Intellian®

t80W

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.

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Doc. No. 2012U1-UM1031-V1_1

INDEX

INTRODUCTION

Introduction to Intellian t80W

Features of Intellian t80W

Introduction to Intellian t80W

The Intellian t80W antenna locks onto satellites quickly and provides seamless operation in all regions, offering global coverage. The antenna delivers this performance by utilizing a fully stabilized 3-axis platform, as well as a fourth axis for LNB auto-skew control. In addition, built-in as standard, the internal GPS combined with Intellian's patented Wide Range Search (WRS®) provides the fastest satellite acquisition possible. Multiple HD receivers can be connected to the system as standard, providing a truly hands off global coverage depending on the regions visited.

The Intellian t80W incorporates the patented WorldView™ LNB (Low Noise Block-Down Converter), which automatically switches frequency depending on the region the antenna is operating in; all of the switching information is contained in the Antenna Control Unit (ACU). As the satellite TV provider is selected electronically, there is no requirement to purchase multiple LNB modules, reconfigure complex systems and manually change the LNB unit inside the antenna dome each time the vessel crosses into a different satellite service region.

The t80W antenna has a broad elevation range, from -15° to +110°, enabling operation in all conditions and the cross level axis ensures uninterrupted viewing even when the antenna is operating near the equator. The t80W dome is designed to complement the v80G VSAT antenna, providing customers with a compact dual antenna solution for communications and entertainment.

All Intellian antenna systems are designed, manufactured and tested to withstand the company's industry-leading standards for vibration and extreme shock in all sea states and weather conditions.

Features of Intellian t80W

Global Satellite Services Compatibility
Intellian t80W provides boaters with seamless and uninterrupted satellite TV service across multiple coverage areas and service providers offering cost-effective solutions and straightforward, simple operation from the Americas (circular polarized), as well as Europe, the Middle East and the Asia Pacific region (linear polarized) with one LNB module.

Hands-Free WorldView™ LNB Module
The WorldView™ LNB module is built with precise pioneering technology of ±25 kHz (±2.5ppm) stability and is designed to receive multi-band and multi-polarization satellite TV services around the globe. Therefore, boaters are no longer required to manually switch out the LNB inside the antenna dome or re-wire the system when the vessel travels from region to region.

DVB-S2 Digital TV Receptions
Some of the HD TV services have moved onto DVB-S2 and will be more in the future. Thanks to Intellian's groundbreaking DVB-S2 digital TV technology, now boaters are able to enjoy their favorite DTH entertainment at sea, just like home.

Wide Elevation Range
The wide elevation range from -15° to 110° enables the t80W to have seamless signal reception while the vessel is traveling near the Equator or Polar Regions.

Global Satellite Library
The t80W includes the pre-programmed global satellite library which allows the boaters to select the desired satellite while travelling from region to region. Once the satellite is selected the WorldView™ LNB module will automatically switch to the corresponding local frequency to receive the signal.

INSTALLING THE ANTENNA

System Package

Antenna Unit
ACU (Antenna Control Unit)
Installation Kit

Planning the Installation

Selection of Antenna Installation Site
System Cables
Power Requirement
Tools Required for Installation

Antenna Installation

Unpacking the t80W Package Box
Antenna Dimensions
Antenna Mounting Templates
Installing the System Cables
Mounting the Radome
RF Cable Connections
Position the Radome

System Package

The Intellian t80W consist of two major units, an antenna unit and an antenna control unit (ACU).

Antenna Unit

The antenna unit includes an antenna pedestal inside a radome assembly unit. The pedestal consists of the satellite antenna main dish and sub-reflector module with a WorldView™ LNB module mounted on a stabilized pedestal. The radome protects the antenna pedestal assembly unit from the severe marine environment.

ACU (Antenna Control Unit)

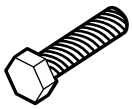
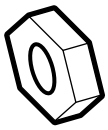
Antenna Control Unit (ACU) provides the power to the antenna and controls the various settings of the antenna. Additionally, VFD (Vacuum Fluorescent Display) allows you to operate the ACU in the dark.

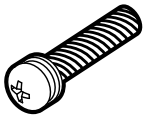
Front panel

Rear panel

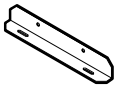
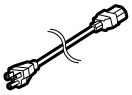
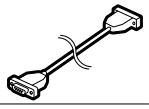
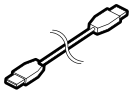
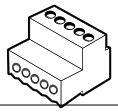
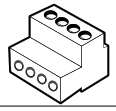
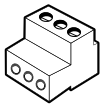
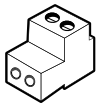
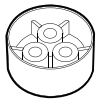
Installation Kit

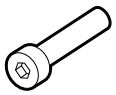
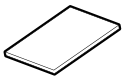
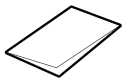
Contains the items required for securing the antenna unit and ACU to the vessel.

Antenna	Q'ty	Description	Size	Remark
	5	Hex. Bolt	M12 x 60L	Antenna-Deck
	5	Flat Washer	M12	
	5	Spring Washer	M12	
	10	Hex. Nut	M12	

ACU	Q'ty	Description	Size	Remark
	5	Self-Tapping Screw	ø 4 x 16	Table Mount Bracket
	10	Flat Head Screw	M3 x 8L	Rack Mount Bracket ACU
	5	Sems Bolt	M3 x 12L	Table Mount Bracket ACU

Other Components

	Image	Q'ty	Description		Size	Remark
1		2	ACU Bracket	Rack	-	ACU-19inch Rack
		2		Table	-	ACU-Table
2		1	RG6 Cable		30m	ANT - ACU RF Cable
3		1	RG6 Cable		3m	ACU - IRD Cable
4		1	AC Power Cable (CEE 7/7)		1.5m	ACU Power
5		1	PC Serial Cable		1.8m	ACU to PC
6		1	USB Cable (A-A/M-M)		1.8m	ACU to PC
7		1	Synchro Connector		AK950-5	ACU (Synchro)
8		1	Step by Step Connector		AK950-4	ACU (Step-by-Step)
9		1	NMEA Out Connector		AK950-3	ACU (NMEA Out)
10		2	Gyro NMEA / GPS NMEA In Connector		AK950-2	ACU (Gyro NMEA / GPS NMEA In Connector)
11		2	Rubber Gland		RG6	RG6 Cable-Antenna

12		5	Hex Socket Head Cap	M6x40L	Radome (Top-Bottom)
13		5	Dome Washer	M6	Radome (Top-Bottom)
14		1	Installation CD	-	-
15		1	User Manual	-	-
16		1	Mounting Template	-	-

Planning the Installation

Selection of Antenna Installation Site

Install the antenna in accordance with the following procedures to insure maximum performance of the antenna.

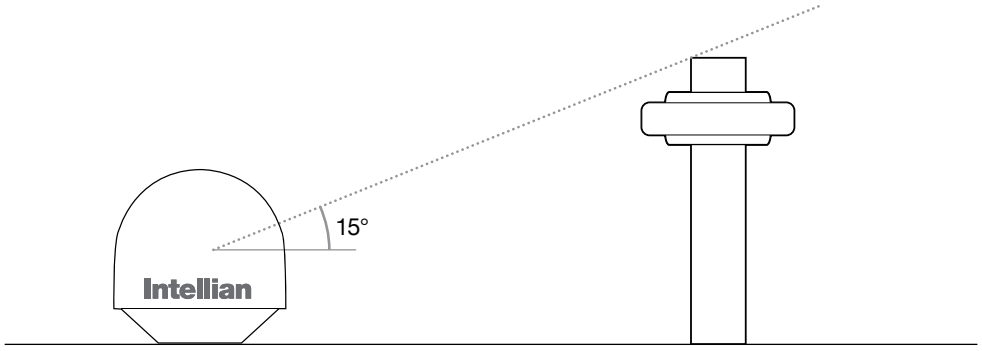
The antenna should be installed in a place where there is all round clear view of the horizon. Please be sure there are no obstacles within 15 degrees above the antenna. Any obstacles can prevent the antenna from tracking the satellite signal (Refer to the drawing).

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 (1.2m) above or below the level of the radar and minimum of 15 feet (4.6m) 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. For optimal performance of the antenna, it is not recommended to install at any corner of the vessel, where the movement of the vessel is the greatest. Install the bottom of the antenna parallel to the surface of the sea and fix tightly to the structure of the vessel.

When setting the antenna down, be careful not to damage the RF connector. Striking the connectors on the bottom directly will damage the connector.

Elevation Limit of Obstacles



System Cables

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

1. All cables need to be well clamped and protected from physical damage and exposure to heat and humidity.
2. Cable with a tight bend radius 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 coax on L-Band, Intellian recommends the following 75 ohm coax cable types for standard system installations. For cables that run longer than 100 meters, please consult Intellian Technologies.

Run Length	Coax Type
Up to 35 meters	RG6 or LMR-300-75
Up to 60 meters	RG11 or LMR-400-75
Up to 100 meters	LMR-600-75

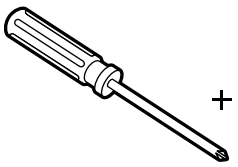
Gyro Compass / GPS Interface Cable (Customer Furnished)

Multi-conductor, Shielded
2 conductors for NMEA

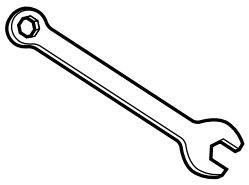
Power Requirement

Intellian t80W has been designed to work on a vessel's power supply rated at 110-220 V AC.

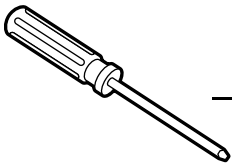
Tools required for Installation



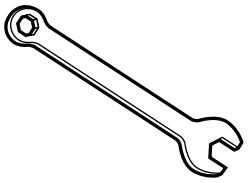
Phillips Head
Screwdriver



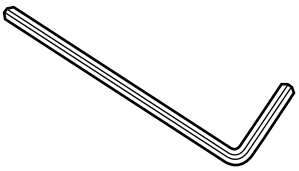
11 mm Spanner



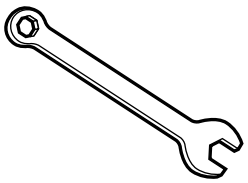
Flat Head
Screwdriver (Min. 5mm)



13 mm Spanner



5 mm Allen/Hex key

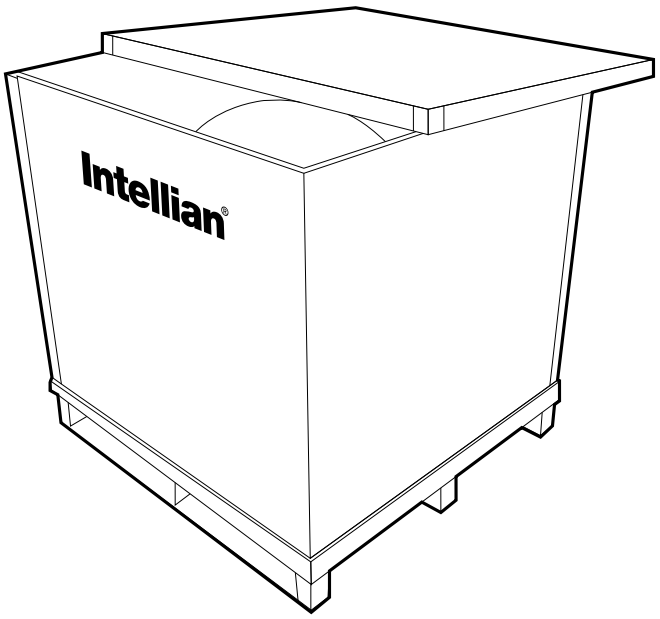


19 mm Spanner

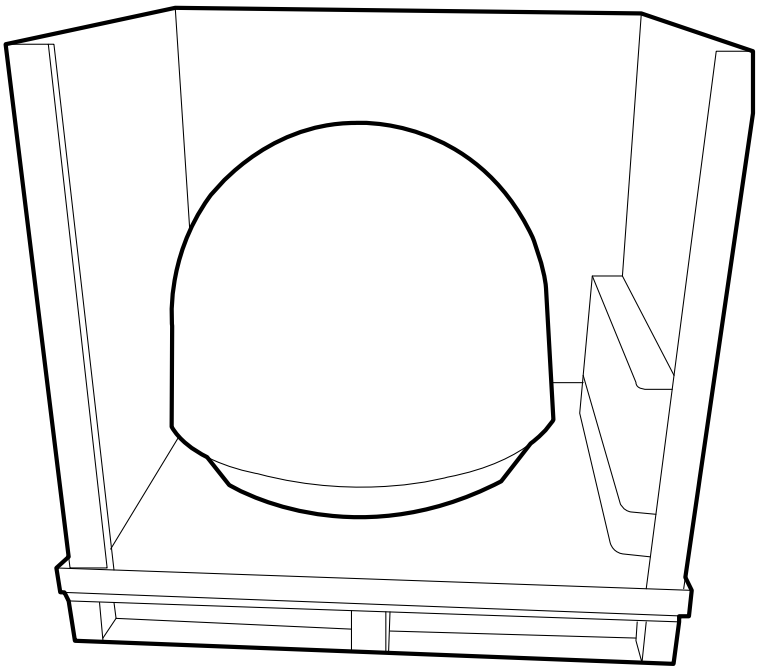
Antenna Installation

Unpacking the t80W Package Box

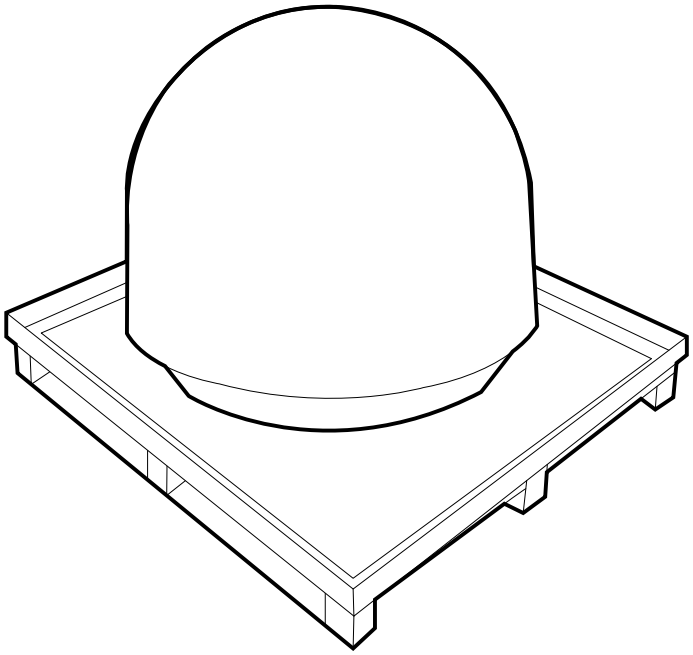
Step 1.
Remove the top panel.



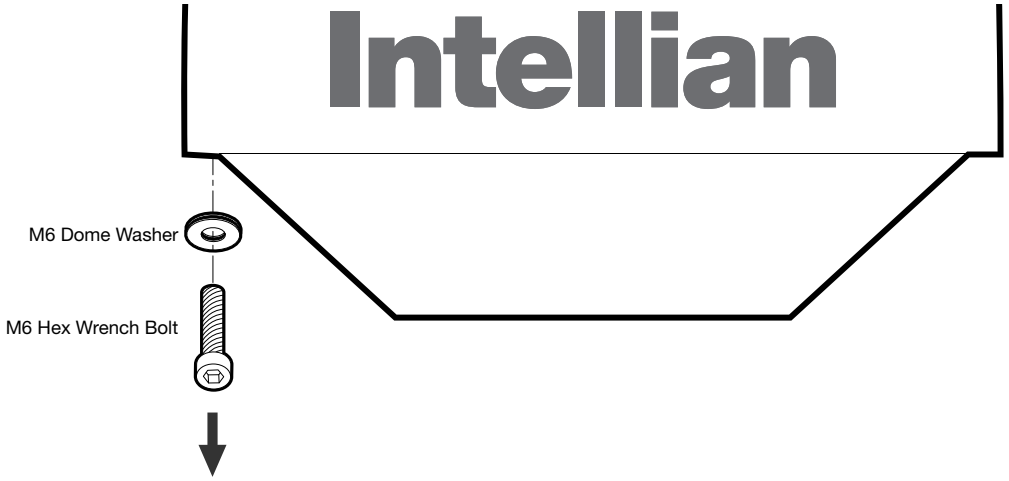
Step 2.
Remove ACU box and installation kit box.

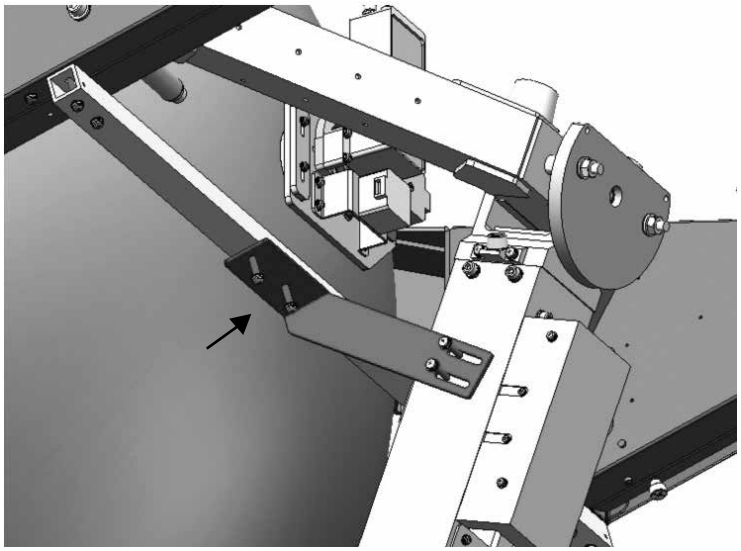


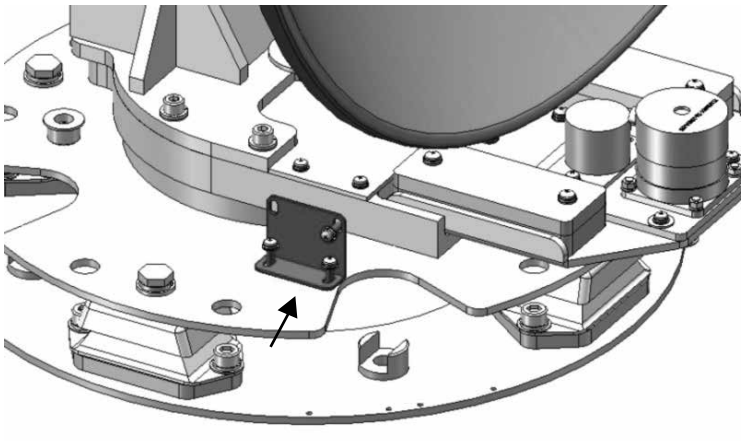
Step 3.
Remove the 4 shipping bolts that mount the antenna to the pallet.



Step 4.
Open the top radome and remove the shipping restraints
(3 fixing brackets mounted to the antenna pedestal and the azimuth axis).



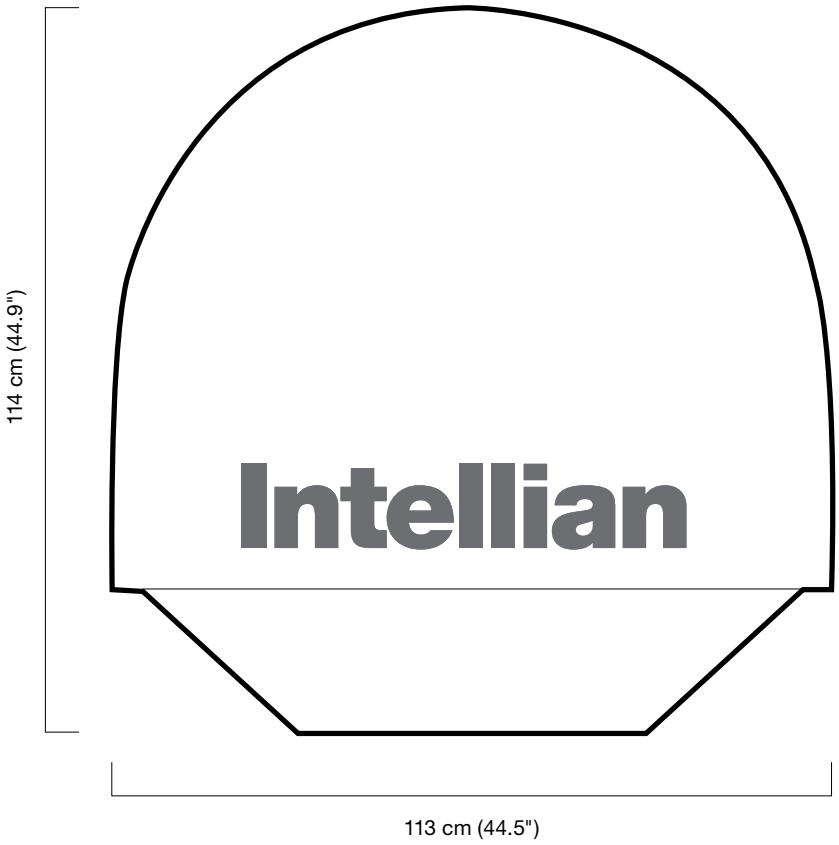




Antenna Dimensions

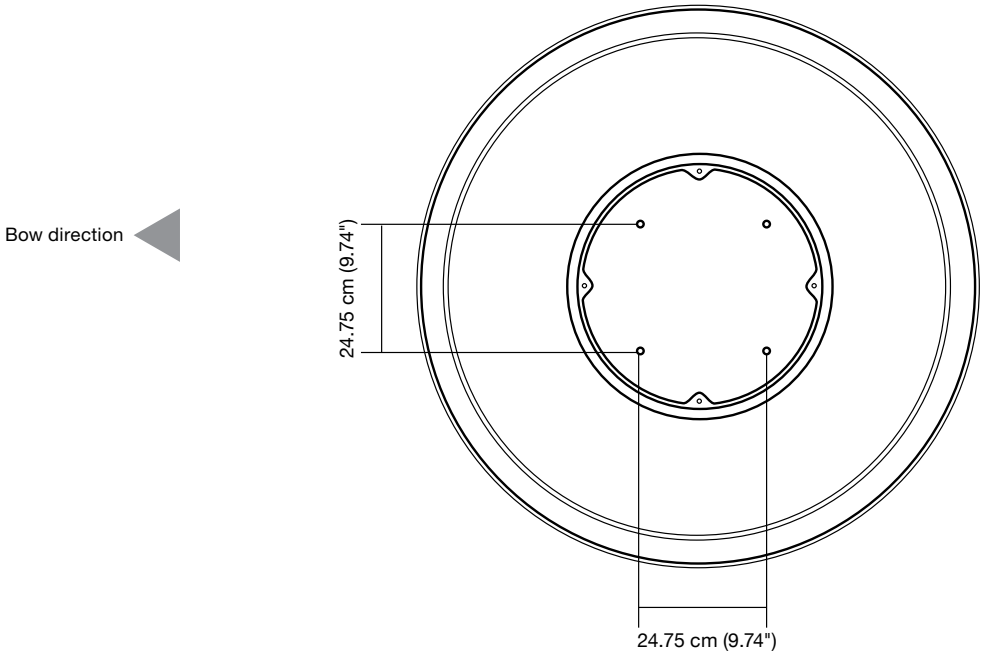
The method of installation and mounting of antenna may vary with vessel design but the following procedures are applicable in most situations, and will result in a secure and effective installation. Confirm the height and diameter of the antenna before installing it.

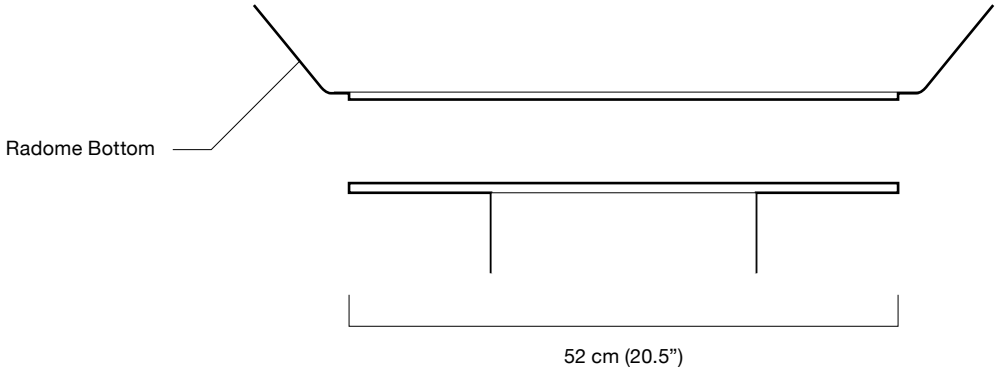
Radome Dimensions

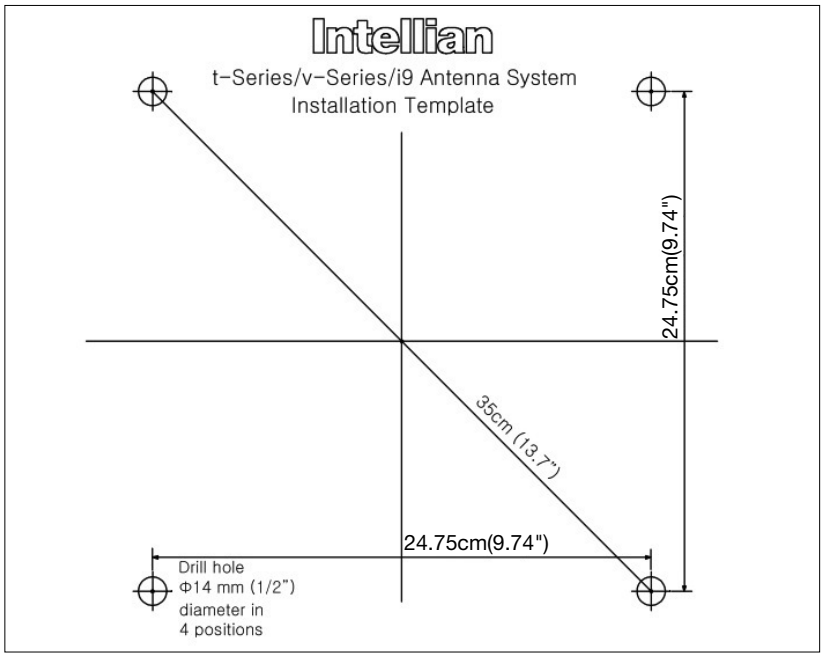


Antenna Mounting Templates

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

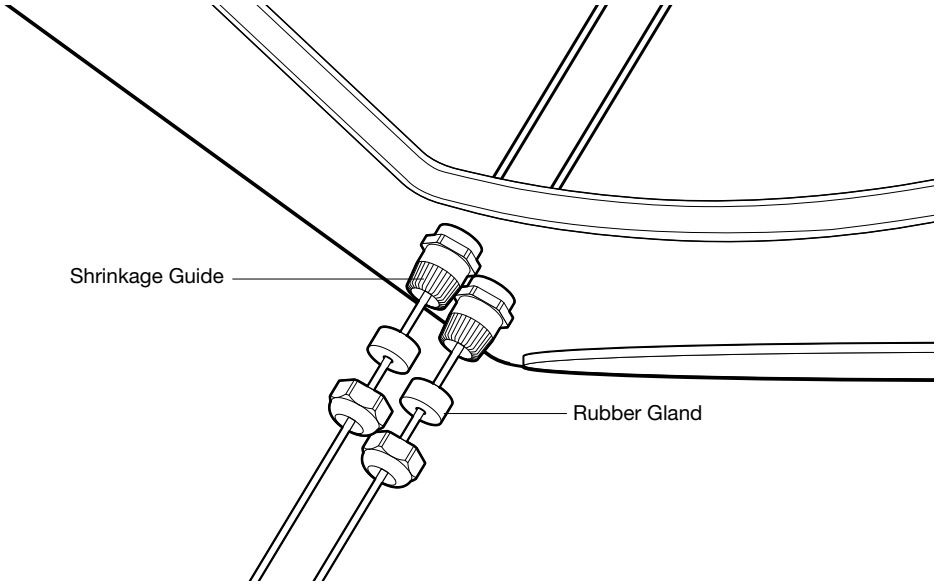





Intellian
t-Series/v-Series/i9 Antenna System
Installation Template
24.75cm(9.74")
35cm (13.7")
24.75cm(9.74")
Drill hole
Φ14 mm (1/2")
diameter in
4 positions

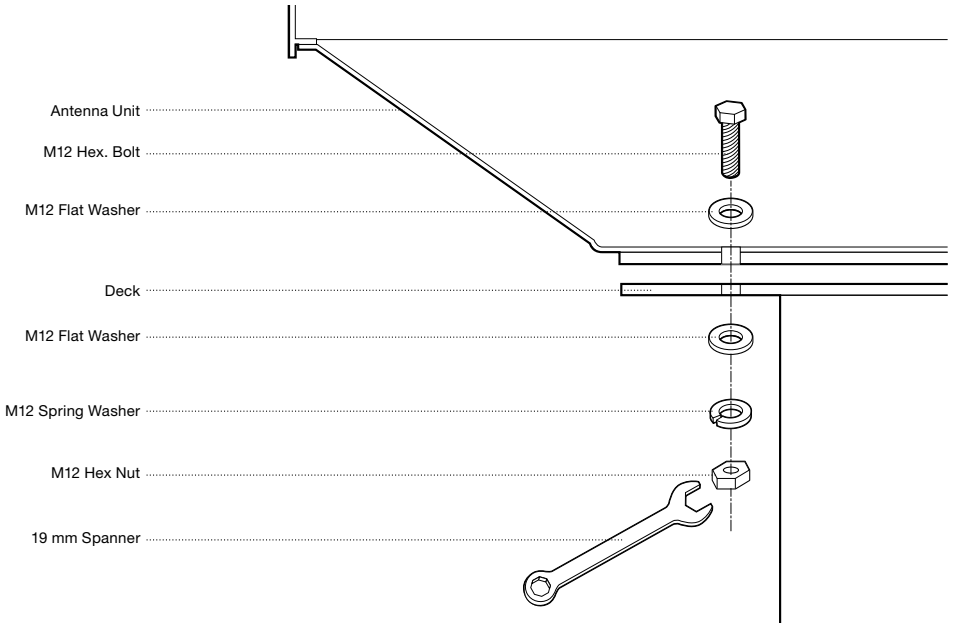
Installing the System Cables

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



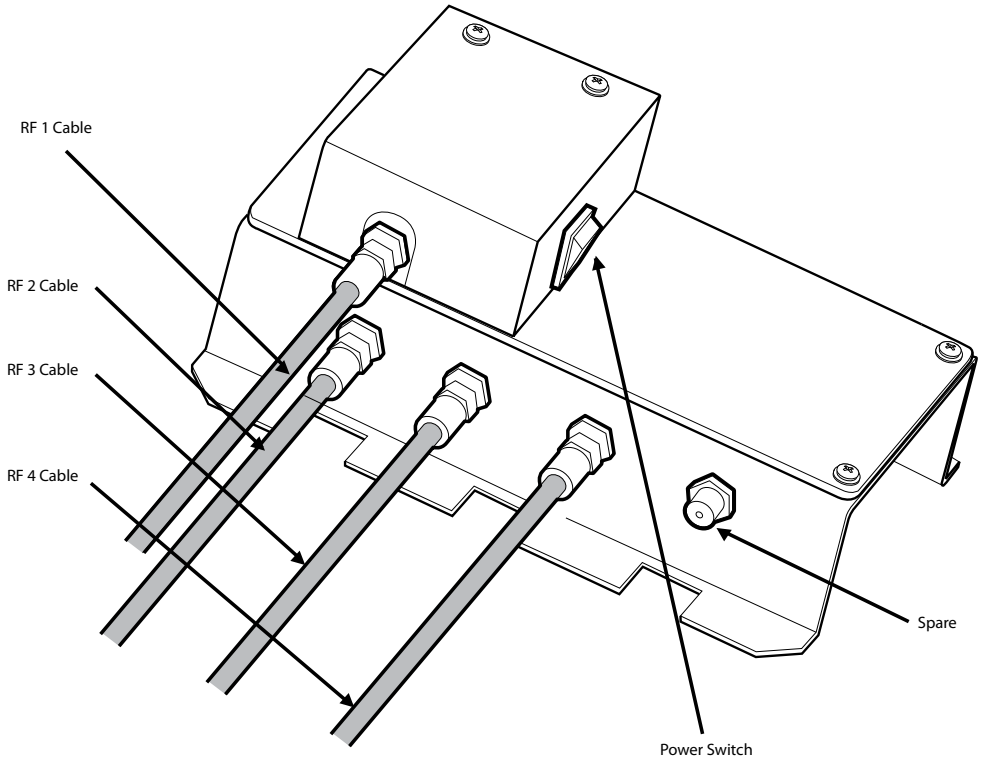
Mounting the Radome

Bolt the radome base directly to the support pedestal. Makesure to use the Intellian supplied blots from the accessory box when you mount the radome.

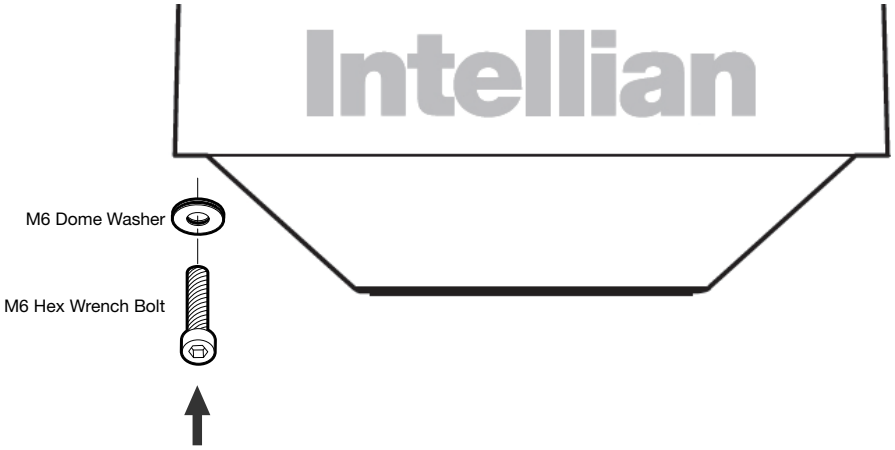


RF Cable Connections

Before installing the RF cable, ensure that the RF cable labeled with RF1 has to be connected properly between the antenna control unit and the power switch box. Connect the four RF cables to the RF connectors using an 11mm spanner. Ensure that the power switch is off during the installation period. When all the hardware and cables have been installed, turn on the power switch. Use RG11 rubber gland if you're using RG11 cable instead of RG6 cable.



Reinstall the top radome.



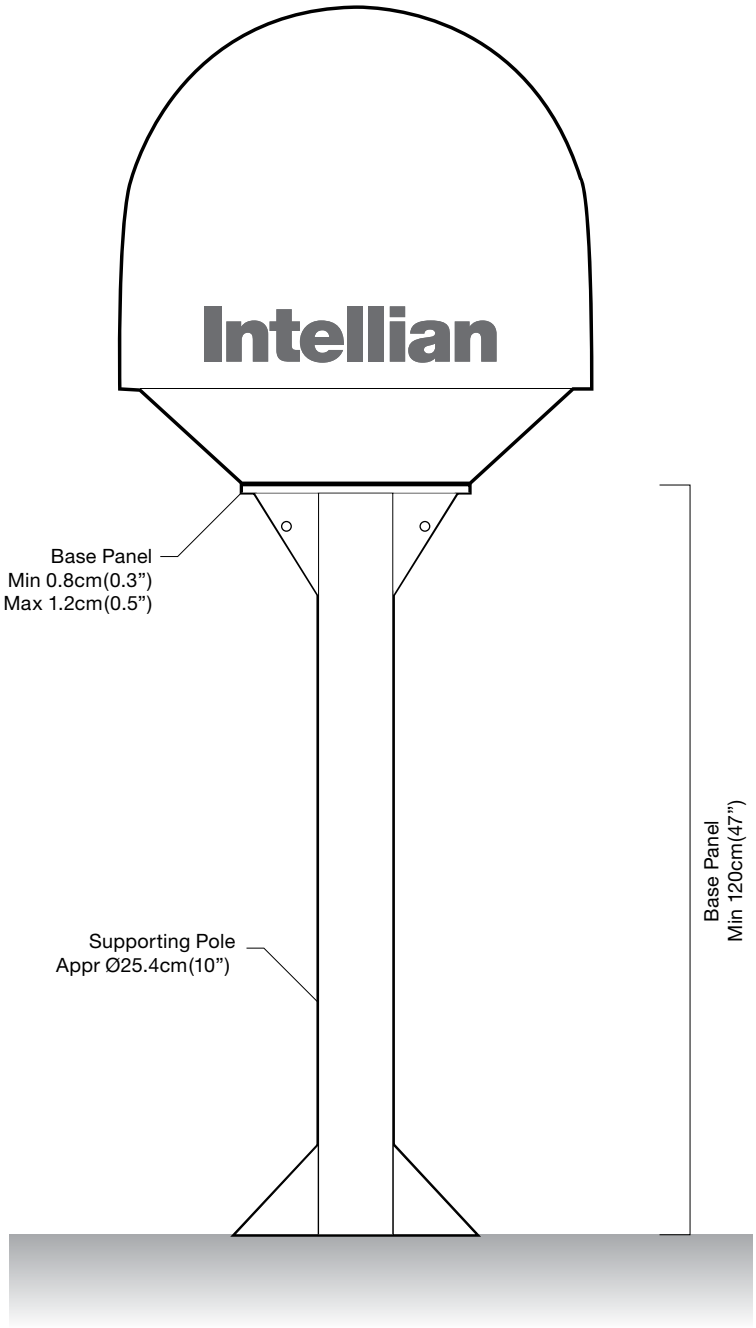
WARNING

WARNING: Please ensure that your Intellian system is ALWAYS powered ON upon leaving the dock. Failure to follow these instructions could result in damaging mechanical parts in the antenna and/or possibly void your warranty. Intellian strongly recommends to restrain the antenna pedestal properly while underway when power is removed from the antenna. The normal operating condition for the t80W is to remain powered up at all times.

Position the Radome

The radome should be positioned with the BOW marker aligned as closely 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 Cables

Up to 4 Receivers Connection

Multi-Switch Connection

Ship Gyrocompass Connection

Mounting the ACU

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

Figure 01. 19" Rack Mount Type

(a) 19” Rack Mount Type

- The ACU should be installed using the two supplied Rack Mounting Brackets which allow ACU to be installed in the 19” rack (Customer Supplied).
- Using the bolts supplied, attach the mounting brackets to the sides of the ACU.
- Place the ACU in the 19" rack.
- Connect the cables to the rear of the ACU.

Figure 02. Table Mount Type

(b) 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 bolts supplied, attach the mounting brackets to the sides of the ACU.
- Place the ACU in the location where it is going to be installed.
- Using a pencil to mark the 4 hole positions (2 on each side), and fix the ACU using the self-tapping screws.
- Connect the cables to the rear of the ACU.

WARNING

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

ACU Dimensions

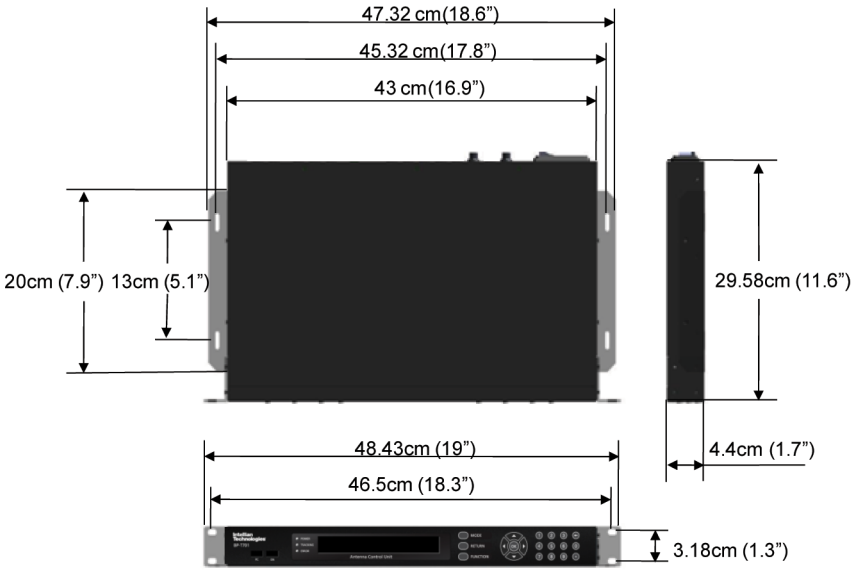


Figure 03. Dimension of ACU

Selection of ACU Installation Site

- The ACU should be installed below deck, in a location that is:
- Dry, cool, and ventilated.
- Easy accessible from your main TV viewing area.

Connecting the System Cables

For your satellite TV system to work properly, the system will have to be properly connected with all of the provided components, as shown in the figure below. Separate purchase of a satellite receiver, multi-switch, and TV is required.

Up to 4 Receivers Connection

In Universal LNB mode, RF1, RF2, RF3 and RF4 can be connected, however, when you switch and use the system from universal LNB mode (ex. Europe) to single LNB mode (ex. US), RF3 and RF4 will not work and only RF1 and RF2 will transfer the satellite's signal.

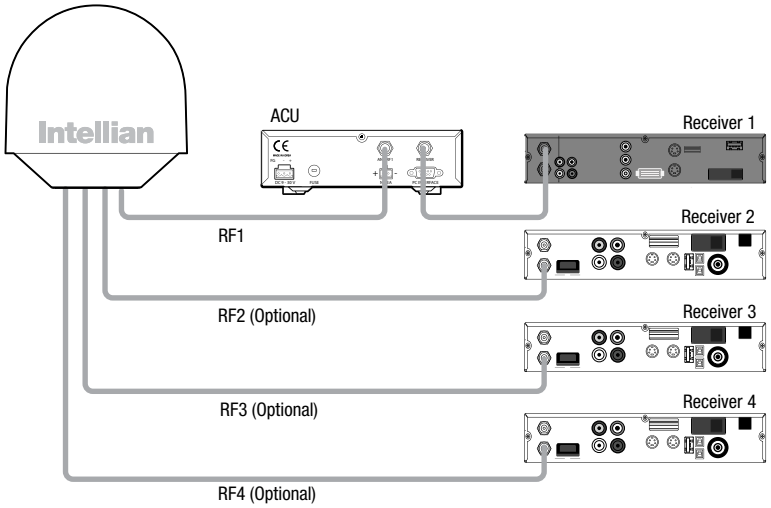


Figure 04. t80W System Diagram

- Connect the RF cable from the ACU's RF1 connector on the power switch box located inside of the radome to the ANT. RF1 connector on the ACU.
- Connect the RF cable from the RECEIVER connector on the ACU to the RF connector on the IRD.
- Connect the ship’s gyro to the Gyrocompass Input on the ACU.
- Connect the power cable from the AC power connector on the ACU to a power source at 110- 220 V AC.
- Press the POWER ON switch on the ACU to start the operation of the antenna system.

Multi-Switch Connection

When you use the multi-switch in single LNB mode, you need to connect RF1 and RF2 to the low-band (Horizontal Low and Vertical Low) outputs of the 4x8 multi-switch and disable DisEqC function while connecting to a receiver other than a European receiver. In Universal LNB mode, RF1~ RF4 can be connected to any 4 outputs of 4x8 multi-switch. However when you use the system for single LNB mode, RF3 and RF4 ports will not transfer the RF signal.

RF1	RF2	RF3/RF4	
13V	18V	13V+22kHz	18V+22kHz
Vertical Low	**Horizontal Low**	Vertical High	Horizontal High

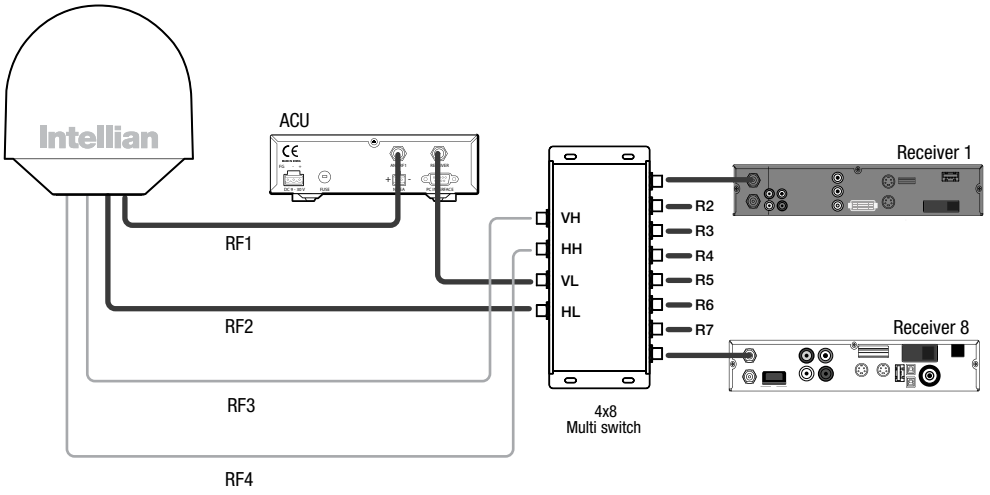


Figure 05. Multi-switch Configuration

Ship Gyrocompass Connection

For satellite tracking, you must connect a ship's gyrocompass to the antenna system through the gyro interface on the ACU. If the ship's gyrocompass output is other than NMEA 0183 separate purchase of a Gyro to NMEA converter is required.

- NMEA 0183 Gyrocompass Interface Cable (Customer Furnished)
- Type: Multi-conductor (2 conductors for NMEA 0183).

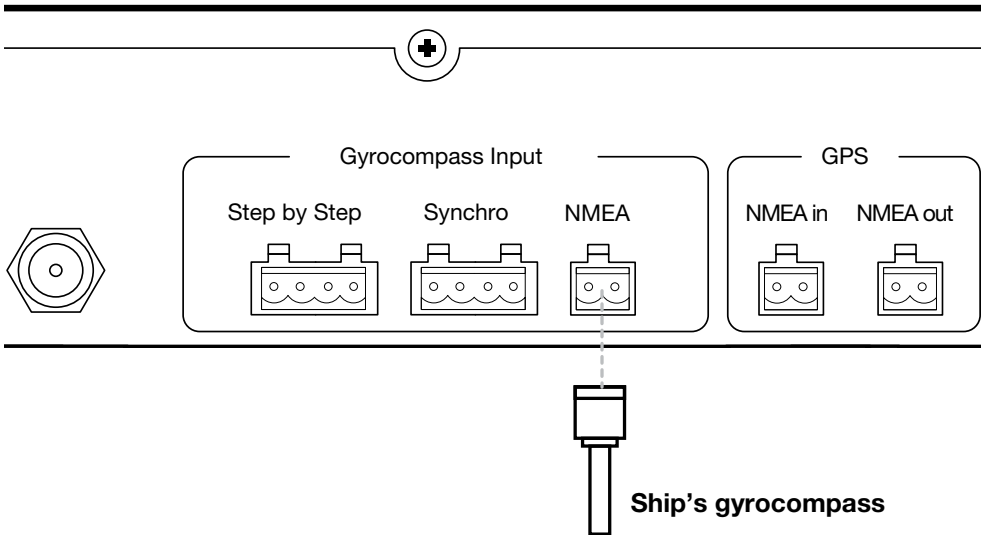


Figure 06. Ship's Gyrocompass Connection

NOTE: 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).

The heading in most cases will be 000.0 and you will have to enter the initial value of the 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 0183 Heading Gyrocompass output.

OPERATING THE ACU

Introduction

Normal Mode

Startup
Change of Target Satellite
Monitoring Current Status

Setup Mode

Installation Settings

Antenna Settings

Manual Search
Set Antenna LNB pol Angle
Set Antenna Position
Set Search Parameters
Set Antenna Parameters
Set Block Zone
Antenna Diagnostic Test

Satellite Settings

Set Satellite Pair
Edit Satellite Information
Set Region
Find Transponders

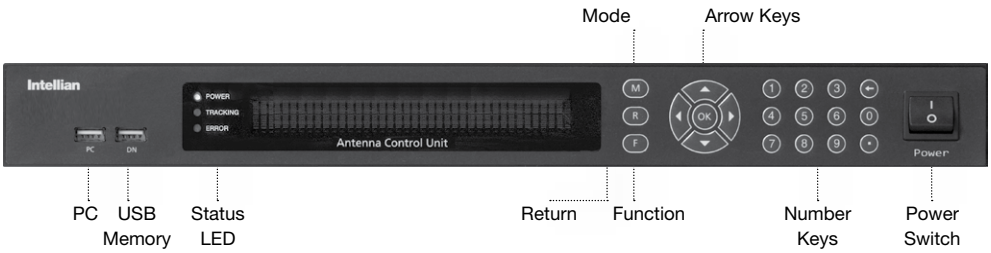
System Settings

Set Location
Set Remocon
System Backup & Restore
View Versions

Introduction

This section of the handbook describes how to set up your Satellite TV System after installation using the ACU.

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

Figure 07. Soft Key Functions

WARNING

WARNING: Please ensure that your Intellian system is ALWAYS powered ON upon leaving the dock. Failure to follow these instructions could result in damaging mechanical parts in the antenna and/or possibly void your warranty. Intellian strongly recommends to restrain the antenna pedestal properly while underway when power is removed from the antenna. The normal operating condition for the t80W is to remain powered up at all times.

Normal Mode

Startup

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

```
      INTELLIAN TECHNOLOGIES INC.
```

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

```
     INITIALIZE – ANTENNA INFO
           INTELLIAN W80
```

2. The ACU receives antenna information.

```
     INITIALIZE – EL POSITION
           INTELLIAN W80
```

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

```
     INITIALIZE – AZIMUTH POSITION
           INTELLIAN W80
```

4. The azimuth angle is initialized.

```
     INITIALIZE – FIND NOISE LEVEL
           INTELLIAN W80
```

5. The antenna measures the noise levels of the default satellites.

```
     INITIALIZE – SAT POSITION
           INTELLIAN W80
```

6. The antenna returns to the target satellite position.

```
◀ SEARCH3 ASTRA_1          AGC:301   [VL] ▶
  AZ:292.7( 202.7) EL:  48.3 SK:▲–72.0▼
```

7. The antenna is searching for the target satellite.

```
◀ TRACKING ASTRA_1         AGC:501●  [VL] ▶
  AZ:292.7( 202.7) EL:  48.3 SK:▲–72.0▼Fn
```

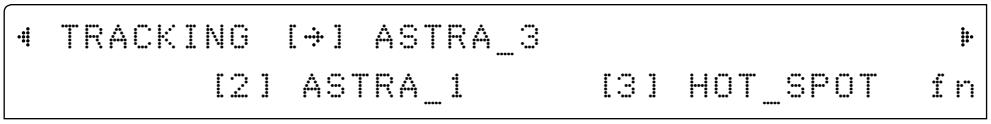
8. The antenna has locked onto the satellite.

Change of Target Satellite

Your antenna is programmed with three or two candidates of target satellites as default.While the antenna is in tracking mode, press the Left arrow key to display the current satellite. To change the target satellite, press the number key assigned to the target satellite. The target satellite is changed and automatically tracked by the antenna.

1. The antenna is tracking satellite [1].

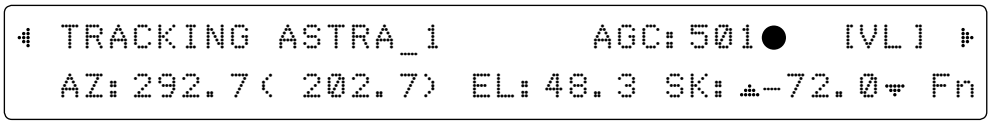
2. Press the NUMBER key 2 for tracking satellite [2].



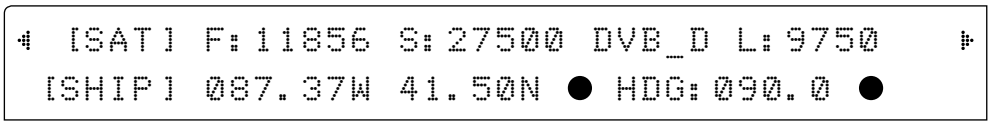
3. Press the NUMBER key 3 for tracking satellite [3].

Monitoring Current Status

While POWER ON to Intellian t80W, ACU displays the status of the antenna. The various ACU displays may be shown according to the current status of the antenna.



1. True azimuth [292.7] position of the antenna is the sum of ships heading 090.0 [HDG] and antenna relative [202.7]. Current IF signal (AGC) is displayed.● will only be displayed when the signal is strong enough to lock. [VH] indicates vertical high band. VL: Vertical Low, HL: Horizontal Low, HH: Horizontal high. Press the UP and DOWN arrow keys to increase and decrease the LNB skew angle.

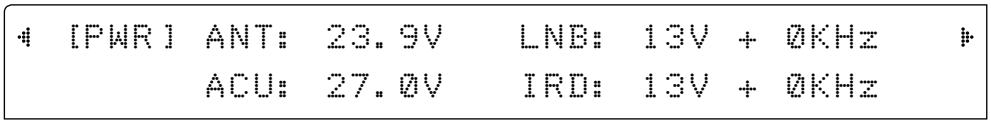


2. Press the RIGHT arrow key to display current satellite, GPS [SHIP] and ship's heading [HDG].

Satellite Information :
Frequency : 11856 MHz
Symbol rate : 27500 KHz
Verification method : DVB_Decode
LNB local frequency : 9750 MHz

GPS Information :
Longitude : West/East
Latitude : North/South
● will be displayed flashing only if ACU receives the correct GPS input

Heading Information:
● will be displayed flashing only if ACU receives the correct NMEA heading input

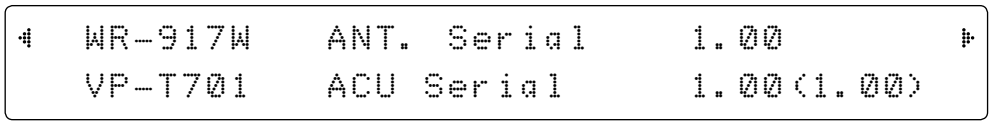


3. Press the RIGHT arrow key to display ACU and antenna, LNB and IRD voltage information).

Antenna and ACU Voltage :
Due to the voltage losses across the RF1 coaxial cable, ensure that the output voltage of the ACU is within 27± 1 V DC and the minimum antenna operation voltage is above 16V DC.

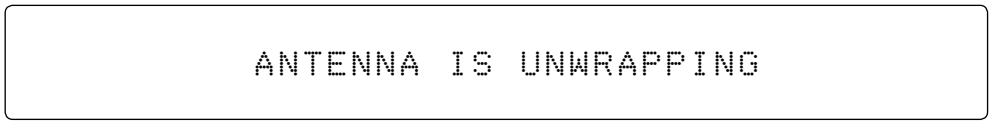
LNB and IRD Voltage :

Voltage		DiSEqC		Discription
13V	18V	0KHz	22KHz	
•		•		Vertical Low (VL)
	•	•		Horizontal Low (HL)
•			•	Vertical High (VH)
	•		•	Horizontal High (HH)

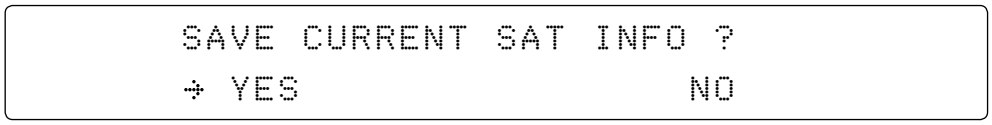


4. Press the RIGHT arrow key to display the antenna, ACU and Library version.
Keep pressing the Right arrow key to return to the previous view.

5. Press the RIGHT arrow key to display the current tracking satellite.



6. The antenna is winding/ unwinding the cables in the antenna. The necessity of “unwrap” is based on how far the ship has turned in one direction on the other.

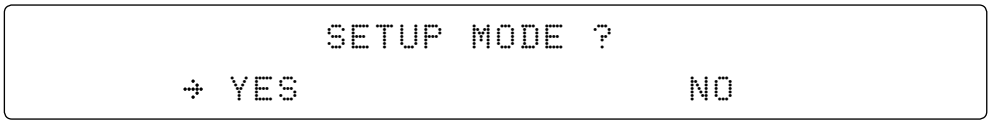


7. While the antenna is in tracking mode, Press the FUNCTION key to save the bow offset or abort and return to the previous view.

Setup Mode

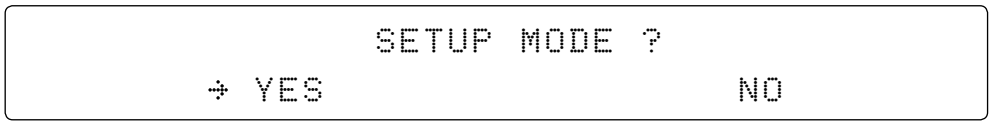
Enter the SETUP mode simply follow the instructions below.

1. While the antenna is in tracking mode, press the MODE key for setup mode.



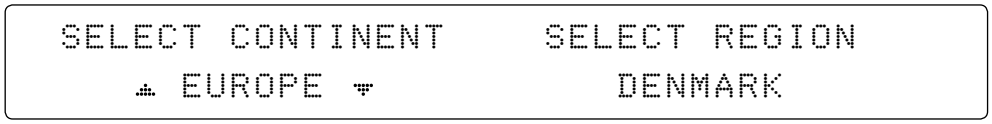
2. Press the LEFT arrow key to move cursor to YES and press the OK key to enter setup mode or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

Installation Settings

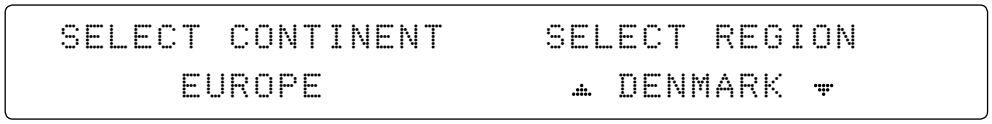


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

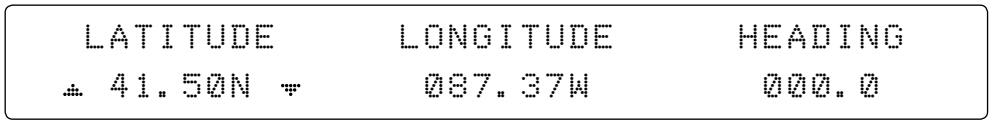
2. Press the arrow keys to move cursor to INSTALLATION menu and press the OK key to enter it.



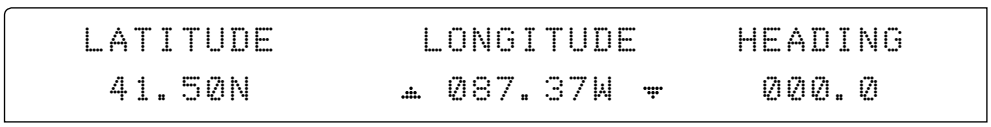
3. Set CONTINENT. Press the UP and DOWN arrow keys to select the continent that you are in. Press the OK key to set the settings.



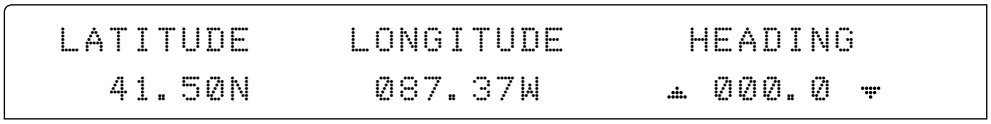
4. Set REGION. Press the UP and DOWN arrow keys to select the region that you are in. Press the OK key to set the settings.



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



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

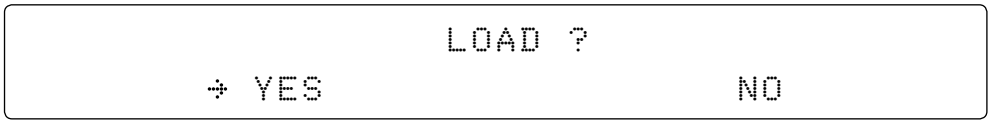


7. Set the ship's current HEADING.
Entry of ships heading is not required when your system is connected to a NMEA0813 Heading Gyrocompass output.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the HEADING.

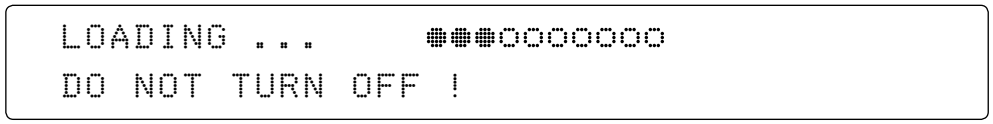
8. Set the GYRO TYPE.
Determine the type of gyrocompass that is used on the ship. Ensure that the Gyro Type is set correctly. Press the UP and DOWN arrow keys to select the gyro type and press the OK key to set the GYRO TYPE.

9. Set the BOW ADJUST.
The radome should be positioned with the BOW marker aligned as close as possible to the centerline of the ship. Small variations from actual alignment can be compensated with the BOW ADJUST, so precise alignment is not required.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the BOW ADJUST.

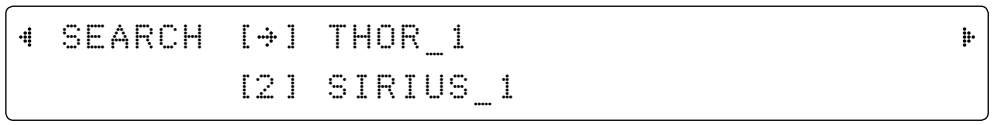
10. Set the BACKUP SETTINGS.
BACKUP SETTINGS is to determine whether to back up the installation setting or not. Press the UP and DOWN arrow keys to select "YES" to backup or "NO" to NOT backup and press the OK key to set the BACKUP SETTINGS.



11. Press the RETURN key to load the current setting or abort and return to the previous view.



12. Setting is being loaded to the system.
The ACU will restart the system automatically after uploading the setting.
DO NOT turn off ACU power when uploads are being processed.

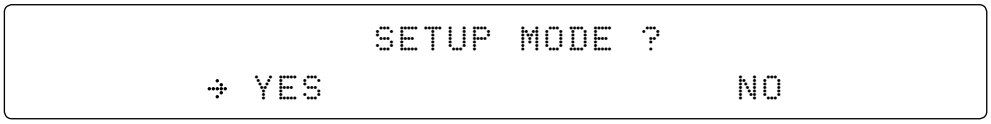


13. Regional satellite library has been updated.

Antenna Settings

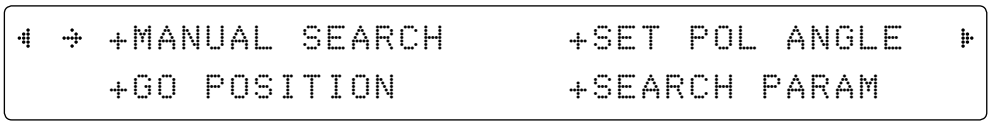
Manual Search

Search the desired satellite manually.

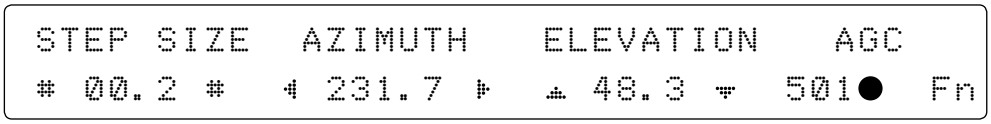


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

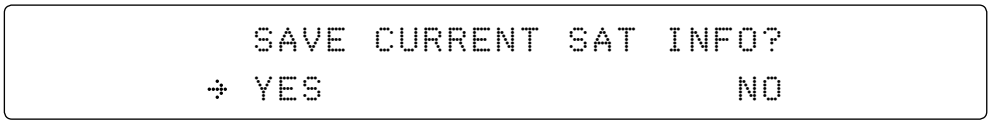
2. Press the OK key to enter ANTENNA menu.



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

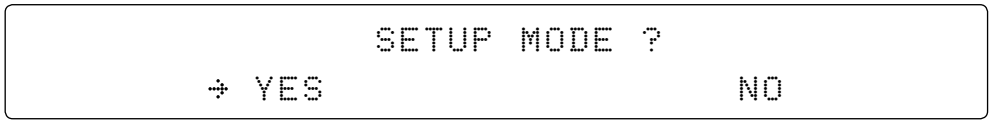


4. Current IF signal level (AGC) is displayed to assist you in manually peaking EL for best signal level. Press the NUMBER key to change the step size(Range : 0.1~9.9). Press the LEFT and RIGHT arrow keys to move azimuth by step size (Range : 0~360). Press the UP and DOWN arrow keys to move elevation by step size(Range : 0~90). Press the FUNCTION key to save the bow offset when the antenna locks onto the peak level of the AGC signal.



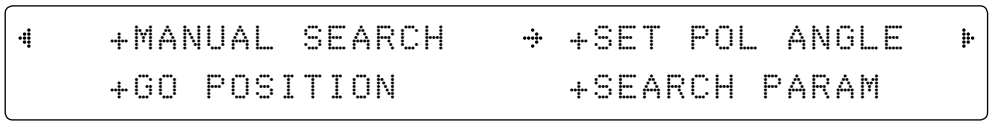
5. If the current settings are able to lock onto the satellite, press the LEFT key to move cursor to YES and press the OK key to save the bow offset. It will shorten the satellite acquisition time next time. Or you can press the RIGHT key to move cursor to NO and press the OK key to abort and return to the previous view.

Setup Antenna LNB pol Angle



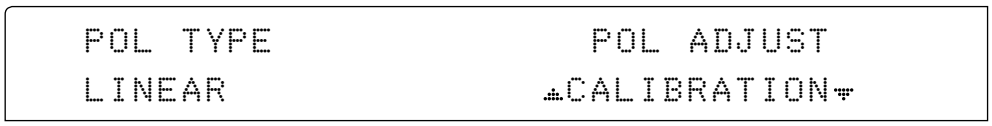
1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

2. Press the OK key to enter ANTENNA menu.



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

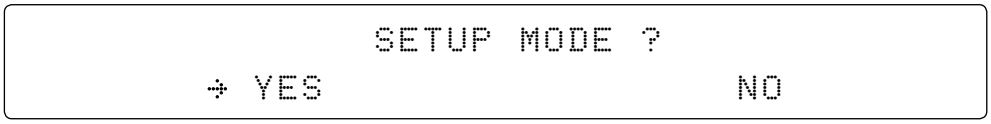
4. Press the UP and DOWN arrow keys to select the POL TYPE (Linear / Circular polarization) of the LNB.



5. Press the UP and DOWN arrow keys to select the POL ADJUST (Calibration/ Manual Adjust). When you replace the control board or LNB skew sensor, select CALIBRATION to calibrate LNB pol. angle.

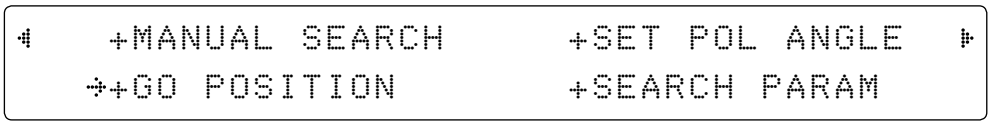
6. This menu will only be displayed when " Manual Adjust" on previous step is selected. Press the UP and DOWN arrow keys to increase or decrease the LNB pol angle manually and the correspondent SIGNAL level will be displayed next to it.
Press the RETURN key to return to the previous view.

Antenna Go Position

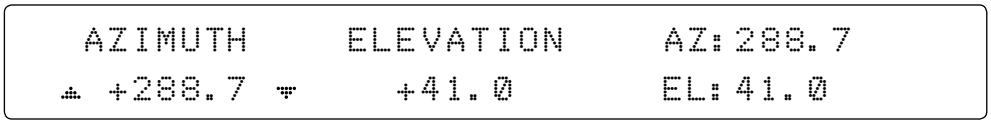


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

2. Press the OK key to enter ANTENNA menu.

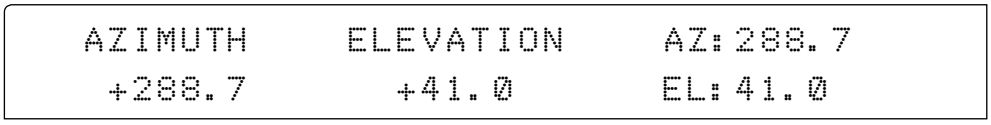


3. Press the RIGHT arrow key to move cursor to GO POSITION menu and press the OK key to enter it.



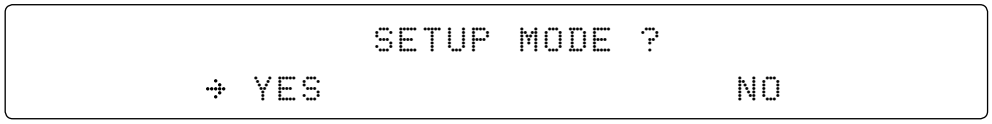
4. Set the AZIMUTH position.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the AZIMUTH position.

5. Set the ELEVATION position.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the ELEVATION position and execute both the new azimuth and elevation position.



6. ACU displays current antenna position.
Press the RETURN key to return to the previous view.

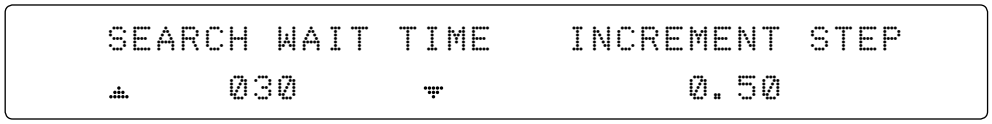
Search Parameters



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

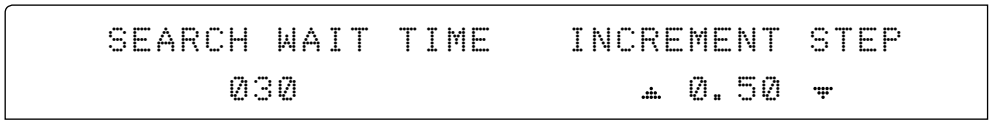
2. Press the OK key to enter ANTENNA menu.

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

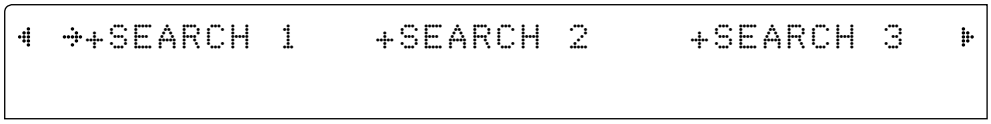


4. Set the SEARCH WAIT TIME. (Range : 20 - 120 sec)
Set the time-out for automatic initiation of a search after the signal level drops below threshold.

Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase and decrease the selected character Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the SEARCH WAIT TIME.
Press the RETURN key to save or abort and return to the previous view.



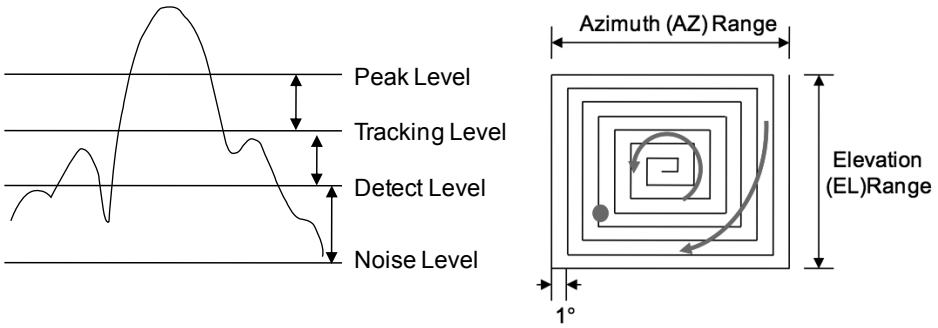
5 Set the INCREMENT STEP size.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK keys to set the INCREMENT STEP.
Press the RETURN key to save or abort and return to the previous view.



6. SEARCH 1 menu is reserved for future use.
Use SEARCH 2 and SEARCH 3 menus to set the size of search pattern range.
Move cursor to SEARCH 2 or SEARCH 3 and press the OK key to enter SEARCH 2 or SEARCH 3 menu.

SEARCH 2 : a search pattern 2 will automatically be initiated when AGC falls below the current detect level threshold setting.

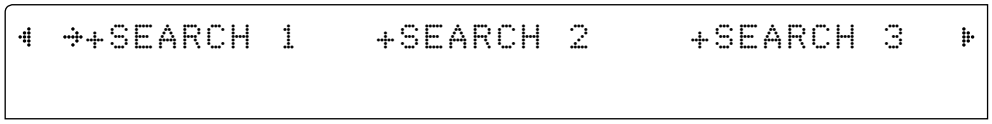
SEARCH 3 : a search pattern 3 will automatically be initiated when AGC falls below the current tracking level threshold setting.



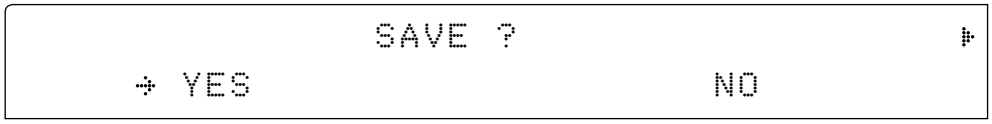
A search pattern will automatically be initiated when AGC falls below the current threshold setting (indicates that satellite signal has been lost). Search is conducted in a two-axis pattern consisting of alternate movements in azimuth (AZ) and elevation. These parameters should only be changed by an authorized service technician. Improper setting of these parameters will cause your system to perform improperly.

7. Set the AZIMUTH RANGE. (Range : 0 - 540)
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new AZ RANGE.

8. Set the ELEVATION RANGE. (Range : 0 - 90)
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new EL RANGE.



9. Press the RETURN key to save or abort and return to the previous view.



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

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 ?
          + YES                    NO
```

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

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

2. Press the OK key to enter ANTENNA menu.

```
   +SET PARAMETERS      +BLOCK ZONE
    +DIAGNOSIS
```

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

```
              ENTER PASSWORD
                 _ _ _ _
```

4. Access to the password protected system. Setup parameters are only required after installation for repairs of your antenna system. These parameters should only be changed by an authorized service technician. Improper setting of these pararmeters will cause your system to perform improperly.
Press 4 digit (1590) password to enter SET PARAMETERS menu.

```
  SCAN OFFSET              DISEQC THRES
     55                        0100
```

5. Set the SCAN OFFSET. (Range : 0 -90)
THe scan offset is to offset the angle difference between the black marker on the sub-reflector and the optical sensor.Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease theselected character. Or press the NUMBER keys to set the desired value directly. Press the OK key to set the new SCAN OFFSET.

SCAN OFFSET	DISEQC THRES
55	▲ 0100 ▼

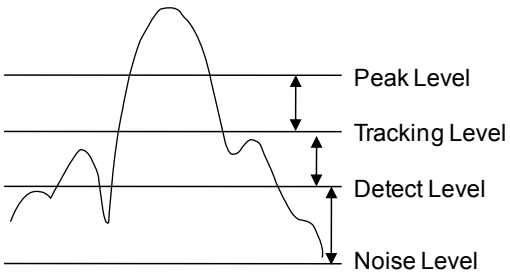
6. Set the DISEQC THRES. (Range : 0 - 1000)
The DiSEqC thres is to set the DiSEqC signal threshold level.
Press the LEFT and RIGHT arrow keys until the desired character to be edited is underscored (selected) and press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new DISEQC THRES.

DETECT LEVEL	TRACKING LEVEL
▲ 060 ▼	030

7. Set the DETECT LEVEL. (Range : 1-200)
The detect level is to set the satellite signal detection level.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the new DETEC LEVEL.
Or press the RETURN key to return to the previous view.

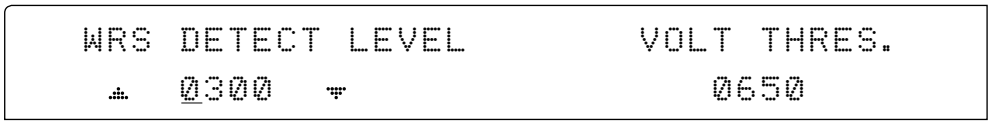
DETECT LEVEL	TRACKING LEVEL
060	▲ 030 ▼

8. Set the TRACKING LEVEL. (Range : 1-200)
The tracking level is to set the satellite signal tracking level.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new TRACKING LEVEL.

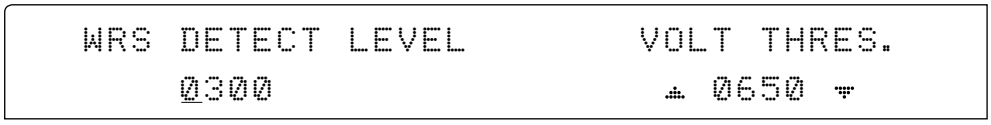


9. Set the BOW ADJUST. (Range : 0 -360)
The bow adjust is to offset the angle difference between the antenna's bow and the ship's bow. Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new BOW ADJUST.

10. Set the EL ADJUST. (Range : ±5)
The elevation adjust is to offset the angle difference between the mechanical elevation angle and actual elevation angle.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new EL ADJUST.



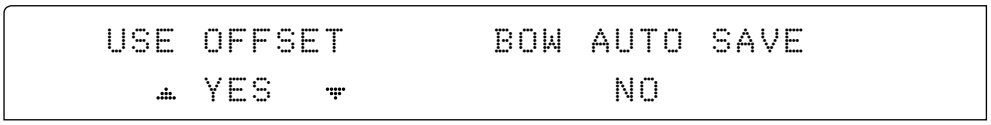
11. Set the WRS DETECT LEVEL (Range : 10 - 5,000)
The WRS level is to set the WRS detection level.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new WRS DETECT LEVEL.



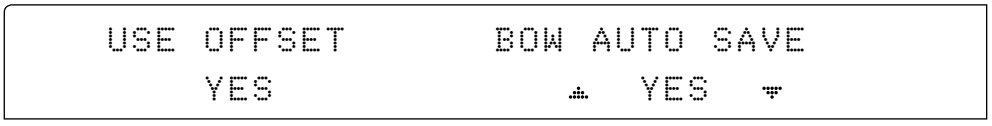
12. Set the VOLT THRES.
The voltage threshold is to distinguish the voltage between 13V and 18V.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new VOLT THRES.

13. Set the OFFSET DIFF. (Range : ±100)
The offset difference is to offset the signal difference between RHCP and LHCP.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase and decrease the selected character. Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the new OFFSET DIFF.

14. Set the USE WRS.
USE WRS is to determine whether the system uses WRS LEVEL or not.
USE WRS and WRS LEVEL are pair functions.
Press the UP and DOWN arrow keys to select "YES" to USE WRS or "NO" to NOT USE WRS and press the OK key to set the USE WRS.



15. Set the USE OFFSET.
USE OFFSET is to determine whether the system uses OFFSET DIFF or not.
USE OFFSET and OFFSET DIFF are pair functions.
Press the UP and DOWN arrow keys to select "YES" to USE OFFSET or "NO" to NOT USE OFFSET and press the OK key to set the USE OFFSET.



16. Set the BOW AUTO SAVE
BOW AUTO SAVE is to determine whether the system saves the bow offset automatically or not. Press the LEFT and RIGHT arrow keys to select "YES" to SAVE or "NO" to NOT SAVE the bow info. And press the OK key to set the BOW AUTO SAVE. ("YES" is recommended).

```
+TILT BIAS
```

17. 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) between the antenna's actual position vs. its targeted (or intended) position . The TILT BIAS is required to set when the system is newly installed or antenna control board is replaced. Check and see if the bubble is located at the center of the level vial. If not, press the OK key to enter TILT BIAS menu to adjust.

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

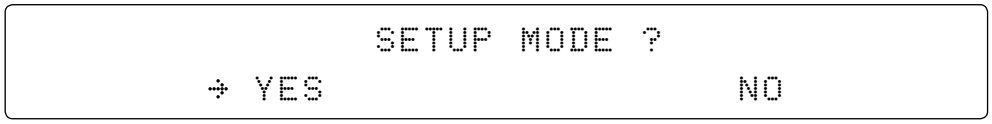
18. Press the NUMBER keys to set the step size.
Press the OK keys to select the parameter you wish to edit.
Press the LEFT and RIGHT arrow keys to move CROSS LEVEL OFFSET by step size. Press the UP and DOWN arrow keys to move ELEVATION OFFSET by step size.

```
                SAVE ?
      → YES                    NO
```

19. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

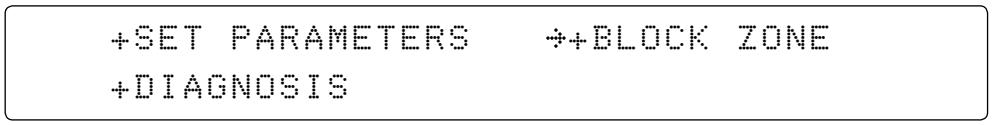
Setup Block Zone

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

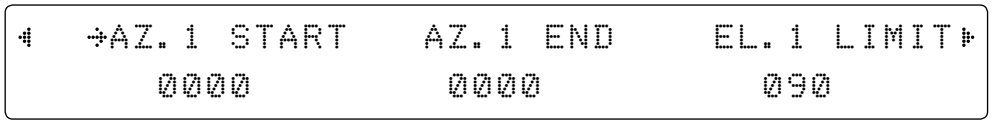


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

2. Press the OK key to enter ANTENNA menu.



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



4. Set BLOCK ZONE 1.
Press the UP and DOWN arrow keys to select “ON” to setup the block zone for ZONE 1.
Press the OK key to use BLOCK ZONE 1 and set zone 1 block range.
Press the RETURN key to select the parameter you wish to edit and press the RETURN key again to save or abort and return to the previous view.

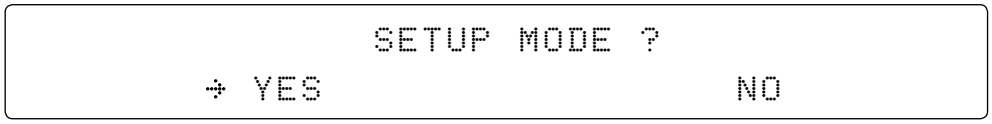
Set the AZ.1 START, AZ. 1 END and EL.1 LIMIT while BLOCK ZONE 1 is ON.
This is the clockwise of the two points. AZ.1 START is where the relative azimuth starts and AZ.1 END is where the relative azimuth ends (Range: 0- 360°).
EL.1 Limit is where the elevation starts (Range 0- 90°).

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

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

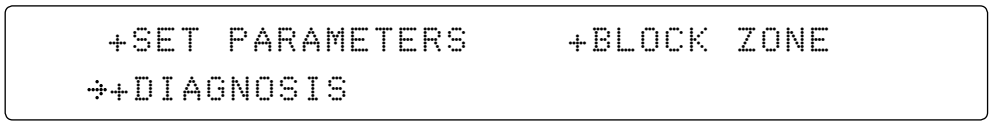
6. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

Diagnosis



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

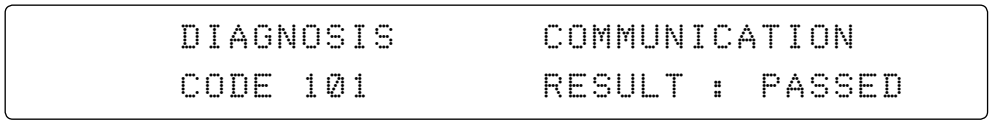
2. Press the OK key to enter ANTENNA menu.



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

4. Press the UP and DOWN arrow keys to select a full diagnostic test or single diagnostic test and press the OK key to execute the selected diagnostic test.

5. A full diagnostic test is successfully completed.



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.
CODE 113: The antenna power is tested.
CODE 114: The ACU power is tested.
CODE 115: The receiver power is tested.

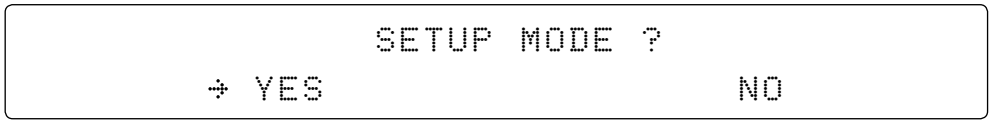
An example of test result: ●●2●●●●●●●●●●●

●: test is passed
2: test is failed
?: test is in process

Refer 2 to the diagnosis code 102 as shown above for occurred error explanation.

Satellite Settings

Set Sat. Pair



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

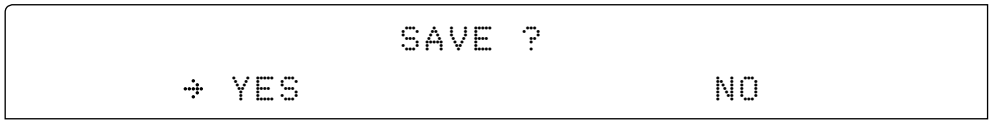
2. Press the RIGHT arrow key to move cursor to SATELLITE and press the OK key to enter it.

3. Press the OK key to enter SET SAT. PAIR menu.

4. Move cursor to YES and press the OK key to enter Tri-Sat mode or move cursor to NO and press the OK key to enter Dual-Sat mode.

5. Press the UP and DOWN arrow keys to select PRESENT SLOT 1, 2 and 3 in Tri-Sat mode or 1 and 2 in Dual-Sat mode.

6. Press the UP and DOWN arrow keys to select the DESTINED SATELLITE from the library (pre-programmed satellites). Press the OK key to set the DESTINED SATELLITE.



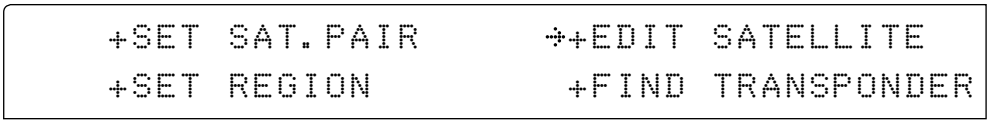
7. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

Edit Satellite Information

You are allowed to modify the existing satellite information and input new satellite information into the ACU as well. It is not recommended for a novice satellite service user to use this mode.

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

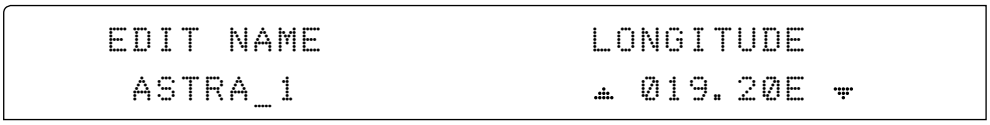
2. Press the RIGHT arrow key to move cursor to SATELLITE and press the OK key to enter it.



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

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

5. Edit satellite NAME.



6. Edit satellite orbit position, LONGITUDE.

7. Set the satellite **VERIFY TYPE***.

Press the UP and DOWN arrow keys to select the verification method for satellite tracking and press the OK key to set the VERIFY TYPE.

VERIFY TYPE*
- AGC – use signal level for satellite tracking.
- DVB Lock – use frequency and symbol rate for satellite tracking.
- DVB Decode – use frequency, symbol rate, and NID for satellite tracking.
- DSS Decode – use for DirecTV satellite tracking

8. Set the LNB **VOLTAGE***.
Press the UP and DOWN arrow keys to select the LNB voltage supply method and press the OK key to set the VOLTAGE ("AUTO" is recommended).

VOLTAGE*
- AUTO: supply both 13V and 18V
- 13V: supply 13V only
- 18V: supply 18V only

9. Set the **DiSEqC Method***
Press the UP and DOWN arrow keys to select DiSEqC Method* and press the OK key to set the DISEQC ("AUTO" is recommended).

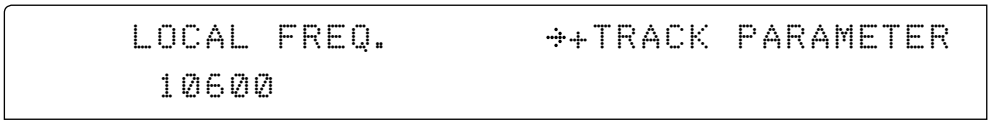
DiSEqC Method*
- AUTO: supply both 0kHz and 22kHz tone
- OFF: supply 0kHz tone only
- ON: supply 22kHz tone only

10. Set the **POL. TYPE*** for satellite polarization.
Press the UP and DOWN arrow keys to select POL. TYPE and press the OK key to set the POL. TYPE.

POL.TYPE*
- LINEAR: Linear polarized satellite
- CIRCULAR: Circular polarized satellite

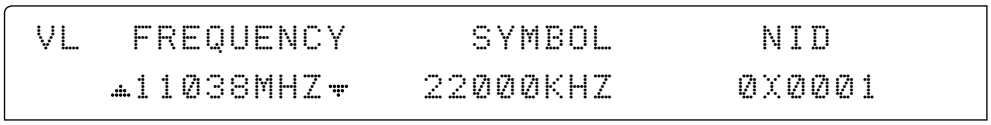
11. Set the LNB **LOCAL FREQ.*** for satellite tracking.
Press the UP and DOWN arrow keys to select LOCAL FREQ and press the OK key to set the LOCAL FREQ.

LOCAL FREQ*
10500 MHz
10600 MHz
10678 MHz
10700 MHz
10750 MHz
10800 MHz
11000 MHz
11050 MHz
11200 MHz
11250 MHz
11300 MHz
Note: Select 10600MHz for Universal LNB use.

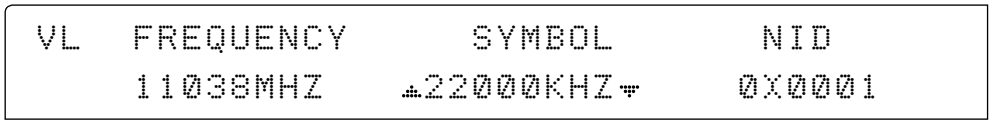


12. Setup the satellite tracking parameters. Press the OK key to enter the setup menu.

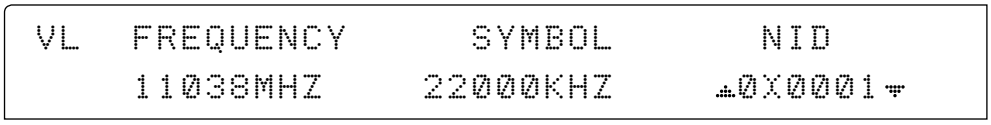
13. Press the arrow keys to select the frequency band you wish you edit.
Press the OK key to edit the selected frequency or press the RETURN key to save or abort and return to the previous view.



14. Set the satellite FREQUENCY for VL(vertical Low) / RHCP frequency
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the FREQUENCY.

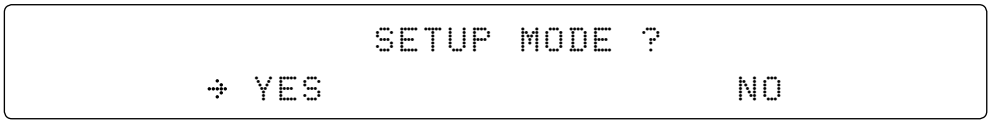


15. Set the frequency SYMBOL rate (Maximum: 45,000).
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the SYMBOL.

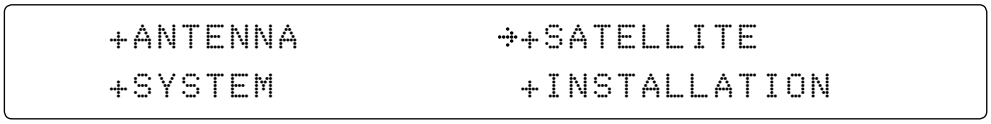


16. Set the frequency NID (Network ID). Range is 0x0000-0xFFFF.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the NID.

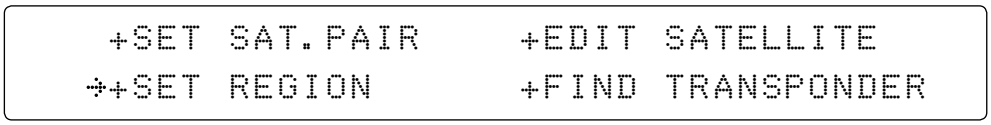
Set Region



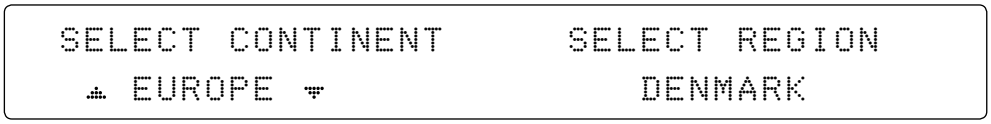
1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.



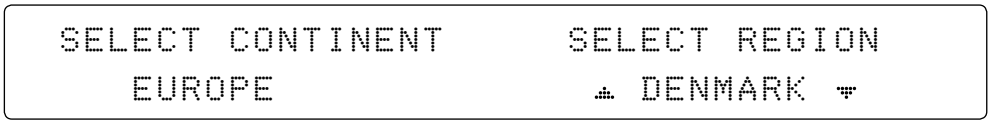
2. Press the RIGHT arrow key to move cursor to SATELLITE and press the OK key to enter it.



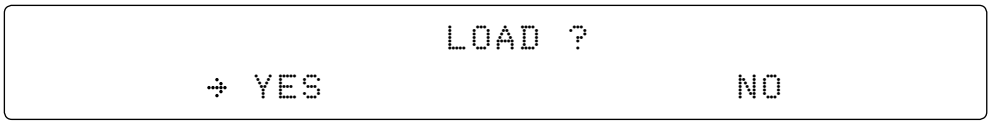
3. Press the arrow key and the OK key to enter SET REGION menu.



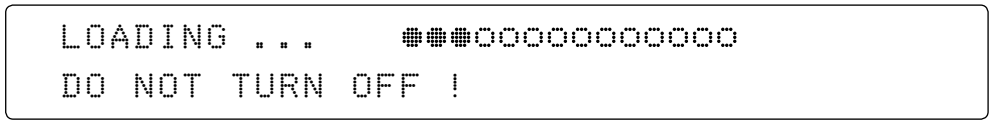
4. Set CONTINENT. Press the UP and DOWN arrow keys to select the continent that you are in. Press the OK key to set the settings.



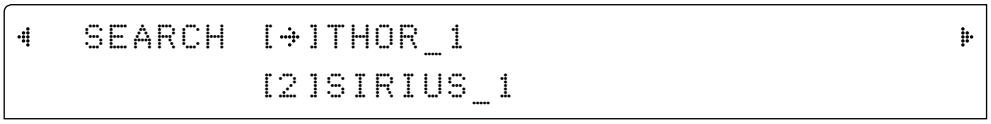
5. Set REGION. Press the UP and DOWN arrow keys to select the region that you are in. Press the OK key to set the settings.



6. Press the RETURN key to load the current setting or abort and return to the previous view.

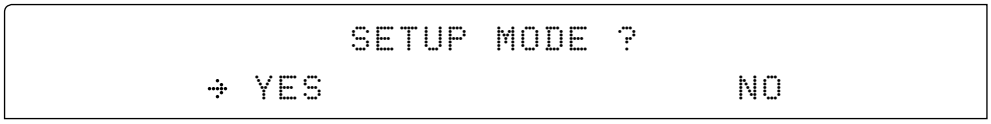


7. Setting is being loaded to the system.
The ACU will restart the system automatically after uploading the setting.
DO NOT turn off ACU power when uploads are being processed.

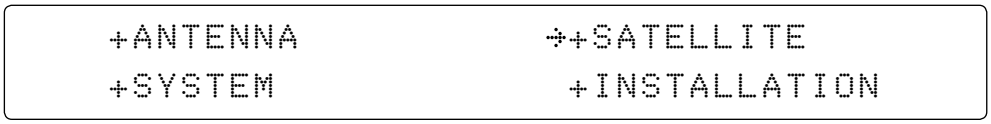


8. Regional satellite library has been updated.

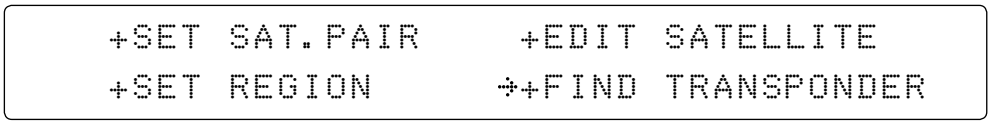
Find Transponder



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



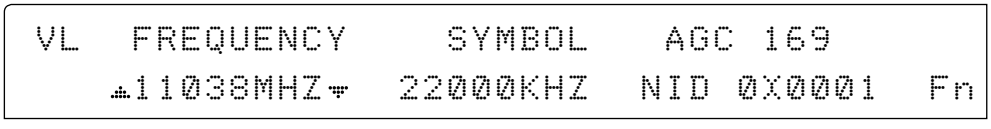
2. Press the RIGHT arrow key to move cursor to SATELLITE menu and press the OK key to enter it.



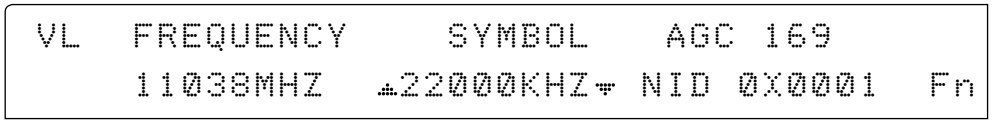
3. Press the arrow keys and the OK key to enter FIND TRANSPONDER menu.

4. Press the UP and DOWN arrow keys to select the desired satellite **TRACKING POWER***. Press the OK key to edit the selected power type.

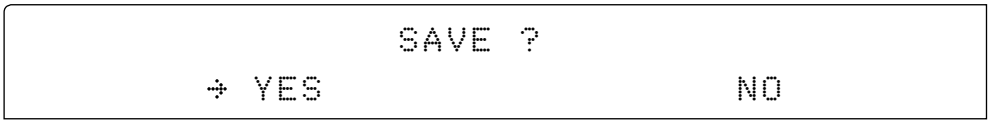
TARGET TRACKING POWER*
- VER/ RHCP LOW
- VER/ RHCP HIGH
- HOR/ LHCP LOW
- HOR/ LHCP HIGH



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



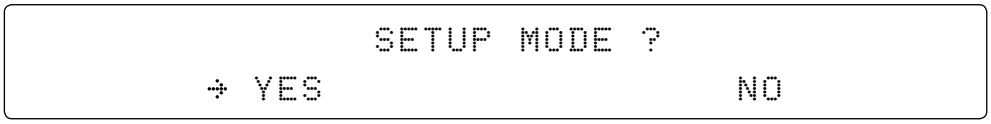
6. Set the frequency SYMBOL RATE.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected).
Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to the desired value directly.
Press the OK key to set the SYMBOL.
If the network ID (NID) of the selected frequency is flashing, then the selected frequency is a valid transponder and can be set as a primary tracking transponder in the system. Press the FUNCTION Key to save the current setting or abort and return to the previous view.



7. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

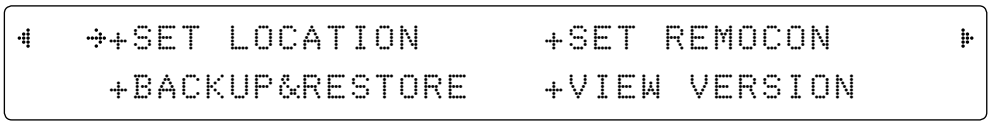
System Settings

Set Location

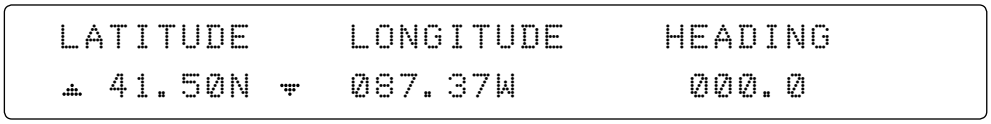


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

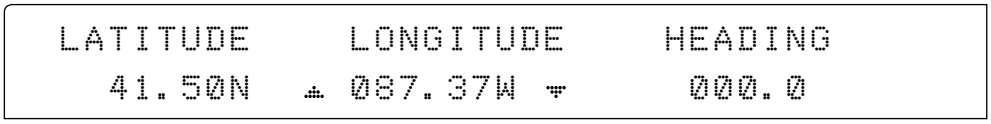
2. Press the DOWN arrow key to move cursor to SYSTEM and press the OK key to enter it.



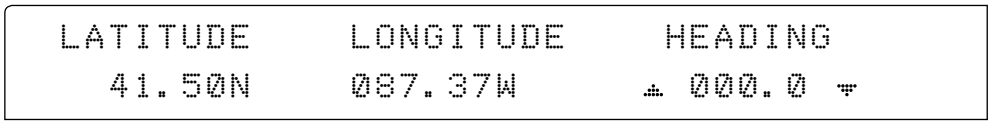
3. Press the RIGHT arrow key to move cursor to SET LOCATION and press the OK key to enter it.



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



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



6. Set the ship's current HEADING.
Entry of ships heading is not required when your system is connected to a NMEA0813 Heading Gyrocompass output.
Press the LEFT and RIGHT arrow keys until the desired character is underscored (selected). Press the UP and DOWN arrow keys to increase or decrease the value.
Or press the NUMBER keys to set the desired value directly.
Press the OK key to set the HEADING.

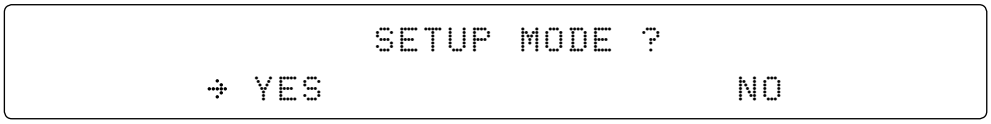
7. Set the GYRO TYPE.
Determine the type of gyrocompass that is used on the ship. Ensure that the Gyro Type is set correctly. Press the UP and DOWN arrow keys to select the gyro type and press the OK key to set the GYRO TYPE.

8. Set the **BAUD RATE*** for NMEA gyro interface.

BAUD RATE*
- 4800
- 9600
- 19200
- 38400

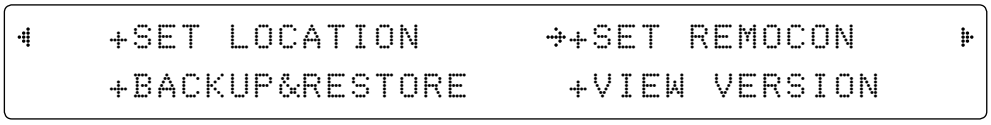
9. Press the LEFT arrow key to move cursor to YES and press the OK key to save and execute the current settings. Or press the RIGHT arrow key to move cursor to NO and press the OK key to abort and return to the previous view.

Set Remocon



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

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



3. Press the OK key to enter SET REMOCON menu.

4.Set the **REMOCON FUNCTION***
Press the UP and DOWN arrow keys to select the remote control function.
and press the OK key to set the REMOCON FUNCTION.

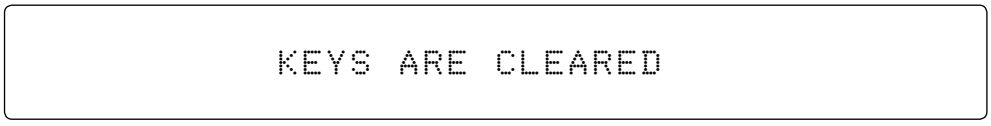
REMOCON FUNCTION*
- Change Satellite : To change the target satellite.
- Clear Registered key : To clear the registered key.

5. Point remote control to ACU and press any key on the remote control for selected function and press the same key again for confirmation.

6. Press the same key again for confirmation.

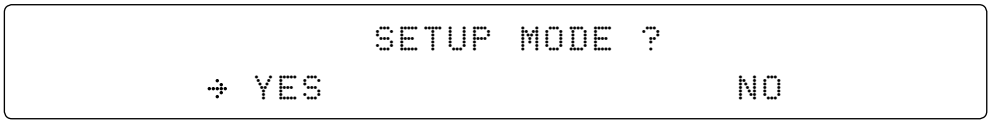
7. Remote key is registered.

8. Press the UP and DOWN arrow keys to select the remote control function and press the OK key to set the REMOCON FUNCTION.



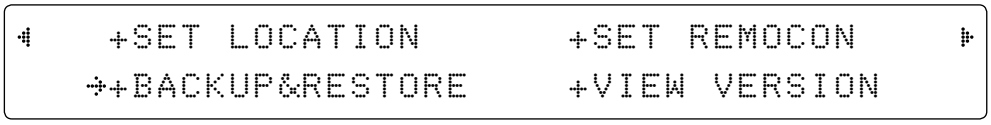
9. All registered keys are cleared.

System Backup & Restore

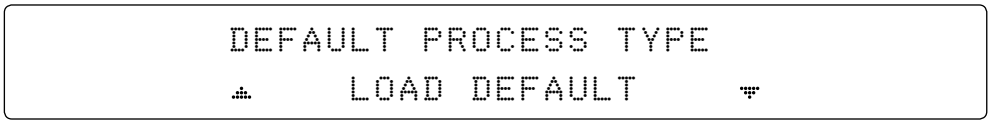


1. Press the LEFT arrow key to move cursor to YES and press the OK key to enter SETUP mode.

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



3. Press the OK key to enter BACKUP & RESTORE menu.



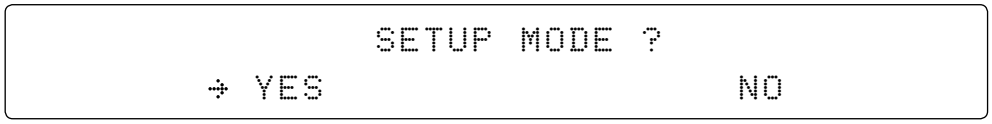
4. Press the UP and DOWN arrow keys to select **DEFAULT PROCESS TYPE ***
Press the OK key to set the parameter and the processing message will be displayed.

DEFAULT PROCESS TYPE*

- LOAD DEFAULT: To restore 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.

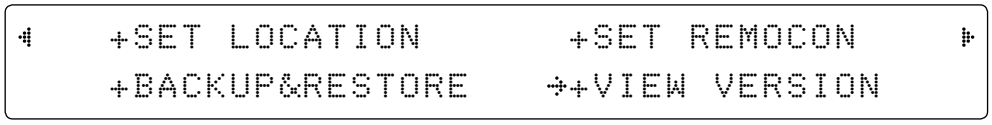
5. Processing message is displayed.

View Versions



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

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



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

4. System firmware versions are displayed. Press the RETURN key to return to the previous view.

OPERATION THE PC PROGRAM

Introduction

Program Initialing and Serial Port Setup

Main Menu

Controller Menus

Set Antenna GPS and Find Antenna Angle
Set Satellite Information
Set Tracking Information of Satellite [Primary]
Set Tracking Information of Satellite [Secondary]
Move Antenna and Skew Calibration
Antenna Information and Set Antenna Parameters for Control
Diagnosis and Set Antenna Parameters for Control

Introduction

GUI Software of Intellian t80W has been created for the user to easily set up the antenna by using the user's personal computer. Using the GUI program enables the user to easily monitor and modify the information of antenna, satellite and GPS. Additionally, detailed diagnostic methods of the antenna are provided by the GUI program.

To start this GUI program:

1. Connect one end of the USB cable to the USB port on the computer.
2. Connect the other end of the USB cable (A-A Type) to the "PC" connector in front of ACU.
3. Execute GUI program by inserting the supplied CD-ROM into the CD-ROM drive of the computer.

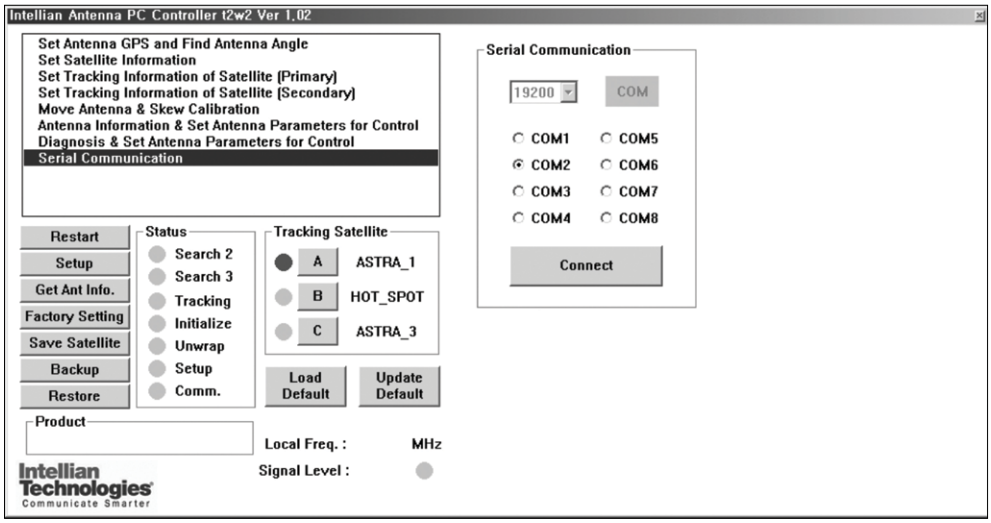


Figure 08. Screen Capture of Intellian Antenna PC Controller

Program Initialing and Serial Port Setup

Data communication between the ACU and antenna must be established as the first step in order to start setting your antenna.

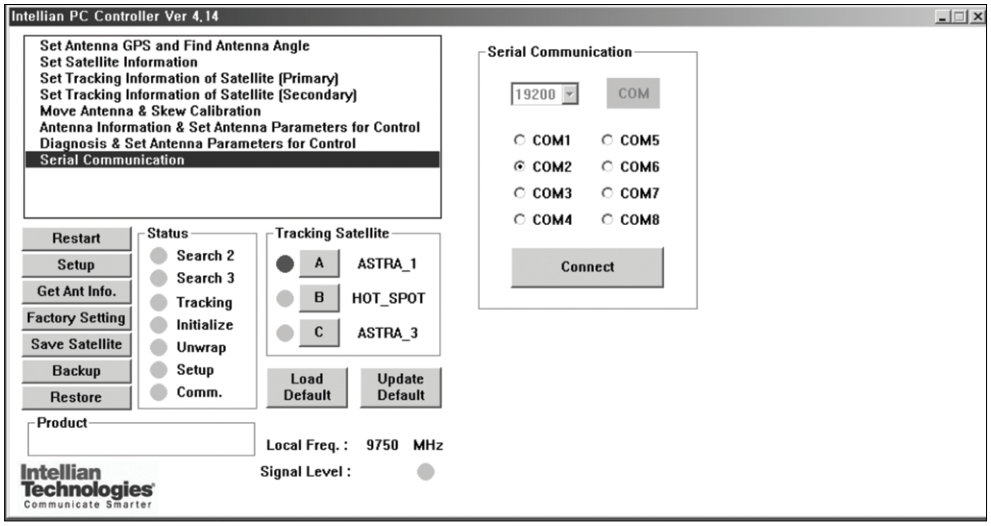


Figure 09. Setup for Serial Communication

- Baud Rate Setting: To display the speed of data communication.
- Connection Status: To display data connection between ACU and PC.
- Serial Port Setting: To select serial port to be used.
- Connect/ Disconnect: To establish connection between PC and ACU.

Main Menu

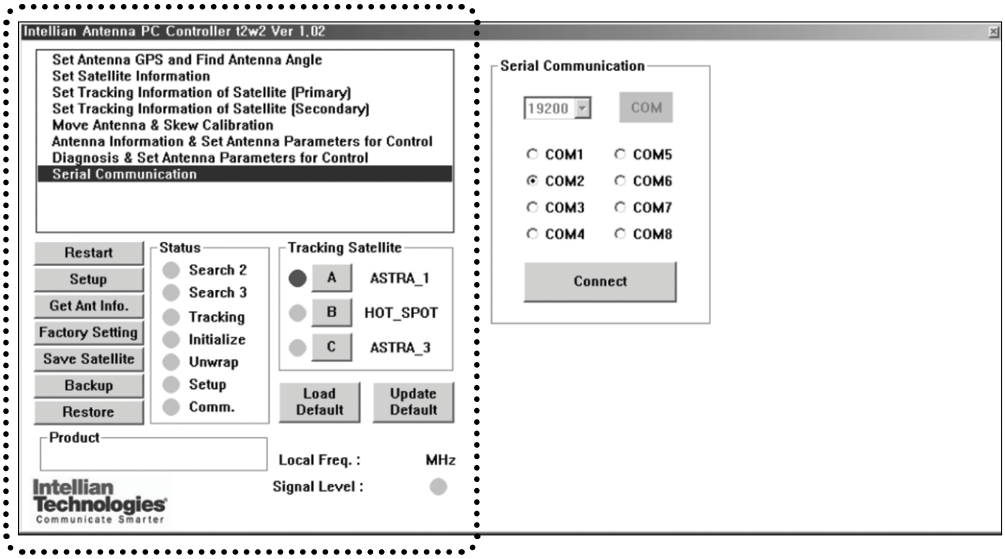


Figure 10. Main Menu

Controller Menu

- Set Antenna GPS and Find Antenna Angle
- Set Satellite Information
- Set Tracking Information of Satellite (Primary)
- Set Tracking Information of Satellite (Secondary)
- Move Antenna & Skew Calibration
- Antenna Information & Set Antenna Parameters for Control
- Diagnosis & Set Antenna Parameters for Control
- Serial Communications

Antenna Status

- Search 2: The search range corresponds to the Search Pattern 2. Once the signal is located, the antenna will enter to Search 3 mode.
- Search 3: The antenna is detecting the satellite signal which is above current tracking level threshold. The search range corresponds to the Search Pattern 3. Once the signal is located, the antenna will enter to Tracking mode.
- Tracking: Antenna is tracking the selected satellite.
- Initialize: Antenna or the ACU is initializing.
- Unwrap: Antenna is unwinding/ winding the cable in the antenna.
- Setup: Antenna is in setup mode.
- Comm: Antenna is able to be communicated.

Command Buttons

- Restart: To exit setup mode and restart antenna again.
- Setup: To enter the setup mode.
- Get Antenna Information: To indicate the information on display after receiving input from the antenna.
- Factory Setting: To initialize all antenna information to default as it was in the factory status.
- Save Satellite: If the current settings are able to locate the satellite (in Tracking mode), press this button to save the bow offset. It will shorten the satellite acquisition duration next time.
- Load and Update Default: To select the regional library file on the PC program and update the antenna by using the selected library file. See below for detailed instructions:

1. Click the “Load Default” button to select a regional library file *.rif according to your region.

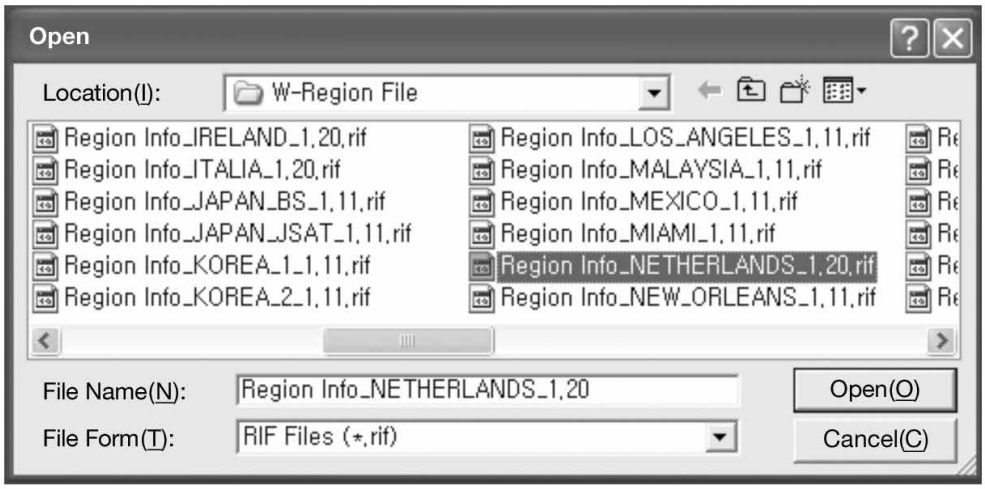


Figure 11. Load Regional Library

2. Click “Update Default” button and click “ Yes ” button to update the system.

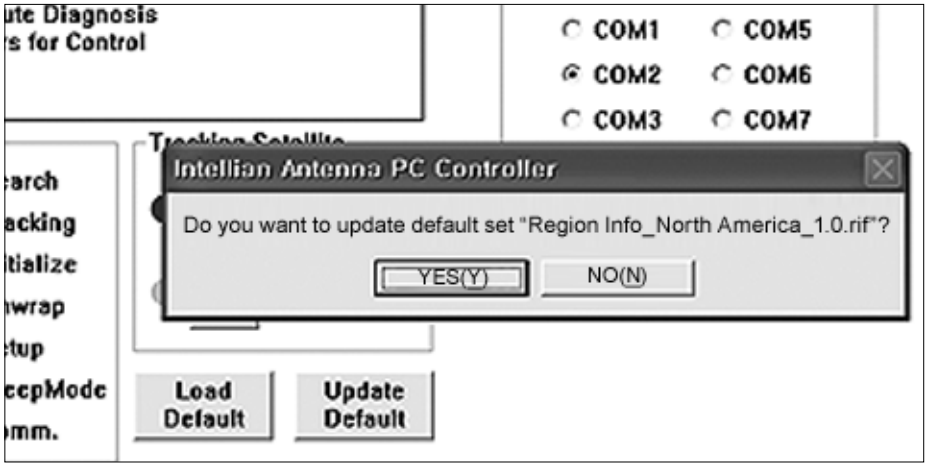


Figure 12. Confirm the Update

3. Click the “OK” button to complete the update.

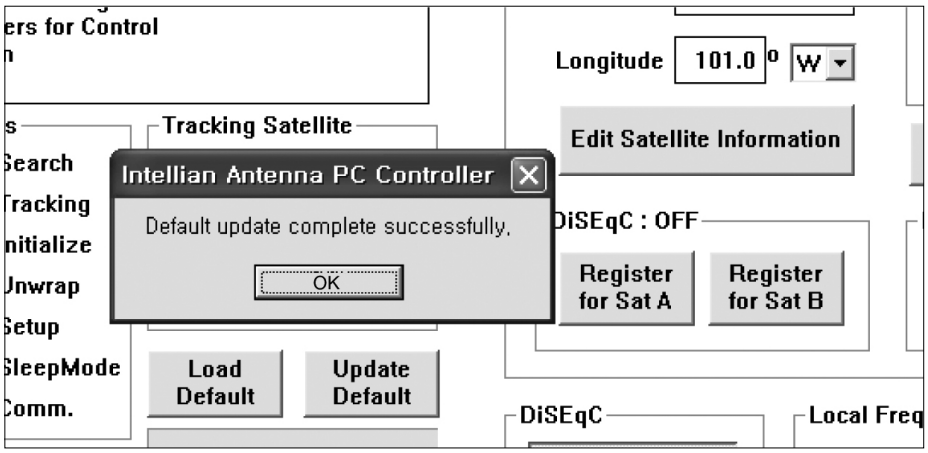


Figure 13. Update has been completed

Controller Menus

Set Antenna GPS and Find Antenna Angle

Select "Set Antenna GPS and Find Antenna Angle" from the controller menu.

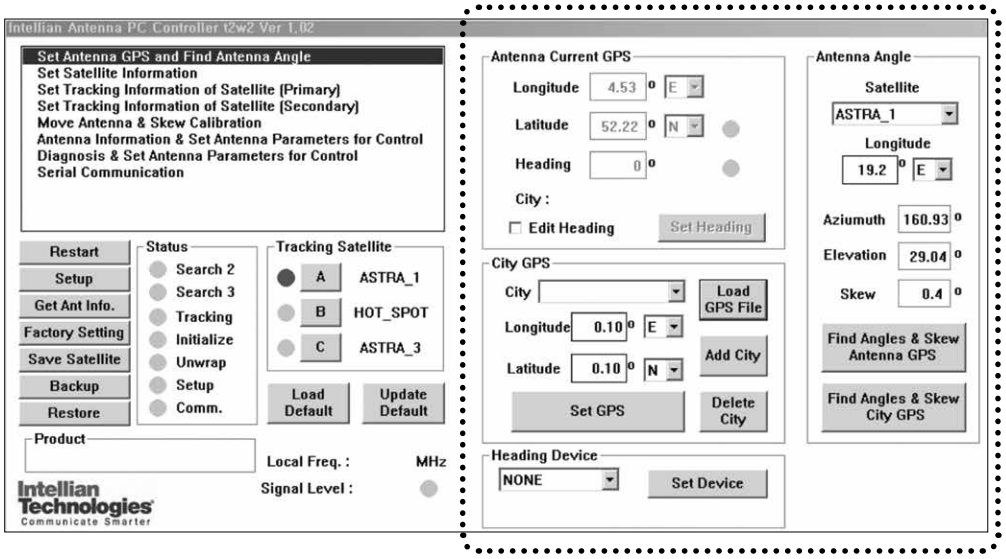


Figure 14. Set antenna GPS and Find Antenna Angle

The antenna makes use of GPS information to search satellite faster. The more precise the GPS's information is, the quicker the antenna is able to search for the satellite.

The method to input information into GPS is to push the "Set GPS" button after keying in the latitude and longitude information on "City GPS". Pushing the "Add City" button stores the GPS's information. By selecting the stored region in the list box, the GPS's information of that region is displayed. The Intellian t80W satellite TV antenna system utilizes GPS data to locate the satellite faster.

Command Buttons

- Load GPS Files: Reads various city information from the GPS files.
- Add City: Adds the name of city and its GPS information to GPS files.
- Delete City: Deletes the name of city and its GPS information from the GPS files.
- Set GPS: Inputs the indicated GPS information on display to the antenna.
- Find Angles & Skew Antenna GPS: Finds the current antenna's angles and skew angle in relation to the longitude (orbit position) of antenna current GPS.
- Find Angles & Skew City GPS: Finds the current antenna's angles and skew angle in relation to the longitude (orbit position) of satellite and city GPS.

Set Satellite Information

Select “Set Satellite information” from the controller menu.

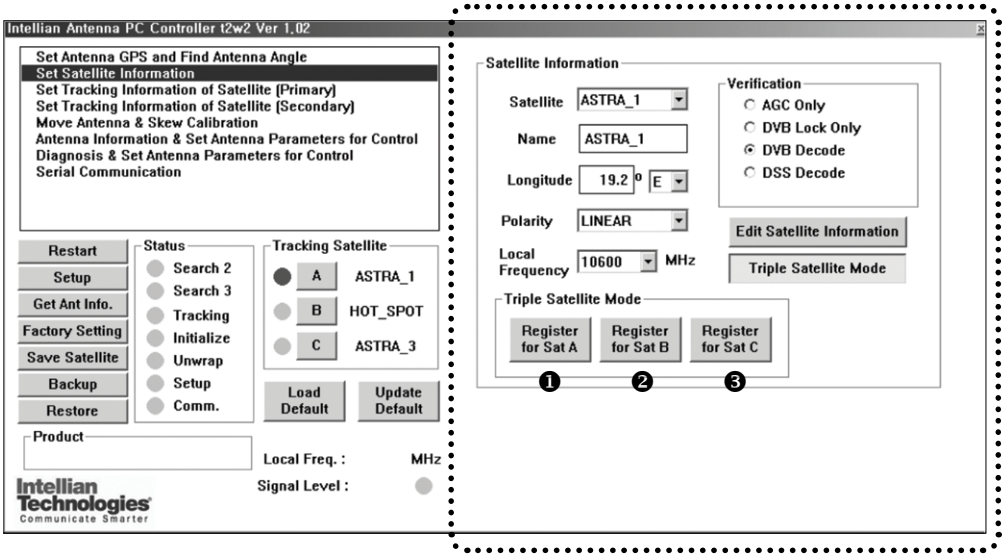


Figure 15. Set Satellite Information

Satellite Information

The satellite name, longitude, polarization, local frequency of LNB to be used, and confirmation method of the satellite will be displayed when a satellite is selected from a dropdown list box. Push “Edit Satellite Information” button to update the information after modifying the value.

Command Buttons

- Edit Satellite Information: To save the modified the satellite’s information.
- Triple Satellite Mode: To select between Dual-Sat mode and Triple- Sat mode.
- Registration of Target Satellite: Pushing ❶ or ❷ button after selecting the satellite in the list box makes it possible to register A or B (Dual-Sat mode). Pushing ❶ or ❷ or ❸ button after selecting the satellite in the list box makes it possible to register A or B or C (Triple-Sat mode).

Set Tracking Information of Satellite [Primary]

Select “Set Tracking Information of Satellite [Primary]” from the controller menu.

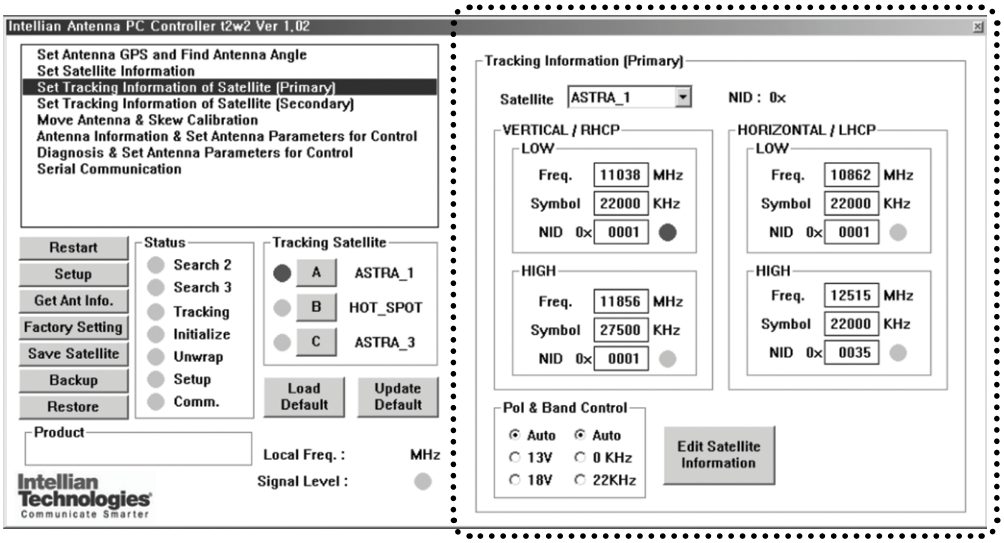


Figure 16. Set Tracking Information of Satellite [Primary]

Command Buttons

- Edit Satellite Information: To change frequency information of the target satellite.
- Satellite Information: Satellite information consists of frequency, symbol and NID (Network ID) of a transponder in tracking satellite. There are four groups of satellite information. “Vertical/RHCP” is applied when IRD supply 13V, and “Horizontal/LHCP” is applied when IRD supply 18V. “LOW” is applied when DiSEqC signal (0 kHz tone) is not detected from IRD. “HIGH” is applied when DiSEqC signal (22 kHz tone) is detected from IRD. After modifying information, press ‘Edit Satellite Information’ button, then new information is updated in the antenna.
- Pol & Band Control: The “Pol” controls 13V (Vertical/RHCP band) or 18V (Horizontal/ LHCP band). The “Band” controls DiSEqC 0KHz tone (Low band) and 22KHz tone (High band)

Voltage		DiSEqC		Discription
13V	18V	0KHz	22KHz	
AUTO	AUTO	AUTO	AUTO	13V & 18V and DiSEqC 0KHz & 22KHz tone to LNB
AUTO	AUTO	•		13V & 18V and DiSEqC 0KHz tone to LNB
AUTO	AUTO		•	13V & 18V and DiSEqC 22KHz tone to LNB
•		AUTO	AUTO	13V and DiSEqC 0KHz & 22KHz tone to LNB
•		•		13V and DiSEqC 0KHz tone to LNB
•			•	13V and DiSEqC 22KHz tone to LNB
	•	AUTO	AUTO	18V and DiSEqC 0KHz & 22KHz tone to LNB
	•	•		18V and DiSEqC 0KHz tone to LNB
	•		•	18V and DiSEqC 22KHz tone to LNB

Set Tracking Information of Satellite [Secondary]

Select “Set Tracking Information of Satellite [Secondary]” from the controller menu.

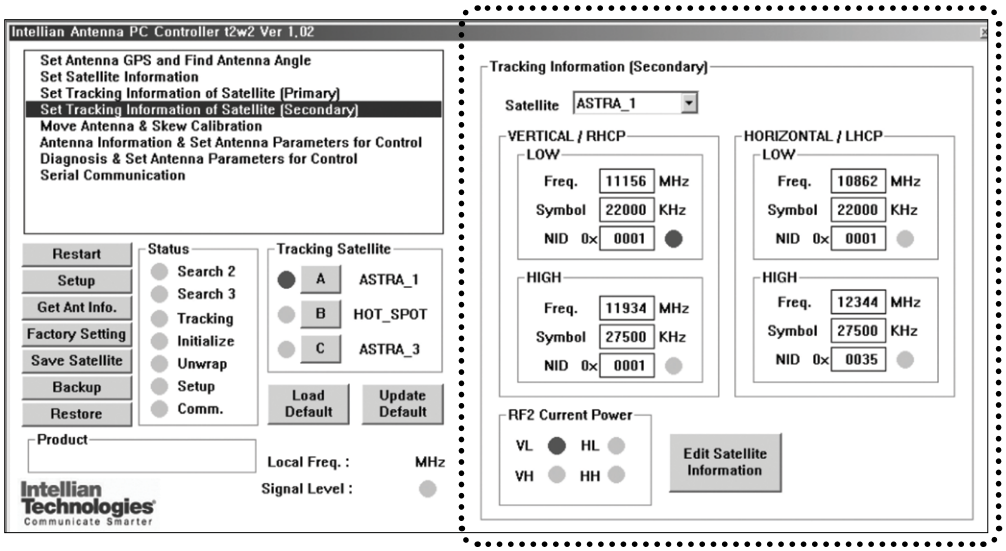


Figure 17. Setting up the Secondary Tracking Information

Command Buttons

- Edit Satellite Information: To change frequency information of the target satellite.
- RF2 Current Power: To monitor current power status of the satellite receiver connected to the RF 2 coaxial cable.

Move Antenna and Skew Calibration

Select "Move Antenna and Skew Calibration" from the controller menu.

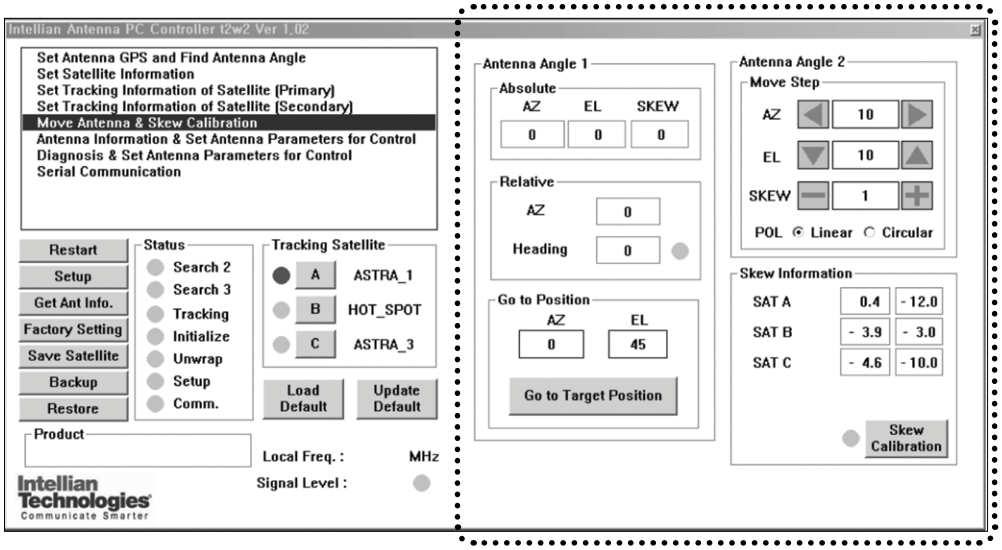


Figure 18. Set up Move Antenna and Skew Calibration

Command Buttons

- Go to Target Position: The current position (angle) of the antenna is displayed as “Current”. Push “Go to target Position” button after keying in the desired angle to move the antenna to target position.
- Move Step: To move to a certain amount of angle only, move antenna’s direction of up or down, and CW or CCW by using ▼▲◀ ▶ buttons after keying the desired angle into the AZ and EL in the “Move Setup” box. Rotate LNB to direct the skew angle by using + - buttons.
- POL: Assign the polarization of LNB.
- Skew Calibration: When you replace the LNB assembly or the control board, make sure to calibrate the LNB’s skew angle.

Antenna Information and Set Antenna Parameters for Control
It is not recommended for a novice at satellite service to use this mode. Consult Intellian for changing antenna parameters.

Select "Antenna Information and Set Antenna Parameters for Control" from the controller menu.

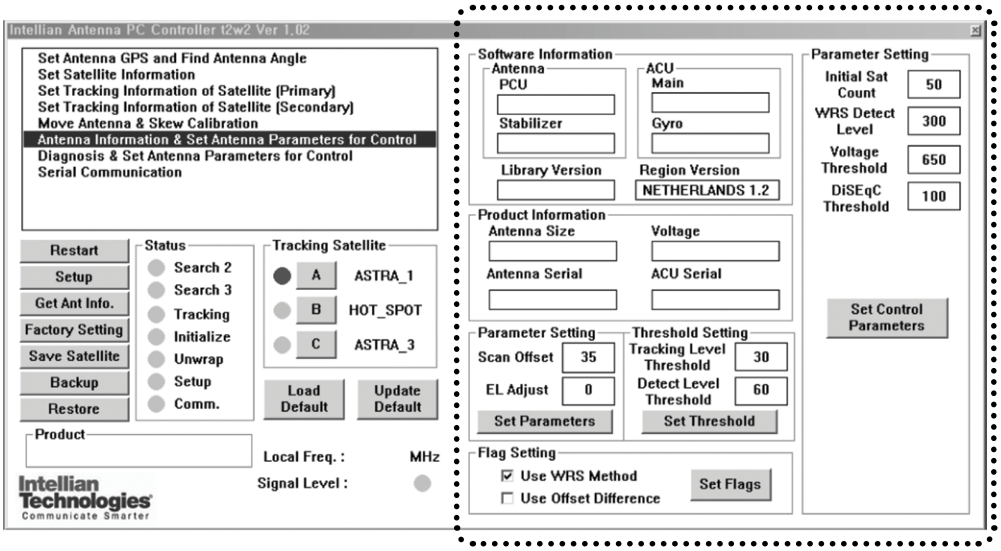


Figure 19. Antenna Information and Set Antenna Parameters for Control

Command Buttons
- Set Control Parameters: To confirm the control parameter settings.
- Set Parameters: To confirm the parameter settings.
- Set Threshold: To confirm the threshold settings.
- Set Flags: To confirm the flag settings.

Parameter Settings
- Scan Offset: The scan offset is to offset the angle difference between the black marker on the sub-reflector and the optical sensor.
- EL Adjust: The elevation adjustment is to offset the angle difference between the mechanical elevation angle and actual elevation angle.
- Tracking Level Threshold: The tracking level is to set the satellite signal tracking level.
- Detect Level Threshold: The detect level is to set the satellite signal detection level.

- WRS Detect Level: The WRS detect level is to set the WRS detection level.
- Voltage Threshold: The voltage threshold is to distinguish the voltage between 13 V and 18V.
- DiSEqC Threshold: The DiSEqC threshold is to distinguish the 0KHz tone and 22 KHz tone.
- Use WRS Method: Use WRS method is to determine whether the system uses “WRS Detect Level” or not. Use WRS method and “WRS Detect Level” are pair functions.
- Use Offset Difference: Use offset difference is to determine whether the system uses “Offset Difference” or not. Use Offset Difference and “Offset Difference” are pair functions.

Diagnosis and Set Antenna Parameters for Control

Select "Diagnosis and Set Antenna Parameters for Control" from the controller menu.

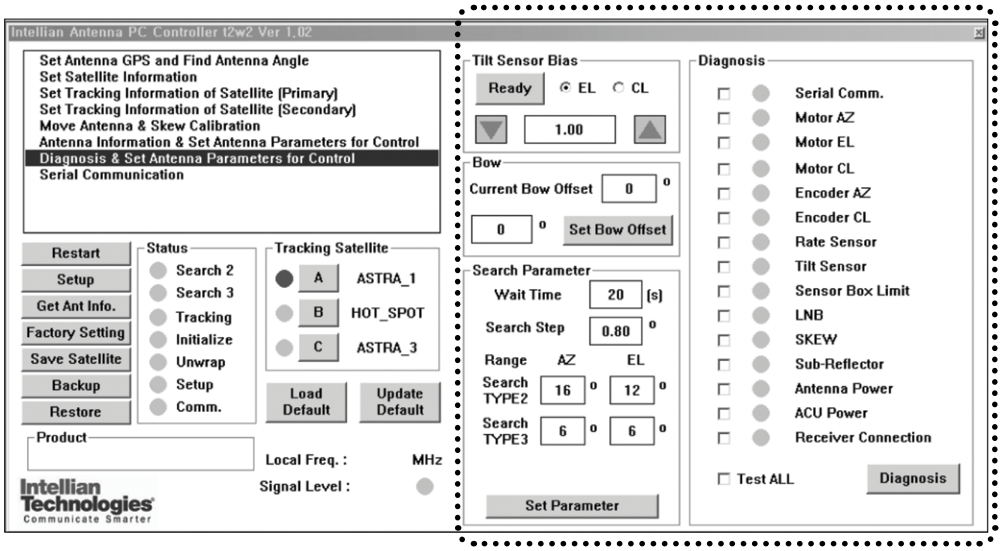


Figure 20. Diagnosis and Set Antenna Parameters for Control

Command Buttons

- Diagnosis: If “Diagnosis” button is pressed, the system will carry out the selected full diagnosis “Test All” or single diagnosis. The software will display the diagnosis results (Blue dot represents “normal”, red represents “abnormal” and green represents “the diagnosis is under process”).
- Ready: To confirm to the tilt bias setting. After pressing the Ready button, a remote tilt calibration is required to align the level cage assembly correctly by pressing ▼▲ buttons to adjust elevation and cross-level angle so that all sensors will be aligned accurately to the axis they related to. The fluid filled tilt sensor provides a two dimensional horizon reference. The system is not able to be automatically calculated the exact center value, therefore, it is necessary to perform this procedure to manually enter any offset required to make sure the PCU receives a true reference to the horizon. The fluid filled tilt sensor provides a two dimensional horizon reference. The system is not able to be automatically calculated the exact center value, therefore, it is necessary to perform this procedure to manually enter any offset required to make sure the PCU receives a true reference to the horizon.

- Set Bow Offset: To confirm the bow offset settings.
- Set Parameter: To confirm the searching parameter settings.

Parameter Settings

- Wait Time: To set the time-out for automatic initiation of a search after the signal level drops below threshold.
- Search Step: To define the increment search range step size.
- Search TYPE 2: The antenna is detecting the satellite signal which is above cur rent detect level threshold. The search range corresponds to the Search Type 2. Once the signal is located, the antenna will enter to “Search 3 mode”.
- Search TYPE 3: The antenna is detecting the satellite signal which is above current tracking level threshold. The search range corresponds to the Search Type 3. Once the signal is located, the antenna will enter to “Tracking mode”.

Warranty

This product is warranted by Intellian Technologies Inc., to be free from defects in materials and workmanship for a period of Three (3) YEARS on parts and ONE (1) YEAR on labor performed at Intellian Technologies, Inc. service center from the purchased date of the product.

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

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

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

Appendix: t80W Technical Specification

General	
Approvals	
CE – conforms to	EU Directive 89/336/EEC
FCC – verified to	CFR47: Part 15
Dimensions	
Satellite antenna unit	113 cm x 114 cm (44.5” x 44.9”)
Antenna dish diameter	85cm (34”)
Antenna control unit	43cm x 29.58cm x 4.4cm (16.9” x 11.6” x 1.7”)
Weight	
Satellite antenna unit	82.2 kg (181.2 lbs)
Antenna control unit	3.2kg (7.1 lbs)
Environmental	
Operating temp. range	-15°C to +55°C (5°F to + 131°F)
Storage temp. range	-40°C to + 80°C (-40°F to + 176°F)
Humidity limit	95% R.H
Power requirements	110/220V AC
Power consumption	Typ. 50W, Max. 100W

Antenna System Performance	
Frequency	Ku-band(10.7 to 12.75 GHz)
Minimum EIRP	44 dBW
Azimuth range	680°
Elevation range	-15° ~ +110°
Cross-level range	±30°
Roll / Pitch / Yaw	±25° / ±15° / ±8° @ 6 sec period
Turn rate	Up to 12° / sec and 15° / sec^2

Intellian®

APAC

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