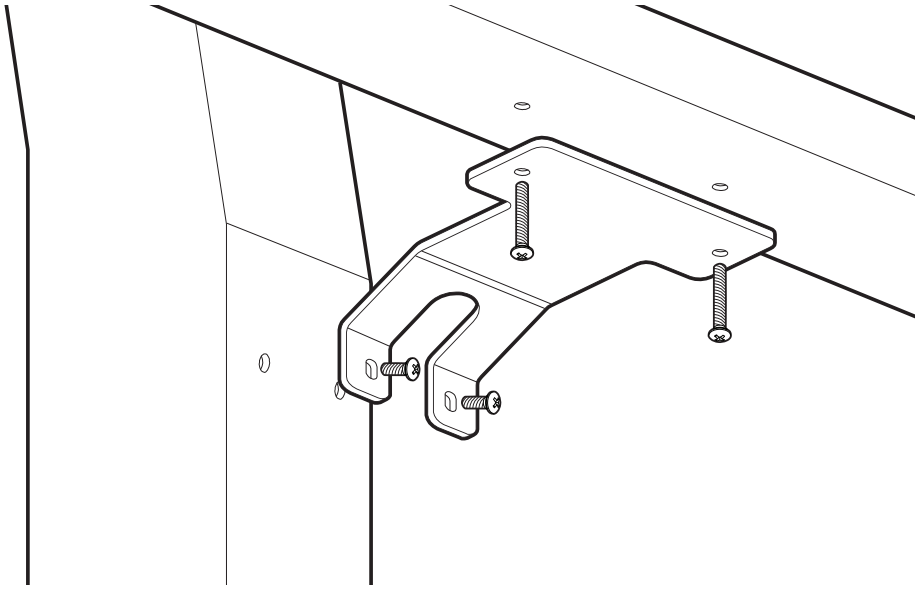


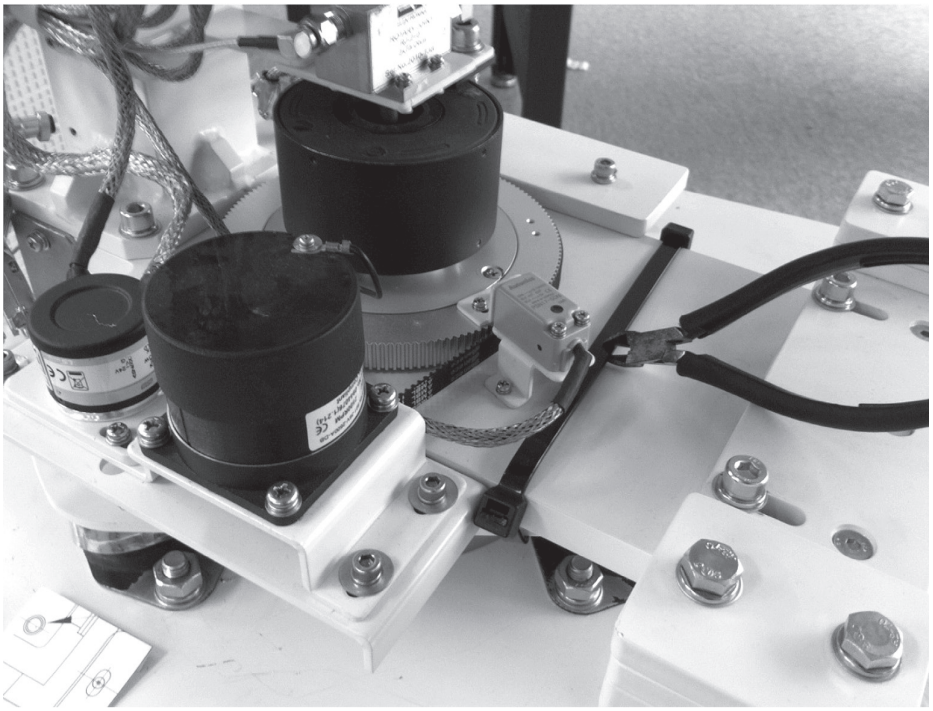
Step 3.
Remove 4 shipping blots that mount the antenna to the pallet.



Step 4.
Open the top radome and remove the shipping restraints
(bracket mounted to the antenna pedestal and tie wrap fixed the azimuth axis).



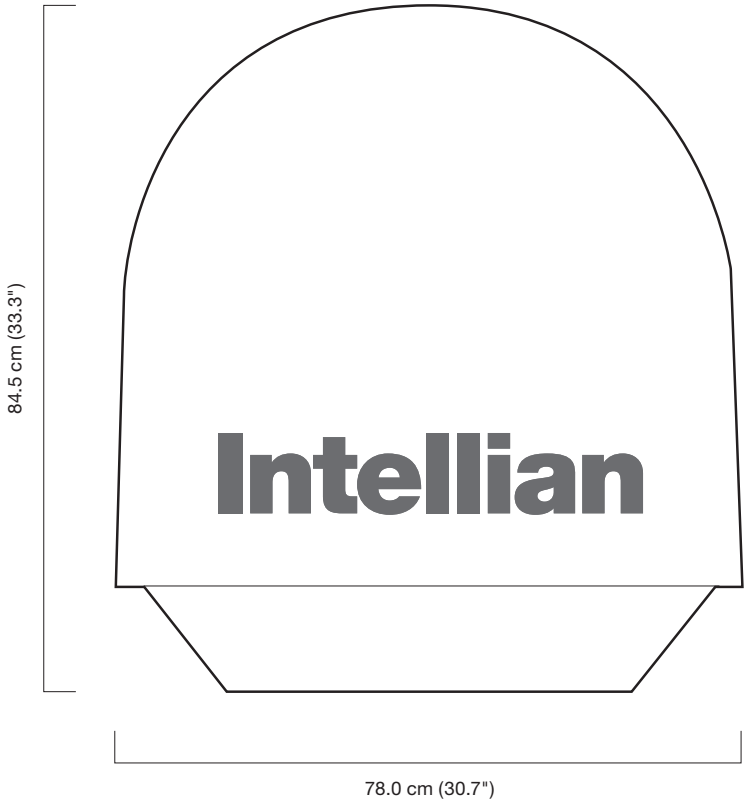




Antenna Dimensions

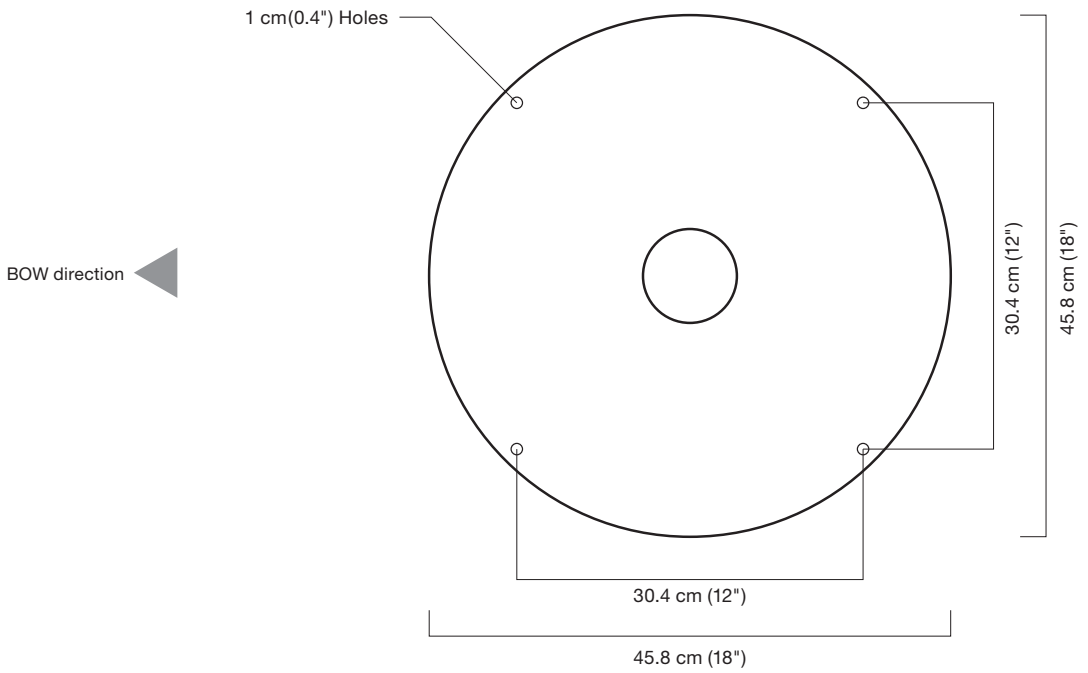
The method of installation and mounting of antenna may vary with vessel design but the following procedures are applicable in most situations, and will result in a secure and effective installation. Confirm the height and diameter of the antenna before installing it.

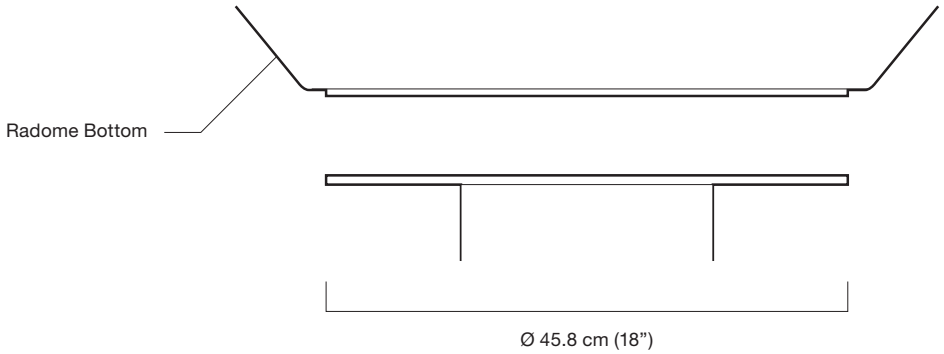
Radome Dimensions



Antenna Mounting Templates

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

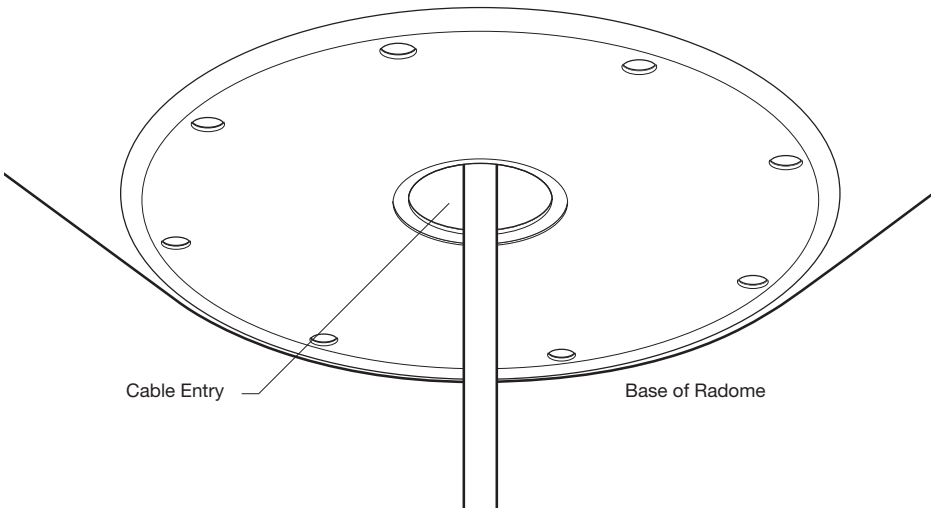




Installing the System Cables

The cables must be routed from the antenna through the deck and through various ship spaces to the antenna control unit. When pulling the cables in place, avoid sharp bends, kinking, and the use of excessive force.

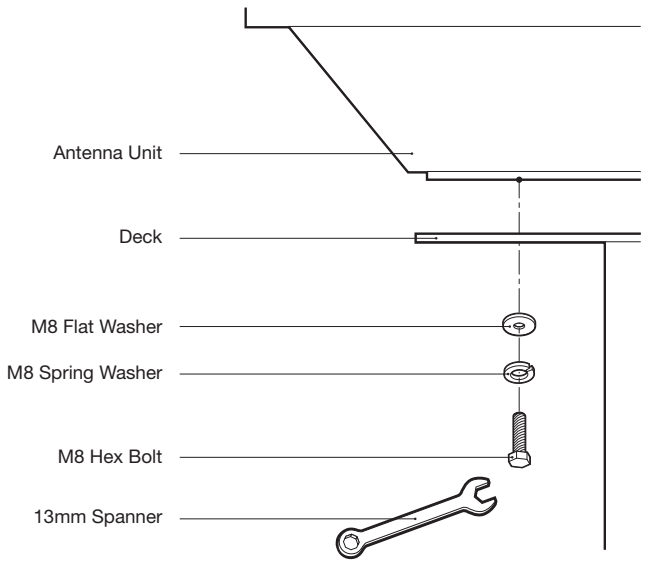
Cable Entry



Mounting the Radome

Bolt the radome base directly to the ship's deck or mounting plate (flat mounting area).

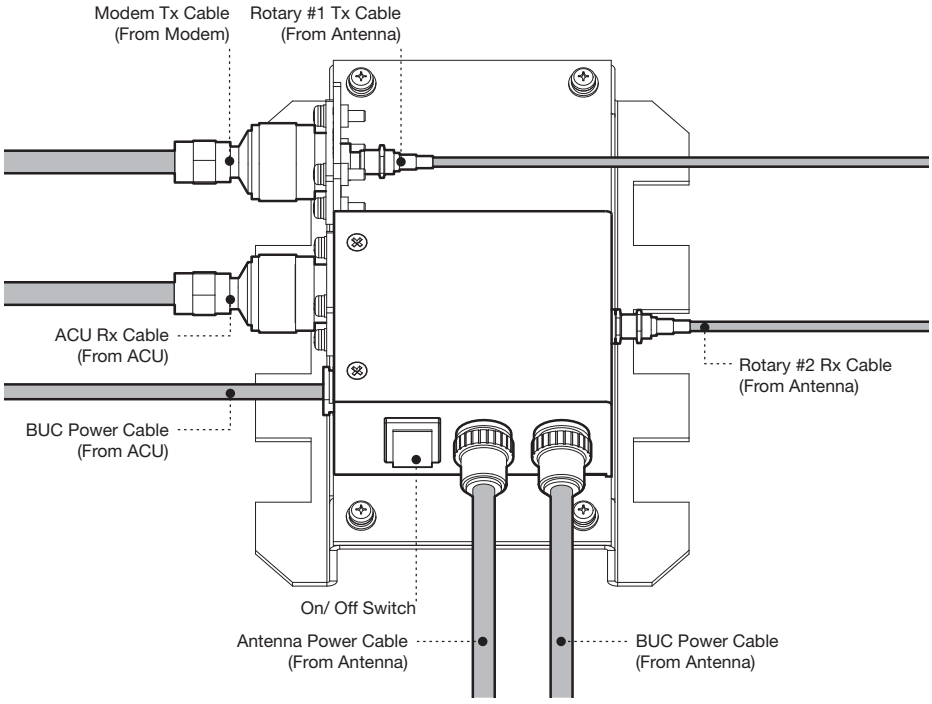
Mounting the Radome



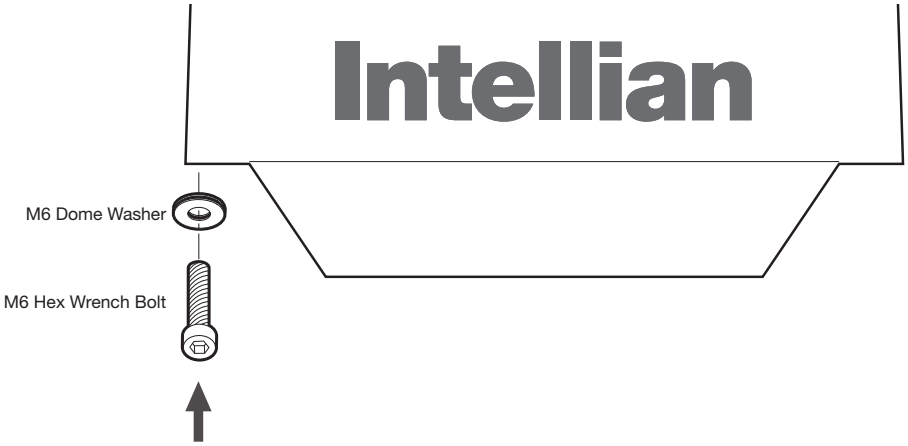
RF Cable Connections

Ensure that the power switch is off during the installation period and all the cables are connected properly between the antenna control unit and the power switch box. Using tie wraps supplied with radome, secure the RF cables connected to the power switch box. When all the hardware and cable have been installed, turn on the power switch.

Power Switch Box



Reinstall the top radome.



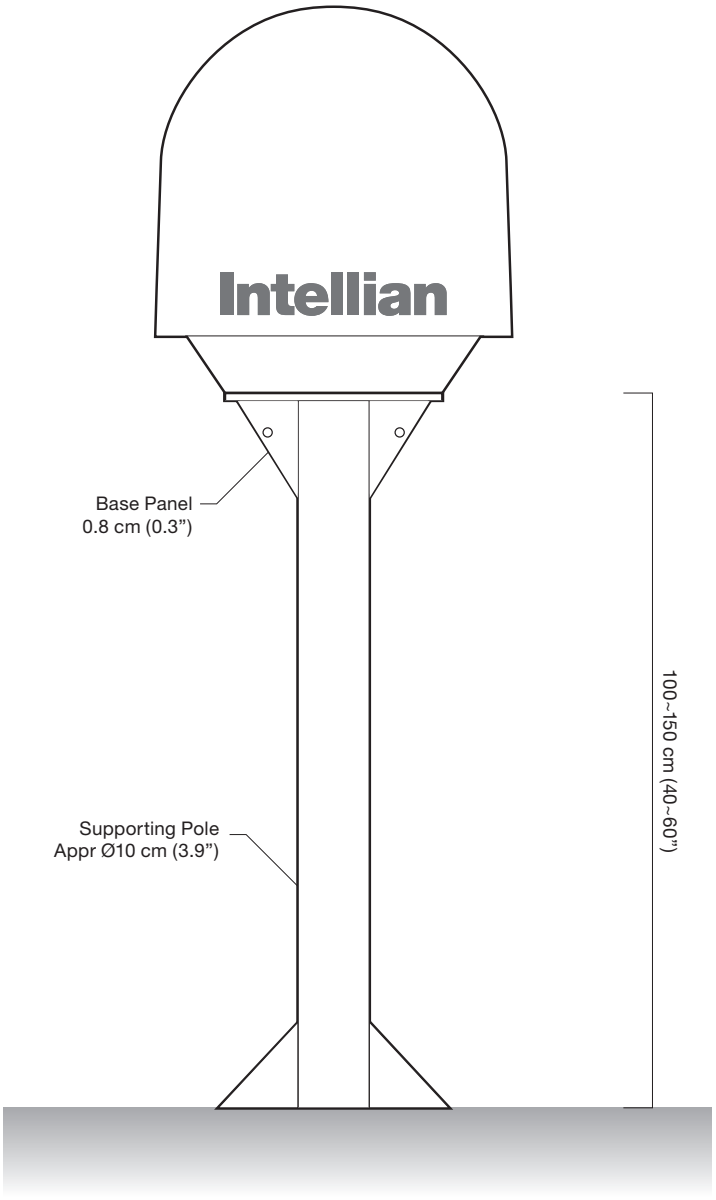
WARNING

WARNING: The elevation and cross-level motor breaks prevent dish damage while the antenna is in power off mode. However, Intellian strongly recommends to restraint the antenna pedestal properly during underway conditions when power is removed from the antenna. The normal operating condition for the v60 is to remain powered up at all times.

Position the Radome

The radome should be positioned with the BOW marker aligned as close as possible to the ship's centerline.

Recommended size of the support pedestal



INSTALLING THE ACU

Mounting the ACU

19” Rack Mount Type

Table Mount Type

ACU Dimensions

Selection of ACU Installation Site

Connecting the System

Connecting the System with a Ship’s Gyro

Connecting the System without a Ship’s Gyro

ACU Connector Guide

Mounting the ACU

Intellian supplies two type of mounting methods (a) 19” Rack Mount Type and (b) Table Mount Type to mount your ACU.

19" Rack Mount Type

19” Rack Mount Type

- The ACU should be installed using the two supplied Rack Mounting Brackets which allow for a side 19” rack mounting configuration.
- Using the self tapping screws supplied, attach the mounting brackets to the sides of the ACU.
- Place the ACU in the location where it is going to be installed.
- Connect the cables to the rear of the ACU.

Table Mount Type

Table Mount Type

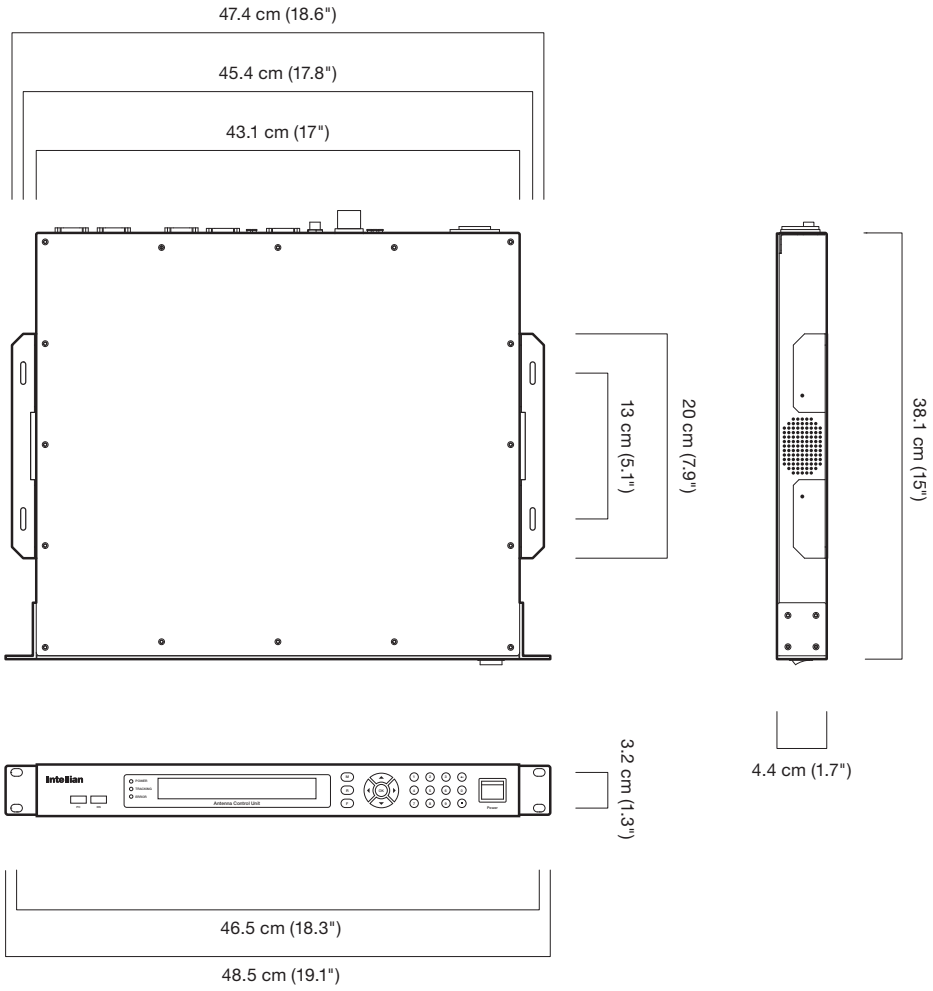
- The ACU should be installed using the two supplied Table Mounting Brackets which allow for a top or bottom mounting configuration.
- Using the self tapping screws supplied, attach the mounting brackets to the sides of the ACU.
- Place the ACU in the location where it is going to be installed.
- Using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

WARNING

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

ACU Dimensions

Dimension of ACU



Selection of ACU Installation Site

The ACU should be installed below deck, in a location that is:
Dry, cool, and ventilated.
The front panel should be easy accessible to user.

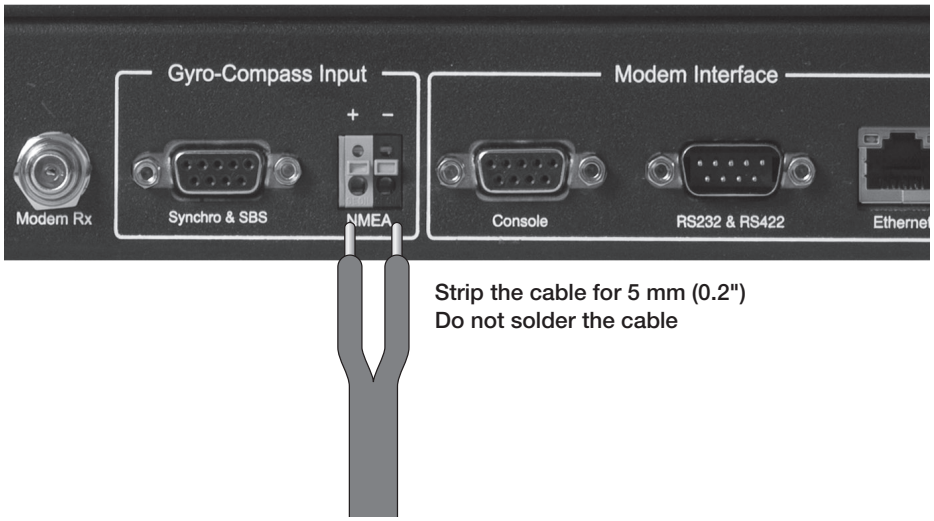
Ship Gyro Connection

Connecting the System with a Ship's Gyro

The ship's gyrocompass provides true heading input to the antenna which easily allows the antenna to target and acquire the desired satellite. Therefore, Intellian always recommend the user to connect a ship's gyro to the antenna through the gyro interface on the ACU. If the ship's gyrocompass output is other than NMEA 0183 and Synchro separate purchase of a gyro converter is required.

- NMEA 0183 Gyro Compass Interface Cable (Customer Furnished)
- Type: 2 conductors for NMEA 0183
- NMEA heading sentence: xx HDT (4800 Baud, 8, N,1)
  If there is no HDT sentence then use HDM sentence instead.

Ship's Gyro Connection



WARNING

WARNING: Determine the type of gyrocompass OUTPUT on the ship, assure that the GYRO TYPE parameter is set correctly (refer to the operation section of this menu). Heading in most cases will be 000.0 and you will have to enter the initial value of ships current value whenever you turn on the ACU. The ship's heading is not required to input when your system is connected to NMEA or 1:1 synchro gyrocompass output.

Connecting the System without a Ship's Gyro

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

The table below provides an example of the Gyro-Free satellite search algorithm. The Search 1 or Search 3 satellite search pattern will be triggered according to the existence of heading input and the setting of the heading device.

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

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

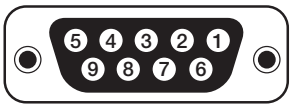
	Setting of Heading Device		
Existence of Heading Data	**No Device**	**NMEA/Synchro**	**Ground Test**
w/ Heading Data	Search 1	Search 3	Search 3
w/out Heading Data	Search 1	Search 1	Search 3

Quick Setup Procedure

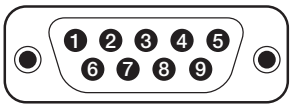
- Set the satellite having DVB transponder as the target satellite.
- Set "No Device" to the heading device.
- The antenna will search for the target satellite by turning its azimuth angle in CCW direction and lock onto the satellite signal until the antenna receives a lock signal from the modem or the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

ACU Connector Guide

• Synchro Connector



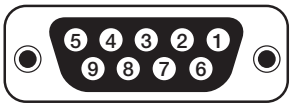
ACU Synchro Port
D-Sub 9 pin Female



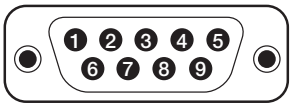
D-Sub 9 pin Male connector
Supplied Component

Pin	Signal	Pin	Signal
1	-	6	-
2	-	7	-
3	SYNCHRO_R2	8	SYNCHRO_R1
4	SYNCHRO_R3	9	SYNCHRO_S2
5	SYNCHRO_S1		

• Console Port



ACU Console Port
D-Sub 9 pin Female

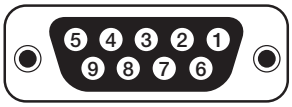


D-Sub 9 pin Male connector
Supplied Component

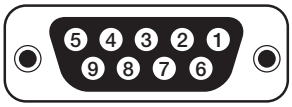
Pin	Signal	Pin	Signal
1	GND	6	GPS OUT -
2	GPS OUT +	7	MODEM_SIGNAL_IN
3	MODEM_LOCK	8	MODEM_CTRL2
4	MODEM_CTRL1 (TX MUTE)	9	GPS IN -
5	GPS IN +		

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

• RS232 / 422 Connector (Modem & BUC Interface)



D-Sub 9 pin RS232
Connector



D-Sub 9 pin RS422
Connector

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

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

OPERATING THE ACU

Introduction

Normal Mode

Setup Mode

Installation Settings

Antenna Settings

Manual Search
Setup Antenna LNB pol Angle
Search Parameters
Setup Antenna Parameters
Setup Block Zone
Antenna Diagnostic Test

Satellite Settings

Load Satellite
Edit Satellite Information
Add Satellite Information
Check NID

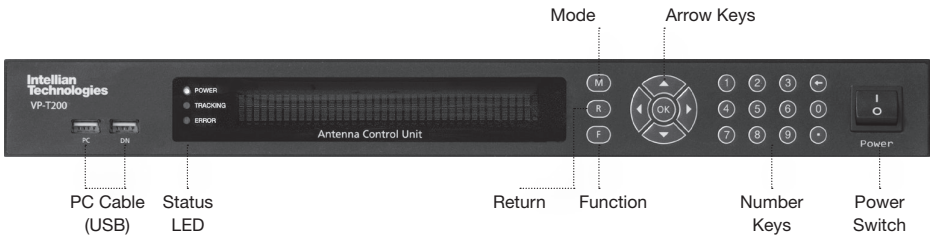
System Settings

Set LNB Local Oscillator Frequency
Set Location
Set Modem Port
System Backup & Restore
Display Versions

Introduction

This section of the handbook describes how to setup your system after installing the ACU. It includes the following functions:

ACU Soft Keys



Soft Key Functions

Soft key	Function
MODE	Enter SETUP mode
RETURN	In SETUP mode: return to previous menu / option or save the adjusted settings. In normal mode: return to the first page of antenna current status.
FUNCTION	Save the adjusted settings.
ARROW KEYS	Select from the alternative options to increse or decrese the selected character to the desired value.
OK	Enter next step / menu
NUMBER KEYS	Input the numbers

Normal Mode

Startup

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

Start up

```
INTELLIAN TECHNOLOGIES INC.
```

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

Initialize antenna info

```
INITIALIZE – ANTENNA INFO
INTELLIAN V60
```

2. The ACU receives antenna information.

Initialize elevation & cross level angle

```
INITIALIZE – EL POSITION
INTELLIAN V60
```

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

Initialize azimuth angle

```
INITIALIZE – AZIMUTH POSITION
INTELLIAN V60
```

4. The azimuth angle is initialized.

Initialize target satellite position

```
INITIALIZE – SAT POSITION
INTELLIAN V60
```

5. The antenna returns to the target satellite position.

Search status

```
◀ SEARCH1   138.0E TELST_18 SIG:301 VL   ▶
  AZ:292.7( 202.7) EL:  48.3  SK:-72.0
```

6. The antenna is searching for the target satellite.

Tracking status

```
◀ TRACKING 138.0E TELST_18 SIG:501●VL   ▶
  AZ:292.7( 202.7) EL:  48.3  SK:-72.0 Fn
```

7. The antenna has locked onto the satellite.

Monitoring Antenna Current Status

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

Current search status

1. The antenna is searching for the target satellite.

Current tracking status

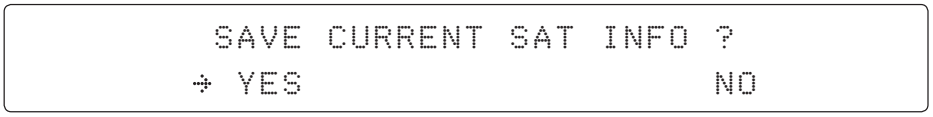
2. The antenna has locked onto the target satellite.
Current IF signal level (SIG / AGC) is displayed. SIG will be displayed when NBD (Narrow band detection) mode for TRACKING SIGNAL is chosen to be used and AGC will be displayed when DVB mode of TRACKING SIGNAL is chosen to be used.

The symbol "•" will be only displayed when the satellite signal is strong enough to locked onto. [VL] indicates the LNB's local frequency corresponding to 13V is in use for the signal reception.

VL: 13V + 0 kHz
HL: 18V + 0 kHz
VH: 13V + 22 kHz
HH: 18V + 22 kHz

True azimuth [292.7] position of the antenna is the sum of ships heading 090.0 [HDG] and antenna relative [202.7].

Save current satellite info

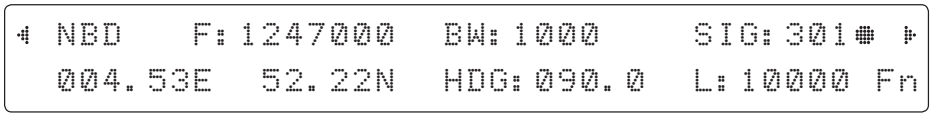


3. Press FUNCTION key to save current satellite information or abort and return to the main display. "Fn" will be displayed only if the antenna is in tracking mode.

Current tracking status

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

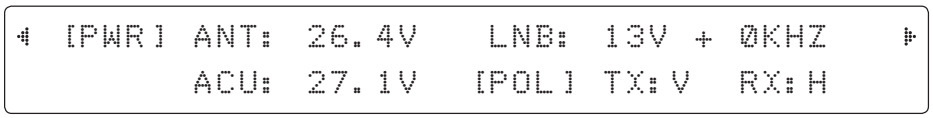
Tracking & Heading information



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

- NBD (Narrow Band Detection) IF tracking frequency: 1247000 kHz
- Detected Band Width: 1000 kHz
- SIG (Signal Level): 301 (When NBD mode for tracking signal is chosen)
- W (West) / E (East) Longitude: 4.53° E
- N (North) / S (South) Latitude: 52.22° N
- HDG (Ship's Heading): 90°
- LNB local oscillator (LO) frequency: 10000 MHz

Power status



6. Press RIGHT arrow key to display the current operation voltage for antenna, ACU and LNB. POL indicates the TX polarity (VERTICAL) and RX polarity (HORIZONTAL).

Antenna & ACU versions

7. Press RIGHT arrow key to display the below information.
- Antenna part number, antenna serial number and PCU firmware version.
- ACU part number, ACU serial number, ACU firmware version and Library version.

Press RETURN Key to return to the first page of the antenna current status.

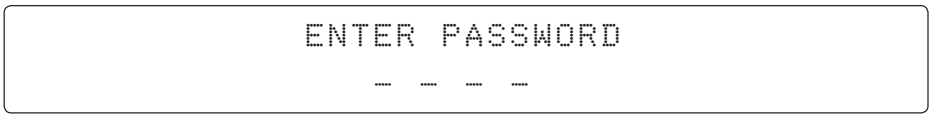
Setup Mode

Enter the SETUP mode simply follow the instructions below.

Searching / Tracking mode

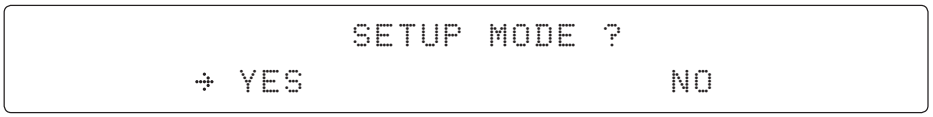
1. While the antenna is in SEARCHING / TRACKING mode, press MODE key to enter SETUP mode. * indicates the key pad lock function is on (Refer to KEY LOCK menu to setup the key pad lock function). When key pad lock function is activated press MODE key or when “Fn” menu is activated press FUNCTION key the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

Enter password



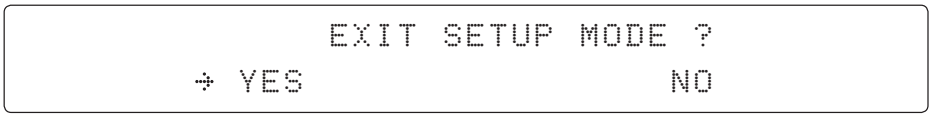
2. If the key pad lock function is on, enter the password before accessing to the SETUP mode. If the key pad lock function is off, access to the SETUP mode directly as Step 3.

Setup mode



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

Exit setup mode

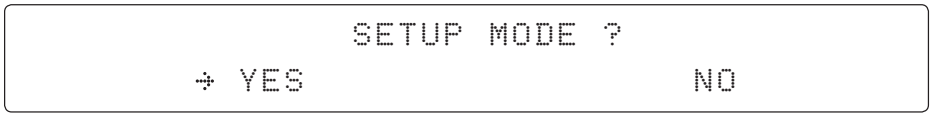


4. While the antenna is in SETUP mode, press FUNCTION key as shortcut key to exit SETUP mode.

Installation Settings

During the first time installation, it is required to setup the installation settings.

Setup mode



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

Installation menu

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

Select satellite

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

Latitude & Longitude

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

Gyro type

5. Set the ship's **GYRO TYPE*** & BOW ADJUST
A search pattern 1 or 3 will be initiated according to which Gyro Type is selected and the existence of the gyro input. Ensure that the supported Gyro Type is set correctly. For v60, if the ship's gyrocompass output is Step-by-Step (SBS), separate purchase of a gyro converter is required.

A search pattern 1 will be initiated automatically if the gyro input does not exist and the gyro type is selected other than GROUND TEST.

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

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

Gyro search mode

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

GYRO TYPE*
NO DEVICE
NMEA
SYNCHRO
GROUND TEST

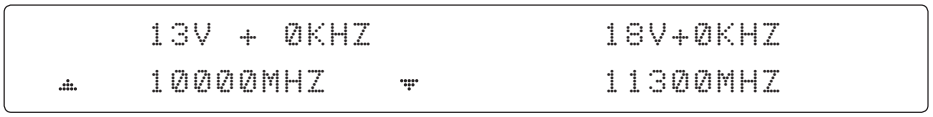
Modem port & Modem protocol

6. Set **MODEM PORT*** and **MODEM PROTOCOL***
MODEM PORT is to select a proper data communication port on the ACU to interface with the satellite modem.

MODEM PORT*
RS232
RS422
ETHERNET

MODEM PROTOCOL*
I/O CONSOLE
OPEN AMIP
SERIAL GPS

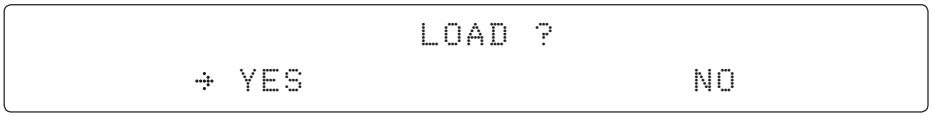
LNB local frequency



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

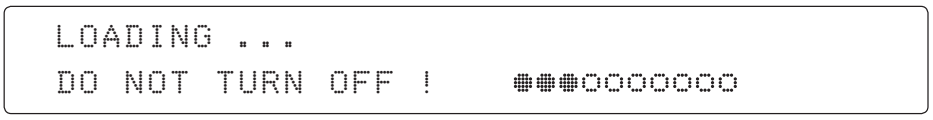
Press LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press UP and DOWN arrow keys to increase or decrease the value. Or press NUMBER keys to set the desired value directly.

Load



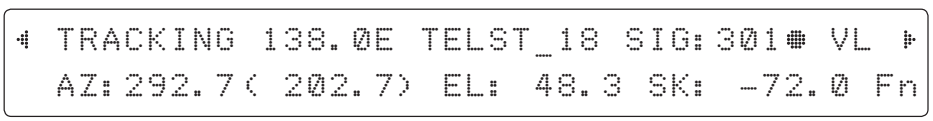
8. Press RETURN key to load the current setting or abort and return to the main display.

Loading settings



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

Tracking status



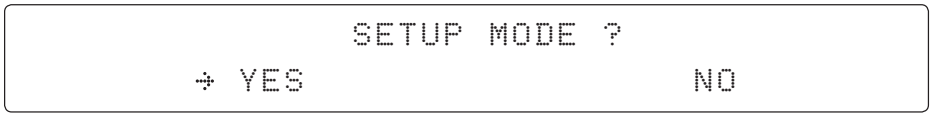
10. Antenna has locked onto the target satellite.

Antenna Settings

Manual Search

Search the desired satellite manually.

Setup mode

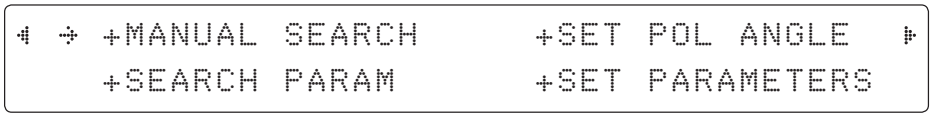


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

Antenna menu

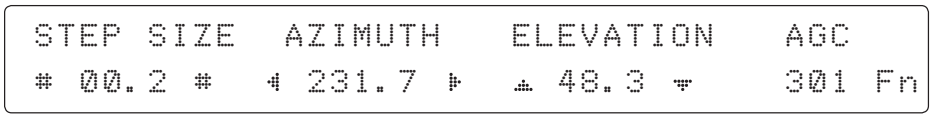
2. Press OK key to enter ANTENNA menu.

Manual search menu



3. Press OK key to enter MANUAL SEARCH menu.

Antenna movement



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

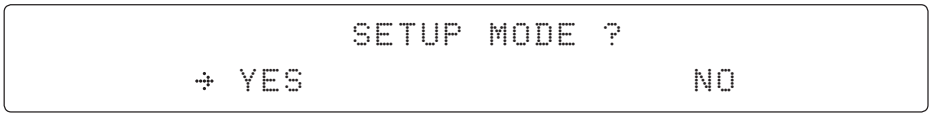
Save

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

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

Setup Antenna LNB pol Angle

Setup mode

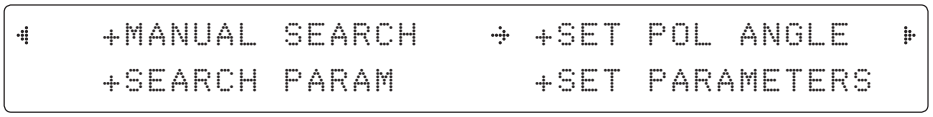


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

Antenna menu

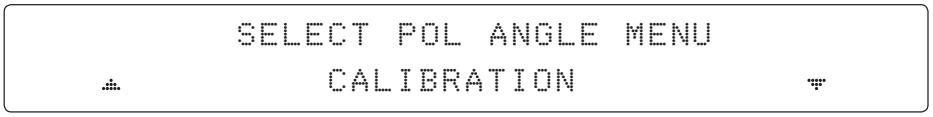
2. Press OK key to enter ANTENNA menu.

Set pol angle menu



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

LNB pol angle type



4. Press UP and DOWN arrow keys to select the LNB pol angle menu and press OK key to run the selected operation 'CALIBRATION' or 'MANUAL ADJUST'. Select MANUAL ADJUST to control LNB pol angle manually. If the control board, LNB pol potentiometer or belt is replaced, select CALIBRATION to calibrate LNB pol angle.

LNB pol angle Signal

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

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

Search Parameters

Setup mode

```
                SETUP MODE ?
          + YES                    NO
```

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

Antenna menu

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

2. Press OK key to enter ANTENNA menu.

Manual search menu

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

3. Press arrow keys to move cursor to SEARCH PARAM menu and press OK key to enter it.

Search param

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

Search 1 range

```
     SEARCH1 AZ          SEARCH1 EL
       400                 06
```

Search 3 range

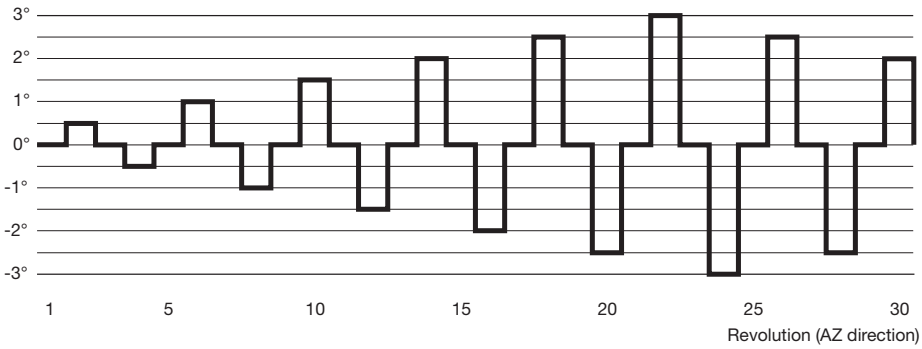
```
     SEARCH3 AZ          SEARCH3 EL
       003                 04
```

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

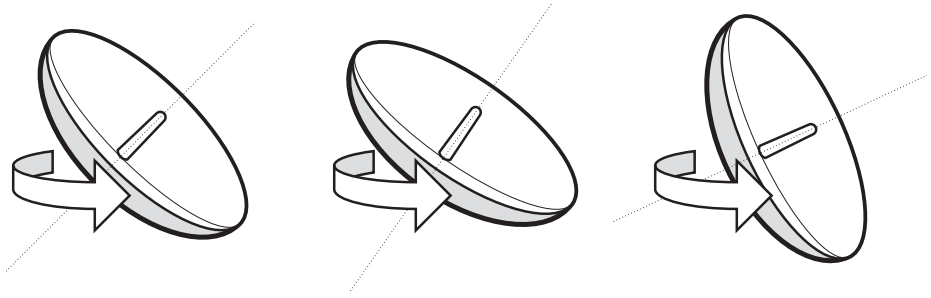
A search pattern 1 or 3 will be initiated according to which GYRO TYPE is selected and the existence of the gyro input.
Search 1: a search pattern 1 will automatically be initiated when the ship's heading input does not exist / is failed. The antenna will go to the relative azimuth position 0º at the calculated elevation and search in the azimuth CCW direction and search up +0.5º & down -0.5º with a total 6º(±3º) in elevation. The search cycle will repeat until the antenna receives the lock signal from the modem or the DVB transponder of the target satellite is decoded by the antenna. If the desired signal is found and above the predefined detect level, the ACU will enter to Search 3. However, the antenna will not initiate Search 3 pattern but go into TRACKING mode immediately if the desired signal is above the predefined tracking threshold level. If the detected signal is below the predefined tracking threshold level, the search 1 will repeat and start 3º away from the current position.

Search 1 (Gyro Free) Search Pattern

Target Satellite EL Position



Search 1 antenna motion



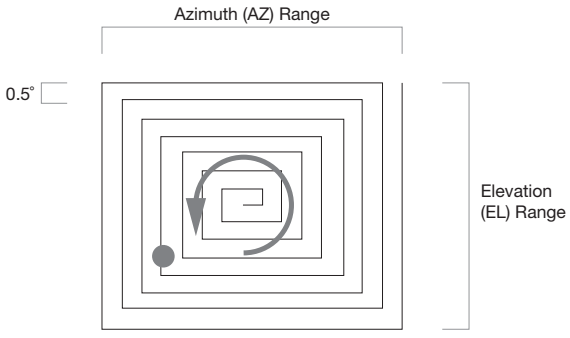
Target EL Angle
Turn 1

Target EL Angle + 0.5°
Turn 2

Target EL Angle - 0.5°
Turn 3

Search 3: a search pattern 3 will automatically be initiated when AGC / SIG falls below the current tracking level threshold value. If the desired signal is found and above the predefined tracking level, the ACU will terminate Search 3 and go into TRACKING mode. A search pattern will automatically be initiated when AGC / SIG falls below the current threshold setting (indicates that satellite signal has been lost). Search is conducted in a two-axis pattern consisting of alternate movements in azimuth (AZ) and elevation (EL) as forming expanding square indicated as below diagram.

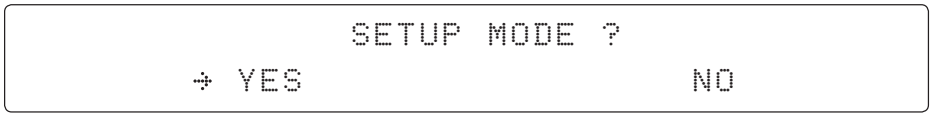
Search 3 pattern



Setup Antenna Parameters

These parameters should only be changed by an authorized service technician. Improper setting of these parameters will cause your system to perform improperly.

Setup mode

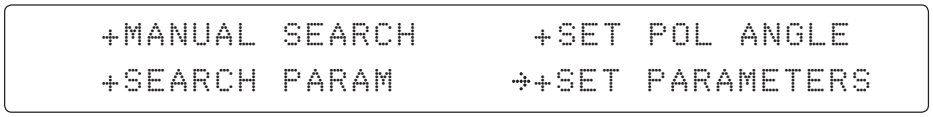


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

Antenna menu

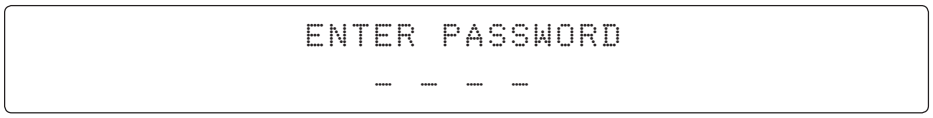
2. Press OK key to enter ANTENNA menu.

Set parameters menu



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

Password



4. Press 4 digit password to enter SET PARAMETERS menu (1590).
Setup parameters is only required after installation or repairs of your antenna system.

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

Set detect & tracking DVB

5. Set DETECT DVB and TRACKING DVB when DVB mode of TRACKING SIGNAL is chosen to be used (Range: 1-200).

DETECT DVB is to set the satellite signal detection level and TRACKING DVB is to set the satellite signal tracking level.

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

Set detect & tracking NBD

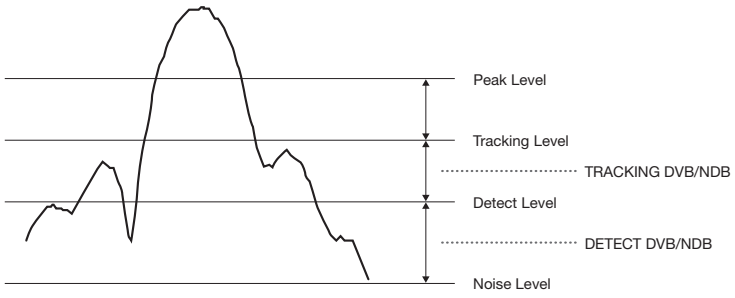
```
  DETECT NBD          TRACKING NBD
▲     040      ▼           020
```

6. Set DETECT NBD and TRACKING NBD when NBD (Narrow band detection) mode of TRACKING SIGNAL is chosen to be used (Range: 1-200).

DETECT NBD is to set the satellite signal detection level and TRACKING NBD is to set the satellite signal tracking level.

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

Detect & tracking level



BOW & EL adjust

```
  BOW ADJUST          EL. ADJUST
▲ 000 ▼                 +0.0
```

7. Set BOW ADJUST and EL. ADJUST
BOW ADJUST is to offset the angle difference between the antenna's bow and the ship's bow (Range: 0 – 360°) and EL. ADJUST is to offset the angle difference between the mechanical elevation angle and actual elevation angle (Range: ± 5°).

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

Idle mode & Reboot antenna

```
   IDLE MODE              REBOOT ANTENNA
   ▲  OFF  ▼                  NO
```

8. Set IDLE MODE and REBOOT ANTENNA
The antenna is balanced at factory. However, after disassembly for shipping, maintenance or parts replacements, antenna balance adjustment may be required. The elevation and cross-level motors have a brake mechanism integrated into them, therefore, antenna power and IDLE MODE must be ON to release the motor brakes. Balancing is achieved by adding or removing weight blocks at strategic locations to keep the antenna balanced.

IDLE MODE: Press UP and DOWN arrow keys to turn ON/ OFF IDLE MODE.
The motor brakes will be released while the IDLE MODE is ON. The antenna will restart automatically if IDLE MODE is re-set from ON to OFF or RETURN key is pressed to exit SETUP mode.

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

Rate sensor bias

```
  +RATE SENSOR BIAS          +TILT BIAS
```

9. Set RATE SENSOR BIAS
RATE SENSOR BIAS is to calibrate DC voltage output from the three rate sensors used to sense antenna motion in azimuth, elevation and cross-level axes. The DC voltage output from each of the rate sensors may be vary by an amount which is directly proportional to the direction and rate of motion induced on it.

***NOTE**: The motion of the ship must be stable when the sensor box is replaced.*

Tilt bias

```
STEP SIZE     ELEVATION      CROSS LEVEL
# 0.2 #       ▲ 00.0 ▼       ◀ 01.0 ▶
```

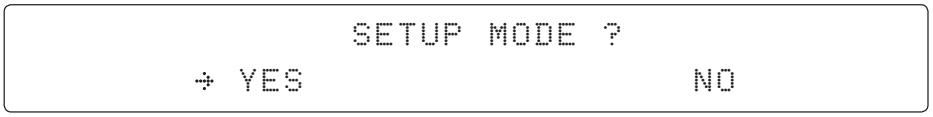
10. Set TILT BIAS
TILT BIAS is to adjust the two solid-state tilt sensors used to provide absolute cross-level tilt of the antenna and elevation feedback to eliminate long-term pointing drift (error). The TILT BIAS is required to set when the system is newly installed, antenna control board or sensor box is replaced. Check and see if the bubble is located at the center of the level vial. If not, press OK key to enter TILT BIAS menu to adjust.

Level vial

Setup Block Zone

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

Setup mode



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

Antenna menu

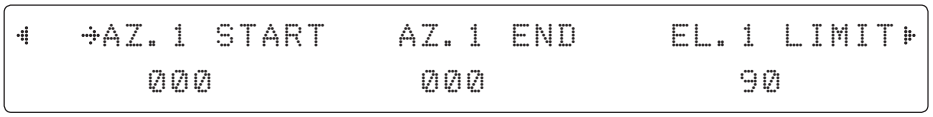
2. Press OK key to enter ANTENNA menu

Block zone menu

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

Block zone 1

Block zone range



4. Set ZONE 1 BLOCK

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

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

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

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

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

Press LEFT and RIGHT arrow keys until the desired character is underscored (selected).

Press UP and DOWN arrow keys to increase and decrease the selected character.

Or Press NUMBER keys to set the desired value directly. Press OK key to set the parameter.

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

Block zone 2

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

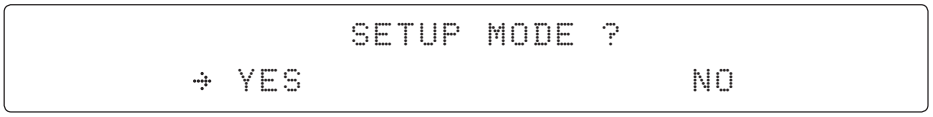
Save

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

Antenna Diagnostic Test

Refer to the diagnosis codes for the test results.

Setup mode



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

Antenna menu

2. Press OK key to enter ANTENNA menu.

Diagnosis menu

3. Press arrow keys to move cursor to DIAGNOSIS menu and press OK key to enter it.

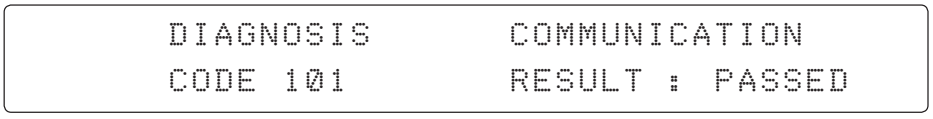
Full diagnostic test

4. Press UP and DOWN arrow keys to select a full diagnostic test or single diagnostic test and press OK key to execute the selected diagnostic test.
Menus for DIAGNOSIS are FULL TEST and CODE 101 ~ CODE 115.

Full diagnostic test result

5. A full diagnostic is successfully completed.

Single diagnostic test result



6. A single diagnostic test is successfully completed.

Diagnosis Code:

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

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

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

Satellite Settings

Load Satellite

Setup mode

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

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

Satellite menu

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

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

Load sat menu

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

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

Load satellite

```
              LOAD SATELLITE
▲      [1] TELST_18 138.00E          ▼
```

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

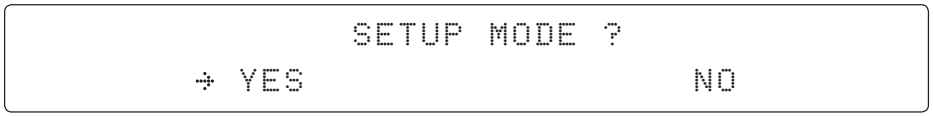
Load

```
                LOAD ?
        → YES                    NO
```

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

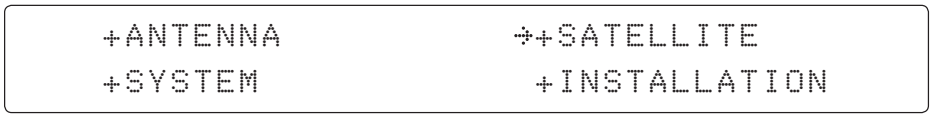
Edit Satellite Information

Setup mode



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

Satellite menu



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

Edit sat menu

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

Edit satellite

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

Edit longitude & name

5. Edit satellite orbit position, LONGITUDE and satellite NAME.

DVB verifiy method

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

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

Set LNB local frequency

7. Set **SELECT LOCAL*** frequency and **TRACKING SIGNAL***.
Press LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press UP and DOWN arrow keys to select the LNB local frequency from the installed LNB.
Or press NUMBER keys to set the desired value directly. Press OK key to set the parameter.

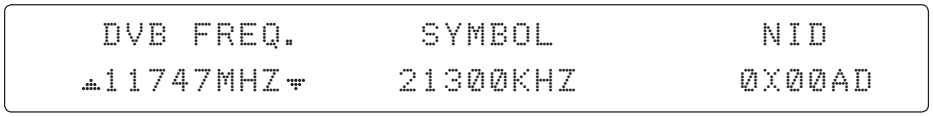
SELECT LOCAL*
The selectable LNB frequencies are depended on the installed LNB type.

TRACKING SIGNAL*
NBD
DVB

Set polarity

8. Set RX POL and TX POL
To select the polarity for both RX (receive) and TX (transmit).
Press UP and DOWN arrow keys to select VERTICAL or HORIZONTAL.
Press OK key to set the parameter.

Set DVB tracking frequency



9. Set DVB FREQUENCY, SYMBOL RATE and NID when DVB mode of TRACKING SIGNAL is chosen to be used.

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

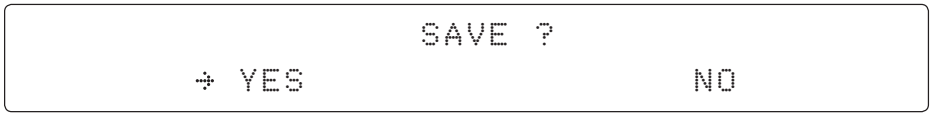
Press LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press UP and DOWN arrow keys to increase or decrease the value.
Or press NUMBER keys to set the desired value directly.
Press OK key to set the parameter.

Set NBD tracking frequency

10. Set NBD IF FREQUENCY and BANDWIDTH when NBD (Narrow Band Detection) mode of TRACKING SIGNAL is chosen to be used.

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

Save



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

Add Satellite Information

Setup mode

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

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

Satellite menu

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

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

Add sat menu

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

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

Set longitude & name

```
◄     LONGITUDE              EDIT NAME    ►
   ▲   000.00E  ▼            SAT.00
```

4. Set satellite LONGITUDE and satellite NAME.

DVB verify method

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

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

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

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

Set LNB local frequency

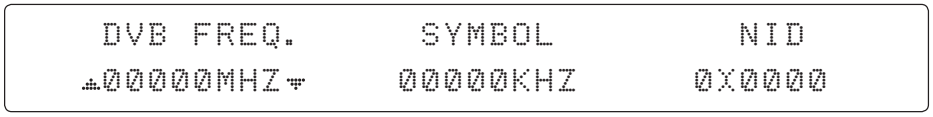
6. **SELECT LOCAL*** to set LNB local oscillator frequency and **TRACKING SIGNAL***.
The selectable LNB frequencies are depended on the installed LNB type.
Press LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press UP and DOWN arrow keys to increase or decrease the value.
Or press NUMBER keys to set the desired value directly.
Press OK key to set the parameter.

SELECT LOCAL*	**TRACKING SIGNAL***
The selectable LNB frequencies are depended on the installed LNB type.	NBD DVB

Set polarity

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

Set DVB tracking frequency



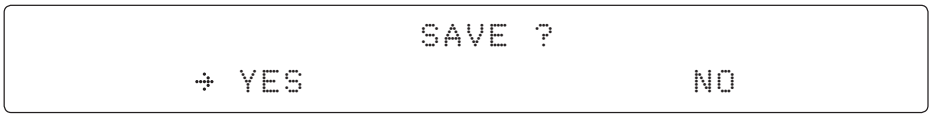
8. Set DVB FREQUENCY, SYMBOL RATE and NID when DVB mode of TRACKING SIGNAL is chosen to be used.
45,000 is the maximum allowed symbol rate value. NID (network ID) range is from 0 x 0000 to 0 x FFFF (hexadecimal digit).
Press LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press UP and DOWN arrow keys to increase or decrease the value.
Or press NUMBER keys to set the desired value directly.
Press OK key to set the parameter.

Sat NBD tracking frequency

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

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

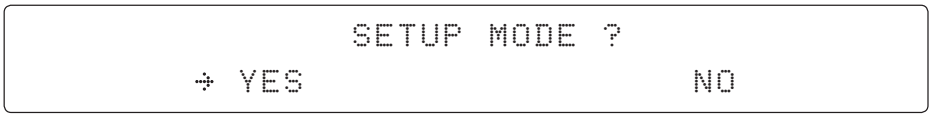
Save



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

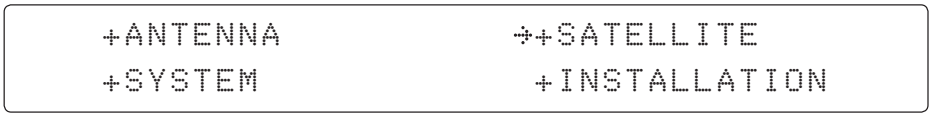
Check NID

Setup mode



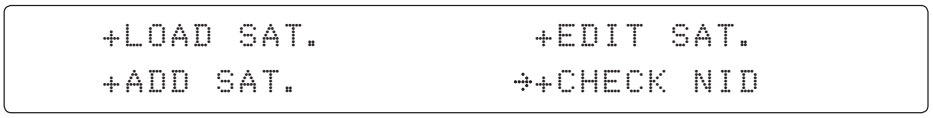
1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

Satellite menu



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

Check NID menu



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

NID verification

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

System Settings

Set LNB Local Oscillator Frequency

Setup mode

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

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

System menu

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

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

Set local frequency menu

```
◄  →+SET LOCAL           +SET LOCATION   ►
    +MODEM PORT          +BACKUP&RESTORE
```

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

LNB info

```
◄   →13V + 0KHZ            18V + 0KHZ    ►
      10000MHZ              11300MHZ
```

```
     13V + 22KHZ            18V + 22KHZ
      10750MHZ             ▲ 09750MHZ ▼
```

4. Set LNB local oscillator frequency for each correspondent voltage power.
(13V +0 kHz, 18V +0 kHz, 13V +22 kHz, 18V +22 kHz)

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

LNB LOCAL: The selectable LNB frequencies are depended on the installed LNB type.

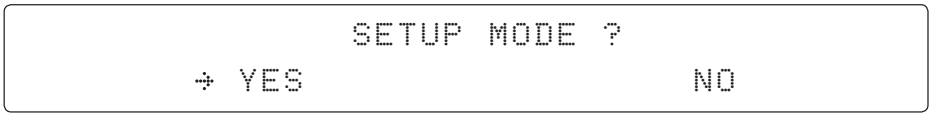
Save

```
                SAVE ?
          → YES                    NO
```

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

Set Location

Setup mode

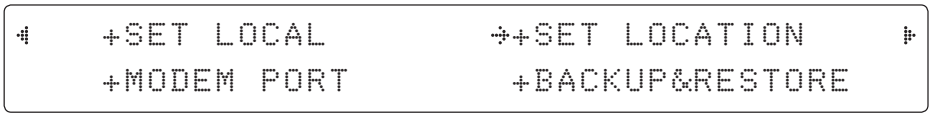


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

System menu

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

Set location menu



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

Gyro type and Baud rate

4. Set the ship's **GYRO TYPE*** and BAUD RATE
A search pattern 1 or 3 will be initiated according to which GYRO TYPE is selected and the existence of the gyro input. Set the BAUD RATE as 4800,9600,19200 or 38400 according to your device.

A search pattern 1 will be initiated automatically if the gyro input does not exist and the gyro type is selected other than GROUND TEST.

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

Gyro search type

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

GYRO TYPE*
NO DEVICE
NMEA
SYNCHRO
GROUND TEST

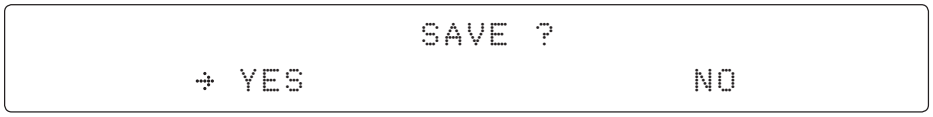
Latitude & longitude

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

Heading

6. Entry of ships heading is not required when your system is connected to a NMEA0813 or 1:1 Synchro Heading output. Ensure that the supported Gyro Type is set correctly. For v60 if the ship's gyrocompass output is Step-by-Step (SBS), separate purchase of a gyro converter is required.

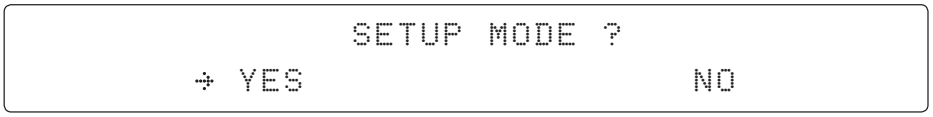
Save



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

Set Modem Port

Setup mode



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

System menu

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

Modem port menu

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

Set Mediator & modem port

4. USE MEDIATOR is to enable the usage of MEDIATOR if the antenna is connected to the Intellian dual VSAT Mediator.

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

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

MODEM PORT*
ETHERNET
RS422
RS232

Set modem protocol

5. **MODEM PROTOCOL*** is to select a proper communication protocol on the ACU to interface with the modem. **GPS OUT SENTENCE*** is to select the GPS OUT SENTENCE type.

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

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

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

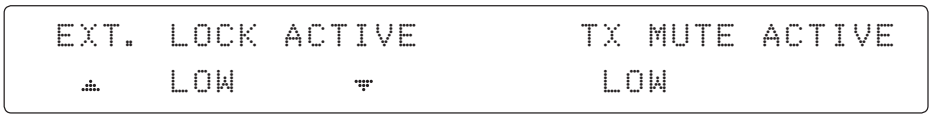
GPS OUT SENTENCE*
GPGLL
GPGGA
SIMPLE GPGGA

Use TX mute & EXT. lock

6. USE TX MUTE is to select whether or not to USE TX MUTE function from the satellite modem. A transmit inhibit output from the ACU will disable/mute the modem transmit via a voltage whenever the antenna is blocked, searching, or is mis-pointed 0.5° from the peak satellite position.

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

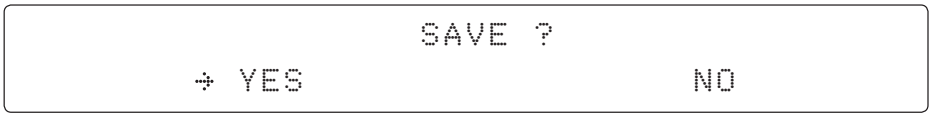
EXT lock & TX mute activation



7. EXT. LOCK ACTIVE is referred that modem lock output from the modem provides a logic input through a 5 V (HIGH) or 0 V (LOW). current to the ACU to identify when it is on the correct satellite. *EXT. LOCK ACTIVE item will only be activated when PROTOCOL is set as I/O CONSOLE.*

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

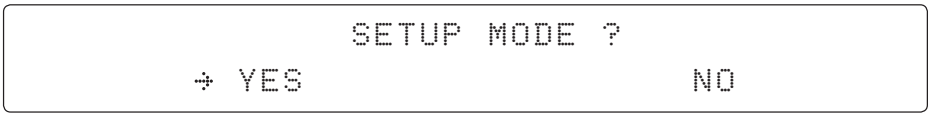
Save



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

System Backup & Restore

Setup mode

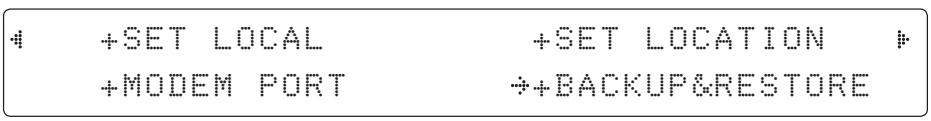


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

System menu

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

Backup and restore menu



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

Default process type

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

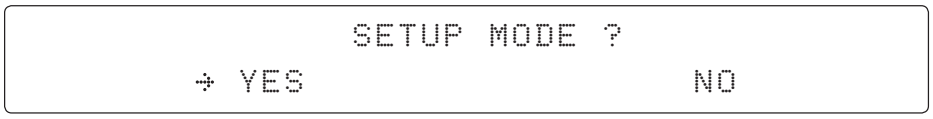
DEFAULT PROCESS TYPE*
LOAD DEFAULT: To reset the antenna back to factory default settings.
BACKUP USER DATA: To backup the antenna settings set by user.
RESTORE USER DATA: To restore the antenna by using the backup user data.

***NOTE**: When you perform a load default setting, you will lose all the data that is stored on the antenna. Back up the antenna settings to an external hard drive before performing a reset.*

Processing

Key Lock

Setup mode



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

System menu

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

Key lock menu

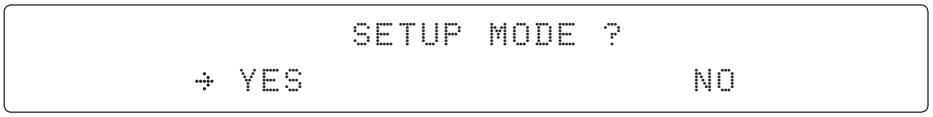
3. Press arrow keys to move cursor to KEY LOCK menu and press OK key to enter it.

Set key lock and password

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

Display Versions

Setup mode

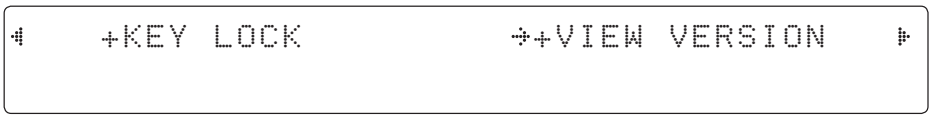


1. Press LEFT arrow key to move cursor to YES and press OK key to enter SETUP mode.

System menu

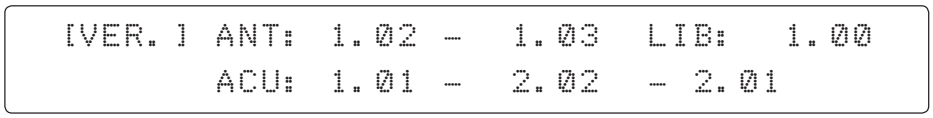
2. Press DOWN arrow key to move cursor to SYSTEM menu and press OK key to enter it.

View version menu



3. Press arrow key to move cursor to VIEW VERSION menu and press OK key to enter it.

System versions



4. System firmware versions are displayed.
ANT: PCU Firmware version, STABILIZER Firmware version, Library version
ACU: MAIN Firmware version, MODEM Firmware version, Gyro Firmware version

PC CONTROLLER SOFTWARE

Introduction

PC to ACU Communication Setup

Main Menu

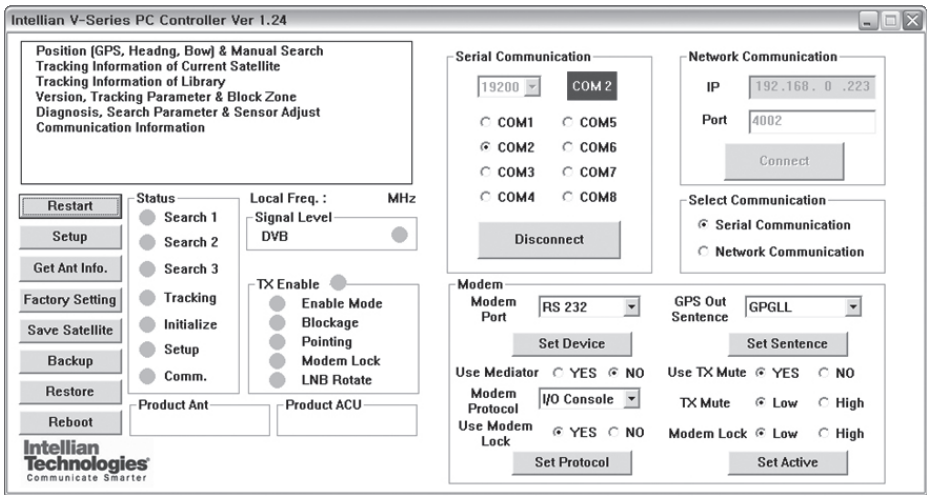
Controller Menus

Position & Manual Search
Tracking Information of Current Satellite
Tracking Information of Library
Version, Tracking Parameter & Block Zone
Diagnosis, Search Parameter & Sensor Adjust

Introduction

The PC Controller Software of Intellian v60 has been created for the user to easily set up the antenna by using the user's personal computer.

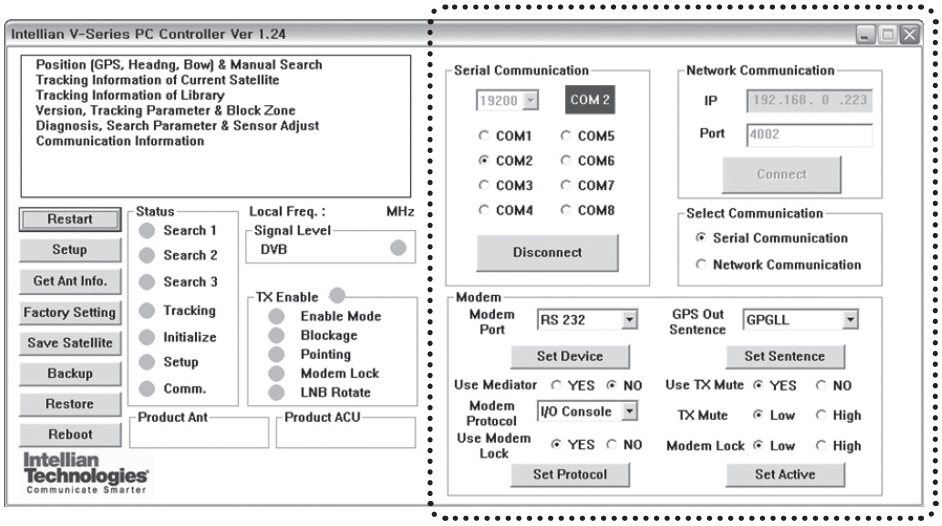
Antenna PC controller



PC to ACU Communication Setup

Enter “Communication Information” menu to setup the data communication between the PC and the ACU.

Establish a data communication



• Access ACU through Serial Communication

- Connect a 9 pin serial cable from the PC INTERFACE connector on the ACU to the 9-pin serial port on the PC. Use USB-Serial Adapter if there is no 9-pin serial port on the PC.
- Execute PC Controller Software by inserting the supplied CD-ROM into the CD-ROM drive of the PC.
- The baud rate of the ACU is 19200.
- Select a COM port which is not occupied by other devices.
- Click Connect button

• Access ACU through Network Communication

- Turn off wireless connection while using this method.
- Execute PC Controller Software by inserting the supplied CD-ROM into the CD-ROM drive of the PC.
- Enter the ACU’s IP address (Factory default IP: 192.168.0.223)
- Enter the ACU’s port number (Factory default port: 4002)
- Click Connect button

NOTE: *If the remote access PC is located in the same network group with the ACU, the ACU can be accessed through the internal IP address. But, if the remote access PC is located at the outside of network group, the ACU’s IP address should be changed by the IP address assigned by the network service provider. Refer to page 104 for changing the ACU’s IP address.*

WARNING: The data volume will grow very quickly if Network Communication is in use. Intellian recommends to use Remote Web Access to access the ACU (refer to page 86).

• Enable the Usage of External Lock & TX Mute

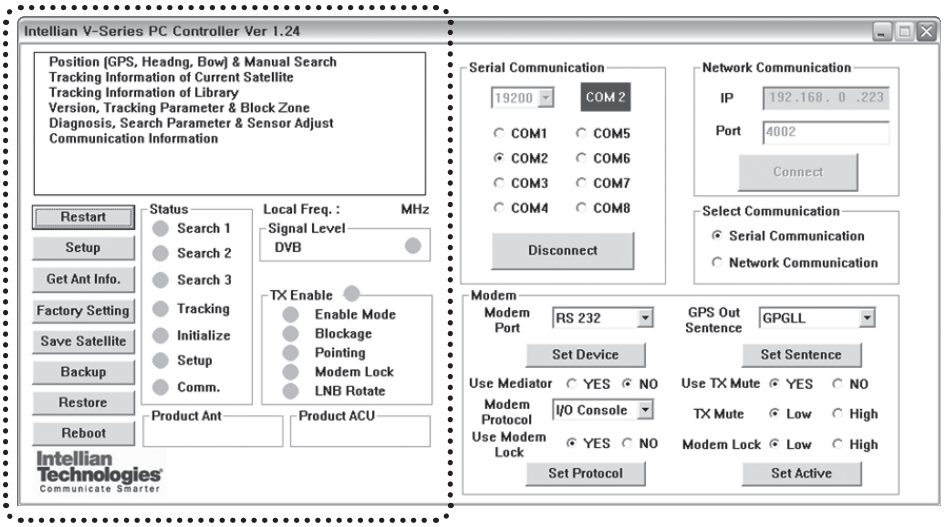
- Connect a RJ45 cable from the Ethernet connector on the ACU to the modem or connect a 9 pin serial cable from the RS232/422 connector on the ACU to the modem.
- Select a proper data communication port (RS232/422 / Ethernet) to interface with a modem.
- Select a proper communication protocol (I/O Console / OpenAMIP / Serial GPS) to interface with a modem.
- Enable / disable the usage of TX MUTE function.
- TX Mute is a transmit inhibit output from the ACU to disable/mute the modem transmit through a 5 V (HIGH) or 0 V (LOW) current whenever the antenna is blocked, searching, or is mis-pointed 0.5 degrees from peak satellite position. This item will only be activated when the modem protocol is set as I/O Console.
- Enable/disable the usage of External Lock function. This function will only be activated when the modem protocol is set as I/O Console.
- Modem Lock is referred that modem lock output from the modem provides a logic input through a 5 V (HIGH) or 0 V (LOW). current to the ACU to identify when it is on the correct satellite. This item will only be activated when the modem protocol is set as I/O Console.

• Select GPS Out Sentence Type

- Select GPS OUT SENTENCE type (GPGLL / GPGGA / Simple GPGGA)

Main Menu

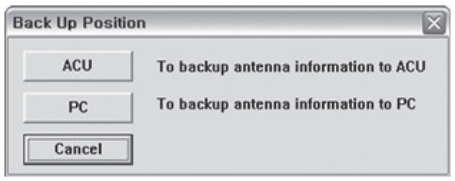
Main menu



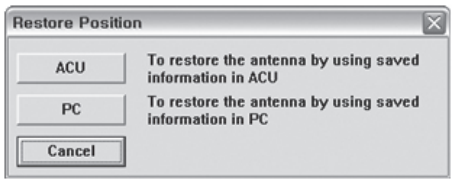
- **Controller Menus**
- Position (GPS, Heading, Bow) & Manual search
- Tracking Information of Current Satellite
- Tracking Information of Library
- Version, Tracking Parameter & Block Zone
- Diagnosis, Search Parameter & Sensor Adjust
- Communication Information

- **Command Buttons**
- Restart: Exit SETUP mode and restart antenna.
- Setup: Enter SETUP mode.
- Get Antenna Information: Obtain the information stored in the antenna.
- Factory Setting: Reset the antenna back to factory default settings.
- Save Satellite: Save the current settings if they are able to locate the satellite (in Tracking mode). It can reduce the satellite acquisition time after restarting the system.
- Backup: Backup antenna information to ACU / PC.
- Restore: Restore the antenna by using saved information in ACU / PC.
- Reboot: Reboot the antenna.

Backup Position



Restore Position



In “SETUP” mode, “Back Up Position” or “Restore Position” message will pop up if “Backup” or “Restore” button is pressed. Backup File (*.ibf) and Report File (*.rpt) will be generated on the PC if “Back Up to PC” button is pressed. You can open a report file using notepad software.

NOTE: *These two functions are only available for ACU Version 1.07 or later.*

• Status

- Search 1: A search pattern 1 will automatically be initiated when the ship’s heading input does not exist or is failed. The search cycle will repeat until the antenna receives the lock signal from the modem or the DVB transponder of the target satellite is decoded by the antenna.
- Search 2: Search 2 is reserved for future use.
- Search 3: Search 3 is a search pattern 3 will automatically be initiated when AGC / SIG falls below the current tracking level threshold value. Once the desired signal is found and above the predefined tracking threshold, the ACU will enter to tracking mode.
- Tracking: Antenna is tracking the target satellite.
- Initialize: Antenna or ACU is initializing.
- Setup: Antenna is in SETUP mode.
- Comm: Antenna is able to be communicated.

• Local frequency

- Local freq: Display LNB local oscillator frequency.
- Signal level: Display signal level. It shows “DVB” when DVB mode of tracking signal is chosen to be used and “NBD” when NBD mode of tracking signal is chosen to be used.

• System versions

- Product ant: Display antenna model and “PCU” firmware version.
- Product ACU: Display ACU model and “ACU main” firmware version.

• TX enable:

- TX enable: TX function is enabled and ready to transmit.
- Enable mode: Not in SETUP mode.
- Blockage: Antenna is not facing the predefined block zone(s).
- Pointing: Antenna is pointing to the target satellite.
- Modem lock: Satellite modem is sending a logic input to the ACU to identify when the antenna tracks on the correct satellite.
- LNB rotate: LNB is not rotating.

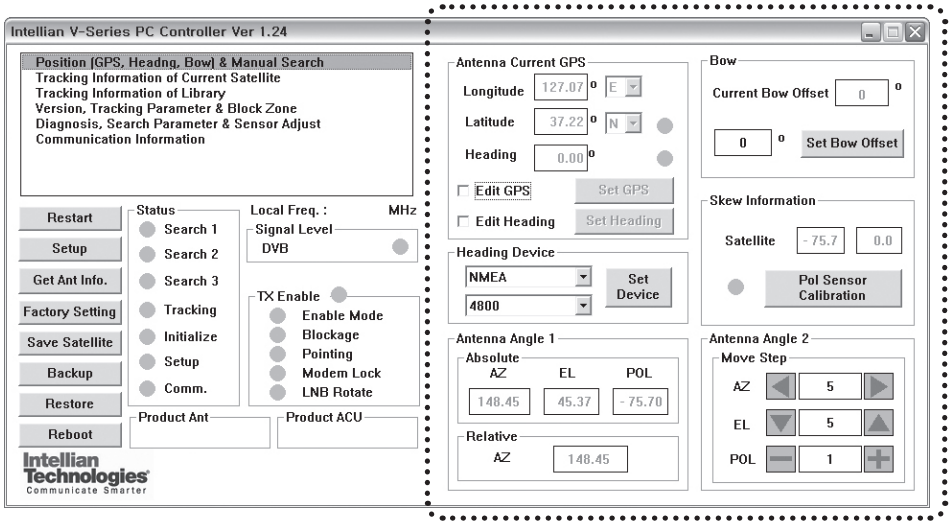
NOTE: *The TX function will be enabled (shows blue dot) only if all of the factors listed above shows “blue” dot. If any of the factors listed above shows “gray” dot or "red" dot, the TX function will be disabled (shows red dot).*
Exception: If “Use TX Mute” is set as “NO”, the TX function will be enabled regardless of which factor listed above shows “gray” dot or “red” dot.

Controller Menus

Position & Manual Search

Set the GPS and ship's heading information to acquire the satellite signal and use move step function to find the satellite signal manually.

Antenna angle, GPS and ship's heading information



Antenna Current GPS

- Antenna Current GPS: Display current antenna GPS and Ship's heading information. Enter SETUP mode and click check box in front of Edit GPS / Edit Heading to set GPS / ship's heading. After the desired value is entered press Set GPS / Set Heading button to save the settings.
- Set GPS: Set antenna GPS information manually.
- Set Heading: Set ship's heading information manually.

Heading Device

- Heading Device: Set ship's heading device and its baud rate (4800/ 9600/ 19200/ 38400).

Antenna Angle 1

- Antenna Angle 1: Display current antenna absolute and relative AZ (azimuth) position, EL (elevation) position and LNB pol angle.

Bow

- Bow: Display and set bow offset if needed.

Skew Information

- LNB pol Information: Display LNB pol angle and satellite skew angle.
- Pol sensor calibration: Calibrate the sensor (potentiometer).

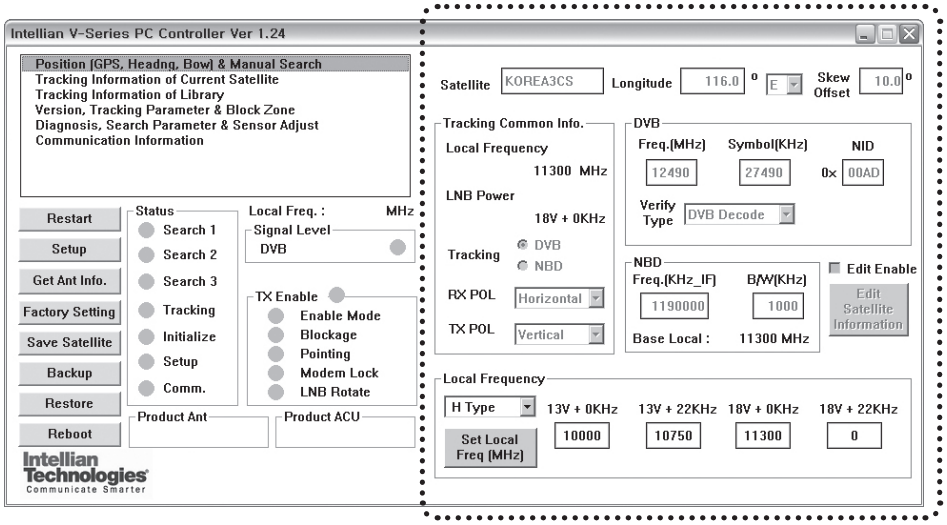
Antenna Angle 2

- Antenna Angle 2: Move antenna azimuth and elevation position and LNB pol angle to find the desired satellite manually.

Tracking Information of Current Satellite

Set the tracking mode and tracking frequency of the current satellite.
Set the LNB local frequency to its corresponding voltage power supply.

Set the current satellite tracking information



Satellite Information

- Satellite information: Display the current satellite name, longitude position and satellite skew.

Tracking Common Info

- Local Frequency & LNB Power: Display the current LNB frequency which is in use and its corresponding voltage power supply.
- Tracking: Display/ set the current tracking mode (DVB/ NBD).
- RX POL and TX POL: Set RX and TX polarity (Vertical/Horizontal).

DVB

- DVB: Set satellite tracking information (Frequency, Symbol rate, NID and Verify type) for DVB tracking mode.

NBD

- NBD: Set satellite tracking information (Frequency and bandwidth) for NBD tracking mode.

Local Frequency

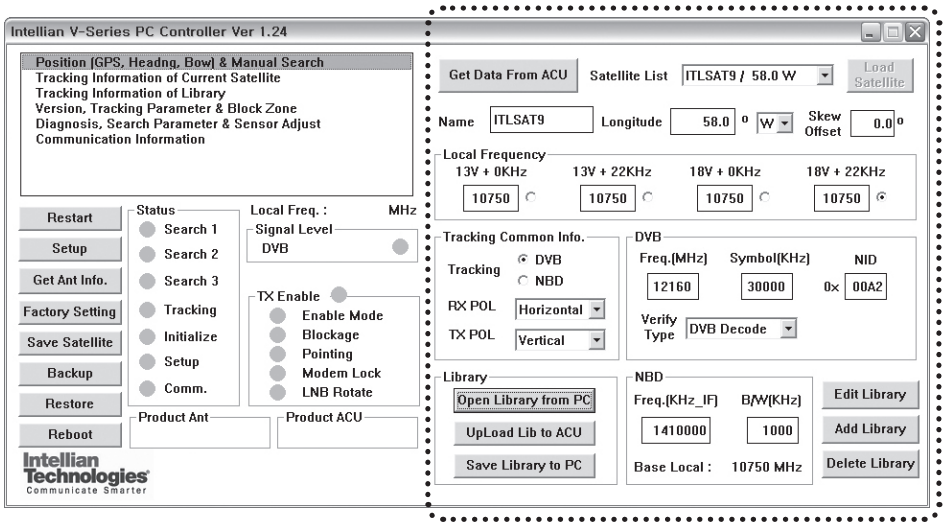
- Local frequency: Display or set LNB local frequency and its corresponding LNB power supply.

NOTE: *Select the Swedish Microwave (SMW) PLL LNB type from the Drop-Down List. If the LNB type is other than SMW, manually input the LNB local frequency is required.*

Tracking Information of Library

Open the pre-programmed satellite library file and upload it to the ACU.
Build your own custom library and save it to an external hard drive/PC.

Library information



Get data from ACU

- Get data from ACU: Obtain the pre-programmed satellite library file from the ACU while the antenna is in SETUP mode.

Load Satellite

- Load satellite: Upload the pre-programmed satellite information in the library.

Library

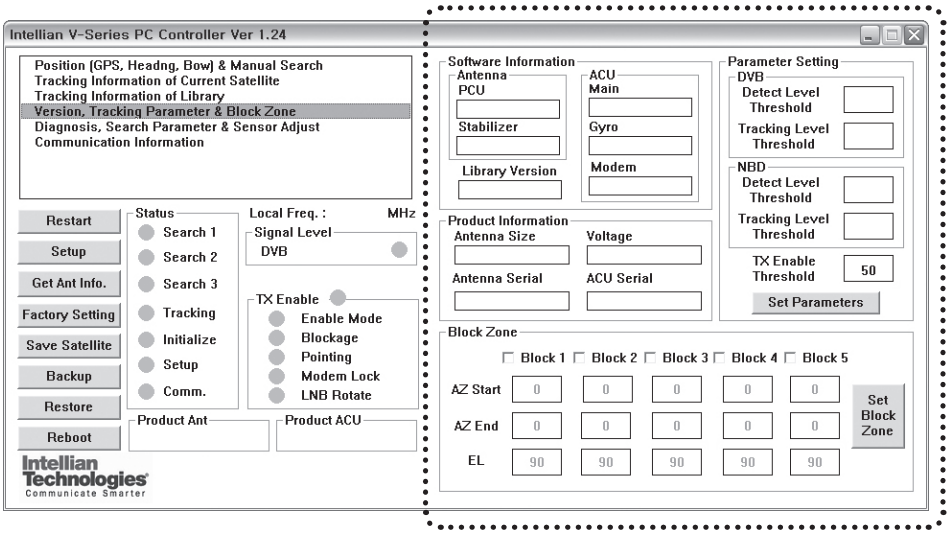
- Open library from PC: Open the satellite library file from the supplied Intellian CD or from the external hard drive/PC. (File format: *.ilf)
- Upload library to ACU: Upload the satellite library file to ACU.
- Save library to PC: Save the current library setting to the PC.
- Edit Library: Edit the satellite information of the selected satellite.
- Add Library: Add the satellite information as defined in the current settings.
- Delete Library: Delete the selected satellite from the library settings.

NOTE: *It is required to click the "Save Library to PC" button after "Edit Library", "Add Library ", or "Delete Library" button is clicked. These functions are only available for ACU Version 1.07 or later.*

Version, Tracking Parameter & Block Zone

Display the antenna, ACU firmware versions and serial number.
Setup the antenna blockage zone(s).
Setup the antenna parameters.

Display antenna versions and tracking parameters



Software Information

- Software information: Display antenna and ACU firmware versions and library version.

Product Information

- Product information: Display antenna and ACU serial numbers.

Parameter Setting

- DVB: Display /setup current detect level threshold and tracking level threshold when DVB tracking mode is chosen to be used.
- NBD: Display /setup current detect level threshold and tracking level threshold when NBD tracking mode is chosen to be used.
- TX Enable Threshold: display/ setup TX enable threshold.

Block Zone

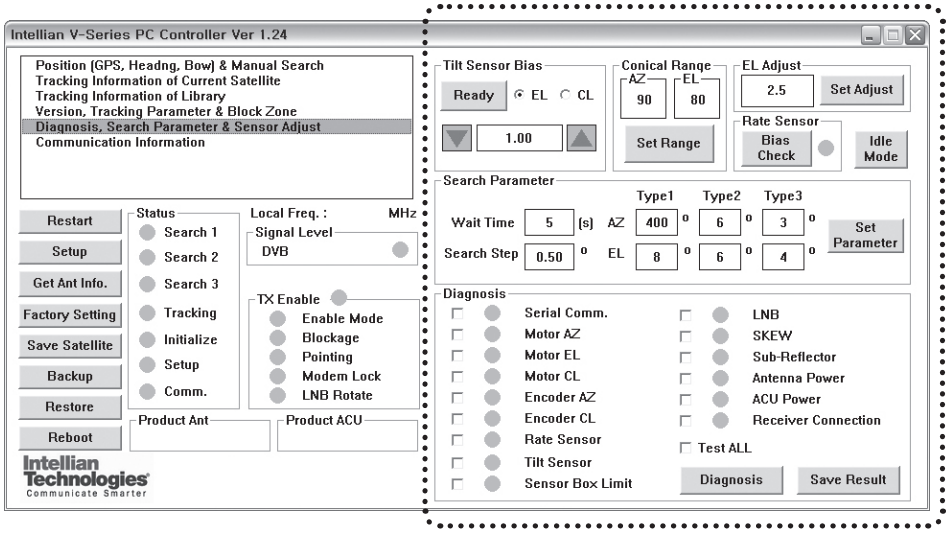
- Display current block zones by azimuth and elevation sectors. Up to 5 blockage zones can be programmed.

NOTE: *DVB and NBD parameter settings should only be changed by an authorized service technician. Improper setting of these parameters will render your system inoperable. Consult Intellian for changing antenna parameters.*

Diagnosis, Search Parameter & Sensor Adjust

Set the tilt sensors and calibrate rate sensors.
Set the antenna search parameters.
Run an antenna diagnostic test.

Display antenna versions and parameters



Tilt Sensor Bias

- Tilt sensor bias: Adjust the two solid-state tilt sensors used to provide absolute cross-level tilt of the antenna and elevation feedback to eliminate long-term pointing drift (error). Tilt bias is required to be adjusted when the antenna control board or sensor box is replaced. Check and see if the bubble is located at the center of the level vial.
- Ready: Make elevation angle go to 0º for tilt sensor bias adjustment.

Conical Range

- Conical rage: set conical range while the antenna is on tracking mode.

EL Adjust

- EL adjust: The elevation adjustment is to offset the angle difference between the mechanical elevation angle and actual elevation angle.

Rate Sensor

- Rate sensor: Rate sensor is to calibrate DC voltage output from the three rate sensors used to sense antenna motion in azimuth, elevation and cross-level axes. The DC voltage output from each of the rate sensors may be vary by an amount which is directly proportional to the direction and rate of motion induced on it.. Before calibrating the rate sensors located at the Sensor box, make sure that the antenna is placed on a rigid and flat platform. During the calibration process, the antenna should avoid any motion as it can affect the antenna's performance. After clicking the "Rate Sensor Bias Check" button, the green dot will be displayed as a ready signal to calibrate the gyro sensor. The red dot (fail) or blue dot (pass) will be displayed once the calibration is completed.

Idle Mode

- Idle mode: Release the elevation and cross level motor brakes while the antenna is in SETUP mode. The antenna can be moved manually during the idle mode.

Diagnosis

- Diagnosis: The system can carry out the selected full diagnostic test "Test All" or single diagnostic test. The software will display the diagnostic results (Blue dot represents "normal", red represents "abnormal", yellow represents "skip test" and green represents "the diagnostic test is under process").

REMOTE WEB ACCESS

Introduction

Main Page

Antenna Settings

General Information
Current Status
Ship Information
Antenna Position
Tracking Information
Parameter Setting
Modem Setting
Block Zone Setting
Diagnosis
Satellite Information

Antenna / ACU Firmware Upgrade

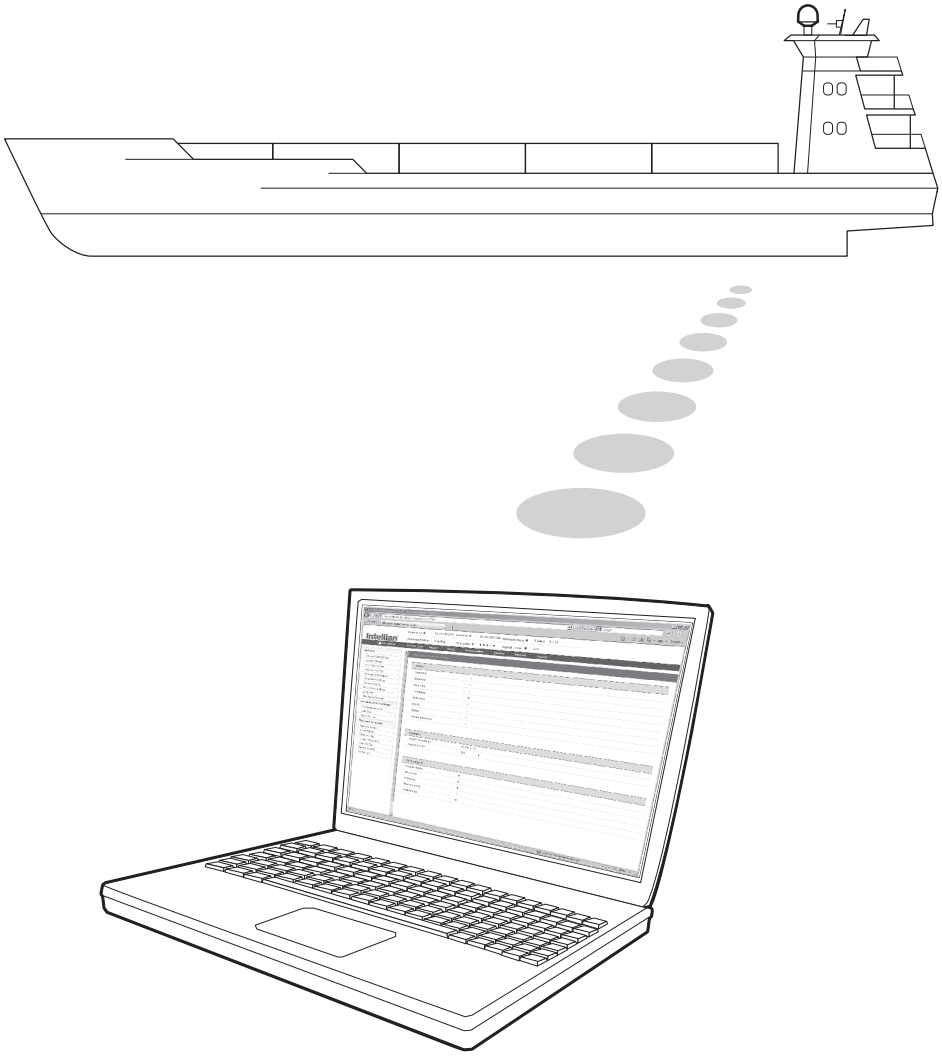
Firmware Upgrade
Roll Back
Upgrade Log

Ethernet-to-Serial Settings

Network Setting
Serial Setting
SNMP Setting
Change Password
Upgrade E2S (Ethernet-to-Serial)
Save & Reboot
Access Log

Introduction

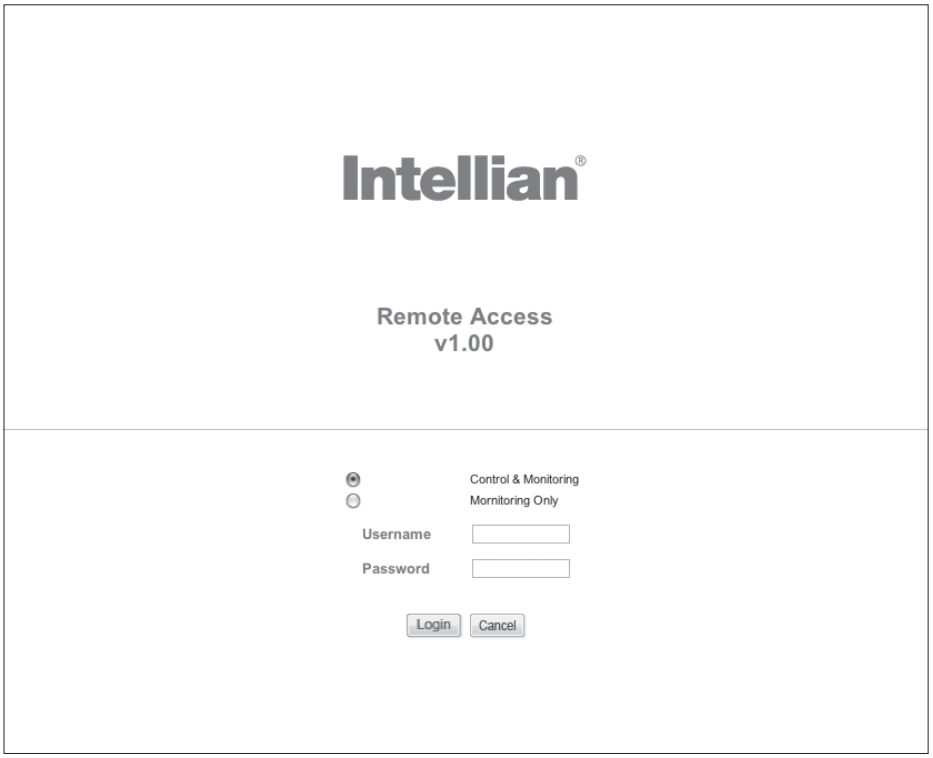
With embedded remote access function, the v-Series can be monitored, controlled, and diagnosed remotely from anywhere, anytime through the TCP/IP protocol. This not only can save tremendous time but also save the cost generated from the hundreds of routine maintenance activities such as operating firmware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

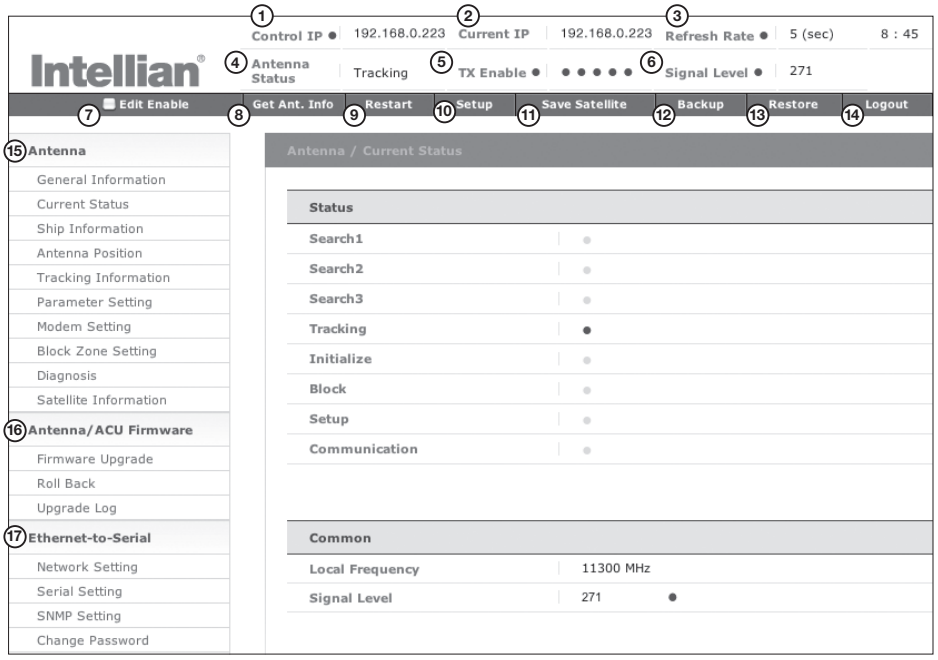


Main Page

• **Page Login**

1. Enter the ACU's IP address into your web browser's address bar to login into the ACU’s internal HTML page. If this system has not been changed from the ACU’s factory default:
   IP address: Primary: 192.168.0.223 / Secondary: 10.10.1.1
2. Choose either to Control & Monitor the ACU or Only Monitor the ACU.
3. Log into the ACU by typing in User Name and Password information. If this system has not been changed from the factory default:
   User Name: intellian / Password: 12345678

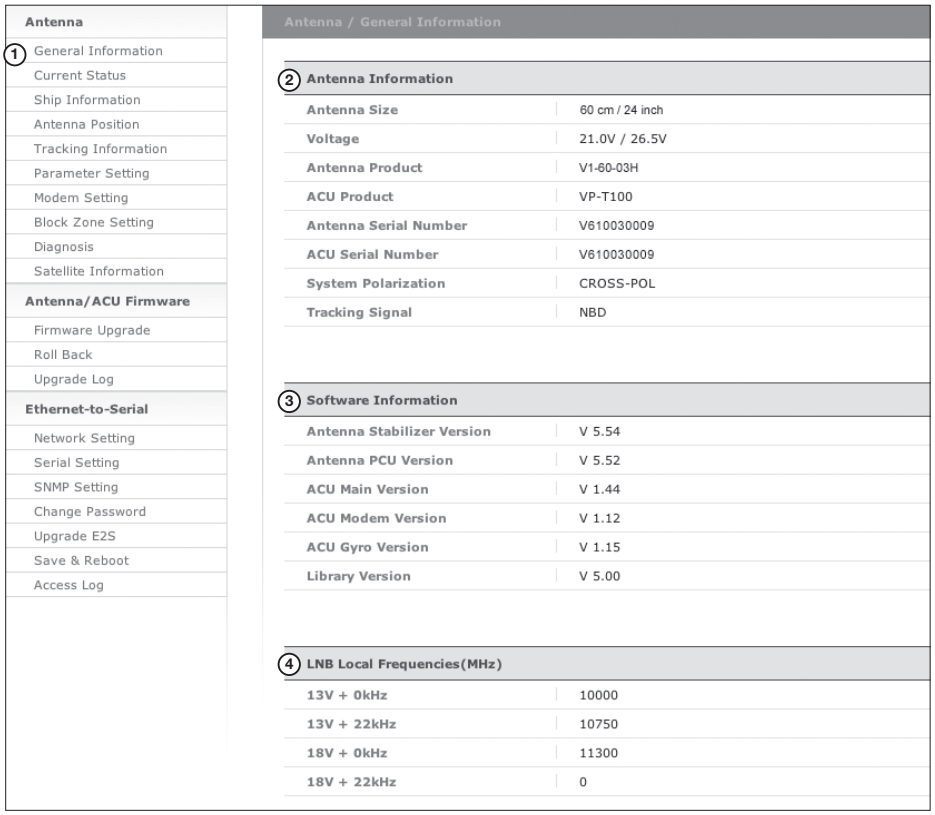




No.	Item	Description
①	Control IP	Display current IP that controls the ACU.
②	Current IP	Display current IP address.
③	Refresh Rate	Display screen refresh rate and time out. The screen will not refresh once the time-out shows 0:00. Exception: If the Refresh Disable Time is set to “OFF” in the Network Setting page, then the clock will show “--:--“ and system will keep monitoring all activities regardless of time-out.
④	Antenna Status	Display antenna status.
⑤	TX Enable	Display whether or not the antenna is able to transmit the data.
⑥	Signal Level	Display current signal level.
⑦	Edit Enable	Enable to edit the ACU settings. Ensure the check box is enabled before modifying the settings.
⑧	Get Antenna Info	Obtain current antenna information.
⑨	Restart	Restart antenna system.
⑩	Setup	Enter SETUP mode.
⑪	Save Satellite	Save current satellite settings. Bow offset will be adjusted and saved automatically.
⑫	Backup	Backup antenna information to ACU.
⑬	Restore	Restore antenna information from ACU.
⑭	Logout	Logout ACU’s internal HTML page.
⑮	Antenna	Antenna setup menu.
⑯	Firmware	Firmware upgrade menu.
⑰	Ethernet-to-Serial	ACU’s IP address and serial communication setup menus.

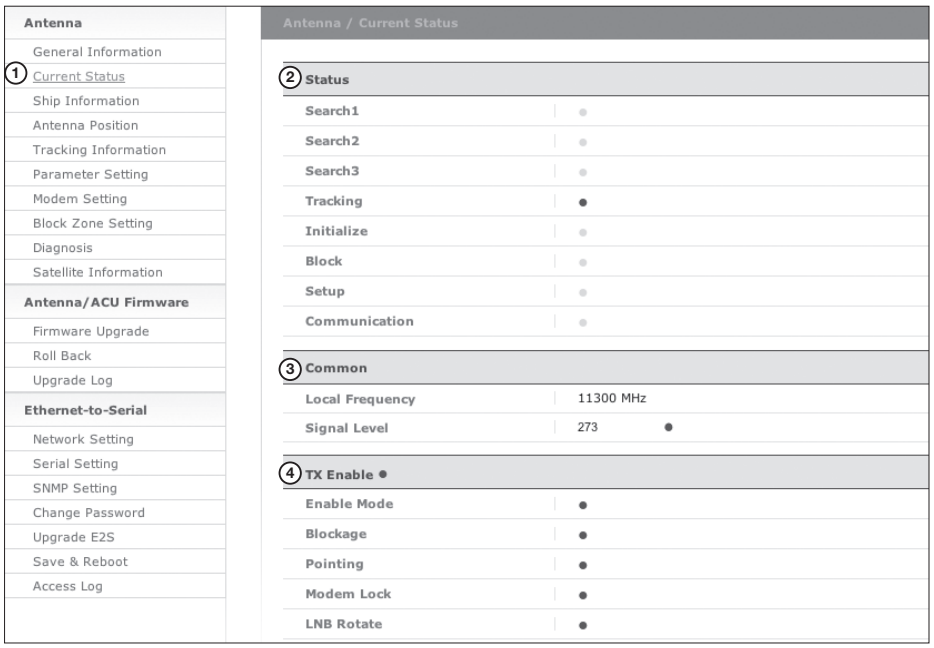
Antenna Settings

General Information



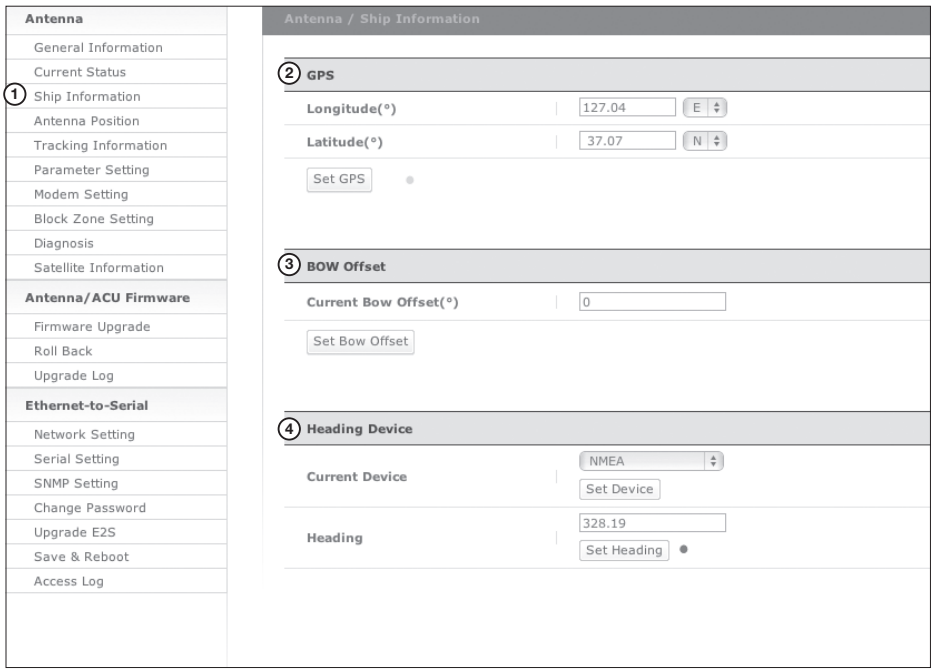
No.	Item	Description
①	General Information	Display current antenna information.
②	Antenna Information	Display current antenna information. - Antenna Size: antenna dish size. - Voltage: operation voltage of antenna and ACU. - Antenna Product: antenna model number. - ACU Product: ACU model number. - Antenna Serial Number: antenna serial number. - ACU Serial Number: ACU serial number - System Polarization: antenna polarized feed (Crosspol / Copol). - Tracking Signal: satellite tracking mode (DVB/ NBD)
③	Software Information	Display current Antenna and ACU firmware versions and Satellite Library version installed in the system. - Antenna Stabilizer Version - Antenna PCU Version - ACU Main Version - ACU Modem Version - ACU Gyro Version - Library Version
④	LNB Local Frequencies(MHz)	Display LNB local frequency and corresponding voltage.

Current Status



No.	Item	Description
①	Current Status	Display current antenna status.
②	Status	Display current antenna status. - Search 1: a search pattern 1 will automatically be initiated when the ship's heading input does not exist / is failed. The search cycle will repeat until the antenna receives the lock signal from the modem or the DVB transponder of the target satellite is decoded by the antenna. - Search 2: is reserved for future use. - Search 3: a search pattern 3 will automatically be initiated when AGC / SIG falls below the current tracking level threshold value. Once the desired signal is found and above the predefined tracking threshold, the ACU will enter to tracking mode. - Tracking: antenna is tracking the target satellite. - Initialize: antenna or ACU is initializing. - Block: satellite signal is being blocked. - Setup: antenna is in SETUP mode. - Communication: antenna is able to be communicated with ACU.
③	Common	Display current LNB local frequency and signal level.
④	TX Enable	Display whether or not the antenna is able to transmit the data. The TX function will only be enabled (shows BLUE dot) only if all of the factors listed below shows "BLUE" dot. Exception: If "Use TX Mute" is set as "NO", the TX function will be enabled regardless of which factor listed below shows "gray" dot or "red" dot. - Enable Mode: antenna is not in SETUP mode. - Blockage: antenna is not facing the predefined block zone(s). - Pointing: antenna is pointing to the target satellite. - Modem Lock: satellite modem is sending a logic input to the ACU to identify when the antenna tracks on the correct satellite. - LNB Rotate: LNB is not rotating.

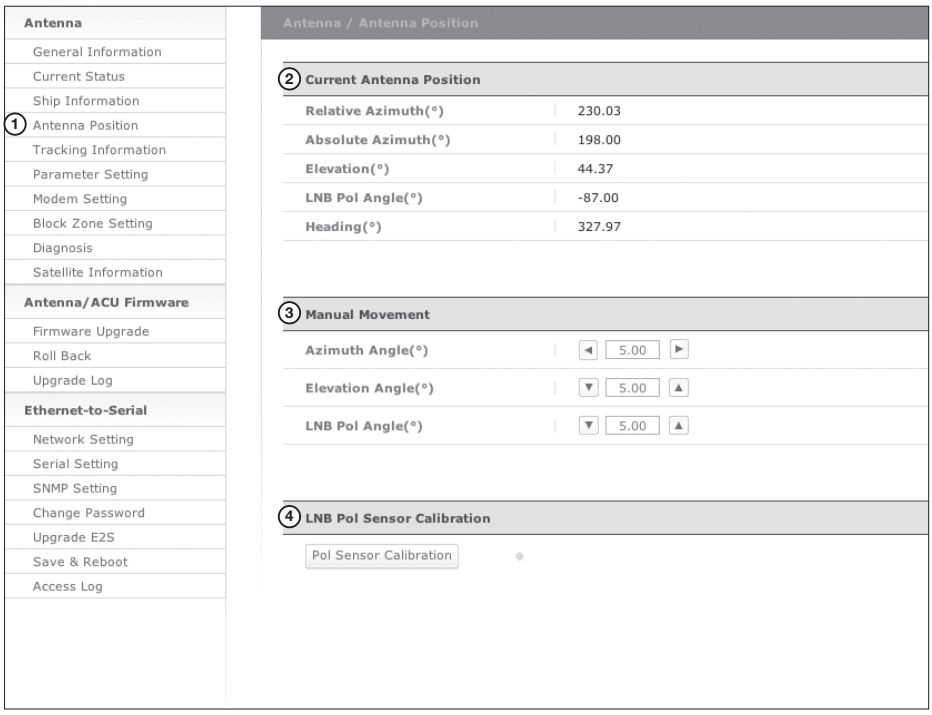
Ship Information



No.	Item	Description
①	Ship Information	Display GPS and ship's gyro information.
②	GPS	Display current GPS information. - Longitude (East / West) - Latitude (North / South)
③	BOW Offset	Display and set bow offset if needed.
④	Heading Device	Current device: set ship's heading device. If the ship's gyro input is Step-by-step (SBS) separate purchase of GYRO Converter is required. - Heading: set ship's heading information.

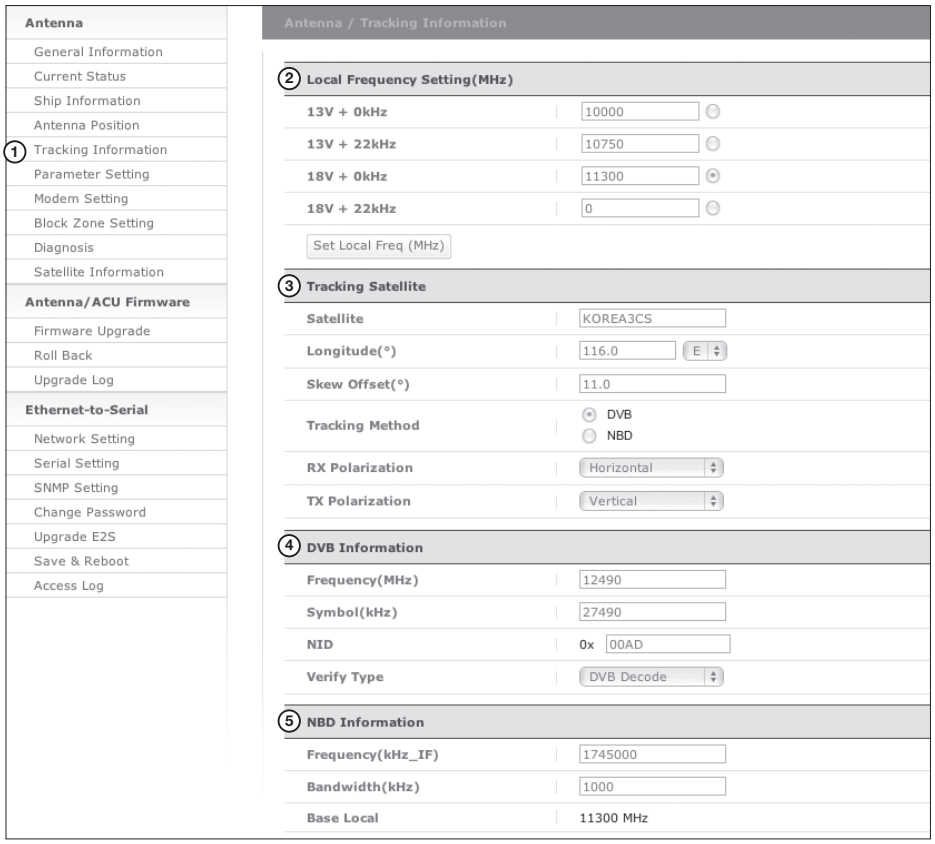
WARNING: Ensure the Edit Enable check box is enabled before modifying the settings.

Antenna Position



No.	Item	Description
①	Antenna Position	Display current antenna position.
②	Current Antenna Position	Display current antenna position. - Relative Azimuth: display antenna relative AZ angle. - Absolute Azimuth: display antenna absolute AZ angle. - Elevation: display antenna elevation angle. - LNB Pol Angle: display LNB pol angle. - Heading: display ship's heading information.
③	Manual Movement	Move antenna azimuth and elevation angles and LNB pol angle to find the desired satellite manually.
④	LNB Pol Sensor Calibration	Calibrate the LNB pol angle when the control board, potentiometer or belt is replaced.

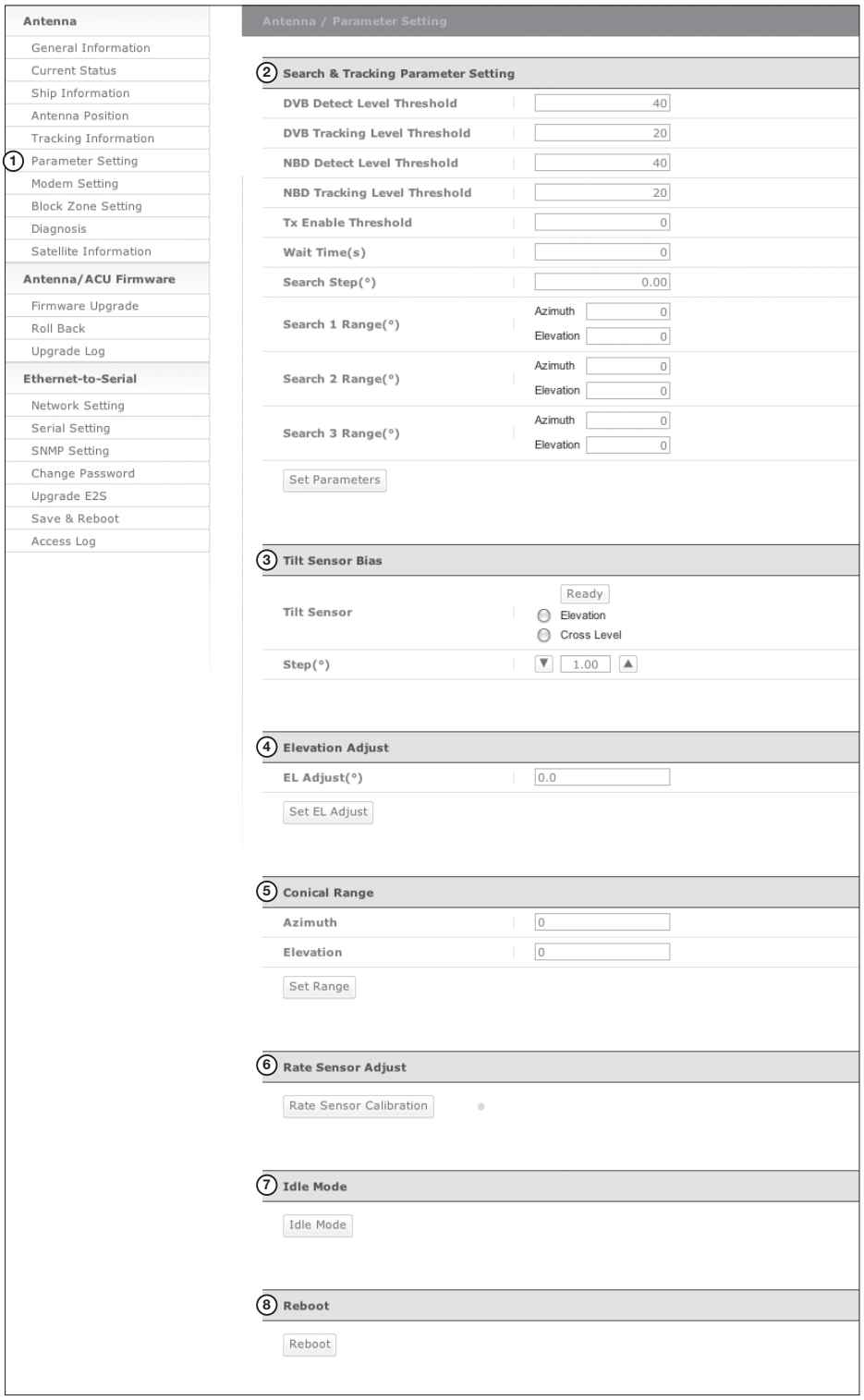
Tracking Information



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

WARNING: Ensure the Edit Enable check box is enabled before modifying the settings.

Parameter Setting

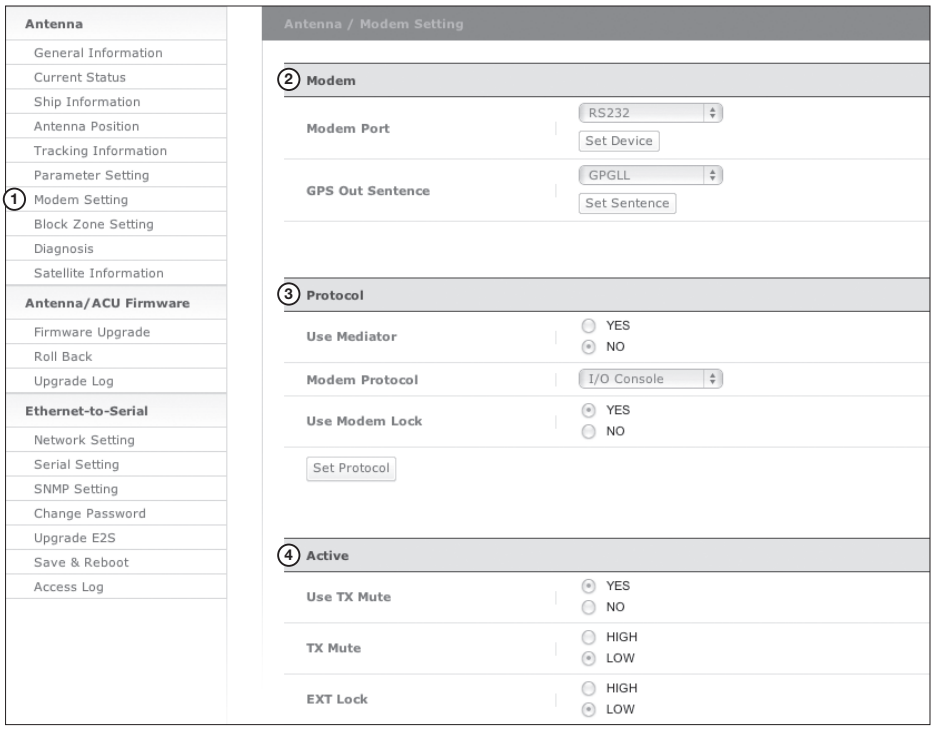


WARNING

WARNING: Ensure the Edit Enable check box is enabled before modifying the settings.

No.	Item	Description
①	Parameter Setting	Set antenna search & tracking parameters. These parameters should only be changed by an authorized service technician. Improper setting of these parameters will render your system inoperable.
②	Search & Tracking Parameter Setting	DVB Detect and Tracking Level Threshold: display / set current detect level threshold and tracking level threshold when DVB tracking mode is chosen to be used. - NBD Detect and Tracking Level Threshold: display / set current detect level threshold and tracking level threshold when NBD tracking mode is chosen to be used. - Enable Threshold: display / set TX enable threshold. - Wait time: set the time-out for automatic initiation of a search after the signal level drops below the pre-defined threshold value. - Search Step: set increment step size. - Search 1 & 3 Range: set Search 1 & 3 search range. Search is conducted in a two-axis pattern consisting of alternate movements in azimuth and elevation as forming expanding square. - Search 2 Range: is reserved for future use.
③	Tilt Sensor Bias	Adjust the two solid-state tilt sensors used to provide absolute cross-level tilt of the antenna and elevation feedback to eliminate long-term pointing drift (error). Tilt bias is required to be adjusted when the antenna control board or sensor box is replaced. Check to see whether or not the bubble is located at the center of the level vial.
④	Elevation Adjust	Adjust the angle difference between the mechanical elevation angle and actual elevation angle.
⑤	Conical Range	Set conical range while the antenna is on tracking mode.
⑥	Rate Sensor Adjust	Calibrate DC voltage output from the three rate sensors used to sense antenna motion in azimuth, elevation and cross-level axes. During the calibration process, the antenna should avoid any motion as it can affect the antenna's performance.
⑦	Idle Mode	Release the elevation and cross level motor brakes while the antenna is in SETUP mode. The antenna can be moved manually during the idle mode.
⑧	Reboot	Reboot the system.

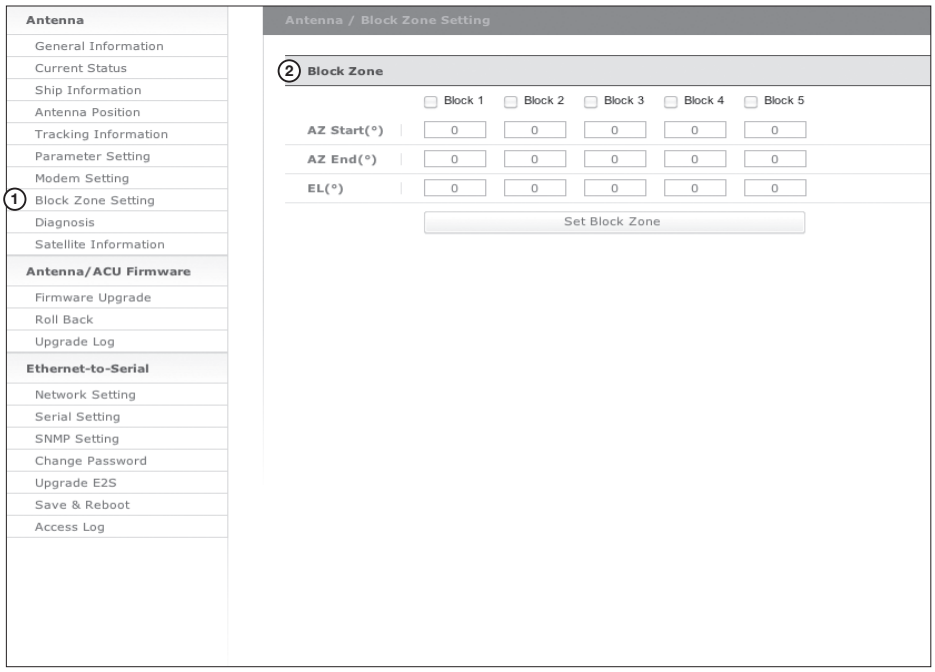
Modem Setting



No.	Item	Description
①	Modem Setting	Set the modem interface.
②	Modem	- Modem Port: select a proper data communication port (RS232/ 422/ Ethernet) to interface with a modem. - GPS Out Sentence: select GPS out sentence type (GPGLL/ GPGGA/ Simple GPGGA).
③	Protocol	- Use Mediator: enable the usage of Mediator if the antenna is connected to the Intellian dual VSAT Mediator. Use Mediator must be set to “NO” if there is no MEDIATOR connected to the ACU. Improper setting of this parameter will cause your ACU’s modem interface working incorrectly. - Modem Protocol: select a proper communication protocol on the ACU to interface with the modem. (I/O Console, OpenAMIP, Serial GPS) - Use Modem Lock: select whether or not to use external lock signal from the satellite modem. Use Modem Lock will only be activated when modem protocol is set as I/O Console.
④	Active	- Use TX Mute: select whether or not to USE TX MUTE function from the satellite modem. A transmit inhibit output from the ACU will disable/ mute the modem transmit via a voltage whenever the antenna is blocked, searching, or is mis-pointed 0.5 degrees from the peak satellite position. - TX Mute: TX Mute is a transmit inhibit output from the ACU to disable /mute the modem transmit through a 5 V (HIGH) or 0 V (LOW) current whenever the antenna is blocked, searching, or is mis-pointed 0.5 degrees from peak satellite position. TX Mute will only be activated when modem protocol is set as I/O console. - EXT Lock: is the modem lock output from the modem provides a logic input through a 5 V (HIGH) or 0 V (LOW) current to the ACU to identify when it is on the correct satellite. EXT. Lock will only be activated when modem protocol is set as I/O Console.

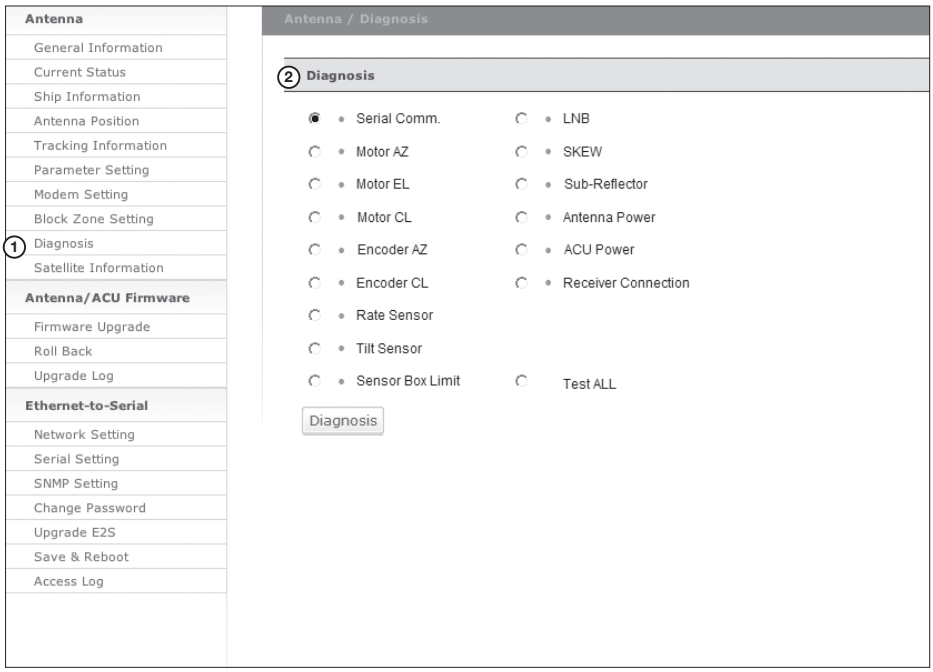
WARNING: Ensure the Edit Enable check box is enabled before modifying the settings.

Block Zone Setting



No.	Item	Description
①	Block Zone Setting	Up to 5 block zones are allowed to be programmed.
②	Block Zone	This is the clockwise of the two points. AZ. START is where the relative azimuth starts and AZ. END is where the relative azimuth ends (Range: 0 - 360°). EL. Limit is where the elevation starts (Range 0 - 90°).

Diagnosis

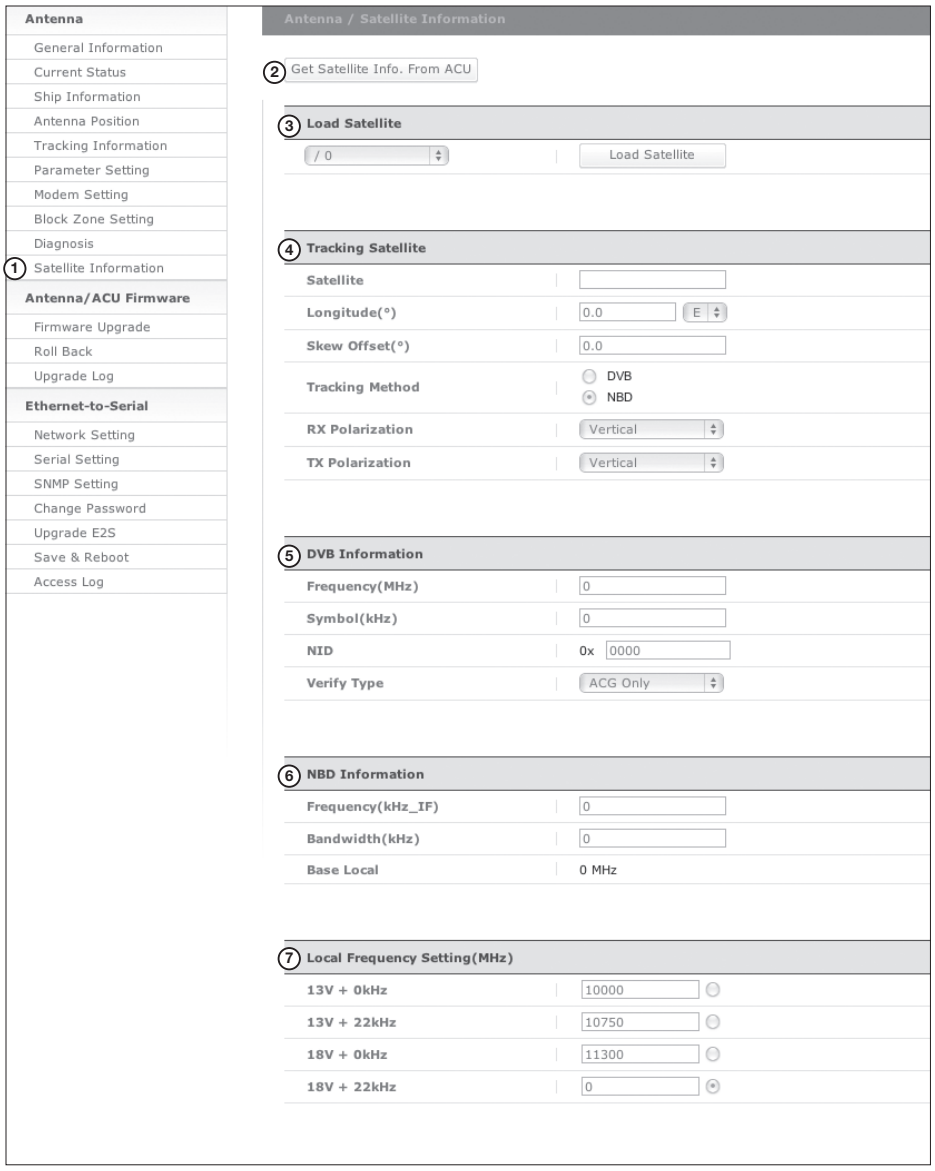


No.	Item	Description
①	Diagnosis	Execute antenna diagnostic test.
②	Diagnosis	Select to run a full diagnostic test or single diagnostic test. - Serial Comm.: test the data communication between the antenna and the ACU. - Motor AZ: test the azimuth motor. - Motor EL: test the elevation motor. - Motor CL: test the cross-level motor. - Encoder AZ: test the azimuth encoder. - Encoder CL: test the cross-level encoder. - Gyro Senor: test the gyro sensor. - Tilt Sensor: test the tilt sensor. - Sensor Box Limit: test the sensor box motor. - LNB: test the LNB. - LNB pol: test the LNB pol motor. - Sub-Reflector: test the sub-reflector. (Skip for v-Series communication products) - Antenna Power: test the antenna power. - ACU Power: test the ACU power. - Receiver Connection: test the receiver power. (Skip for v-Series communication products)

WARNING

WARNING: Ensure the Edit Enable check box is enabled before modifying the settings.

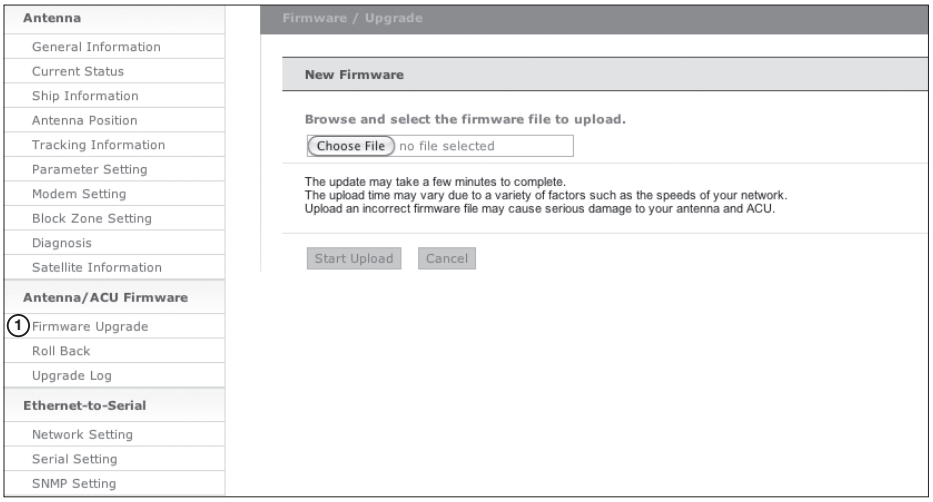
Satellite Information



No.	Item	Description
①	Satellite Information	Display the satellite library information.
②	Get Satellite Info from ACU	Obtain satellite information installed in the ACU.
③	Load Satellite	Select satellite that you wish to track and press Load button to load the selected satellite.
④	Tracking Satellite	- Satellite: display satellite name. - Longitude: display satellite orbit position. - Skew offset: display Skewoffset. - Tracking method: display current tracking mode (DVB/ NBD). - RX polarization: display current RX polarization. - TX polarization display current TX polarization.
⑤	DVB Information	- Display DVB tracking mode's tracking information. - Frequency: display tracking frequency. - Symbol rate: display symbol rate. - NID: display network ID. - Verify type: display verification type (AGC only, DVB lock, DVB decode, DSS decode)
⑥	NBD Information	Display NBD tracking mode's tracking information. - Frequency: display tracking frequency. - Bandwidth: display detection bandwidth.
⑦	Local Frequency Setting	Display LNB local frequency (MHz) and voltage.

Antenna/ ACU Firmware Upgrade

Firmware Upgrade



No.	Item	Description
①	Firmware Upgrade	Upgrade antenna and ACU firmware version. Browse and select the firmware package file to upload.

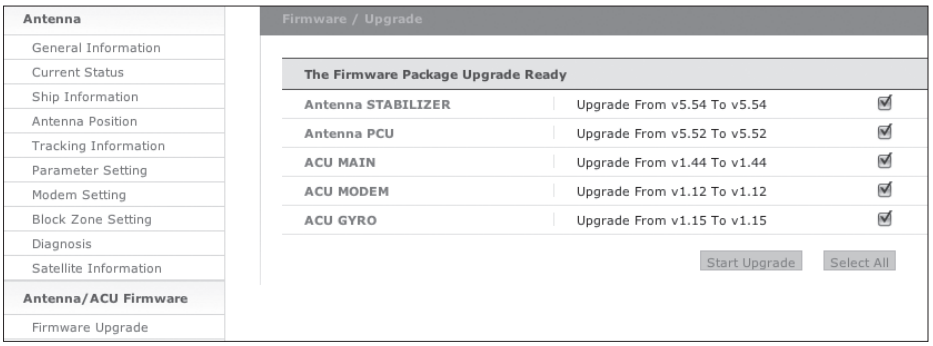
Upgrade Steps

1. Select the upgrade package file.
2. Click on “Start Upload” button to transfer the Firmware package file (“*.fwp”) to E2S (Ethernet to serial) module.

3. After the package file is transferred, it’ll show “upgrade from vx.xx Version to vx.xx Version”. Enable the check box to select the firmware file that you wish to upgrade.

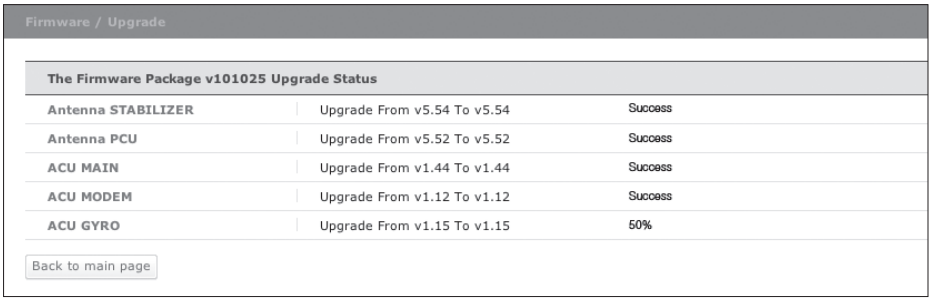
4. Click on “Start Upgrade” button.

Firmware upgrade status page



5. It'll display information about the upgrade process status on full screen.

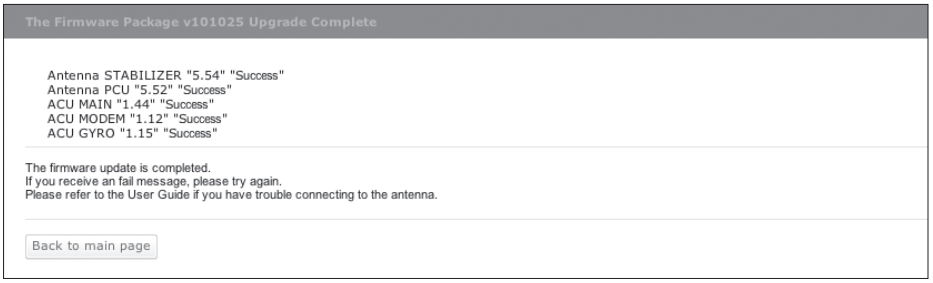
Upgrade process status page



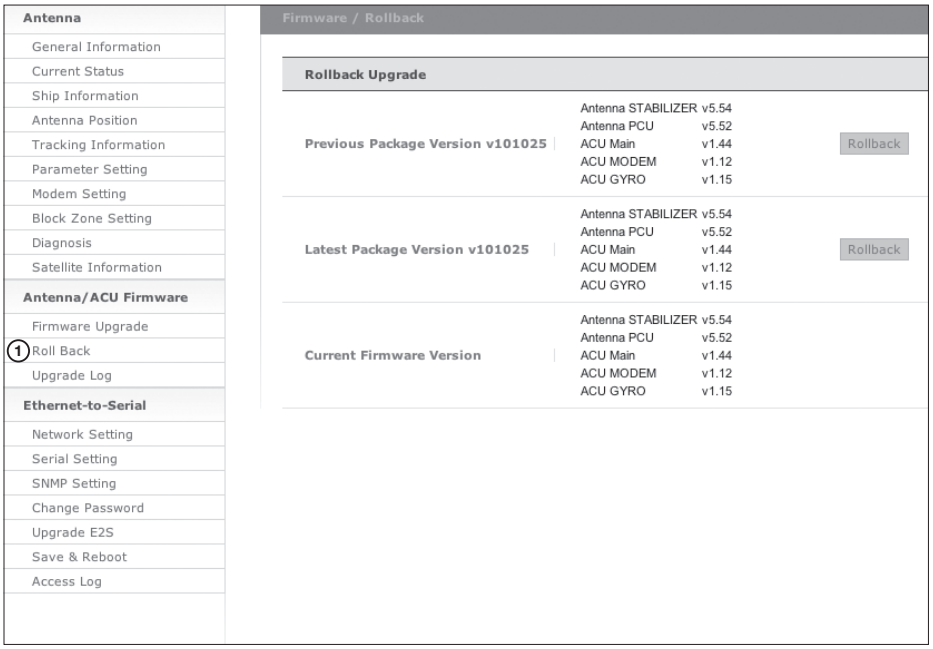
6. If the firmware is successfully upgraded, it'll display "The firmware update is completed."

7. Click on "Back to main page" to go out of the screen.
   To verify the upgraded firmware version, go to the right-side menu of "General information"

Upgrade complete page

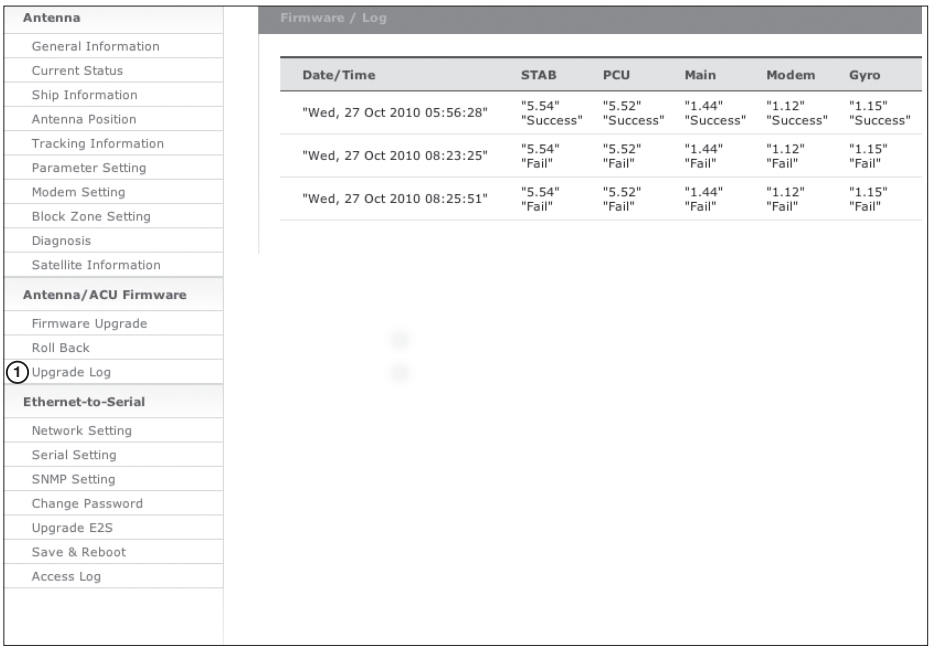


Roll Back



No.	Item	Description
①	Roll Back	Roll back antenna and ACU firmware to previous package version or latest package version.

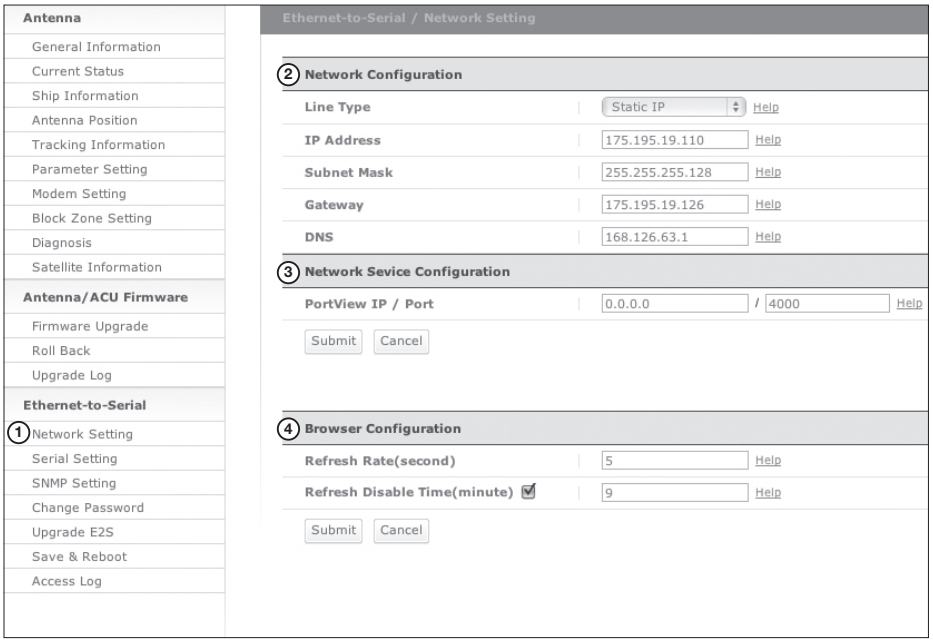
Upgrade Log



No.	Item	Description
①	Upgrade Log	Display log information of firmware upgrade.

Ethernet-to-Serial Settings

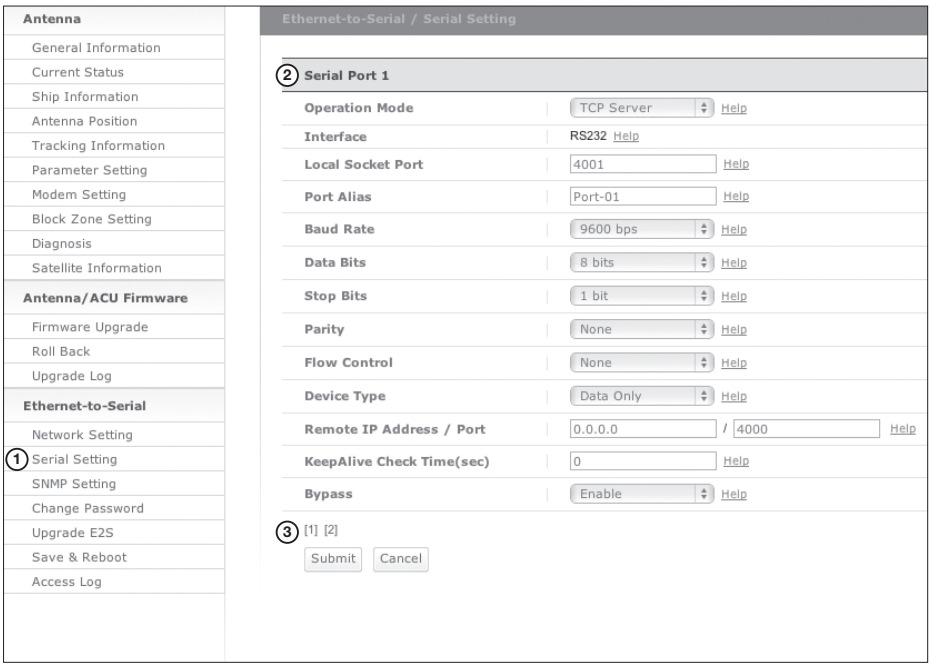
Network Setting



No.	Item	Description
①	Network Setting	Modify ACU's Internal IP address.
②	Network Configuration	Modify ACU's Internal IP address and press Submit button. Go to "Save & Reboot" page and press Save & Reboot button to validate the changes. - IP Address: Factory default (Primary: 192.168.0.223) / (Secondary: 10.10.1.1) - Subnet Mask: Factory default (255.255.255.0) - Gateway (modem IP): Factory default (192.168.0.254)
③	Network Service Configuration	Install the PortView software to use this function. Setup the IP address and socket number to the PC installed with PortView software. PortView function will not be activated if the IP address is set to 0.0.0.0.
④	Browser Configuration	Modify browser refresh rate and refresh disable time. If the check box of Refresh Disable Time is enabled, then Refresh Disable Time function will be activated and system will keep monitoring all activities regardless of time-out.

WARNING: Enter Save & Reboot page and click on "Save & Reboot" button after completing the modification of Ethernet-to-Serial's settings. Without doing so, the modified settings will be lost.

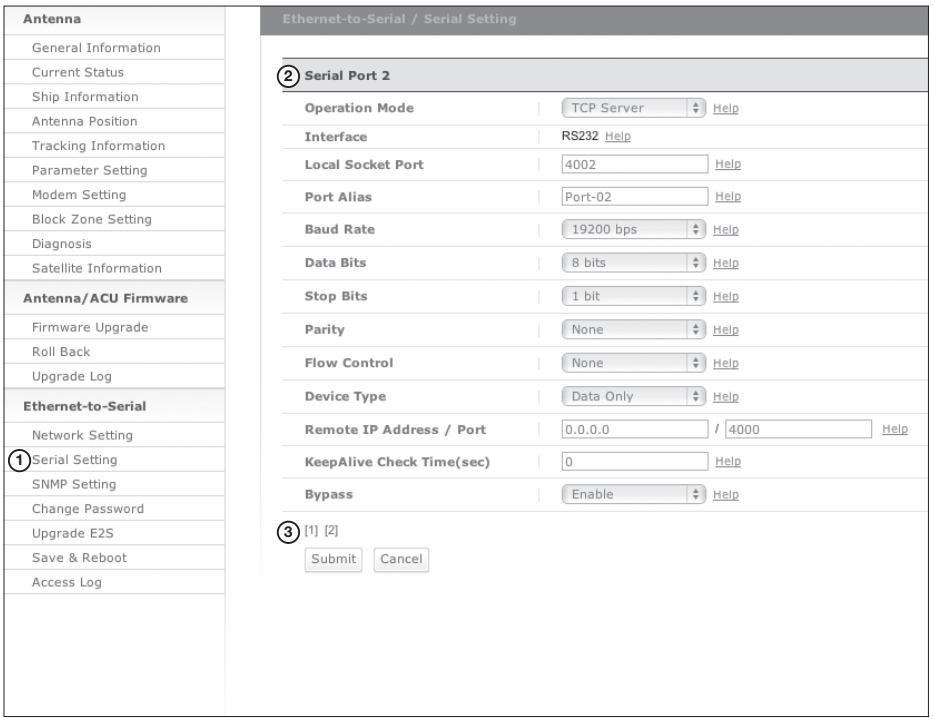
Serial Setting [1]



No.	Item	Description
①	Serial Setting	Configure Serial port [1] and Serial port [2]
②	Serial Port [1]	Serial Port [1] is to communicate with an external modem via Ethernet. Follow the below instruction to configure Serial port [1] and press Submit button. Go to “Save & Reboot” page and press Save & Reboot button to validate the changes. - Operation mode: TCP Server - Local socket port: 4001 - Baud Rate: 9600 bps - Data Bit: 8 Bit - Stop Bit: 1 Bit - Parity: None - Flow Control: None The data communication between the modem and the PC may disconnect while setting these parameters.
③	[1][2]	Select to configure Serial port [1] or Serial port [2]

Serial Setting [2]

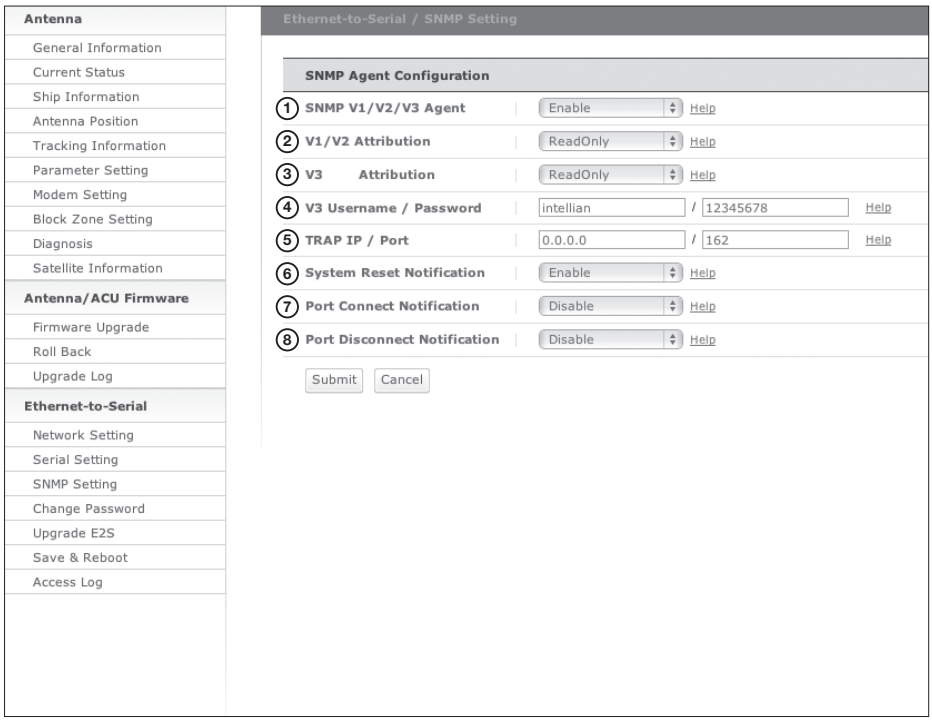
Serial setting [2] page



No.	Item	Description
①	Serial Setting	Configure Serial port [1] and port [2]
②	Serial Port [2]	Port [2] is to communicate with the PC Control via Ethernet. Follow the below instruction to configure Serial port [2] and press Submit button. Go to “Save & Reboot” page and press Save & Reboot button to validate the changes. - Operation mode: TCP Server - Local socket port: 4002 - Baud Rate: 19200 bps - Data Bit: 8 Bit - Stop Bit: 1 Bit - Parity: None - Flow Control: None The ACU control settings should be applied as same above.
③	[1][2]	Select to configure Serial port [1] or Serial port [2]

SNMP Setting

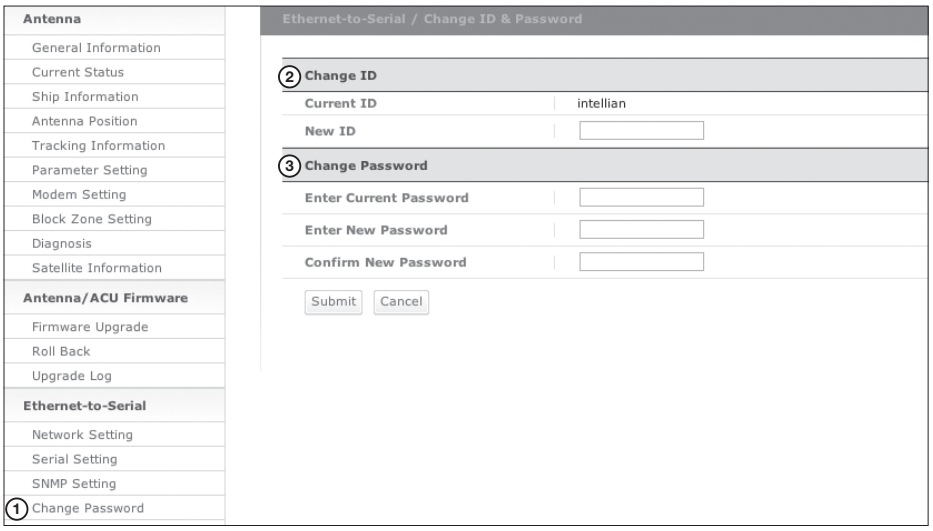
SNMP setting page



No.	Item	Description
①	SNMP v1/v2/v3 Agent	Enable or disable the SNMP (Simple Network Management Protocol) agent.
②	V1/2 Attribution	Configure the SNMP v1/v2 attributes (Read-Only, Read-Write, Disable). The community name of SNMP v1 / v2 is “public”.
③	V3 Attribution	Configure the SNMP v3 attributes (Read-Only, Read-Write).
④	V3 Username / Password	Set a v3 username & password of the SNMP agent.
⑤	TRAP IP / Port	Set the trap IP address and socket number of the SNMP trap server. Trap feature will be disabled if the trap IP is set to 0.0.0.0.
⑥	System Reset Notification	Enable or disable the system reset SNMP trap notification.
⑦	Port Connect Notification	Enable or disable the port connect SNMP trap notification.
⑧	Port Disconnect Notification	Enable or disable the port disconnect SNMP trap notification.

Change Password

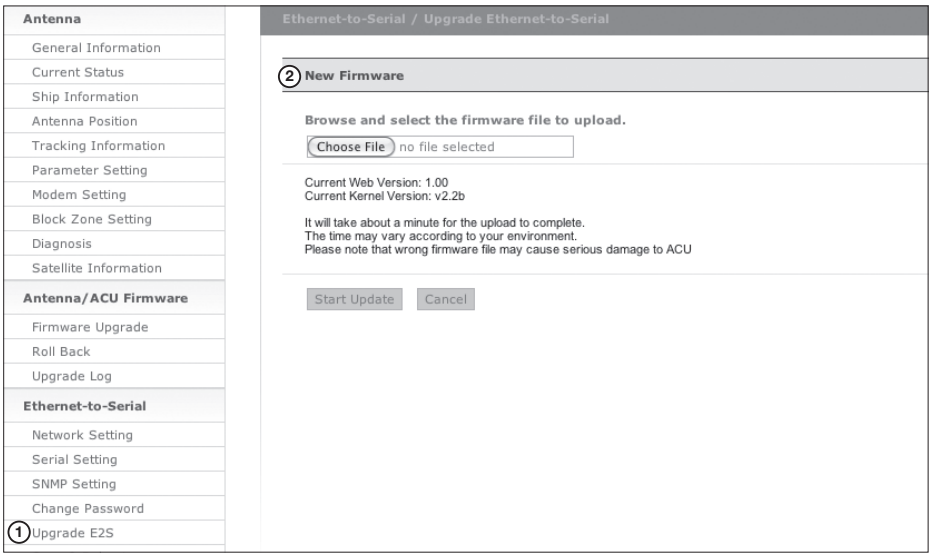
Change password page



No.	Item	Description
①	Change Password	Change your login ID (user name) and password.
②	Change ID	Enter your current login ID (user name) and new login ID. Press Submit button to validate the changes that are made to the login ID
③	Change Password	Enter your current login password and new login password. Press Submit button to validate the changes that are made to the login password.

Upgrade E2S (Ethernet-to-Serial)

Upgrade E2S page

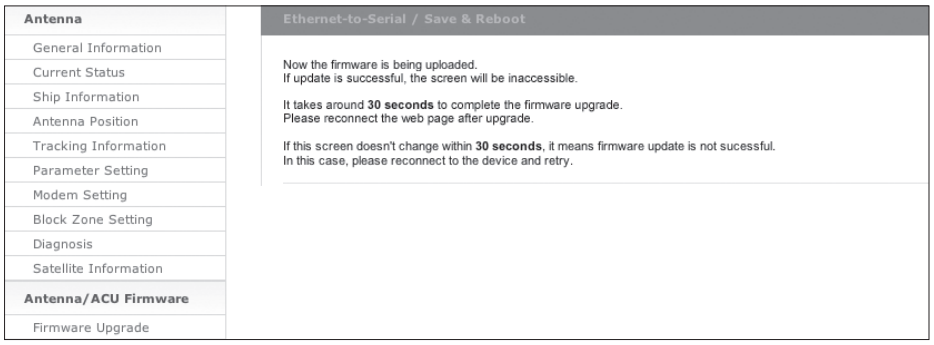


No.	Item	Description
①	Upgrade E2S	Upgrade the firmware of Ethernet-to-Serial module.
②	New Firmware	Select a new firmware file and press Start Update button to upgrade the firmware of Ethernet-to-Serial module.

Upgrade Steps

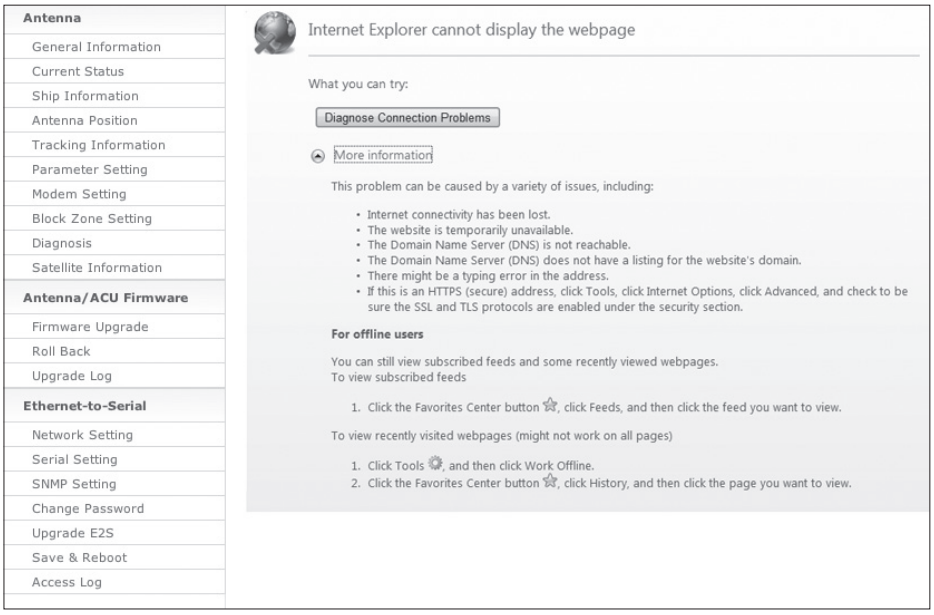
1. Click on “Browse” button to select the E2S firmware file (.bin) that you wish to upgrade.
2. Click on “Start Update” button to update the E2S firmware. Wait until the page is loaded.
3. It’ll inform you that the firmware is being uploaded.

Firmware uploaded message



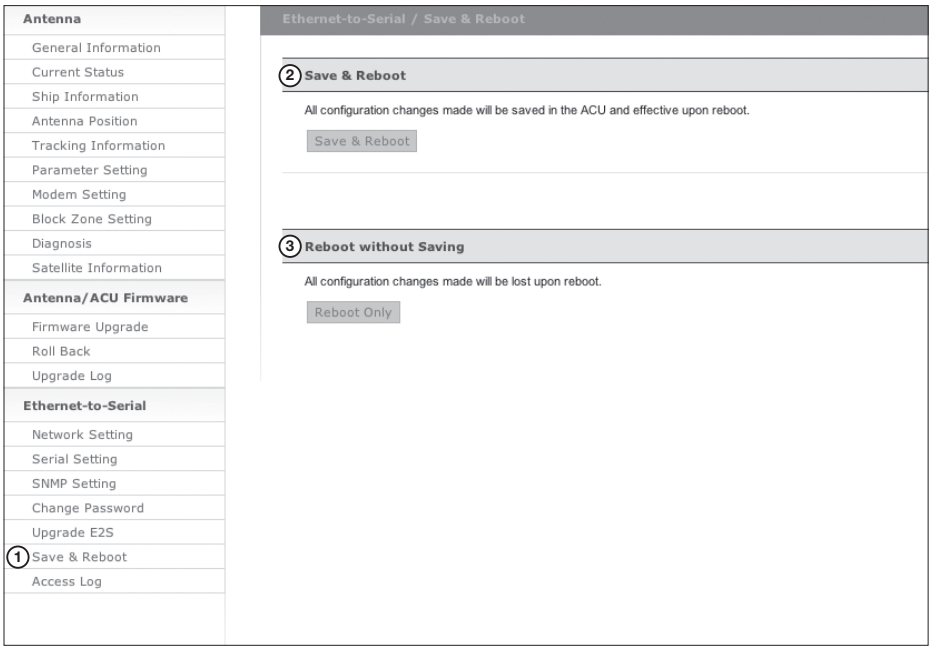
4. It takes around 30 seconds to complete the firmware upgrade. Please reconnect the web page after upgrade.

System disconnection



Save & Reboot

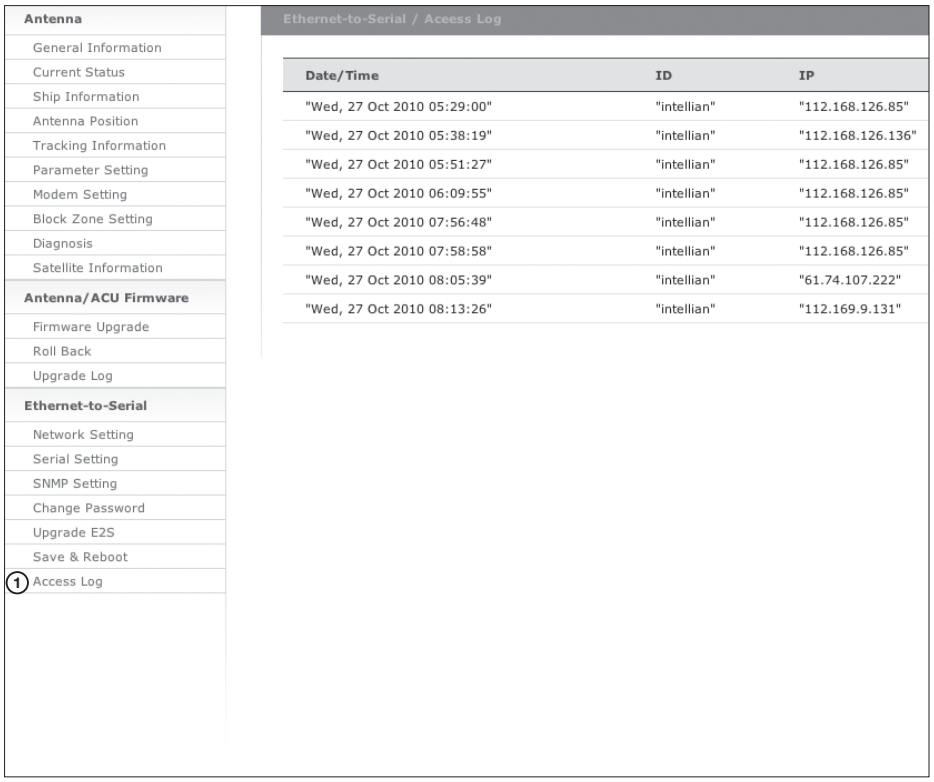
Save & reboot page



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

Access Log

Access log page



No.	Item	Description
①	Access Log	Display user's log information (Date/Time, Login ID and IP)

Warranty

This product is guaranteed by Intellian Technologies Inc., against defect due to faulty workmanship or materials and this guarantee covers for 1 year's parts from installation or 18 months from shipment.

You are requested to present a copy of the purchase receipt issued by Intellian Technologies, Inc. that presents the date of purchase for after sales service under warranty. In case of failure to present the date of purchase, the warranty period is to be calculated to 30 days after the manufacturing production date.

If you discover a defect, Intellian Technologies, Inc. will, at its option, repair, replace or refund the purchase price of the product at no charge to you, provided you return it during the warranty period, transportation charges prepaid, to the factory direct. Please attach your name, address, telephone number, a description of the problem and a copy of the bill of sale or sales receipt as proof of date of original retail purchase, to each product returned to warranty service. Alternatively, you may bring the product to an Authorized Intellian Technologies, Inc. dealer/distributor for repair.

This Limited Warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication or has been modified without the written permission of Intellian Technologies, Inc.; if any Intellian Technologies, Inc. serial number has been removed or defaced; or if any factory-sealed part of the system has been opened without authorization.

Technical Specification

General	
Approvals	
CE – conforms to	EU Directive 89/336/EEC
FCC – verified to	CFR47: Part 15
Dimensions	
Satellite antenna unit	78.0 cm x 84.5 cm (30.7” x 33.3”)
Antenna dish diameter	60cm (23.6”)
Antenna control unit	43.1cm x 38.1cm x 4.4cm (17” x 15” x 1.7”)
Weight	
Satellite antenna unit	59.5 kg (131.2 lbs)
Antenna control unit	5.2kg (11.5 lbs)
Antenna system performance	
Tx Frequency	14.0 ~ 14.5 GHz Ku-band
Tx Gain	38.1 dBi
Rx Frequency	10.95 ~ 12.75 GHz Ku-band
Rx Gain	35.8 dBi
Polarized Feed	Cross-pol / Cross-pol & Co-pol
Skew Control	Automatic Skew-angle Control
Azimuth range	Unlimited
Elevation range	-10° ~ +100°
Cross-level range	±30°
Stabilization Accuracy	0.2° peak mis-pointing @ max ship motion condition
Max Ship’s motion	±25°roll, ±15° pitch, ±8°yaw@ 6 sec
Turning rate	Up to 12°/ sec & 5°/ sec2
BUC	4W, 6W, 8W (optional)
Rack Mount Antenna Control Unit	
Display	2 Line 40 Character Graphic VFD Module
Serial Interface	19200 bps 8, N, 1, RS-232C
Modem Interface	Ethernet port / RS-232C / I/O ports
Remote Access	TCP / IP
Input Power	100 ~ 240V AC, 50 ~ 60Hz
Gyrocompass Interface	NMEA / Syncro

Intellian®

Intellian Technologies, Inc.
EMEA & APAC Region

Headquarters / R&D Center / Factory
348-5 Chungho-Ri Jinwi-Myeon Pyengtaek-Si,
Gyunggi-Do 451-562 Korea

Tel: +82 31 379 1000
Fax: +82 31 377 6185

Seoul Office
2F Dongik Bldg., 98, Nonhyun-dong,
Ganagnam-gu, Seoul 135-010, Korea

Tel: +82 2 511 2244
Fax: +82 2 511 2235

Intellian Technologies USA, Inc.
Americas Region

9004 Research Drive
Irvine, CA. 92618, USA

Tel: +1 949 727 4498
Fax: +1 949 271 4183

customersupport@intelliantech.com
www.intelliantech.com