

Sea Tel LMXP w/Front Panel Display

User Manual

**EAR Controlled - ECCN EAR99**

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LMXP w/ Front Panel Display User Manual



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1. Introduction

The Lite Media Xchange Point (**LMXP**) is the primary interface for configuration, operation, monitoring, management, and maintenance of the antenna system. You can do the following with the **LMXP** interface:

- Configure system parameters
- Backup configurations
- Operate the **Sea Tel** antenna
- Add and delete satellites
- Edit satellite parameters
- Target, Search and Track a satellite
- Diagnose some communication problems
- View system status reports

1.1. Audience

This manual is intended for Users, rather than Administrators or Dealers.

1.2. Internal Web Page Prerequisites

This section contains some information about system requirements. *For help with Windows requirements or usage, contact your IT Systems Administrator or Dealer.*

1.2.1. Browsers

- **LMXP** supports Internet Explorer (version 9.0 or above), Firefox (version 5.0 or above), Chrome (version 13.0 or above) and Safari (version 5.1 and above).
- When you click the **SAVE** button, an animated image may not spin on browsers other than Firefox. It does not mean that **LMXP** Web stopped working; it still works properly. Wait until the "Saving" message goes away.
- Do not use the IE "Compatibility view", because it does not fully support **LMXP**, and it might cause problems with images, background color, or graphs.

1.2.2. Monitors

The lowest supported monitor resolution is 1024 x 768. For optimal viewing, use a resolution of 1280x1024. If your monitor has a maximum vertical resolution of 768, then press **F11** to enter full screen mode. Press **F11** again to return to normal mode.

1.2.3. Computer Parameters

If you have any problems or questions about your computer, or any of the items in the following list, contact your IT support person.

- Turn on popups and enable JavaScript.
- To access **LMXP** using https, contact your Dealer.
- **LMXP** makes heavy use of your computer resources. Therefore, if possible, close other applications that are running on your computer, and only keep one browser and one instance open.
- Log out and exit your browser after you finish the session.
- It is good practice to reboot your computer daily.

1.2.4. SSL certificate

If you have any problems or questions about an SSL certificate, contact your Dealer.

1.2.5. Signal Bar

- If you see 15px and 25px instead of the **Signal Bar** in the banner, then press **F5** to refresh the page, and it should appear normal. This happens because the downloading of required files is not complete.
- If pressing **F5** does not resolve the problem, then logout, and close the browser. Then restart the browser, log in, and the banner should display correctly.

1.3. *Using this Manual*

The order of the chapters reflects the order in which a typical user would use this manual and in the necessary sequence.

| | |
|---|---|
| <p>New users</p> | <p>Read the <i>Introduction</i> chapter. Read the <i>Quick Start</i> chapter. Read the <i>Login</i> chapter. Read the Help and FAQ pages. Read the <i>Common Information on all LMXP System Pages</i> chapter. As needed, read the rest of the chapters.</p> |
| <p>Experienced users</p> | <p>Read the <i>Common Information on All LMXP System Pages</i> chapter, and all of the following chapters.</p> |
| <p>Users who are troubleshooting</p> | <p>Read the <i>User Troubleshooting</i> chapter. Read the <i>Logs</i> sections. Read the <i>Technical Contacts</i> chapter.</p> |

1.4. *Cyber Security Caution*

Sea Tel Antenna systems are not intended to be connected directly to the Internet. They must be connected behind a dedicated network security device such as a firewall. In addition, we highly recommended that you change default passwords. This is an extremely important consideration that must be taken into account as part of commissioning procedures as attackers with malicious intent (after easily obtaining default passwords and identify internet-connected systems) can be rendered a system inoperable.

For clarification purposes, the factory default Passwords/Configurations are only intended for initial production testing/verification purposes and it is an assumed responsibility of the installing partner to change and record the login credentials and is shared only with persons whom are directly responsible for operation/maintenance of the system. Instructions on how to change passwords may be located within the system manual.

2. Quick Start

If your system was set up correctly, and if your ship has not moved since the system was set up or used last, then the system should:

- Automatically power up from a cold start;
- Acquire the last satellite that you used;
- Achieve receiver network lock;
- Start tracking.
- Then the system is fully operational

Perform the steps in the rest of this chapter to go from a cold start to an operational system.

2.1. Turn Power ON

To apply power to the antenna system:

1. If all of the Above Deck Equipment (ADE) and Below Decks Equipment (BDE) are connected to a Universal Power Supply (UPS), then turn the UPS ON first (or verify that it is ON).
2. Turn on the LMXP and the antenna pedestal by toggling the power switch on the front panel of the LMXP to the ON position. The LMXP provides power to the ADE.



3. Turn on all BDE (modems, distribution, and other service specific equipment).
4. The antenna system powers up, goes through its initialization process, and automatically targets the last satellite that was acquired.

2.2. Power-Up sequence

From a cold start you will see:

1. The **Tracking** LED, on the front panel of the LMXP, flashes for a short period of time (**Search Delay**) followed by the **Search** LED coming ON.
2. The antenna automatically begins a search pattern, attempting to relocate the desired satellite.
3. If a signal greater than **Threshold** is not found during the scan, then the antenna is at the end of the search pattern.
4. Then antenna automatically retargets back to the satellite location, where it will pause for a short period of time (**Search Delay**).
5. If signal is still not found, the antenna begins the search pattern again, attempting to locate the satellite.
6. The antenna repeats steps 1 to 4, until either the satellite is found, or you intervene.

If the satellite signal is found and receive lock is achieved, then

1. Tracking takes over and automatically adjusts the antenna position for the highest received signal level from the satellite.
2. When the signal is above threshold, and the tracking receiver achieves receive lock, the antenna continues to track the satellite.

Then the system continues to operate automatically and indefinitely until one of the following conditions occur:

- AC power to the system is interrupted;
- The satellite signal is blocked.
- The ship sails into an area with insufficient satellite signal strength or level.

2.3. ***If Satellite Signal NOT Found***

If the system *cannot find* the satellite, then follow the steps below:

1. Press **NEXT** until the **Ship** menu is displayed to check the Latitude, Longitude and Heading values. If necessary:
 - Correct the Latitude and Longitude location of the ship.
 - Correct the Heading to be the same as the *current* heading value of the of the ships Gyro Compass or of the ship if using "No Gyro" mode.
2. Press **NEXT** to the **Satellite** display menu so you can check the satellite being targeted and the tracking frequency being used. If either of these are incorrect:
 - Correct the Longitude of the Satellite to target the desired satellite.
 - Correct the Frequency so that the system will be able to track the desired satellite.

If the desired satellite is still not found:

1. Check for Blockage. (Blockage is the *most* common cause of not being able to acquire the desired satellite.) (See the *Check for Blockage* section in the *Troubleshooting* chapter for details.)
2. Check the cable connections to assure that a cable is not disconnected.
3. Check the satellite modem power, connections and settings.
4. Read the *Troubleshooting* chapter for other possible causes and directions.

If you cannot identify or resolve the problem, then contact your Dealer.

2.4. ***If satellite signal IS found but receive lock is NOT achieved:***

Your system is designed to use the receive lock output from the internal tracking receiver; When signal above threshold is found but the tracking receiver does NOT get receive lock (receive sync), the ACU will re-target in an attempt to find the satellite which has signal AND receive lock. Refer to the Operation from the Front Panel - Satellite Information Menus section of this manual to verify that all of the Satellite settings are correct and then re-target the desired satellite.

This could also be due to the antenna targeting the wrong satellite, polarization failure or tracking receiver failure (not getting receive sync). The ACU will continue to re-target until satellite signal AND receiver lock is obtained.

2.5. ***Target a Different Satellite***







Satellite longitude is used to calculate antenna Elevation, Azimuth and Polarity pointing angles from the ships current location and heading.

1. Press Next until the **Satellite** sub-menu is shown.
2. Press Enter to until **SAT** is shown
3. Press Left or Right to enter Edit mode.
4. Press the **LEFT** or **RIGHT** arrow key to bring the cursor up under the tenths digit to the left, or the E/W character to the right respectively.
5. Continue to move the cursor until the desired character to be edited is underscored (selected).
6. Use the **UP** or **DOWN** arrow keys to increment or decrement the selected character.
7. When the hemisphere character is selected press the **UP** or the **DOWN** key to toggle East/West hemisphere.

8. Press **ENTER** to target the displayed satellite position *OR* Press **NEXT** to abort and return to the main Satellite menu.

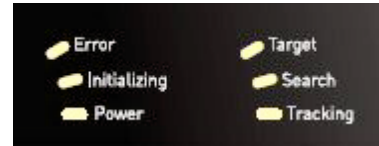
2.6. Basic Function of Front Panel Keys

Keyboard operation is very simple and straightforward. Basic function of each key is:

| | |
|---|--|
|  | <p>Press NEXT to cycle through the four main menus: Ship, Satellite, Antenna and Status (refer to the Operation Flowcharts).</p> |
|  | <p>Press TRACK key to toggle the state of Tracking, ON/OFF. If SEARCH is ON, pressing the TRACK key will turn search OFF.</p> |
|  | <p>When the Antenna main menu is displayed, pressing the LEFT arrow moves the antenna left (CCW or down in azimuth). Pressing the RIGHT arrow to move the antenna right (CW or up in azimuth).</p> <p>In any sub-menu, pressing the LEFT or RIGHT arrow enters editing mode and brings up a cursor in the display. When the cursor is under a character, it is selected and can be changed (see UP/DOWN arrow below).</p> <p>(Setup) - Press and release BOTH the LEFT and RIGHT arrow keys to access the SAVE parameters window. Press and hold for six seconds to access the setup parameters (refer to the Setup section of the systems installation manual).</p> |
|  | <p>When the Antenna main menu is displayed, press UP arrow to move the antenna up in elevation or the DOWN arrow to move the antenna down in elevation.</p> <p>Press the UP/DOWN arrow cycle Up and Down through the sub-menus.</p> <p>When a sub-menu item is being edited, use the UP/DOWN to increment/decrement the selected character. This steps the selected entry one increment per sequential key-press or rapidly increments the selected entry when pressed and held.</p> |
|  | <p>At any main menu level, press ENTER to access the sub-menu items.</p> <p>When viewing one of the sub-menus, pressing the ENTER key will step down through the sub-menu items, like the DOWN arrow does.</p> <p>When editing, the cursor is visible under a character in a sub-menu (whether it has been changed or not), press ENTER to execute the present value, and return to display mode of that sub-menu. This does NOT save the new value to NVRAM.</p> |
|  | <p>Press Brightness/Backlight button once to select, and then the UP/DOWN arrow key to adjust, the brightness of the display. Press the Brightness/Backlight again to select, and then the UP/DOWN arrow key to adjust, the backlight level of the display. Press the Brightness/Backlight button a third time to exit Brightness/Backlight mode.</p> |

2.7. Normal Front Panel LED States

There are six LEDs on the front panel, as shown in the following figure. Each LED can have several different colors, depending on their state. The Front Panel LEDs have the following priority, from highest to lowest, namely, Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.



The normal operating states of the front panel LEDs are:

ERROR — **OFF** indicates that no errors have occurred.

INITIALIZING — **OFF** indicates that the system has finished initialization.

POWER — **ON** (Solid Green) indicates that the boot sequence is complete, and the system power is **ON**.

TARGET — **OFF** after the antenna has finished targeting.

SEARCH — **OFF** indicates that antenna is not searching.

TRACKING — **ON** (Solid Green) indicates that the control unit has identified and is actively tracking the desired satellite to optimize the signal level (AGC).

If the LEDs on the front panel are not in the normal operating state, then consult the Troubleshooting chapter (especially the Front Panel LED States section) and, if necessary, contact your Dealer for assistance.

3. Operation from the Front Panel

Front panel operation of the LMXP is covered in the following paragraphs.

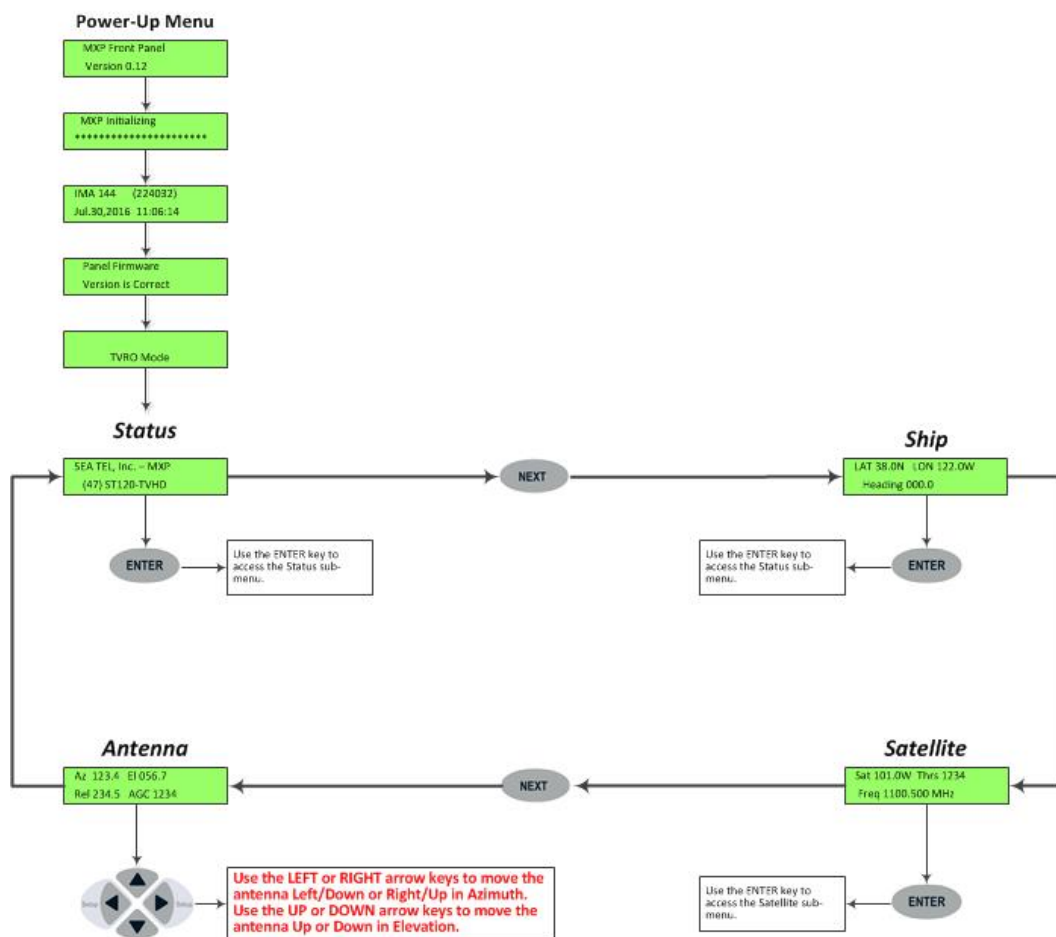
3.1. Display and Entry Operation Menus

The operation menus are arranged in four groups. Use the NEXT key to cycle through the groups, use the ENTER key to access the sub-menu of a selected group and then use the UP/DOWN arrow keys to move up and down the sub-menu items.

3.2. Power-up & Status

The following pages contain the LMXPs' operation flowcharts in graphic, and step-by-step text, format. Each flowchart is followed by paragraphs of operating instructions for each of the main menus.

LMXP Front Panel Operation Overview – IMA Version 1.44



3.2.1. Power-Up displays

After you turn the front panel power ON you will see the following power-up displays.

| Display | Meaning |
|--|---|
| MXP Front Panel Version 0.12 | The front panel software version will be displayed for a few seconds. |
| MXP Initializing ***** | The MXP will begin initializing. Asterisks will sequence across the bottom line, filling the screen multiple times as the initialization progresses. Initialization typically takes less than one minute. |
| IMA 144 (224032) Jul.30,2016 11:06:14 | The IMA software release and build number will be displayed on the top line. GMT Date/Time of the software will be displayed on the bottom line. |
| Panel Firmware Version is Correct | This message will be displayed if the firmware version in the front panel matches the front panel software in the IMA build. When a new IMA software update is installed it, may include newer front panel firmware too. If the firmware doesn't match, " Safeloader V4.00 " (top line) and " Loading Vers x.xx " (bottom line) will display for about 40 seconds. Then the LMXP will reboot (restart power-up displays), |
| TVRO Mode | The Mode message will be displayed to show you which mode the MXP/LMXP is operating in. |
| STATUS | The Power-Up sequence will automatically end by initiating the STATUS menu. |

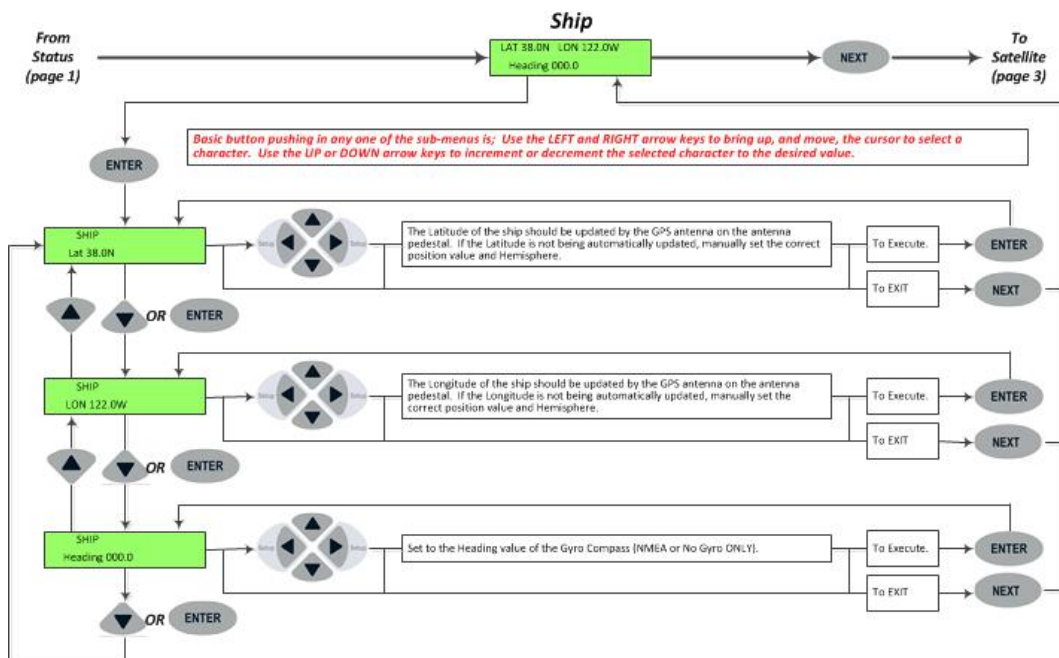
3.2.2. Status Information Menus

| Display | Meaning |
|---------------------------------------|--|
| STATUS | Press the NEXT key until the Status menu is displayed. The main menu header is quickly displayed. |
| SEA TEL, Inc. - MXP (47) 9711-X/KU | This is the <i>Status</i> display of the LMXP and Profile number/model of the antenna. |
| STATUS Tracking: ON | Press the ENTER key once to display the Tracking sub-menu . This is the display of the current <i>Tracking</i> state. To turn the Tracking status On or Off, press the Track key, or press the LEFT or RIGHT arrow to bring up a cursor under the current tracking condition and then Press the UP or DOWN arrow to toggle status ON/OFF. Press ENTER to set the Tracking state <i>OR</i> Press NEXT to abort and return to the main Status menu. |

| | |
|----------------------------------|--|
| <p>STATUS Searching: OFF</p> | <p>Press DOWN arrow or ENTER to access the <i>Search sub menu</i>. This is a display of the current Search condition.</p> <p>To initiate a SEARCH, or terminate a SEARCH in process, press the LEFT or RIGHT arrow to bring up a cursor under the current Search state and then press the UP or DOWN arrow to toggle status ON/OFF.</p> <p>Press ENTER to set the Search state <i>OR</i> Press NEXT to abort and return to the main Status menu.</p> |
| <p>STATUS Block: OFF</p> | <p>Press DOWN arrow or ENTER to access the <i>Block sub menu</i>. This is a display of the current Blockage state. You may want to turn Block ON to simulate a Blocked condition to test the dual antenna arbitrator in a dual antenna installation. Blocked state is automatically ON whenever the antenna is blocked, targeting, searching or has a stability error.</p> <p>To turn the Block status On or Off, press the LEFT or RIGHT arrow to bring up a cursor under the current Block status and then Press the UP or DOWN arrow to toggle status ON/OFF.</p> <p>Press ENTER to set the Block state <i>OR</i> Press NEXT to abort and return to the main Status menu.</p> |
| <p>STATUS Rcvr Lock: OFF</p> | <p>Press DOWN arrow or ENTER to access the <i>Rcvr Lock sub menu</i>. This is a display of the current Receiver Lock state. This is a DVB receive/NID lock from the tracking receiver.</p> |

3.3. Ship Information Menus

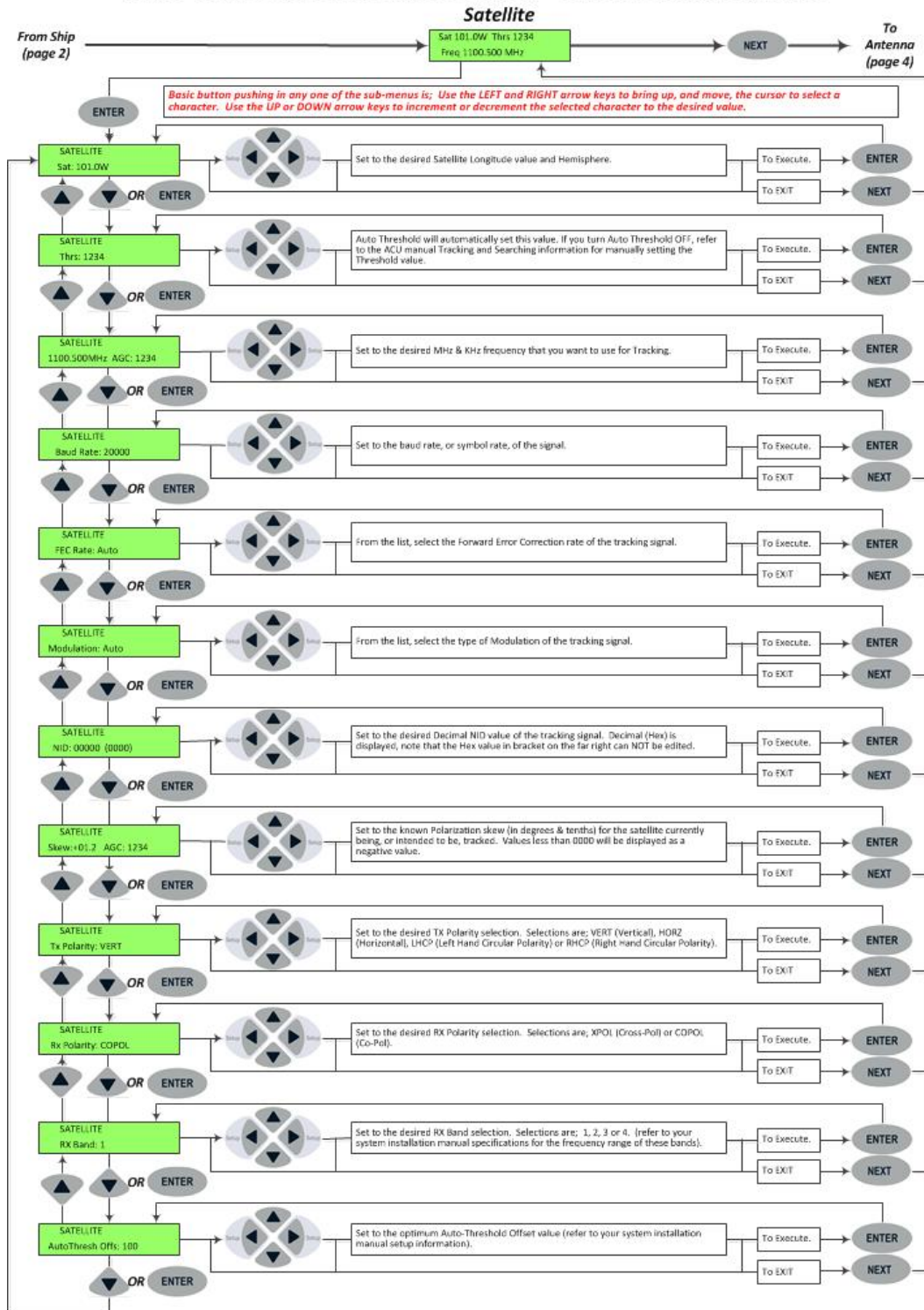
LMXP Front Panel Operation Flowchart – IMA Version 1.44 page 2



| Display | Meaning |
|---------------------------------------|--|
| | Press the NEXT key until the main <i>Ship</i> menu is displayed. The main menu header is quickly displayed. |
| SHIP | |
| LAT 38.0N LON 122.0W Heading 000.0 | This is the display of the current <i>Ship</i> information. |
| SHIP Lat 38.0N | Press ENTER to access the <i>Latitude</i> sub-menu. Latitude is used to calculate Azimuth, Elevation and Polarization for the desired satellite position. Latitude is updated automatically by the GPS mounted on the pedestal. To manually update Latitude, press the LEFT or RIGHT arrow to enter edit mode. This will display a cursor under character to be modified. Press the UP/DOWN arrow to increment/decrement this character. Press the LEFT or RIGHT arrow again to select another digit, or the North/South character, to edit. Press ENTER to set the Latitude setting <i>OR</i> Press NEXT to abort and return to the main Ship menu. |
| SHIP LON 122.0W | Press DOWN or ENTER to access the <i>Longitude entry mode</i> . Longitude is used to calculate Azimuth, Elevation and Polarization for the desired satellite position. Longitude is updated automatically by the GPS mounted on the pedestal. To manually update Longitude, press the LEFT or RIGHT arrow to enter edit mode. This will display a cursor under character to be modified. Press the UP/DOWN arrow to increment/decrement this character. Press the LEFT or RIGHT arrow again to select another digit, or the East/West character, to edit. Press ENTER to set the Longitude setting <i>OR</i> Press NEXT to abort and return to the main Ship menu. |
| SHIP Heading 000.0 | The displayed heading is comprised of two values. The left is the integrated response from the antenna pedestal and right is the local input from the gyrocompass. Press DOWN or ENTER to access the <i>Heading entry mode</i> . Heading is used to provide "True" Azimuth antenna position. This must be True north input, NOT Magnetic north. If the heading input source is NMEA0183 data no initial heading entry is required. If "No Gyro " mode is selected, the HDG MUST be initially set whenever the ACU power is turned ON. To manually update, press the LEFT or RIGHT arrow key to bring the cursor up under the character to the left, or right, of the decimal point respectively. Continue to move the cursor until the desired character to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected character. Press ENTER to set the new heading value <i>OR</i> Press NEXT to abort and return to the main Ship display During subsequent normal operation, the HDG value should automatically follow the Ships Gyro Compass correctly (HDG value should agree exactly with the value observed on the Gyro Compass). |

3.1. Satellite Information Menus.

LMXP Front Panel Operation Flowchart – IMA Version 1.44 page 3



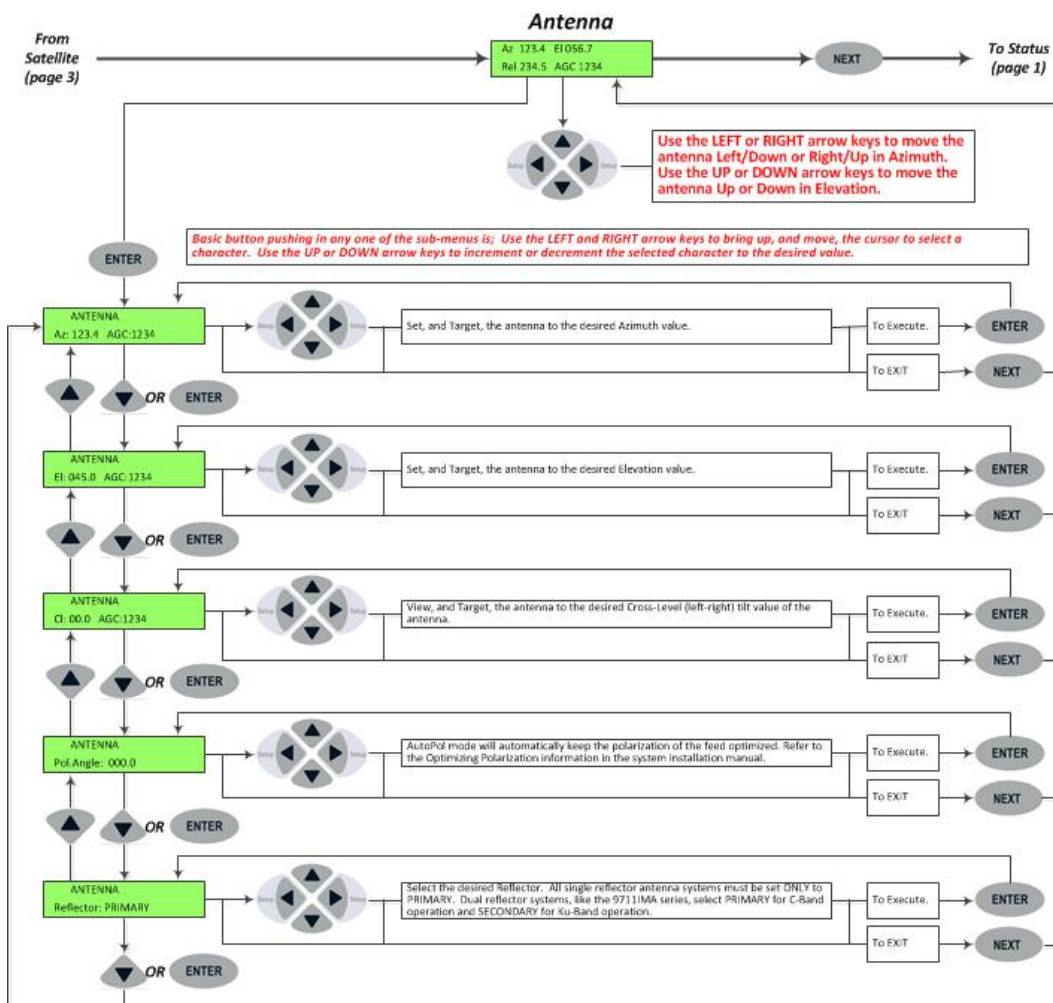
| Display | Meaning |
|---|---|
| | Press the NEXT key until the main <i>Satellite</i> menu is displayed. The main menu header is quickly displayed. |
| SATELLITE | |
| Sat 101.0W Thrs 1234 Freq 1100.500 MHz | This is the display of the current <i>Satellite</i> tracking information. |
| SATELLITE Sat: 101.0W | <p>Press ENTER to access the <i>Satellite Longitude sub-menu</i>. Satellite longitude is used to calculate antenna Elevation, Azimuth and Polarity pointing angles from the ships current location and heading.</p> <p>To manually update, press the LEFT or RIGHT arrow key to bring the cursor up under the tenths digit to the left, or the E/W character to the right respectively. Continue to move the cursor until the desired character to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected character.</p> <p>Range of acceptable longitude values is 000.0 East to 180.0 East/West to 000.0 West, however longitude may be entered as 000.0-359.9 East if you prefer (181.0 East is the same as 179.0 West).</p> <p>When the hemisphere character is selected press the UP or the DOWN key to toggle East/West hemisphere.</p> <p>Press ENTER to target the displayed satellite position <i>OR</i> Press NEXT to abort and return to the main Satellite menu.</p> |
| SATELLITE Thrs: 1234 | <p>Press DOWN or ENTER to access the <i>Threshold sub-menu</i>. Threshold is a minimum AGC value for the ACU to determine if satellite signal has been located or has been lost.</p> <p>Default setup is <i>Automatic Threshold</i>, which sets the Threshold Offset (see AutoThresh Offset setting below) value to nnnn counts of AGC above the average off satellite AGC value whenever the ACU Searches, Targets or Unwraps (refer to your antenna manual for the default setting for AUTO THRES parameter).</p> <p>To manually set threshold; Note the Peak "on satellite" AGC value, move AZ or EL and note the "off satellite" (Noise Floor) AGC value. Calculate the difference between Peak AGC and Noise Floor AGC. Threshold should be set to 1/3 (to 1/2) of the Difference above Noise Floor.</p> <p>Press ENTER to set the threshold value and return to heading display <i>OR</i> Press NEXT to abort and return to the main Ship display.</p> |
| SATELLITE 1100.500MHz AGC: 1234 | <p>Press DOWN or ENTER to access the <i>DVB Tracking Receiver Frequency entry mode</i>. The individual frequency of the tracking receiver and the current signal level (AGC) will be displayed.</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up under a digit. Continue to move the cursor until the desired digit to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected digit.</p> <p>Edit the digits to the left of the decimal point to be the desired MHz frequency (950-2150 MHz) and the digits to the right of the decimal point to be the KHz frequency (000-999 KHz).</p> <p>Press ENTER to tune the receiver to this frequency and return to the frequency display <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |

| | |
|---|--|
| <p>SATELLITE Baud Rate: 20000</p> | <p>Press DOWN or ENTER to access the <i>Baud Rate entry mode</i>. Enter the baud rate, or symbol rate, of the signal.</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up under a digit. Continue to move the cursor until the desired digit to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected digit.</p> <p>Press ENTER to set the desired value <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
| <p>SATELLITE FEC Rate: Auto</p> | <p>Press DOWN or ENTER to access the <i>FEC Rate entry mode</i>. Enter the baud rate, or symbol rate, of the signal.</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up. Use the UP or DOWN arrow keys to increment or decrement Up/Down the list to select the desired Forward Error Correction rate of the tracking signal.</p> <p>Press ENTER to set the selected value <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
| <p>SATELLITE Modulation: DVB-S2</p> | <p>Press DOWN or ENTER to access the <i>Modulation entry mode</i>. Enter the baud rate, or symbol rate, of the signal.</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up. Use the UP or DOWN arrow keys to increment or decrement Up/Down the list to select the type of modulation of the tracking signal.</p> <p>Press ENTER to set the selected value <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
| <p>SATELLITE NID: 00000 (0000)</p> | <p>Press DOWN or ENTER to access the <i>NID entry mode</i>. Enter the Decimal Network ID (NID) of the signal. Decimal (Hex) is displayed, note that the Hex value in bracket on the far right can NOT be edited.</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up under a digit. Continue to move the cursor until the desired digit to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected digit.</p> <p>Press ENTER to set the desired value <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
| <p>SATELLITE Skew:+01.2 AGC: 1234</p> | <p>Press DOWN or ENTER to access the <i>Satellite Skew entry mode</i>. Enter a known skew for the new satellite. If the satellite is not skewed, then enter zero. The skew must be entered in degrees and tenths of degrees</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up under a digit. Continue to move the cursor until the desired digit to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected digit. Underscore the +/- character to toggle the plus or minus sign of the value.</p> <p>Press ENTER to set the desired Skew value <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
| <p>SATELLITE Tx Polarity: VERT</p> | <p>Press DOWN or ENTER to access the <i>Tx Polarity sub-menu</i>. This setting is NOT used in TVRO systems</p> |

| | |
|---|--|
| <p>SATELLITE AutoThresh Offs: 100</p> | <p>Press DOWN or ENTER to access the Automatic Threshold Offset sub-menu. This setting is used to set Threshold to be Offset counts of AGC above the background noise (off satellite AGC value).</p> <p>To manually set, press the LEFT or RIGHT arrow key to bring the cursor up under a digit. Continue to move the cursor until the desired digit to be edited is underscored (selected). Use the UP or DOWN arrow keys to increment or decrement the selected digit.</p> <p>To optimize the Offset value you will need to access the Antenna menu, so you can move the elevation of the antenna. While ON satellite, record the peak "ON Satellite" AGC value that is displayed in the Antenna display, turn Tracking OFF and use the UP arrow in the Position graphic to move the antenna UP OFF satellite. Read the "OFF Satellite" AGC value, subtract the OFF Satellite AGC from the peak ON Satellite AGC. The result is the difference in signal level between ON and OFF satellite. Turn Tracking back ON and return to this sub-menu, divide the difference value in half and enter that value in this AutoThres Offset field.</p> <p>Press ENTER to set the desired Auto Threshold Offset setting <i>OR</i> Press NEXT to abort and return to the main Satellite display.</p> |
|---|--|

3.2. Antenna Information Menus.

LMXP Front Panel Operation Flowchart – IMA Version 1.44 page 4



| Display | Meaning |
|---|---|
| | Press the NEXT key until the main Antenna menu is displayed. The main menu header is quickly displayed. |
| ANTENNA | |
| Az 123.4 El 056.7 Rel 234.5 AGC 1234 | This is the display of the current <i>Antenna</i> information. While in the antenna main menu pressing the UP, DOWN, LEFT or RIGHT arrows moves the antenna in those respective directions. Quick pres & release the desired arrow key will <i>step</i> the antenna in small individual increments. Press & Hold the desired arrow key to <i>slew</i> the antenna in rapid steps. |
| ANTENNA Az: 123.4 AGC:1234 | Press ENTER to access the Azimuth sub-menu . This allows you to target the antenna to desired Azimuth position. The current IF signal level (AGC) is displayed to assist you in manually peaking AZ for best signal level. Range of input is 000.0-359.9. To target a new azimuth position, press the LEFT or RIGHT arrow key to bring the cursor up under the character to the left, or right, of the decimal point respectively. Continue to move the cursor until the desired character is selected. Use the UP or DOWN arrow keys to increment or decrement the selected character. Press ENTER to <i>target</i> the antenna to the new Azimuth position OR Press NEXT to abort and return to the main Antenna display. |
| ANTENNA El: +045.0 AGC:1234 | Press DOWN or ENTER to access the Elevation sub-menu . This allows you to target the antenna to a desired Elevation position. Range of input is 00.0-90.0. To target a new elevation position, press the LEFT or RIGHT arrow key to bring the cursor up under the character to the left, or right, of the decimal point respectively. Continue to move the cursor until the desired character is selected. Use the UP or DOWN arrow keys to increment or decrement the selected character. Press ENTER to <i>target</i> the antenna to the new elevation position OR Press NEXT to abort and return to the main Antenna display. |
| ANTENNA Cl: +00.0 AGC:1234 | Press DOWN or ENTER to access the Cross-Level sub-menu . This sub-menu displays the current Cross-Level (left/right tilt) position of the antenna. To target a new CL position, press the LEFT or RIGHT arrow key to bring the cursor up under the character to the left, or right, of the decimal point respectively. Continue to move the cursor until the desired character is selected. Use the UP or DOWN arrow keys to increment or decrement the selected character. Press ENTER to <i>target</i> the antenna to the new CL position OR Press NEXT to abort and return to the main Antenna display. |
| ANTENNA Pol.Angle: +000.0 | Press DOWN or ENTER to access the Polarization Angle sub-menu . Auto-Polarization is the DEFAULT method of polarization adjustment. Polarization mode must be set to Manual to be manually adjusted (refer to the Setup and Maintenance sections of the antenna installation manual). |

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4. Operation from the Internal Web-based GUI

You may prefer to operate the MXP from a computer, using the internal web-based GUI. GUI operation is covered in the following paragraphs.

4.1. Login to MXP

Log in to the **MXP** from the computer, and the **Login** page appears. If your Dealer did not set up the computer, then refer to the *Installation Manual* for setup instructions.

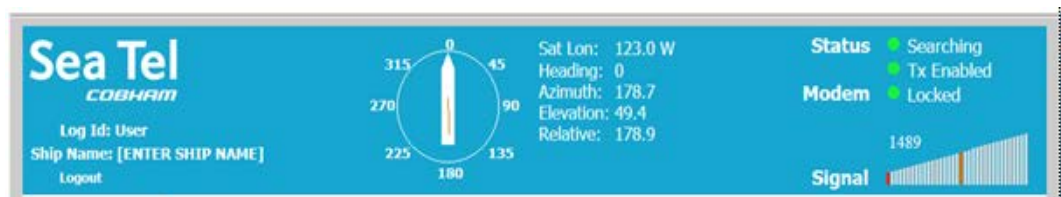
Enter the default **Username** (User) and **Password** (seatel1), or the **Username** and **Password** given to you by your Dealer. Both the **Username** and **Password** are case sensitive.



4.2. Common Information on all MXP System Pages

4.2.1. Banner

The same banner appears at the top of every page. It contains much of the information that you might want to know about the system.



4.2.1.1. On the left side of the banner:

- To link to the **Sea Tel** web site, click the **Sea Tel** logo in the upper-left corner of the banner.
- **Log Id** displays the **User Name** that you used to log in.
- The **Ship Name** is displayed next.
- To log out of the system, click **LOGOUT**.

4.2.1.2. Compass Rose, Ship Heading, and Antenna Direction

On the middle-left of the banner is a graphic. It shows the ship heading, a compass rose with four cardinal directions, numeric ship heading value and antenna direction (red arrow). The numeric value of the ship heading is displayed with more accuracy in the small box near the stern of the ship. The red arrow indicates the position of the antenna, both relative to the bow of the ship and to the true azimuth-pointing angle.

The compass follows the heading reading coming from either the gyrocompass on the ship, or the fixed heading entered in the **Navigation** section of the **Configuration > Interfaces (Communication Interfaces page)**.

4.2.1.2.1. Customize the Compass Rose

To change the four principal directions on the Compass Rose, click on the Compass Rose, and then toggle it by pressing **Shift + C** on the keyboard. There are six different choices:



- The first set (default) is 'N', 'S', 'E', and 'W', representing North, South, East and West in English.
- The second set is 'N', 'S', 'E', and 'O' representing Nord, Sud, Est and Ouest in French or Norte, Sur, Este and Oeste in Spanish.
- The third set displays the four principal directions in traditional Chinese characters.
- The fourth set displays the initial letter of the names of the four principal directions in Cyrillic.
- The fifth set displays the universal circular degrees with 0 or 360 degrees representing North, 90 degrees representing East, 180 degrees representing South, and 270 degrees representing West.
- The sixth set displays the four principal radian values of the angular direction, with 0 or 2π representing North, $\pi/2$ representing East, π representing South, and $3\pi/2$ representing West.

4.2.1.2.2. Customize the Type of Ship

To change the silhouette of the ship within the Compass Rose, click on the ship graphic, and then toggle it by pressing **Shift+Q** on the keyboard to change to the next available ship image.

- The first (default) image is a needle shape typically found in a magnetic compass, with the needle always pointing towards the North magnetic pole. The needle rotates, and the compass rose directions remain static.
- The second image is a standard sailboat silhouette. The compass rose rotates and the sailboat silhouette remains static.
- The third image is a large ship silhouette. The compass rose rotates, and the large ship silhouette remains static.

- The fourth image is a catamaran silhouette. The compass rose rotates, and the catamaran silhouette rotates.

4.2.1.3. **Blockage Zones**

Blockage zones are represented on the compass as translucent red wedges. The display of the blockage zones can be toggled ON or OFF by clicking on the compass and pressing **Shift+B**. Normally, Blockage Zones are defined only for permanent objects on the ship, and not for objects elsewhere, such as on-shore buildings, cranes, other ships, and so forth. Only the Dealer can add or delete Blockage Zones.



4.2.1.4. **Pointing Information**

The Pointing Information is displayed in the middle right of the banner. It displays values for:

To link to the **Sea Tel** web

- Sat Lon – is the longitudinal position of the currently selected satellite.
- Heading – is the heading of the ship.
- Azimuth — is the true azimuth pointing angle of the antenna.
- Elevation — is the elevation pointing-angle of the antenna.
- Relative — is the azimuth pointing angle of the antenna, relative to the bow of the ship.

4.2.1.5. **Status Indicators in the Banner**

On the right side of the banner are four status indicators that provide a top-level view of the state and health of the system. Below the status indicators is a Signal Strength indicator.

The top status indicator (Status) indicates the tracking status, and can have one of five colors:

- Tracking Off (Off)
- Tracking or Searching (Green)
- Tracking (The Automatic Gain Control [AGC] is below threshold) (Orange)
- Tracking (In blockage or approaching blockage) (Orange Flashing)
- Disconnected (No communication between the **MXP** and the ICU) (Red)

The second status indicator indicates the blockage status, and can have one of three colors:

- Normal (Green)
- Approaching Blockage (REL is within 10 degrees of a blockage zone) (Orange Flashing)
- Blocked (REL is in a blockage zone) (Red Flashing)

The third status indicator (Lock) indicates the status of the modem, and can have one of two colors:

- Locked (Modem has RX lock) (Green)
- Unlocked (Modem does not have RX Lock) (Red)

The bottom status indicator (Errors) indicates the errors status, and can have one of two colors:

- Errors found (red)
- No errors found (green)

If Errors are found (The Errors LED is red.), then click **View** to see the errors in the system. See the **Troubleshooting** chapter for a list of errors that *can* be displayed, along with other information about them. If you cannot resolve the errors, contact your Dealer for help.

4.2.1.6. Status Indicators

On the right side of the banner are nine status indicators that provide a top-level view of the state or health of the system. Their values (colors) are the same as those on the corresponding LED states on the front panel of the LMPX. See the **Front Panel LED States** section for details about the states.

4.2.1.7. NID

The decimal value of the **Network ID (NID)** is displayed on the right side of the banner.

4.2.1.8. Signal Level

The **Signal Level** bar graph is on the right side of the banner, below the **Status Indicators**. It is a visual representation of the relative signal strength (AGC). The signal level is displayed, both as a digital value of AGC, and as a relative bar graph. The AGC has a range of 0 to 4095. The bar graph displays a segment of the AGC range from -300 to +300 around the light gray bar. The light gray bar represents the current Threshold value. Its digital value is displayed directly above it.

When the signal level is greater than the **Threshold** value, then the segments of the bar graph are green. When the signal level is less than the **Threshold** value, then the segments of the bar graph are red. The more green bars, the stronger the signal strength.

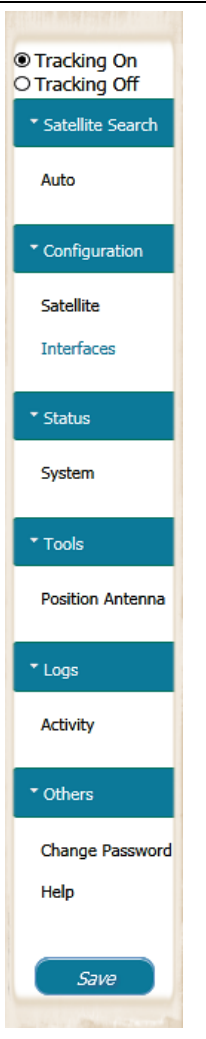
- If the signal strength (AGC) is 300 counts less than threshold, all bars are gray. A single gray bar represents the minimum value.
- If the signal strength (AGC) is less than the threshold, then red bars appear.
- If the signal strength (AGC) is greater than the threshold, then green bars appear.
- If the signal strength (AGC) is 300 counts greater than the threshold, then all bars are green.

The current decimal value of the signal is displayed to the left of the bar graph.

4.2.2. Left Side Bar

Following this sentence are a table and a figure. The table contains the **Headings, Subheadings,** and the **Page Titles** for the middle part of the **Left Side Bar**. The figure on the right is the complete **Left Side Bar**, with all levels expanded.

| Main or Top Level Headings (Dark teal sections) | Subheadings (White subsections) | Page Titles (Names of the pages for each subsection. The text changes to light teal when you click on the subsection.) |
|--|------------------------------------|---|
| Tracking On Tracking Off (radio buttons) | Not applicable | Not applicable |
| Satellite Search | Auto | Satellite Signal Automatic Search |
| Configuration | Satellite | Satellite Configuration |
| | Interfaces | Ship Position Setting |
| Status | System | System Status |
| Tools | Data Export | System Log |
| Logs | Activity | View Activity Log |
| Others | Change Password | Change User's Password |
| | Help | Help |
| Save (button) | Not applicable | Not applicable |



4.2.2.1. Tracking

The **Tracking ON and OFF** radio buttons are on the top of the sidebar. **Tracking** can be turned **ON** or **OFF**, by clicking the appropriate button.

4.2.2.2. Headings (Expand or Collapse)

Each of the dark teal headings below the **Tracking ON/OFF** buttons, have a small arrow on the left side that expands, or collapses the subsections.

4.2.2.3. Subheadings

The subheadings correspond to each of the **LMXP System Page** sections. If you select a subheading, the text changes from black to light teal.

4.2.2.4. Save

Save is on the bottom of the sidebar, where it is available for every page in the system. You can save the changes you made on each page, as you go, or after you finish making all changes on all pages. (If you click **Save**, then the values of all parameters are saved.)

4.2.3. **Task Bar**

The task bar is at the bottom of each page.

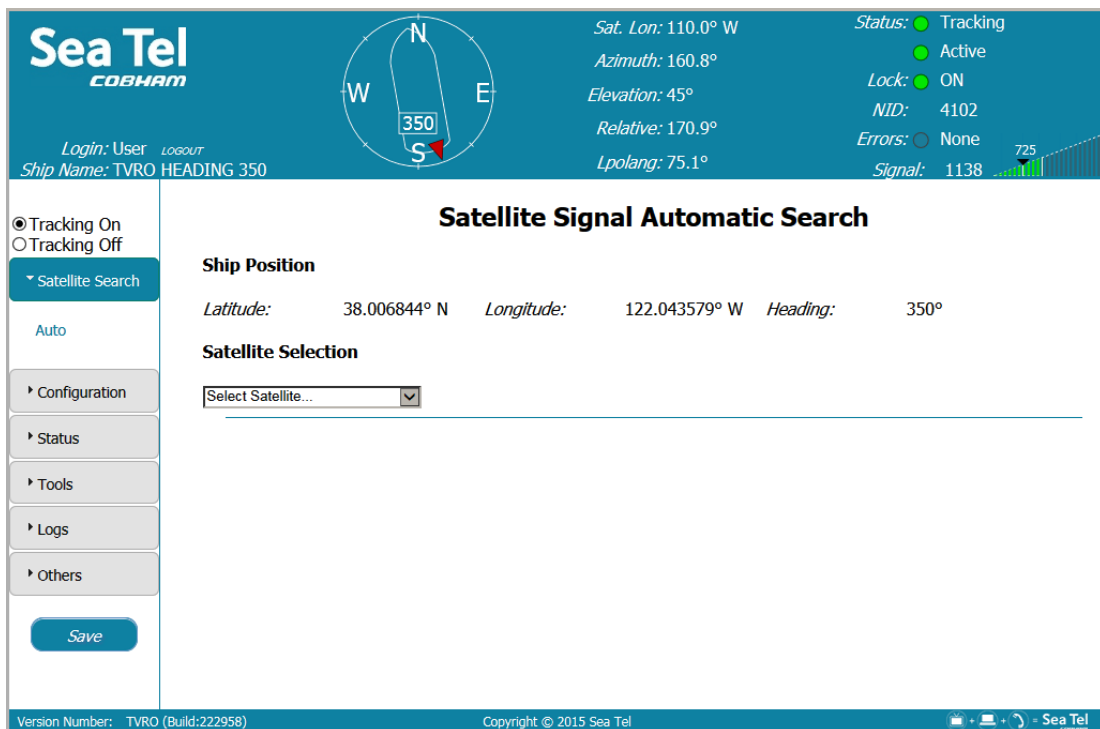


The **LMXP Software Version** and **Build Number** are on the left. The **Copyright** is in the middle. Ignore the four icons on the right. Do not click the icons.

4.3. **LMXP System Pages**

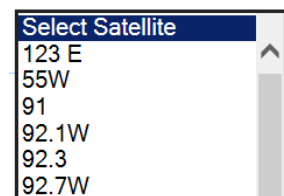
4.3.1. **Satellite Search > Auto (Satellite Signal Automatic Search page)**

You can select and track any of up to 40 favorite satellites from the **Satellite Signal Automatic Search** page.



The **Ship Position** section displays the Latitude, Longitude, and Heading of the ship. You cannot change any of these values from this page. However, you can edit them in the **Navigation** section of the **Configuration > Interfaces (Communication Interfaces page)**.

You can add or delete a satellite, and edit the parameters of a selected satellite, in the **Configuration > Satellite (Satellite Configuration page)**.



The **Satellite Selection** section has a dropdown list that contains up to 40 "favorite" satellites. The graphic on the right is an example of the dropdown list. When you select a satellite, either the message "Acquiring satellite signal may take up to 60 seconds.....Please wait", or the message "Acquiring satellite signal may take up to 300 seconds.....Please wait" is displayed. When the satellite signal is acquired, the message "Satellite target loaded." is displayed.

NOTE: If the power to the system is recycled, then after power is restored, the system *retargets* the last satellite that was selected.

4.3.2. **Configuration > Interfaces > (Communication Interfaces page)**

The **Communication Interfaces** page enables the Dealer to define system settings to ensure that the **LMXP** can properly communicate with all equipment (ABD and BDE), whether supplied by Cobham SATCOM or not, as a part of normal operation or system maintenance.

The **Communication Interfaces** page has four subsections.

- Network Configuration
- Serial Ports
- Navigation
- Dry Alarms

Sea Tel COBHAM

Login: User LOGOUT
Ship Name: TVRO HEADING 350

Sat. Lon: 110.0° W
Azimuth: 160.8°
Elevation: 45.1°
Relative: 170.9°
Lpolang: 75.1°

Status: ● Tracking
● Active
Lock: ● ON
NID: 4102
Errors: ○ None
Signal: 1138

Communication Interfaces

Tracking On/Off, Satellite Search, Configuration, Status, Tools, Logs, Others

Network Configuration

Addresses
MAC Address: 00:04:A3:D1:9D:69
IP Address: 10.192.104.184
Subnet Mask: 255.255.254.0
Gateway: 10.1.1.1
DNS Address: 10.1.1.205

Ports
UDP Port: 49184 ROAM
Web Port: 80
Secure Web Port: 443

Telnet Ports
TCP 0: 2000 Legacy
TCP 1: 2001 Legacy
TCP 2: 2002 OpenAMIP
TCP 3: 2003 CLI

Serial Ports

LMXP
NMEA 0183: 4800 baud
Console: 115200 baud
Flow Control:
(RTS/CTS):
Mode: CLI

TICU
Console: 115200 baud

Navigation

Gyro
Type: Fixed
Heading: 350 °
Heading ID: HDT

GPS
Port: Internal
ID: RMC

Ship Position
Lat: 38.006886 N
Lon: 122.043587 W

Dry Alarms
Alarm 1 1001,1030,1031
Alarm 2 [ENTER ERROR CODES]

Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel

4.3.2.1. **Network Configuration Section**

The **Network Configuration** parameters are in this section of the **Communication Interfaces** page. These are Ethernet-based communication settings for the system.

Network Configuration

Addresses
MAC Address: 00:04:A3:D1:9D:69
IP Address: 10.192.104.184
Subnet Mask: 255.255.254.0
Gateway: 10.1.1.1
DNS Address: 10.1.1.205

Ports
UDP Port: 49184 ROAM
Web Port: 80
Secure Web Port: 443

Telnet Ports
TCP 0: 2000 Legacy
TCP 1: 2001 Legacy
TCP 2: 2002 OpenAMIP
TCP 3: 2003 CLI

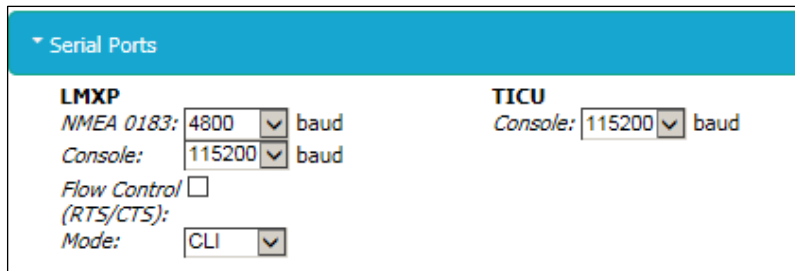
Addresses, Ports and Telnet subsections — These parameter values are usually left “as is” for a system that is accessed infrequently from a single computer. However, if you connect the system to a LAN, and allow access from multiple computers, then you must change the addresses to the appropriate values for the LAN.

4.3.2.2. Serial Ports Section

The **Serial Ports** parameters are in this section of the **Communication Interfaces** page. The values in this section define the serial port communication settings of the system. *Do not change* the factory default values unless it is absolutely necessary, and then, only with the assistance of your Dealer.

LMXP subsection

- **NMEA 0183** — Enter the Baud Rate speed of the NMEA gyrocompass input



connected to the rear panel of the **LMXP**. The standard baud rate for NMEA 0183 is 4800, but your device may be different. The default is 4800.

- **Console** — If a device is connected to the Console (serial) port on the rear panel of the **LMXP**, then enter the speed of the port to the appropriate baud rate of your device. The default is 115200.
- **Flow Control (RTS/CTS)** — Set the **Flow Control (RTS/CTS)** box to ON (box is checked), or OFF (box is unchecked), as appropriate for the input device. The default is OFF (Unchecked).
- **Mode** — Select either **CLI** or **Legacy**. The default is **CLI**.

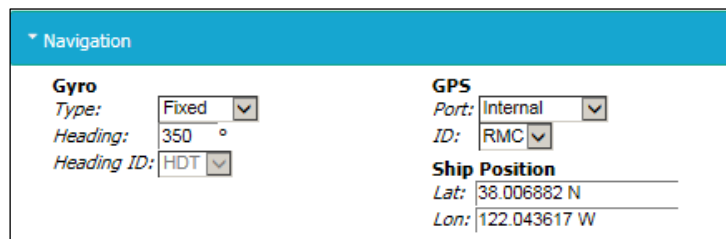
TICU subsection

- **Console** — *Do not change* the baud rate of the **TICU Console** port. Leave it at the default value. The default is 115200.

4.3.2.3. Navigation Section

The **Navigation** parameters are in this section of the **Communication Interfaces** page.

Caution: The values in this section are the *only* ones that are safe to change *without* assistance from your Dealer.



4.3.2.3.1. Gyro subsection

There are three fields in the Gyro subsection. They are **Type**, **Heading**, and **Heading**.

Type

- No Gyro

If you *do not* have a gyrocompass, then select **No Gyro** from the dropdown list, and enter the current **Heading** of the ship.

- Fixed

If the heading is fixed (for example, on an oil drilling platform), then select **Fixed** from the dropdown list. Then enter the heading in the **Heading** field.

- NMEA

If you have a NMEA 0183 gyrocompass, then select **NMEA** from the dropdown list. The default **Type** is **NMEA 0183**, and the default **Heading ID** is **HDT**.

Using a NMEA 0183 gyrocompass to find heading of the ship, reduces the time that is required to find a satellite.

Heading

If you selected **No Gyro**, or **Fixed**, as the **Gyro Type**, then enter the **Heading** in degrees.

ID

Select the type of **NMEA0183** data that your gyrocompass outputs.

- If your gyrocompass outputs digital HDD data, then select **HDD** from the dropdown list
- If your **gyrocompass** outputs heading deviation and variation data, then select **HDG** from the dropdown list.
- If your gyrocompass outputs magnetic heading data, then select **HDM** from the dropdown list.
- If your gyrocompass outputs true heading data, then select **HDT** from the dropdown list. **HDT** is the preferred heading selection.

4.3.2.3.2. GPS subsection

There are two fields in the **GPS** subsection. They are **Port** and **ID**. If an *external* GPS is used, or if periodic manual Latitude (**LAT**) and Longitude (**Lon**) entries are needed to reacquire a lost satellite signal, then you must select a **Port** and enter values for the **Ship Position**.

Port

Select the **Port** required by the external GPS. The **Port** options are:

- If you want the system to search for and find the correct port, then select **Auto**
- If your external GPS is connected to the **Aux** port on the back of the **LMXP**, then select **Aux**.
- If your external GPS is connected to the **Console** (serial) port on the back of the **LMXP**, then select **Console**.
- If you use the internal GPS that is mounted on the **Sea Tel** antenna (You selected **NMEA** as the **Gyro Type**.), then select **Internal**. The internal GPS provides automatic Latitude and Longitude input to the system. Because

a GPS is part of the system, no external GPS is required. **Internal** is the default value.

- If you selected **NMEA** as the **Gyro Type**, then select **NMEA 0183**.

Port ID

If you have an external GPS, then select the **Port ID** of the external GPS. The **Port ID** choices are:

- Select **GCA** if your external GPS uses this Port ID.
- Select **GLL** if you selected **Internal** as the **Port**. **GLL** is the default value.
- Select **RMC** if your external GPS uses this Port ID.

4.3.2.3.3. Ship Position subsection

There are two fields in the **Ship Position** subsection.

If you do not have a gyrocompass, or it is not working, then enter the longitude and latitude of the ship manually. Enter values in degrees and tenths of a degree.

- The **LAT** entry format is **###.#**, followed by N or S for North or South, for example, 38.0 N.
- The **LON** entry format is **###.#**, followed by E or W for East or West, for example, 122.0 W.

4.3.2.4. Dry Alarms Section

The **Dry Alarms** parameters are in this section of the **Communication Interfaces** page. They enable you to define which **Error**, **Informational**, or **Warning Codes** trigger one of the two dry alarm contact sets. The contact sets are on the rear panel of the **LMXP**.

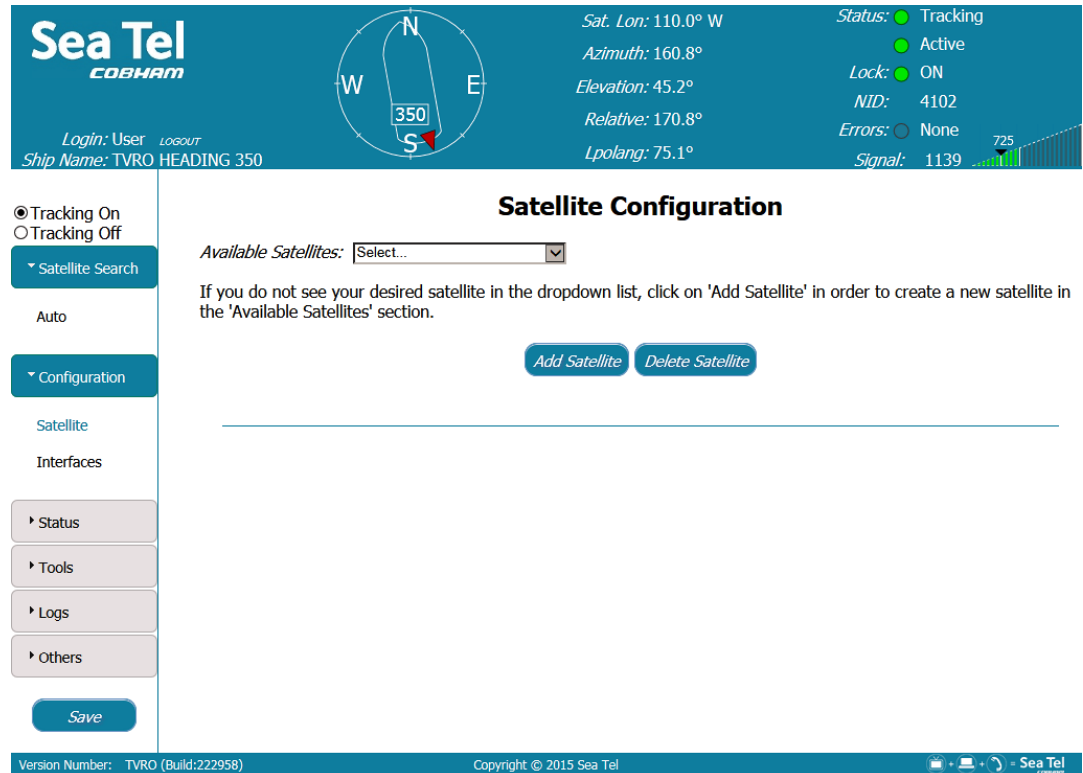


The **Dry Alarms** must be electrically connected and configured appropriately. The **Dry Alarm** contacts can provide programmable alarm outputs to other equipment or systems. Switched outputs can use 4.7K Pull Up or Pull Down and can provide a maximum current sink of 0.5 amps. The contacts are normally **Open** for the **No Alarm** state and are **Closed** (Shorted) for the **Programmed Alarm** state.

Click the alarm check box, and enter the error codes that you want to trigger that alarm.

4.3.3. Configuration > Satellite (Satellite Configuration page)

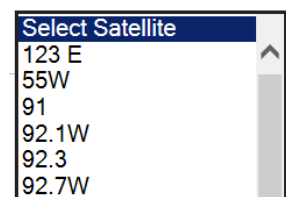
You can select and track any of up to 40 favorite satellites from the **Satellite Signal Automatic Search** page. You can also edit, add, or remove a satellite starting from the same page. The following figure shows the page when it is *first* opened.



4.3.3.1. Select a Satellite

The top section of the **Satellite Signal Automatic Search** page has a **Satellite Selection** dropdown list that contains up to 40 “favorite” satellites. The graphic on the right is an example of the dropdown list.

Select a satellite from the dropdown list that contains up to 40 “favorite” satellites. As soon as you select a satellite, the antenna immediately targets and acquires the satellite that you selected. An **Edit Satellite** section appears. It contains the parameters for the satellite that you selected. . Either the message “Acquiring satellite signal may take up to 60 seconds.....Please wait”, or the message “Acquiring satellite signal may take up to 300 seconds.....Please wait” is displayed. When the satellite signal is acquired, the message “Satellite target loaded.” is displayed.



Then the bottom section (**Edit Satellite**) of the **Satellite Configuration** page is displayed. It contains the parameters for the satellite that you selected.

NOTE: If the power to the system is recycled, then when power is restored, the system *retargets* the last satellite that was selected.

4.3.3.2. Delete a Satellite

To delete a satellite, perform the following steps.

1. Go to the Configuration > Satellite (Satellite Configuration page).
2. From the **Available Satellites** dropdown list, select the satellite that you want to delete.

3. Click **Delete Satellite**. The satellite is removed from the **Available Satellites** dropdown list. The parameters and everything else about the satellite are removed from the system.

4.3.3.3. Add a Satellite

The following figure shows the **Satellite Configuration** page *after* you click **Add Satellite**. Notice the bottom Add Satellite section that appears.

The screenshot shows the 'Satellite Configuration' page. At the top, there is a 'Satellite Selection' section with a 'Select Satellite' dropdown menu. Below it, a message states: 'If you do not see a dropdown list or your desired satellite is not in the dropdown list, click **Add Satellite** to add a satellite'. An 'Add Satellite' button is located to the right of this message. The main 'Add Satellite' section contains several input fields: 'Satellite Name' (text input), 'Longitude' (text input with a 'W' dropdown), 'Frequency' (text input with '1234.567' and 'MHz' label), and 'Skew' (text input with '0' and 'deg' label). To the right of these fields are 'Search Pattern' (dropdown with 'Spiral'), 'Tx Polarity' (dropdown with 'HORZ'), 'Band' (dropdown with '1 (Lo: 10.000 GHz)'), and 'Reflector' (radio buttons for 'Primary' and 'Secondary'). Below the reflector are 'Rx' radio buttons for 'XPol' and 'CoPol'. A 'Save' button is located at the bottom left of the form.

To add a satellite, perform the following steps.

1. Go to the Configuration > Satellite (Satellite Configuration page).
2. Click **Add Satellite**. The **Add Satellite** section appears. It contains some parameter values for the current satellite. (See the **Edit Satellite** section).
3. Enter or change the parameter values for the new satellite.
4. After you finish, click **Save** on the left sidebar. The new satellite is added to the list of favorite satellites.

The system immediately locates, acquires, and tracks the new satellite.

4.3.3.4. Edit Satellite

The following figure shows the **Edit Satellite** section.

This screenshot is identical to the one above, showing the 'Satellite Configuration' page with the 'Add Satellite' section. It displays the same input fields for 'Satellite Name', 'Longitude', 'Frequency', 'Skew', 'Search Pattern', 'Tx Polarity', 'Band', 'Reflector', and 'Rx', along with the 'Save' button.

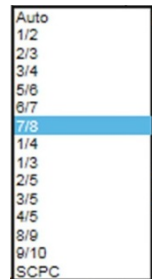
Enter or change the values of the parameters for the new satellite.

- **Satellite Name**
Enter the name that you want to use for the new satellite.

- **Longitude**
Enter the longitude position of new satellite.
- **E/W**
Use the dropdown list to select the East or West longitude position of the satellite.
- **Skew**
Enter a known skew for the new satellite. If the satellite is not skewed, then enter zero. The skew must be entered in degrees and tenths of degrees.
- **Baud rate**
Enter the baud rate, or symbol rate, of the signal.
- **NID (Network ID)**
Enter the decimal format Network ID (NID) of the signal that you will track.
- **FEC (Forward Error Correction)**
From the dropdown list, select the **Forward Error Correction** rate of the tracking signal. This is the signal to error correction rate.

If you select **Auto**, then the system automatically locks on the best value, and updates it as conditions change. Auto should be used when **FEC** rate of the signal you want to track is not published.

If published, select the appropriate **fractional** fixed value. The fraction represents the amount of data vs the amount of error checking.

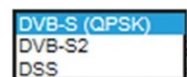


The larger the fraction, the higher the amount of data (and the lower the amount of error checking) per second is. This means that a lot of data gets through every second because so little error checking is being done. So $\frac{9}{10}$ FEC rate provides $\frac{9}{10}$ bits of data and only $\frac{1}{10}$ bits of error checking.

The smaller the fraction, the lower the amount of data (and the higher the amount of error checking) per second is. This means that less data gets through every second because more error checking is being done. So $\frac{1}{2}$ FEC rate provides $\frac{1}{2}$ bits of data and $\frac{1}{2}$ bits of error checking.

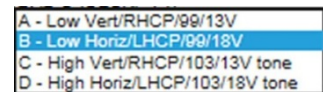
SCPC — For the **Sea Tel TV & TVHD** antennas, do not select **SCPC**.

- **Modulation**
From the dropdown list, select the type of modulation that the tracking signal uses.



- **RX Input**

From the dropdown list, select the Band and Polarity of the **LNB** output, which is routed to the tracking receiver. This *must* be the Band and Polarity, which contains the desired tracking frequency/signal. **Example:** If the signal you want to track is LHCP (or Horizontal) at 12.224 GHz (high band), then select "D –High Horiz/LHCP/103/18Vtone" from the dropdown list.



- **LNB Type (LNB Mode)**

The TVRO LNB can operate in a variety of modes and frequency bands. This setting selects the Local Oscillator frequency (therefore the RF frequency band), linear or circular polarization and whether the **LNB** will output dual or quad IF outputs.



This selection sets the **LNB** into the listed modes (each emulating an individual **LNB** for the satellite and service. This *must* be set correctly for the desired satellite/service.

NOTE: The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the RF frequency input field. This displays the acceptable range of RF frequencies that you can enter.

- **Search Pattern**

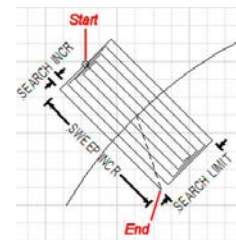
To choose the search pattern that you want the antenna to perform when searching for a satellite, select the search pattern from the dropdown list.



Please note that the **DEFAULT** search pattern is the **Spiral** search.

- **Inclined Orbit Search Pattern**

Some older satellites are in an inclined geosynchronous orbit, to save some of the fuel that would be used to keep them exactly positioned over the Equator. The satellite remains in a geosynchronous orbit, but is not geostationary. From a fixed observation point on Earth, the satellite appears to trace out a figure-eight with its lobes oriented northward and southward, once every twenty-four hours. The north-south excursions of the satellite may be too far from the center point to use the default Spiral (Box) Search Pattern to find the satellite throughout a 24-hour period. Therefore, an Inclined Orbit Search Pattern often is used for these satellites.



When a search begins, the antenna goes to a calculated position that is half of SWEEP INCR degrees above, and perpendicular to, the satellite arc (along the same angle as polarization for the satellite). This position is the Start of the search pattern in the graphic to the right. Then the antenna drives down along the polarization angle by SWEEP INCR degrees, step one SEARCH INCREMENT to the right (parallel to the satellite arc), search up along the polarization angle SWEEP INCR degrees, step two SEARCH INCREMENTS to the left, search down, expanding out in the search pattern until the Search Limit is reached. Then the **LMXP** retargets the antenna to the calculated Azimuth and Elevation point.

If the desired signal *is found and* network lock is achieved at this position, or anywhere within the search pattern, the **LMXP** terminates the search and goes into Tracking mode. If the desired signal *is not found*, then the **LMXP** waits for the SEARCH DELAY, then targets the antenna to the start point shown in the figure to the right and begin the search pattern again. This cycle repeats until the desired satellite signal is found or the user intervenes.

- **Sky Search Pattern**

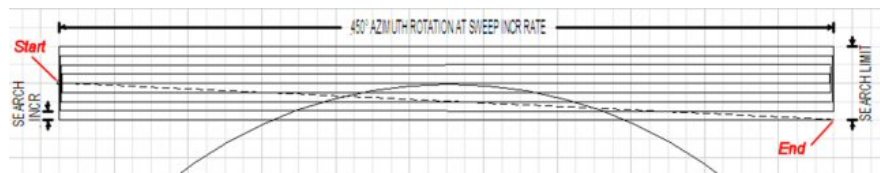
A Sky Search pattern is a hemispheric pattern. Its behavior is different, depending on whether or not you have a gyrocompass input.

No Gyro — If you do not have a gyrocompass, then set the gyro type to **No Gyro**. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 450 degrees, steps the elevation up and drives the azimuth counter clockwise by 450 degrees. It continues to alternately step the elevation up and down and drives azimuth alternately clockwise and counter clockwise by 450 degrees. Because of this large search area, acquiring the satellite takes longer than it would have, if you had a valid heading input. If the end of the search pattern is reached, the

LMXP moves the antenna back to the start point shown in the graphic below.

With Gyro — If you have a gyrocompass, then select the appropriate **Gyro Type** for your gyrocompass. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 360 degrees, and then steps the elevation up and drives the azimuth counterclockwise by 360 degrees. The antenna continues to alternately step the elevation up and down, and drive the azimuth alternately clockwise and counter clockwise by 360 degrees. Even though this is a large search area, acquiring the satellite takes less time than it would have without a gyrocompass, because you have valid heading input. If the end of the search pattern is reached, the LMXP moves the antenna back to the start point shown in the graphic below. If the signal is found, and network lock is achieved, at any position within the search pattern, then the LMXP terminates the search and goes into Tracking mode.

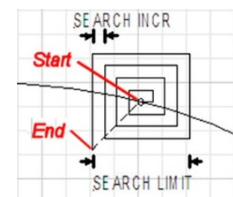
If the signal is not found within the search pattern, then the LMXP waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes,



- **Spiral (Box) Search Pattern (Default)**

The default search pattern in the LMXP is a spiral pattern.

When a search begins, the antenna searches up in azimuth by one search increment, searches up in elevation by one search increment, searches down in azimuth by two search increments, search down in elevation by two Search increments., until the Search Limit is reached. When the search limit is reached, the LMXP moves the antenna to the calculated Azimuth and Elevation position of the desired satellite (start point).



If the signal is found, and network lock is achieved, at any position within the search pattern, then the LMXP terminates the search and goes into Tracking mode.

If the signal is not found within the search pattern, then the LMXP waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes.

- **RF Frequency**

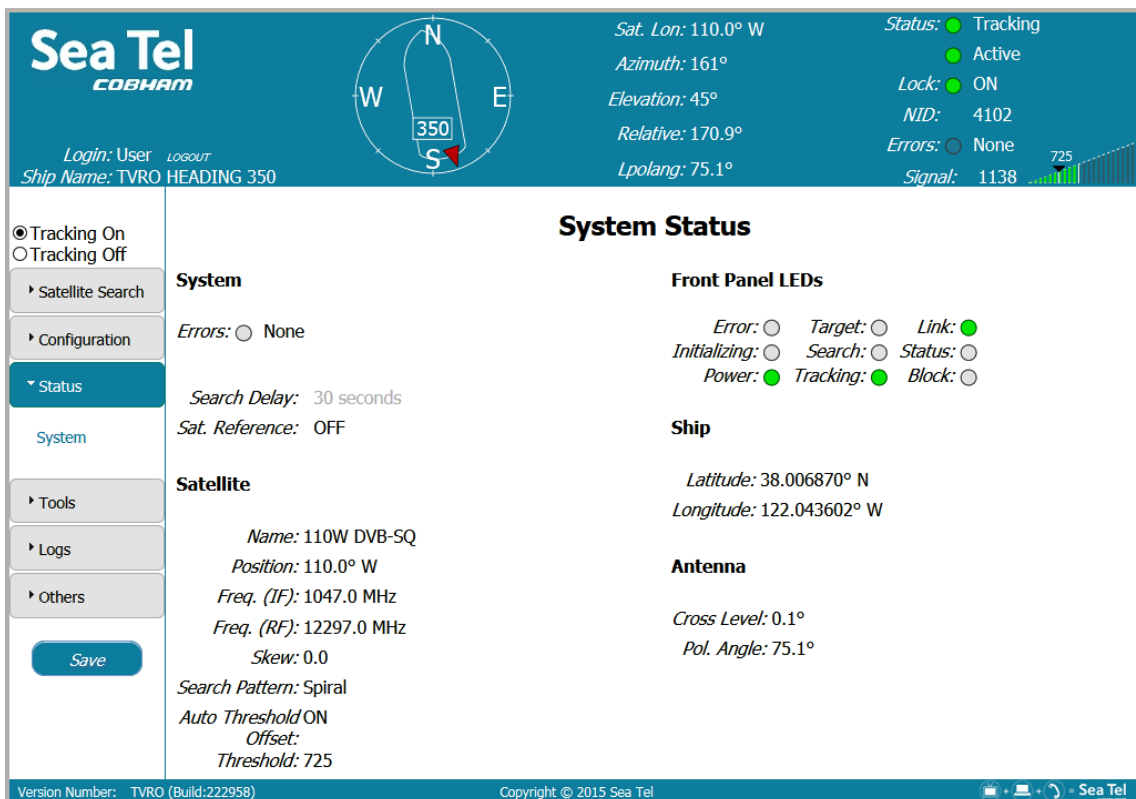
Enter the RF frequency of the signal you want the tracking receiver to use to track the new satellite. You must enter the **RF Frequency** in MHz, so a tracking frequency of 12.224 (twelve point two-two-four) GHz is entered as 12224 MHz.

NOTE: The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the **RF Frequency** input field. This shows the acceptable range of **RF Frequency** that you can enter for the **LNB Type** that is currently selected.

- IF Frequency**
 This is a read-only list of RF ranges that are based upon your choices of **Rx input** and **LNB Type**. The frequency value entered in **Freq. (RF)** must be within one of these ranges.
 To save the new satellite to the list of favorite satellites, click **Save** on the left sidebar. You can save up to 40 favorite satellites.

4.4. Status > System (System Status page)

The **System Status** page displays relevant system status information on a single page. The only action that you can perform on this page is to click **View** in the **System** subsection. **View** appears only if the **Errors** LED is solid red. If you click **View**, then the reported system errors page appears, which contains more information about the errors.



- System:** This section contains the **Search Delay** display, **Sat. Reference** display, and the **Errors** status.
NOTE: If the errors status indicator is solid red, then click **View** to go to the reported system errors page.
- Satellite:** This section consists of a read-only display of the current target satellite settings.
- Front Panel LEDs:** This section consists of a mirror image of the LEDs on the front plate of the LMXP.
- Ship:** This section consists of a read-only display of the current location of the ship, as provided by the integrated GPS.
- Antenna:** This section is a read-only display of the current **Cross Level** and **Polarization Angle (Polang or Lpolang)** of the antenna signal.

4.5. Tools > Position Antenna (Position Antenna page)

The **Position Antenna** page enables you to edit the values of the current target satellite parameters, and to control the angular positions and operational states manually.

CAUTION: Do not change any of the values on this page unless you have received the appropriate training, or if your Dealer asks you to make them.

Sea Tel COBHAM

Login: User Logout
Ship Name: TVRO HEADING 350

Sat. Lon: 110.0° W
Azimuth: 160.8°
Elevation: 45°
Relative: 170.8°
Lpolang: 75.1°

Status: Tracking
 Active
Lock: ON
NID: 4102
Errors: None
Signal: 1138

Position Antenna
Reflector: Primary Reflector

Satellite
Longitude: 110.0 ° W E
Skew: 0.0 °
Baudrate: 20000
NID: 4102
FEC: 7/8
Modulation: DVB-S (QPSK)
Rx Input: B - Low Horiz/LHCP/99/18V
LNB Type: DIRECTV HD Circular: 18.05 GHz(Ka)/11.25 GHz(Ku)
Search Patt.: Spiral
Freq. (RF): 12297.0 MHz
Freq. (IF): 1047.0 MHz

Threshold
Auto Mode: On Off
Auto Offset: 100
Threshold: 725
Manual Threshold: 975

Arbitrator Test
 Blocked Unblocked

Valid RF: 10700 - 11900 (Low)
11550 - 12750 (High)

Auto Trim Add Satellite Re-target

Advanced Operations
Antenna Name: [Enter Description]
Antenna Model: ST120 TV

Polang Target
Polang: 75.1 °

Position
EL up
AZ dn
AZ up
EL dn

Targets
EL: 45.1 °
AZ: 160.8 °
CL: 0 °

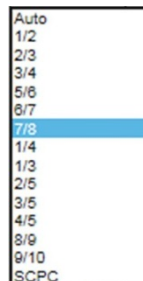
Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel

4.5.1. Satellite

Enter or change the values of the parameters for the new satellite.

- Longitude
Enter the longitude position of new, or an existing, satellite.
- E/W
Use the dropdown list to select the East or West longitude position of the satellite.
- Skew
Enter a known skew for the new satellite. If the satellite is not skewed, then enter zero. The skew must be entered in degrees and tenths of degrees.
- Baud rate
Enter the baud rate, or symbol rate, of the signal.

- NID (Network ID)
Enter the decimal format Network ID (NID) of the signal that you will track.
- FEC (Forward Error Correction)
From the dropdown list, select the **Forward Error Correction** rate of the tracking signal. This is the signal to error correction rate.
If you select **Auto**, then the system automatically locks on the best value, and updates it as conditions change. Auto should be used when **FEC** rate of the signal you want to track is not published.

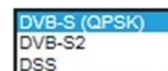


If published, select the appropriate **fractional** fixed value. The fraction represents the amount of data vs the amount of error checking. The larger the fraction, the higher the amount of data (and the lower the amount of error checking) per second is. This means that a lot of data gets through every second because so little error checking is being done. So $\frac{9}{10}$ FEC rate provides $\frac{9}{10}$ bits of data and only $\frac{1}{10}$ bits of error checking.

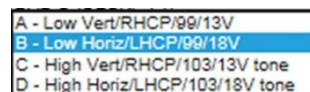
The smaller the fraction, the lower the amount of data (and the higher the amount of error checking) per second is. This means that less data gets through every second because more error checking is being done. So $\frac{1}{2}$ FEC rate provides $\frac{1}{2}$ bits of data and $\frac{1}{2}$ bits of error checking.

SCPC — For the **Sea Tel** TV & TVHD antennas, do not select **SCPC**.

- Modulation
From the dropdown list, select the type of modulation that the tracking signal uses.



- RX Input
From the dropdown list, select the Band and Polarity of the **LNB** output, which is routed to the tracking receiver. This *must* be the Band and Polarity, which contains the desired tracking frequency/signal. **Example:** If the signal you want to track is LHCP (or Horizontal) at 12.224 GHz (high band), then select "D –High Horiz/LHCP/103/18Vtone" from the dropdown list.



- LNB Type (LNB Mode)
The TVRO LNB can operate in a variety of modes and frequency bands. This setting selects the Local Oscillator frequency (therefore the RF frequency band), linear or circular polarization and whether the **LNB** will output dual or quad IF outputs.



This selection sets the **LNB** into the listed modes (each emulating an individual **LNB** for the satellite and service. This *must* be set correctly for the desired satellite/service.

NOTE: The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the RF frequency input field. This displays the acceptable range of RF frequencies that you can enter.

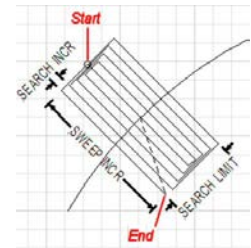
- Search Pattern
To choose the search pattern that you want the antenna to perform when searching for a satellite, select the search pattern from the dropdown list.



Please note that the **DEFAULT** search pattern is the **Spiral** search.

- Inclined Orbit Search Pattern

Some older satellites are in an inclined geosynchronous orbit, to save some of the fuel that would be used to keep them exactly positioned over the Equator. The satellite remains in a geosynchronous orbit, but is not geostationary. From a fixed observation point on Earth, the satellite appears to trace out a figure-eight with its lobes oriented northward and southward, once every twenty-four hours. The north-south excursions of the satellite may be too far from the center point to use the default Spiral (Box) Search Pattern to find the satellite throughout a 24-hour period. Therefore, an Inclined Orbit Search Pattern often is used for these satellites.



When a search begins, the antenna goes to a calculated position that is half of SWEEP INCR degrees above, and perpendicular to, the satellite arc (along the same angle as polarization for the satellite). This position is the Start of the search pattern in the graphic to the right. Then the antenna drives down along the polarization angle by SWEEP INCR degrees, step one SEARCH INCREMENT to the right (parallel to the satellite arc), search up along the polarization angle SWEEP INCR degrees, step two SEARCH INCREMENTS to the left, search down, expanding out in the search pattern until the Search Limit is reached. Then the **LMXP** retargets the antenna to the calculated Azimuth and Elevation point.

If the desired signal *is found and* network lock is achieved at this position, or anywhere within the search pattern, the **LMXP** terminates the search and goes into Tracking mode. If the desired signal *is not found*, then the **LMXP** waits for the SEARCH DELAY, then targets the antenna to the start point shown in the figure to the right and begin the search pattern again. This cycle repeats until the desired satellite signal is found or the user intervenes.

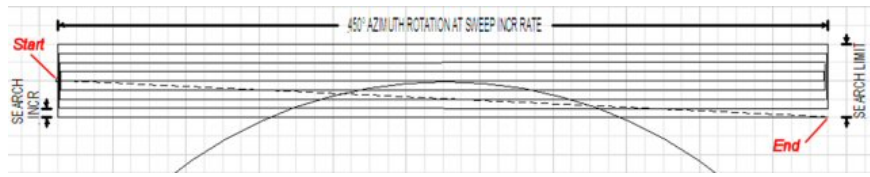
- Sky Search Pattern

A Sky Search pattern is a hemispheric pattern. Its behavior is different, depending on whether or not you have a gyrocompass input.

No Gyro — If you do not have a gyrocompass, then set the gyro type to **No Gyro**. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 450 degrees, steps the elevation up and drives the azimuth counter clockwise by 450 degrees. It continues to alternately step the elevation up and down and drives azimuth alternately clockwise and counter clockwise by 450 degrees. Because of this large search area, acquiring the satellite takes longer than it would have, if you had a valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below.

With Gyro — If you have a gyrocompass, then select the appropriate **Gyro Type** for your gyrocompass. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 360 degrees, and then steps the elevation up and drives the azimuth counterclockwise by 360 degrees. The antenna continues to alternately step the elevation up and down, and drive the azimuth alternately clockwise and counter clockwise by **360** degrees. Even though this is a large search area, acquiring the satellite takes less time than it would have without a gyrocompass, because you have valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below. If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

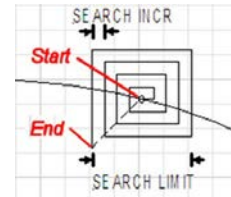
If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes,



- Spiral (Box) Search Pattern (Default)

The default search pattern in the **LMXP** is a spiral pattern.

When a search begins, the antenna searches up in azimuth by one search increment, searches up in elevation by one search increment, searches down in azimuth by two search increments, search down in elevation by two Search increments., until the Search Limit is reached. When the search limit is reached, the **LMXP** moves the antenna to the calculated Azimuth and Elevation position of the desired satellite (start point).



If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes.

- RF Frequency

Enter the RF frequency of the signal you want the tracking receiver to use to track the new satellite. You must enter the **RF Frequency** in MHz, so a tracking frequency of **12.224** (twelve point two-two-four) GHz is entered as 12224 MHz.

NOTE: The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the **RF Frequency** input field. This shows the acceptable range of **RF Frequency** that you can enter for the **LNB Type** that is currently selected.

- IF Frequency

The system calculates the **IF Frequency** from both the **RF Frequency** and the **LNB Type** that you entered. This is a read only display.

- Add Satellite

After you enter all of the information for a specific satellite, then you can use the **Position** graphic to find the satellite manually. Turn tracking **ON** (at the top of the left side bar) and verify that you found the correct satellite.

Verify that the signal from the satellite is maximized at the receiver. You must make these verifications every time that you add a new satellite.



Click **Add Satellite** to add the new satellite to the favorite satellites list. A dialogue box opens, so that you can enter the new **Satellite Name**.

- Auto Trim

If you previously trimmed the antenna to optimize targeting, then you do not need to do it again.

If you have *not* trimmed the antenna to optimize targeting, then click **Auto Trim**.

- Re-Target

To retarget the satellite, click **Re-Target**. This is a good way to verify that the trims on the antenna are set correctly, and that the antenna points to, or very near, the targeted satellite.

To save the new satellite to the list of favorites satellites, click **Save** on the left sidebar. You can save a maximum of 40 favorite satellites.

4.5.2. Threshold Section

The system uses the **Threshold** parameters to calculate the threshold displayed in the signal bar graph in the banner and system. Enter the values of the **Threshold** parameters.

4.5.2.1. **Auto Mode**

View or enter the threshold **Auto Mode**. For normal operation, it should always be **ON**.

4.5.2.2. **Auto Offset**

View or enter the threshold **Auto Offset**. It seldom is changed from the default value. However, if you do want to optimize the **Auto Offset**, then:

1. Record the peak "ON Satellite" **AGC** value that is displayed in the Signal bar graph of the banner.
2. Turn Tracking **OFF**, and use the **UP** arrow on the Position graphic below to move the antenna **OFF** satellite.
3. Read the "OFF Satellite" **AGC** value.
4. Subtract the **OFF** Satellite **AGC** from the peak **ON** Satellite **AGC** to determine the difference in signal between **ON** satellite and **OFF** satellite.
5. Divide the difference value in half.
6. Enter that value in the **Auto Offset** field.
7. Use the **DOWN** arrow to return to the **ON** satellite state.
8. Turn Tracking back **ON**.

4.5.2.3. **Threshold**

View the current **Threshold** value in the **Threshold** field.

4.5.2.4. **Manual Threshold**

View or enter a **Manual Threshold** value in the **Manual Threshold** field. Unless it is absolutely necessary, do not set or change the value of the **Manual Threshold**. If you do, then the system cannot automatically adjust the **Threshold** value as the atmosphere changes, for example, rain, snow, clouds, etc. occur.

4.5.3. Arbitrator Test Section

The advantage of a dual antenna system is that it helps reduce the time during which the ship will be without services due to an antenna being "blocked". This configuration is especially useful if a large structure on the ship blocks a single antenna. One antenna will be **active** while the other is standing by and they are installed in such a way that they will never both be blocked at the same time.

Because each antenna has its own **LMXP**, the arbitrator automatically switches between antennas as needed. When the **active** antenna becomes **blocked** the other antenna will take over supplying signal to the below decks equipment and distribution.

The arbitrator test enables you to simulate a blocked condition on either of the antennas. To test the arbitrator, perform the following steps:

1. Identify the *active* antenna.
2. Log into both **LMXPs** and select the **Position Antenna** page on each.
3. On the active antenna **LMXP** click **Blocked**, and the arbitrator should switch services to the other (standby) antenna, making it the active antenna.
4. On the same **LMXP** click **Unblocked**, and the arbitrator will NOT switch services.
5. On the other **LMXP** (now the active antenna) click **Blocked**, and the arbitrator should switch services to the other (standby) antenna, making it again the active antenna.
6. On the same **LMXP** click **Unblocked**, and the arbitrator will NOT switch services.

CAUTION: This is only a test mode. For normal operation, assure that both **LMXPs** are **Unblocked**.

4.5.4. Advanced Operations Section

4.5.4.1. **Antenna Name**

View the **Antenna Name**, for example, "Port Antenna".

4.5.4.2. **Antenna Model**

View the **Model** of the system. It can be changed in the Profile, which only is accessible to a Dealer.

4.5.4.3. **Polang Target**

View or enter the current polarization angle target (**Polang Target**) value for the current satellite. Do not change the value of the **Polang Target** unless you are testing the feed polarity drive.

4.5.4.4. **Position**

Use the **UP**, **DOWN**, **LEFT**, and **RIGHT** arrows to move the dish by small increments. Each click on an arrow moves the dish 0.3 degrees. Usually, you only change these values when you are performing a Four Quadrant Tracking Test, or when you are checking **ON** satellite / **OFF** satellite signal levels. To move the dish by larger increments, it is faster to enter new values of **AZ** and **EL** in the appropriate **Targets** fields.

4.5.4.5. **Targets**

For larger antenna movements, enter values for **EL**, **AZ**, and **CL**.

4.6. Logs > Activity (View System Logs page)

The View System Logs page enables you to view and sort (by column) the last 20 system log entries.

Sea Tel COBHAM

Sat. Lon: 110.0° W Status: ● Tracking
 Azimuth: 161° ● Active
 Elevation: 44.1° Lock: ● ON
 Relative: 170.9° NID: 4102
 Lpolang: 75.1° Errors: ○ None
 Signal: 1138

Login: User Logout
 Ship Name: TVRO HEADING 350

View System Logs

Tracking On
 Tracking Off

- Satellite Search
- Configuration
- Status
- Tools
- Logs**
- Activity
- Others

| Date | Severity | Source | Error | Brief Summary |
|-------------------------|-------------|--------|-------|--|
| 2015-06-01 19:33:43.067 | NOTICE | MXP | 0 | EOC Avg. BER 3.763733%, Avg. Dest. CRCER 0.328223%, Avg. Src. CRCER 15.411532% |
| 2015-06-01 19:32:18.547 | INFORMATION | MXP | 1031 | AGC Below Threshold: OFF |
| 2015-06-01 19:31:57.927 | INFORMATION | MXP | 1031 | AGC Below Threshold: ON |
| 2015-06-01 19:30:05.077 | NOTICE | ICU | 0 | EOC Avg. BER 3.438551% |
| 2015-06-01 19:28:43.617 | NOTICE | MXP | 0 | EOC Avg. BER 3.762595%, Avg. Dest. CRCER 0.316570%, Avg. Src. CRCER 17.412415% |
| 2015-06-01 19:25:05.627 | NOTICE | ICU | 0 | EOC Avg. BER 3.418299% |
| 2015-06-01 19:23:42.167 | NOTICE | MXP | 0 | EOC Avg. BER 3.765423%, Avg. Dest. CRCER 0.420187%, Avg. Src. CRCER 15.557932% |
| 2015-06-01 19:20:04.147 | NOTICE | ICU | 0 | EOC Avg. BER 3.431274% |
| 2015-06-01 19:18:42.717 | NOTICE | MXP | 0 | EOC Avg. BER 3.752470%, Avg. Dest. CRCER 0.276418%, Avg. Src. CRCER 16.620750% |
| 2015-06-01 19:15:04.697 | NOTICE | ICU | 0 | EOC Avg. BER 3.411133% |
| 2015-06-01 19:13:41.257 | NOTICE | MXP | 0 | EOC Avg. BER 3.754552%, Avg. Dest. CRCER 0.351058%, Avg. Src. CRCER 15.267811% |
| 2015-06-01 19:10:03.247 | NOTICE | ICU | 0 | EOC Avg. BER 3.401468% |
| 2015-06-01 19:08:41.807 | NOTICE | MXP | 0 | EOC Avg. BER 3.751608%, Avg. Dest. CRCER 0.330436%, Avg. Src. CRCER 16.014750% |
| 2015-06-01 19:05:03.867 | NOTICE | ICU | 0 | EOC Avg. BER 3.397518% |
| 2015-06-01 19:03:40.347 | NOTICE | MXP | 0 | EOC Avg. BER 3.745723%, Avg. Dest. CRCER 0.335145%, Avg. Src. CRCER 14.476485% |
| 2015-06-01 19:00:02.367 | NOTICE | ICU | 0 | EOC Avg. BER 3.400131% |
| 2015-06-01 18:58:40.897 | NOTICE | MXP | 0 | EOC Avg. BER 3.752387%, Avg. Dest. CRCER 0.321281%, Avg. Src. CRCER 15.050334% |
| 2015-06-01 18:55:02.907 | NOTICE | ICU | 0 | EOC Avg. BER 3.390860% |
| 2015-06-01 18:53:39.447 | NOTICE | MXP | 0 | EOC Avg. BER 3.772049%, Avg. Dest. CRCER 0.303222%, Avg. Src. CRCER 14.313969% |
| 2015-06-01 18:50:01.457 | NOTICE | ICU | 0 | EOC Avg. BER 3.389569% |
| 2015-06-01 18:48:39.997 | NOTICE | MXP | 0 | EOC Avg. BER 3.766191%, Avg. Dest. CRCER 0.348640%, Avg. Src. CRCER 14.758588% |

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To sort the table up or down by column, click the small arrows (triangles pointing up and down) in the header columns. The column header with a *single* arrow indicates that the table was sorted by that column, and the direction of the arrow indicates whether it was sorted up or down.

4.7. Others > Change Password

Use this page to change your password. You entered your **User Id** when you logged into the system. Contact your Dealer if you want to change your **User Id**.

The screenshot displays the Sea Tel web-based GUI. At the top, the logo 'Sea Tel COBHAM' is visible on the left. In the center, there is a compass rose showing the heading '350'. On the right, system status information is provided: 'Sat. Lon: 110.0° W', 'Azimuth: 160.7°', 'Elevation: 44°', 'Relative: 170.8°', and 'Lpolang: 75.1°'. Further right, there are status indicators for 'Tracking' (green dot), 'Active' (green dot), 'Lock: ON' (green dot), 'NID: 4102', 'Errors: None' (grey circle), and 'Signal: 1139' (green bar graph). Below the top bar, the login information 'Login: User' and 'Ship Name: TVRO HEADING 350' is shown. The main content area is titled 'Change User's Password' and contains a form with the following fields: 'User Id:' (with 'User' entered), 'Old Password:', 'New Password:', and 'Confirm Password:'. An 'Update+Save' button is located below the form. On the left side, there is a sidebar with navigation options: 'Tracking On' (selected), 'Tracking Off', 'Satellite Search', 'Configuration', 'Status', 'Tools', 'Logs' (expanded), 'Activity', 'Others' (expanded), 'Change Password' (selected), and 'Help'. A 'Save' button is at the bottom of the sidebar. The footer of the page shows 'Version Number: TVRO (Build:222958)' and 'Copyright © 2015 Sea Tel'.

To change your password:

1. Enter your **Old Password** (the one that you are currently uses).
2. Enter your **New Password** (the one that you want to use in the future).
3. Enter your **New Password** again (the one that you want to use in the future) to confirm your new password.
4. Click **Update+Save**.

Use your new password in the future.

4.8. Cyber Security Caution

Sea Tel Antenna systems are not intended to be connected directly to the Internet. They must be connected behind a dedicated network security device such as a firewall. In addition, we highly recommended that you change default passwords. This is an extremely important consideration that must be taken into account as part of commissioning procedures as attackers with malicious intent (after easily obtaining default passwords and identify internet-connected systems) can be rendered a system inoperable.

For clarification purposes, the factory default Passwords/Configurations are only intended for initial production testing/verification purposes and it is an assumed responsibility of the installing partner to change and record the login credentials and is shared only with persons whom are directly responsible for operation/maintenance of the system. Instructions on how to change passwords may be located within the system manual.

4.9. Others > Help

The **Help** page provides some general information about the operational capabilities and restrictions of the LMXP.

The **Help** page contains six sections: **Overview**, **Access Permission**, **Browsers**, **Configuration Tips**, **Operation Tips**, and **Tech Contact**. Scroll up or down the page using the scrolling slider at the right hand side of the screen, or use the **Page Up** and **Page Down** keys on the keyboard.

Sea Tel COMMAN

Set. Lon: 110.0° W Status: Tracking
 Azimuth: 160.9° Lock: ON
 Elevation: 44° MID: 4102
 Relative: 171° Errors: None
 Lpolog: 75.1° Signal: 1138

Login: User usuar
 Ship Name: TVRO HEADING 350

Overview

The Media Xchange Point (MXP) web is the primary interface for configuration, operation, monitoring, management, and maintenance of your antenna. You can do the following with MXP web interface:

- Configure system parameters
- Backup configurations
- Operate Sea Tel's antenna
- Add and remove satellites
- Edit satellite parameters
- Target, Search, and Track a satellite
- Diagnose communication problems
- View system status reports
- Upgrade firmware
- Lock or unlock the system

Access Permission

You may not be able to see some pages depending on your user type. A user may be able to view and access all or part of the menu on left-hand side after logging in successfully, depending on what has been granted to the user.

A user who has been granted a role of Dealer has full access to all menu items, including configuration, operations, system information query and firmware upgrade.

For a user who has been granted a role of User, the user only has partial access to menu items.

Contact your dealer if you need to access a particular page or menu which you do not have access to.

Browsers

MXP is tested under IE (ver 9.0 or above), Firefox (ver 5.0 or above), Chrome (ver 13.0 or above) and Safari (ver 5.1 and above). It may or may not work with other browsers.

The monitor's lowest resolution supported is 1024x768. For optimal view, a resolution of 1280x1024 is recommended.

If your monitor only has a maximum vertical resolution of 768, it is recommended to uncheck Menu and Favorite bars from your IE browser to make maximum working area available. Take similar actions for other browsers. For instance, uncheck Menu bar and Tabs on top in Firefox, and Hide Menu, Bookmarks, and Tab bars in Safari. For a shortcut, hit the F11 key to get maximum working space. Once done with your work, hit F11 again to restore the browser's status.

Make sure that cookies and JavaScript are enabled. Also make sure that Use SSL 3.0 is checked and Use TLS 1.2 is unchecked (see FAQ 10: How to enable SSL 3.0?)

If the interface does not appear to be displaying and updating values properly, hit F5 to refresh the page. Now, the page should appear normal. If F5 does not resolve the problem, simply logout, close the browser, and re-start it. Once you have logged in, you should see the normal appearance of web pages.

The MXP web uses your computer resources heavily to perform its tasks. It is strongly recommended that you close other applications which are running on your computer and keep one browser and one instance open only.

It is also strongly recommended to logout and exit your browser once your job is done.

It is recommended to reboot your computer periodically. It is good practice to reboot your computer once or twice per week.

To access MXP web via https, make sure that SSL3 is enabled.

Known issues:

- Compatibility view of IE may cause problems with images, background color or graphs. Therefore, users are not encouraged to use browser's compatibility view
- Chrome typically has much better performance than other browsers when working with https

Configuration Tips

- Add a satellite
 If you do not see the dropdown list of satellite in the pages of Auto Search or Satellite configuration, it is likely that no satellite was previously added. To add one or more satellites, click Satellite on left-hand side menu, and click the Add Satellite button to start adding a satellite.
- Hardware profile
 From the profile page, you can select a proper hardware profile to configure your antenna with a specific model. Once a profile is active, you are able to see the parameters of the profile under the advanced setting section in the system and reflector configuration pages.
- Number of reflectors (* not implemented)
 Parameter of the number of reflectors has a direct impact on the radio buttons of SECONDARY on the reflector, satellite, and position antenna pages. If the number of reflectors is 1, the radio button of SECONDARY is disabled.
- Satellite longitude
 Once a satellite is selected from the dropdown list, the satellite longitude will show up in the top-center of the header. You can customize a satellite's name on the Satellite configuration page.
- Ship name

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5. Setup from the Front Panel

The display panel allows you to access the Setup parameters of the LMXP if the front panel has not been locked. If you front panel has been locked, you will be able to display the Setup parameters but not change them.

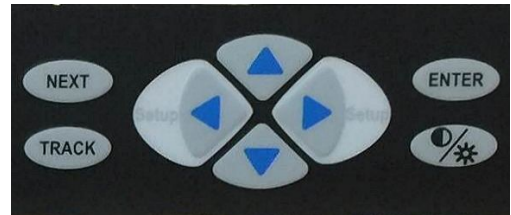
Follow the instructions below to display/edit the Setup Parameters of your LMXP.

5.1. Access to the Setup Parameters

Press and hold BOTH the LEFT and the RIGHT arrow keys for 6 seconds to access the Setup parameters.

Navigation - Press the Up, or Down, arrow keys to move Up/Down the parameters list.

Edit - At each parameter, press the Left or Right arrow key to enter Edit Mode. If the front panel has NOT been locked, this will bring up a cursor under a character or digit and allow you to edit. In parameters that have a selection of choices, use the Up & Down arrow keys to scroll through the choices. In numeric parameters, use the Left & Right arrow keys to move the cursor under the character/digit to be changed. Then use the Up & Down to increment/decrement the digit to the desired value.



If your front panel has been locked, you will not be able to edit the parameters, but you will be able to navigate Up and Down the list to view them.

5.2. Display/Edit the Setup Parameters

If your front panel has been locked, you will not be able to edit the parameters, but you will be able to navigate Up and Down the list to view them.

| | |
|---------------------------------------|---|
| SETUP: IP Address 10.001.001.100 | The current IP Address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Press ENTER or Down arrow to go to the next parameter. If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses. |
| SETUP: Subnet Mask 255.255.255.000 | The current Subnet Mask address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter. If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses. |
| SETUP: Gateway 010.001.001.001 | The current Gateway address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter. If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses. |

| | |
|--|--|
| <p>SETUP: TCP 0 Port: 02000</p> | <p>The current TCP port 0 address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Use 2000 or 2001 for LEGACY, 2002 for OpenAMIP or 2003 for CLI port operation.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> <p>If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses.</p> |
| <p>SETUP: TCP 1 Port: 02001</p> | <p>The current TCP port 1 address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Use 2000 or 2001 for LEGACY, 2002 for OpenAMIP or 2003 for CLI port operation.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> <p>If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses.</p> |
| <p>SETUP: TCP 2 Port: 02002</p> | <p>The current TCP port 2 address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Use 2000 or 2001 for LEGACY, 2002 for OpenAMIP or 2003 for CLI port operation.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> <p>If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses.</p> |
| <p>SETUP: TCP 3 Port: 02003</p> | <p>The current TCP port 3 address of the LMXP will be displayed. Press the left or right arrow to enter edit mode. Use 2000 or 2001 for LEGACY, 2002 for OpenAMIP or 2003 for CLI port operation.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> <p>If you change this setting, you MUST save the parameter changes and then cycle Power on the front panel to reboot the LMXP using the new addresses.</p> |
| <p>SETUP: Console Port Mode: CLI</p> | <p>The Console Port mode setting of the LMXP is displayed. Press the left or right arrow to enter edit mode. Mode choices are CLI or LEGACY. Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> |
| <p>SETUP: Console Port Baud Rate: 115200</p> | <p>The Console Port mode setting of the LMXP is displayed. Press the left or right arrow to enter edit mode. The Console Port Baud Rate can be set to 4800, 9600, 19200, 38400, 57600 or 115200.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> |
| <p>SETUP: Auto Trim Press < or ></p> | <p>Auto Trim is used to calibrate the targeting of the antenna. Press the left or right arrow to enter edit mode. Press the ENTER Key to Trim the antenna targeting. COMPLETE will be displayed.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> |
| <p>SETUP: Azimuth Trim +000.0 Degrees</p> | <p>The Azimuth Trim value calculated by Auto Trim is displayed. Press the left or right arrow to enter edit mode and manually enter the desired Azimuth Trim.</p> <p>Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> |

| | |
|--|---|
| <p>SETUP: Elev. Trim +00.0 Degrees</p> | <p>The Elevation Trim value calculated by Auto Trim is displayed. Press the left or right arrow to enter edit mode and manually enter the desired Elevation Trim. Press ENTER or Down arrow to go to the next parameter. Press the Up arrow to go back to the previous parameter.</p> |
| <p>SETUP: Search Delay 030 Seconds</p> | <p>The Search Delay parameter, in seconds, of the LMXP is displayed. This parameter determines how long the system waits after loss of signal until the antenna will begin an automatic search patten to reacquire the satellite.</p> |
| <p>SAVE NEW PARAMETERS? Press < or ></p> | <p>If you want to save any changes you have made, press the left or right arrow to enter edit mode. Press NEXT to escape this menu.</p> |
| <p>SAVE NEW PARAMETERS? Press ENTER_</p> | <p>Press the ENTER Key to save the parameters. PARAMETERS SAVED! Will be displayed.</p> |

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6. Troubleshooting For Users

Use the information in this chapter to assist with simple troubleshooting of your **Sea Tel** TVRO antenna and control unit.

Contact your Dealer for further troubleshooting or assistance in resolving problems relating to **Error** messages or other problems that you cannot resolve.

6.1. Check that the LMXP Powers up

As the **LMXP** powers up, the LEDs on the front panel light up to indicate progress. The **LMXP** supplies power to the ADE (antenna and pedestal). (Refer to the *Quick Start* chapter for detailed instructions about starting up.)

6.2. Check that other Equipment Powers up

Apply power to the BDE.

Allow 3-4 minutes for the antenna to initialize and search for the satellite. After acquiring the satellite, it may take another few minutes for the receivers to lock and start providing your television services.

6.3. Check the Front Panel LED States

There are nine LEDs on the front panel. Each LED can have several different colors, depending on their state. The Front Panel LEDs have the following priority, from highest to lowest, namely, Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.

The name, states, and meanings of the front panel LEDs are in the following table.

| Name | LED States | Purpose |
|------------------------------|----------------|---|
| ERROR | Off | No errors have occurred. |
| | Flashing RED | One, <i>or more</i> , discrete system errors have occurred. |
| | Solid RED | One, <i>or more</i> , discrete system errors have occurred. |
| | Flashing AMBER | One, <i>or more</i> , discrete system errors have occurred. |
| | Solid AMBER | One, <i>or more</i> , discrete system errors have occurred. |
| INIT (Initialization) | Off | The Initialization state is not active. The antenna has completed initializing and is ready for normal operation. |
| | Solid GREEN | System initialization (start-up) is in progress. |
| | Flashing AMBER | A software update is in progress, or the system (ADE-BDE) is synchronizing or in-service / out-of-service testing is in progress. |
| TARGET | Off | The antenna has completed targeting and is ready for normal operation. |
| | Solid GREEN | The antenna is targeting (driving) to the specified Azimuth and Elevation position. |

| Name | LED States | Purpose |
|------------------------------|----------------|--|
| SEARCH (Searching) | Off | Search state is not active. The system is not searching for a satellite. |
| | Solid GREEN | Satellite search state is in progress. The system is targeting or driving to the specified Azimuth and Elevation position. The system is actively searching for the satellite signal. |
| TRACK (Tracking) | Off | Satellite Tracking state is not active. |
| | Solid GREEN | System is actively in the tracking state with AGC above threshold. The system identified, and is actively tracking, the desired satellite to optimize the signal level (AGC). |
| BLOCK | Off | Either the antenna is <i>not</i> within a <i>defined</i> blockage zone, or <i>no</i> blockage zones were defined. The antenna still could be blocked by something outside of a <i>defined</i> blockage zone. |
| | Solid RED | The system is within a defined blockage zone. Therefore, you will not have a satellite signal until the antenna exits the blockage zone. |
| LINK | Solid RED | The (BDE) LMXP to (ADE) TICU communications link is down. This results in the loss of communications with the antenna, and therefore, loss of antenna control. |
| | Solid GREEN | The (BDE) LMXP to (ADE) TICU communications link is active. The system has good communications with the antenna (therefore good antenna control). This is the normal state for system operation. |
| STATUS | Off | The status is normal. |
| | Solid RED | The AGC is below threshold. The satellite signal is low or lost. |
| POWER | Off | There is no power to the system. Either the Power switch is OFF, or the power is interrupted by a fault in the power supply to the Power switch. |
| | Flashing GREEN | The LMXP is in the process of booting up. |
| | Solid GREEN | LMXP boot sequence is complete, and the system power is ON (normal). |

If Errors are found (The Errors LED is red.), and if **View** appears following the red LED, then click **View** to see the current uncleared color-coded errors in the system.

If you cannot resolve the errors, contact your Dealer for help.

6.4. Check for Blockage

The superstructure of the ship, cranes, buildings, trees, or other obstructions, which are between the satellite and the **Sea Tel** antenna, can block the signal from the satellite.

Blockage zones are represented on the compass rose as translucent red wedges. The display of the blockage zones can be toggled **ON** or **OFF** by clicking on the compass rose and pressing **Shift+B**. Normally, the

Blockage Zones are defined only for permanent objects on the ship, and not for objects elsewhere, such as on-shore buildings and cranes, other ships, and so forth. Only the Dealer can add or delete Blockage Zones.

To check for blockage, perform the following steps:

1. Verify that the latitude, longitude and heading values in the **LMXP** are correct:
2. Retarget the satellite and turn Tracking **OFF** before the antenna begins a search.
3. Determine the heading of the ship so that you know where the bow of the ship is pointed, and where North is.
4. Determine the true azimuth-pointing angle of the antenna to the desired satellite.
5. Determine the relative position of the antenna, or look inside the radome to determine where the antenna is pointed.
6. Determine the elevation angle of the antenna, or look inside the radome to determine the elevation of the antenna.
7. Stand behind the radome facing the back of the reflector.
8. Look past the radome, to see where the antenna is pointed (in azimuth and in elevation).
9. Is it pointed toward the equator? (If you are in the northern hemisphere, the satellite is pointing towards the south. If you are in the southern hemisphere, the satellite is pointing towards the north.)
10. Is any structure on or off the ship in the path between the antenna and the satellite, such as, the superstructure, a mast, building, tower, crane, or mountain? *If so, the antenna probably is blocked. If not, there may be a failure that prevents the antenna from receiving the satellite signal.*

If the antenna is blocked, then you cannot receive the satellite signal until the ship moves, or at least turns. You may be able to target a different unblocked satellite, if you have arranged for services from that satellite.

If the antenna appears to be pointing towards the satellite, the sky is clear, and there are no obstructions, then contact your Dealer for assistance.

6.5. Check for Errors

Check for errors. If the **Errors** status indicator in the banner at the top of a page is red, then one or more errors have occurred and been detected by the system. Click **View** on the right of the LED to display the errors. If you call for support, then the support person will want to know exactly what error messages are/were displayed.

NOTE: The Front Panel LEDs indicate the error priority, from highest to lowest: Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.

NOTE: An unlatched error can automatically clear itself, if the system corrects the condition that caused the error. However, only a user can clear a latched error.

The following table lists all of the possible displayed error codes. (It is possible that other errors might occur, but they are not displayed, and are not in this list.)

| Error Code | Description | Type | Front Panel LED | | | Latched or Unlatched |
|------------|---------------------------------------|---------|-----------------|-------|-------|----------------------|
| | | | Type | State | Color | |
| 1001 | Stability Limit | Error | Error | Solid | Red | Unlatched |
| 1002 | Az Reference Error (Encoder Read) | Error | Error | Solid | Red | Latched |
| 1003 | AGC Below Noise Threshold | Error | Error | Solid | Red | Unlatched |
| 1004 | Software Update Did not Load Properly | Warning | Error | Solid | Red | Latched |
| 1005 | Comm Error w/ Motor Driver | Error | Error | Solid | Red | Latched |
| 1006 | Motor Driver Fault Detected | Error | Error | Solid | Red | Latched |
| 1007 | DishScan Disabled | Error | Error | Solid | Red | Unlatched |
| 1008 | AZ Reference Error (Home Flag Read) | Error | Error | Solid | Red | Latched |
| 1009 | Tilt Sensor Error | Error | Error | Solid | Red | Unlatched |
| 1010 | Rate Sensor Error | Error | Error | Solid | Red | Unlatched |
| 1011 | Over Speed Error | Error | Error | Solid | Red | Latched |

| Error Code | Description | Type | Front Panel LED | | | Latched or Unlatched |
|------------|--|---------|-----------------|----------|--------|----------------------|
| | | | Type | State | Color | |
| 1012 | POST Failure | Debug | Error | Solid | Red | Latched |
| 1013 | OS Errors | Warning | Error | Solid | Red | Unlatched |
| 1014 | Flash Failure | Error | Error | Solid | Red | Latched |
| 1015 | MXP/ICU Link Error | Warning | Error | Solid | Red | Unlatched |
| 1016 | Az Servo Limit | Error | Error | Flashing | Red | Latched |
| 1017 | LV Servo Limit | Error | Error | Flashing | Red | Latched |
| 1018 | CL Servo Limit | Error | Error | Flashing | Red | Latched |
| 1019 | No GPS String | Error | Error | Flashing | Red | Unlatched |
| 1020 | No Profile Set in PCU | Error | Error | Flashing | Red | Latched |
| 1021 | NMEA HDD Heading Not Received for 10 Seconds | Error | Error | Solid | Red | Latched |
| 1022 | NMEA HDG Heading Not Received for 10 Seconds | Error | Error | Solid | Red | Latched |
| 1023 | NMEA HDM Heading Not Received for 10 Seconds | Error | Error | Solid | Red | Latched |
| 1024 | NMEA HDT Heading Not Received for 10 Seconds | Error | Error | Solid | Red | Latched |
| 1025 | GPS String Invalid | Warning | Error | Flashing | Yellow | Unlatched |
| 1026 | Antenna Not Balanced | Warning | Error | Flashing | Red | Unlatched |
| 1027 | Satellite Out of Range | Info | Error | Solid | Red | Unlatched |
| 1028 | Temp In Radome Above/Below Operating Specs | Warning | Error | Solid | Yellow | Unlatched |
| 1029 | Antenna about to enter a Programmed Block Zone | Notice | Error | Flashing | Yellow | Unlatched |
| 1030 | Antenna Within a Programmed Block Zone | Notice | Error | Solid | Yellow | Unlatched |
| 1031 | AGC Below Threshold | Info | Error | Solid | Yellow | Unlatched |
| 1032 | Latest Parameters Not Saved | Notice | Error | Flashing | Yellow | Unlatched |
| 1033 | Software Update In Progress | Info | Initializing | Flashing | Yellow | Unlatched |
| 1034 | Block Zone Test/Simulation | Info | Error | Flashing | Yellow | Unlatched |
| 1035 | MXP-ICU Sync Timeout | Info | Error | Flashing | Yellow | Unlatched |
| 1036 | Parameter Sync Error | Warning | Error | Flashing | Red | Latched |
| 1037 | Time Sync Error | Warning | Error | Flashing | Red | Latched |
| 1038 | System Serial Number Mismatch | Error | Error | Solid | Yellow | Unlatched |
| 1039 | System Serial Number Invalid | Error | Error | Solid | Yellow | Unlatched |
| 1040 | INI Integrity Error | Warning | Error | Flashing | Red | Latched |
| 1041 | NMEA HDD Received with Bad Checksum | Notice | Error | Solid | Yellow | Latched |
| 1042 | NMEA HDG Received with Bad Checksum | Notice | Error | Solid | Yellow | Latched |
| 1043 | NMEA HDM Received with Bad Checksum | Notice | Error | Solid | Yellow | Latched |
| 1044 | NMEA HDT Received with Bad Checksum | Notice | Error | Solid | Yellow | Latched |
| 1045 | Step by Step Gyro Took Invalid Step Size | Warning | Error | Solid | Yellow | Latched |
| 1046 | Step by Step Gyro Not Connected Correctly | Error | Error | Solid | Red | Latched |
| 1047 | Step by Step Gyro Requires Initial Heading | Notice | Error | Solid | Red | Unlatched |
| 1048 | 36:1 Synchro Gyro Requires Initial Heading | Notice | Error | Solid | Red | Unlatched |
| 1049 | 90:1 Synchro Gyro Requires Initial Heading | Notice | Error | Solid | Red | Unlatched |
| 1050 | 360:1 Synchro Gyro Requires Initial Heading | Notice | Error | Solid | Red | Unlatched |
| 1051 | 1:1 Synchro Gyro Is Not Properly Connected | Error | Error | Solid | Red | Latched |
| 1052 | 36:1 Synchro Gyro Is Not Properly Connected | Error | Error | Solid | Red | Latched |

| Error Code | Description | Type | Front Panel LED | | | Latched or Unlatched |
|------------|--|---------|-----------------|----------|--------|----------------------|
| | | | Type | State | Color | |
| 1053 | 90:1 Synchro Gyro Is Not Properly Connected | Error | Error | Solid | Red | Latched |
| 1054 | 360:1 Synchro Gyro Is Not Properly Connected | Error | Error | Solid | Red | Latched |
| 1055 | Polang skew entry results in target out of range | Error | Error | Flashing | Red | Latched |
| 1056 | Motor failed to reach Target | Error | Error | Solid | Red | Latched |
| 1057 | Motion Platform Failed Initialization, Retrying | Error | Error | Solid | Red | Unlatched |
| 1058 | No Home Flag Detected During Pol Initialization | Error | Error | Solid | Red | Latched |
| 1059 | Multiple Home Flags Detected During Pol Init | Error | Error | Solid | Red | Latched |
| 1060 | Detected Pol Home Flag Sensor Anomaly | Warning | Error | Solid | Yellow | Latched |
| 1061 | Pol Home Flag Measured Too Wide | Error | Error | Solid | Red | Unlatched |
| 1062 | Pol Home Flag Found In Wrong Location | Error | Error | Solid | Red | Unlatched |
| 1063 | CM current out of range | Error | Error | Solid | Red | Latched |
| 1064 | CM Voltage out of range | Error | Error | Solid | Red | Latched |
| 1065 | BUC current out of range | Error | Error | Solid | Red | Latched |
| 1066 | BUC Voltage out of range | Error | Error | Solid | Red | Latched |
| 1067 | Profile changed. Please save and reboot | Error | Error | Solid | Red | Latched |
| 1068 | No Pol Home Flag Detected, Using End Stop Home | Warning | Error | Solid | Yellow | Latched |
| 1069 | Pol Home Flag In Wrong Location, Using End Stop Home | Warning | Error | Solid | Yellow | Latched |
| 1070 | Pol Home Flag Failed, Using End Stop Home | Warning | Error | Solid | Yellow | Latched |
| 1071 | Pol Motor Failed | Error | Error | Solid | Red | Latched |
| 1072 | Pol Has Been Driven Outside Of Hardware Limit | Error | Error | Solid | Red | Latched |
| 1073 | Pol Failed To Initialize With Encoder | Error | Error | Solid | Red | Latched |
| 1074 | Running Out Of Service Test | Error | Error | Flashing | Red | Unlatched |
| 1075 | Open AMIP Error | Warning | Error | Solid | Red | Unlatched |
| 1086 | Pol Angle Targeting | Warning | Error | Flashing | Yellow | Unlatched |
| 1087 | Sub Reflector is not properly located | Error | Error | Flashing | Red | Unlatched |
| 1088 | Pol Polarization Error | Error | Error | Solid | Red | Latched |
| 1089 | Minor Alarm | Error | Error | Solid | Red | Latched |
| 1090 | Major Alarm | Error | Error | Solid | Red | Latched |
| 1091 | LNB Communication Error | Error | Error | Solid | Red | Latched |
| 1092 | LNB Configuration Error | Error | Error | Solid | Red | Latched |
| 1093 | Receiver Freq Configuration Error | Error | Error | Solid | Red | Unlatched |
| 1094 | Motors Exceeded Power Limit | Error | Error | Solid | Red | Latched |
| 1095 | Invalid System Profile | Error | Error | Solid | Red | Latched |
| 1096 | Receiver RxInput Configuration Error | Error | Error | Solid | Red | Unlatched |
| 1097 | Receiver Not Initialized | Error | Error | Solid | Red | Unlatched |

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7. Glossary of Terms

ACU (Antenna Control Unit) — The ACU is the below-decks electronic equipment that controls the antenna.

ADE (Above Decks Equipment) — The ADE includes the **Sea Tel** antenna, and its fiberglass radome, because they are on a higher deck or mast location outside the ship. Your ADE may include a Base frame, Legs, Braces, and may even have a marine air conditioner.

AGC (Automatic Gain Control) – A digital representation of the actual signal level being received from the satellite.

Antenna — The antenna is the entire assembly, including the dish (reflector), antenna support structure (but not the pedestal), enclosure (radome), mechanical drive mechanism, etc. The antenna includes an integrated preamplifier, waveguides, and other electronic components that are directly connected to the antenna assembly.

AZ (Azimuth) — Clockwise or Counter Clockwise rotation of the antenna

BDE (Below Decks Equipment) — The **LMXP**, satellite receivers, television sets and all other distribution and audio/video equipment that is associated with this type of system.

BLOCK (Blockage) — The signal from a satellite can be blocked by the superstructure of the ship, cranes, buildings, trees, or other obstructions, which are between the satellite (out in space directly above the equator) and the **Sea Tel** antenna. These obstacles block the signal, preventing it from reaching the antenna.

bps (Bits Per Second) — The speed at which a data signal carries information. It usually is expressed in thousands of bits per second (kbps).

CFE (Customer Furnished Equipment) – Satellite receivers, television sets, cables, uninterruptable power supply (UPS) and all other distribution and audio/video processing equipment.

CL (CROSS-LEVEL) — Tilt (left-right) of the antenna

DBS (Direct Broadcast Services) — One of the satellite TV services in the USA

Dish — Part of an antenna. It is a parabolic reflector, which is a curved surface with the cross-sectional shape of a parabola, used to direct radio and microwaves. The most common form is shaped like a dish. Often it is used synonymously with **Reflector**.

DLA (DirecTV Latin America) — A satellite TV service that covers the Caribbean and Latin America.

DTH — (Direct To Home) — A satellite TV service in Europe

DVB (Digital Video Broadcast) — A standard format for digital video broadcast services

EL (ELEVATION) — The pointing-angle of the satellite antenna, between the horizon (0 degrees EL) and the zenith (directly overhead at 90 degrees EL).

ERROR — Name of an LED on the front panel. **OFF** indicates that no errors have occurred.

Favorite Satellite — Any satellite that is in the **Available Satellite** dropdown list of satellites. The dropdown list is in the **Satellite Selection** section of the **Configuration > Satellite > Satellite Configuration** page.

FEC (Forward Error Correction)

GLA (Galaxy Latin America) — Obsolete name for **DirecTV Latin America (DLA)**

GPS (Global Positioning System) — A device that uses satellites to provide accurate Latitude and Longitude values for the position of the ship.

GUI (Graphical User Interface) — Refers to the Graphical User Interface of the **LMXP ACU**.

Gyrocompass — A gyrocompass provides the true heading of the ship, relative to true North. It is a non-magnetic compass, which is based on a fast-spinning disc and the rotation of the Earth. A gyrocompass is used on ships for navigation, because it finds true north as determined by the rotation of the Earth, which is more useful than magnetic north. A gyrocompass is not affected by ferromagnetic materials, such as a steel hull, which changes the magnetic field.

Horiz (Horizontal) — Horizontal linear polarity satellite signal.

ICU (Integrated Control Unit) — The remote controller that is mounted on the antenna pedestal. It is in constant communication with the ACU. They jointly control all the movements of the antenna.

INIT (Initializing) — Name of an LED on the front panel. **OFF** indicates that the system has finished initialization.

LED (Light Emitting Diode) — LEDs in various colors are used to indicate the status of parts of the system.

LHCP (Left Hand Circular Polarity) — Left-hand rotating circular polarity signal.

LMXP — Lite Media Xchange Point™ — This is the Antenna Control Unit for the **Sea Tel** system. It uses HTML-based internal web pages that form the GUI that enables a user to access and operate the system.

LNB (Low Noise Block Down-Converter)

LNB Mode — An alternative term for **LNB Type**.

LNB Type — An alternative term for **LNB Mode**.

Lpolang (Polarization Angle or Polang)

NID (Network ID)

Polang (Polarization Angle or Lpolang)

POWER — Name of an LED on the front panel. **ON** (Solid Green) indicates that the **LMXP** boot sequence is complete, and the system power is **ON** (normal).

Radome — A radome is a weatherproof enclosure that protects a microwave antenna from wind, rain, snow, etc.

Reflector — This part of an antenna is a parabolic reflector, which is a curved surface with the cross-sectional shape of a parabola. It is used with direct radio and microwaves (radar) antennas. The most common form is shaped like a dish. Often, a **Reflector** is used synonymously with **Dish**.

Relative AZ — This is the azimuth-pointing angle of the antenna relative to the bow of the ship. It is 000.0 (360.0) when the antenna is inline with the bow, 090.0 when the antenna is directly to starboard, 180.0 when directly aft and 270.0 when directly to port.

RHCP (Right Hand Circular Polarity) — Right hand rotating circular polarity.

RMA (Return Material Authorization) — An RMA number must be obtained prior to returning a part for repair or replacement.

SCPC (Single Channel Per Carrier)

SEARCH (Searching) — **OFF** indicates that antenna is not searching.

STABILIZATION — Decoupling of the ship's motion from the stabilized portion of the antenna, so that the antenna stays accurately pointed in a 3-dimensional free space.

TARGET — Name of an LED on the front panel. **OFF** indicates that the antenna has finished targeting a satellite.

TRACK (Tracking) — **ON** (Solid Green) indicates that the **LMXP** has identified and is actively tracking the desired satellite to optimize the signal level (AGC).

TVRO (TeleVision Receive Only) — An antenna that is used to receive television services from a satellite.

Vert (Vertical) — Vertical linear polarity.

8. Technical Contacts

Your first technical contact always should be your Dealer, from whom you originally purchased the system. This is usually the fastest way to have your problem resolved. If your Dealer cannot resolve the problem, then they will contact **Sea Tel** directly and work together to resolve the problem.

For your reference, please write in the following information:

Dealer Name: _____

Dealer Address _____

Dealer Phone _____

Dealer Fax _____

Dealer Email Address _____

If, for some reason, you cannot contact your Dealer, then you can contact **Sea Tel** Service:

Sea Tel Inc., a Cobham SATCOM company
 4030 Nelson Ave.
 Concord, CA 94520
 USA

Email to GCS service: sea.vsat.support@satcomgcs.com
 Telephone: +1 (925) 798-2399

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