



TracLRI Live Remote Interface Installation & Operations Reference Guide

Version 1.2



Cobham SATCOM Land | Orlando

1551 College Park Business Center Road • Orlando, FL • 32804

Ph: 407-650-9054 • Fax: 407-650-9086

<http://www.cobham.com/satcom/land>

Emergency / 24 Hour Support

Emergency and critical support specialists answer the phones 24/7.

1-407-650-9054 (8AM-5PM East Coast Time) | 1-888-650-9054 (After Hours)

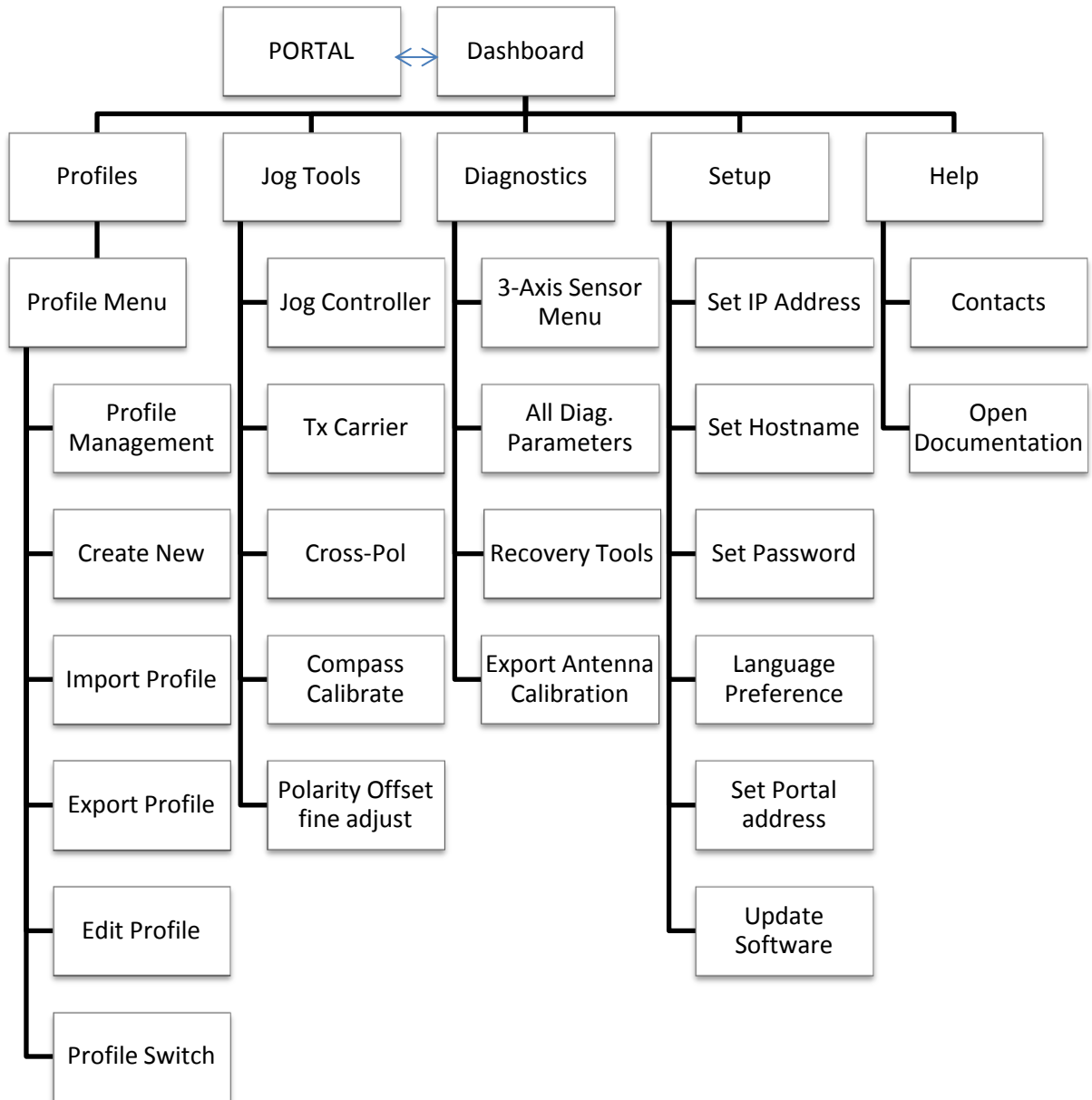
<https://www.satcomgcs.com/esupport/>

TracStar Systems Inc. doing business as Cobham SATCOM

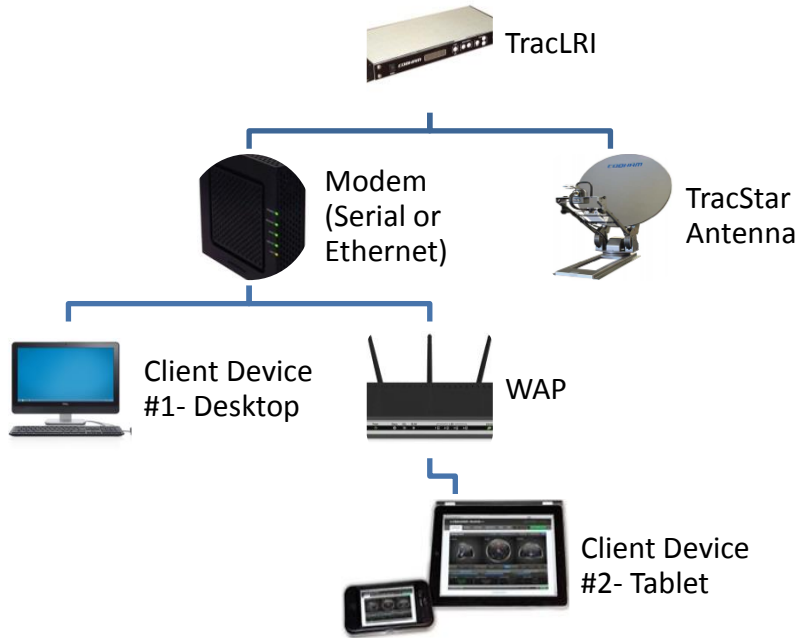
!! CAUTION !!

TracLRI can create settings profiles using from your antenna.
Modify the profile settings with care or adverse performance could be caused."

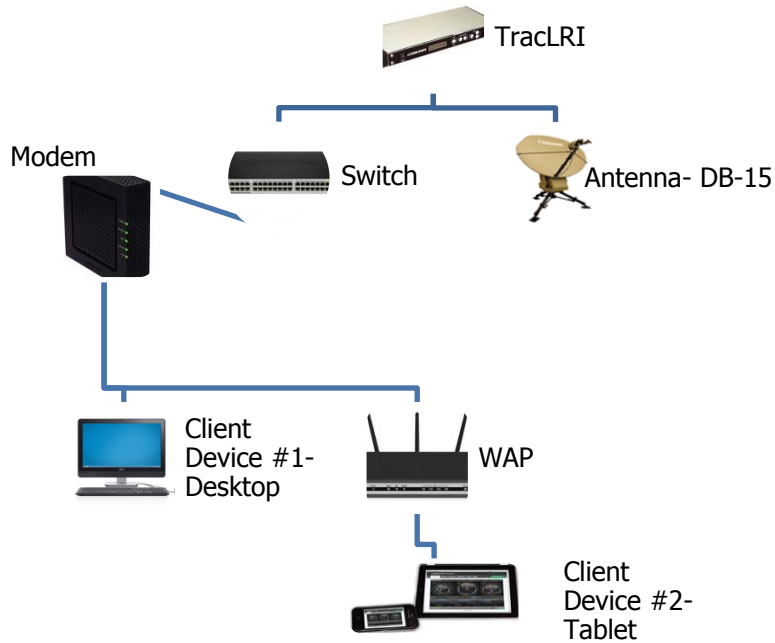
Quick Reference: TracLRI Navigation Map



Typical Configuration A – Direct connection:



Typical Configuration B – Switched connection:



Data Is Subject To Change Without Notice

This document is supplied as and intended to be a reference document for TracStar Systems product users. The document is periodically updated and may contain data that does not apply to a user's specific product or is obsolete. If questions exist regarding the applicability of the data relative to your product, contact TracStar Technical Support.

This manual and its contents are considered proprietary intellectual property of TracStar Systems, Inc. dba Cobham SATCOM. Unauthorized use or distribution is specifically prohibited.

Contents are protected by law.

© Copyright 2013 TracStar Systems, Inc. All rights reserved.

EXPLORER is a registered trademark of Cobham, PLC.

TracStar Systems is a registered trademark of Cobham, PLC.

Any and all additional product names referred to in this manual may be trademarks or registered trademarks of their respective companies. Such trademarks are the sole property of their respective owners.

Compatibility Notice: Supported Browsers

The system is optimized for following browsers compatibility: Internet Explorer, FireFox, Chrome, and Safari.

Compatibility Notice: Supported Cobham TracStar Products

Current version of TracLRI supports the TracStar ACU Firmware volumes loading on the following drive-away and fly-away product families: TracStar1200, TracStar1800, TracStar2000, TracStar 2400, EXPLORER 5000, EXPLORER 7000. WARNING DO NOT LOAD ACU FIRMWARE MAIN2.63 TO A SYSTEM THAT IS RUNNING 2.23, 2.29, 2.64.
Coming Soon: TracStar900P5, TracStar 1000, EXPLORER 9000.

Compatibility Notice: Supported 3rd-Party Modems

The following list is of currently supported modem interfaces for TracLRI. Cobham is constantly updating the list according to customer requirements. Any and all additional product names referred to in this product may be trademarks or registered trademarks of their respective companies. Such trademarks are the sole property of their respective owners.

- iDirect Infinity 3000, 7000, 8000, X5
- Gilat SkyEdge II Pro Series
- Advantech S5000 Series
- Comtech 570, 600, & 625 L-band modems
- LinkStar
- Linkway
- Hughes
- Romantis

Table of Contents

Compatibility Notice: Supported Browsers.....	iii
Compatibility Notice: Supported Cobham TracStar Products	iii
Compatibility Notice: Supported 3 rd -Party Modems	iii
1 Introduction.....	1
1.1 General Description of System	1
1.2 TracLRI DashBoard and Message Center.....	2
1.3 TracStar ACU Front Panel Display and IDD.....	2
2 Basic Antenna System Operations.....	3
2.1 One-Touch Deployment with TracStar ACU	3
2.2 Turnkey Operation using TracLRI	4
2.2.1 Activate a Profile	4
2.2.2 Control Buttons	5
2.2.3 Communication Status on Message Center Ribbon	6
2.2.4 Three-Axis Orientation Gauges	6
2.2.5 Signal Strength	8
2.2.6 Current System State.....	8
2.2.7 Current Satellite	9
2.2.8 Current Location.....	9
2.3 Navigation Tips for Network Management Portals	10
2.3.1 Configure Custom Portal Setup	10
3 TracLRI Web Interface Overviews.....	11
3.1 Login Page	11
3.1.1 Resetting Administrative Password to Default	11
3.2 Dashboard Page	12
3.3 Profile Page.....	12
3.4 Jog Tools Page	13
3.5 Diagnostics Page.....	13
3.6 Setup Page.....	14
3.7 Help Page	14
4 TracLRI First-time Setup Instructions	14
4.1 Hardware Configuration.....	15

- 4.2 Initial ACU Configuration15
- 4.3 Configuring Network Access to TracLRI via IP Setup Utility17
 - 4.3.1 Typical Configuration A – Direct connection:19
 - 4.3.2 Typical Configuration B – Switched connection.....19
- 5 TracLRI Profile Configuration20
 - 5.1 Managing Profiles20
 - 5.1.1 Activating Primary Profiles.....20
 - 5.1.2 Backup Profile Switch Tool21
 - 5.1.3 Profile Exchange Tool (“Import/Export Profile Mode”).....21
 - 5.2 Creating Profiles22
 - 5.2.1 Edit Profiles Names.....22
 - 5.2.2 Edit Satellite Location Parameters22
 - 5.2.3 Edit Satellite Polarity Parameters23
 - 5.2.4 Edit Network Communications Parameters.....23
 - 5.2.5 Edit Satellite Acquisition Parameters.....24
 - 5.2.6 Edit Satellite Modem Parameters.....24
 - 5.2.7 iDirect Modem Beam Selection25
 - 5.3 Managing Advanced Profile Information.26
 - 5.3.1 Edit Advanced Satellite Frequency Band Parameters.....26
 - 5.3.2 Edit Advanced Satellite Tracking Parameters.....27
 - 5.3.3 Edit Advanced Satellite Scan Settings27
 - 5.3.4 Edit Beacon Settings Parameters27
 - 5.3.5 Edit Advanced Data Satellite Parameters28
 - 5.3.6 Edit Reference Satellite Parameters.....28
- 6 Advanced Operations.....29
 - 6.1 IP Address Configuration29
 - 6.1.1 Host Name (“DHCP Mode”)29
 - 6.2 Manual Geo-Location Override30
 - 6.3 Manual Compass Override (“Enter Heading” Mode).....30
 - 6.4 Advanced Manual Jog Tools.....30
 - 6.4.1 Start Transmit Carrier32
 - 6.5 Advanced Diagnostic Tools33

- 6.5.1 Recovery Tools (“Import/Export Calibration Mode”).....33
- 7 Software Management TracLRI System34
 - 7.1 Updating TracLRI Software35
- 8 TracStar ACU Firmware Software Loading Utility Procedure41
 - 8.1 Updating Monitor Version To 2.442
 - 8.2 Updating System Software.....45
 - 8.3 Long-Term Calibration Save (coming soon)47
- 9 Troubleshooting47
 - 9.1 Performance Tips.....48

1 Introduction

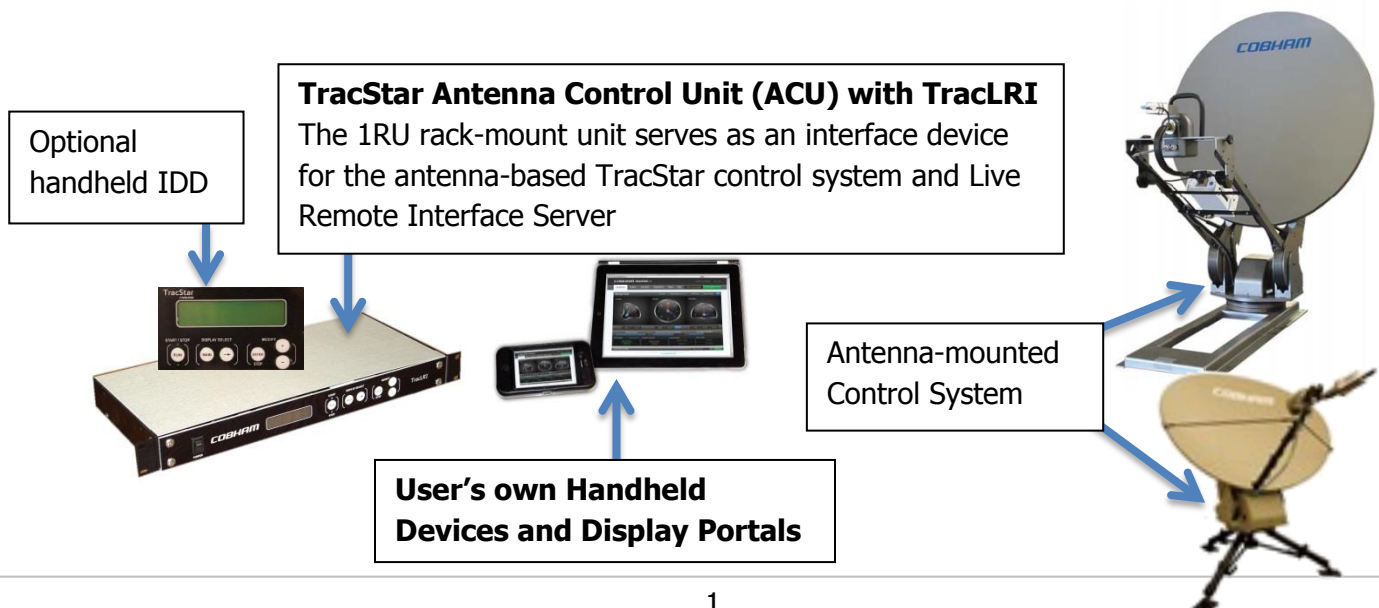
This guide describes important operating instructions, system information, installation, setup, and maintenance information for the TracStar Antenna Control Unit (ACU), and the TracLRI™ graphical user interface. TracLRI communicates with any TracStar ACU internally via serial that leverages existing functionality in order to network-enable your antenna and allow users to easily configure and remotely monitor their satellite terminal’s auto-acquisition operations via Ethernet or wireless connection using a standard web browser available on a variety of devices such as PC’s, tablets and smart phones

The TracLRI functionality provides many key benefits, including the following:

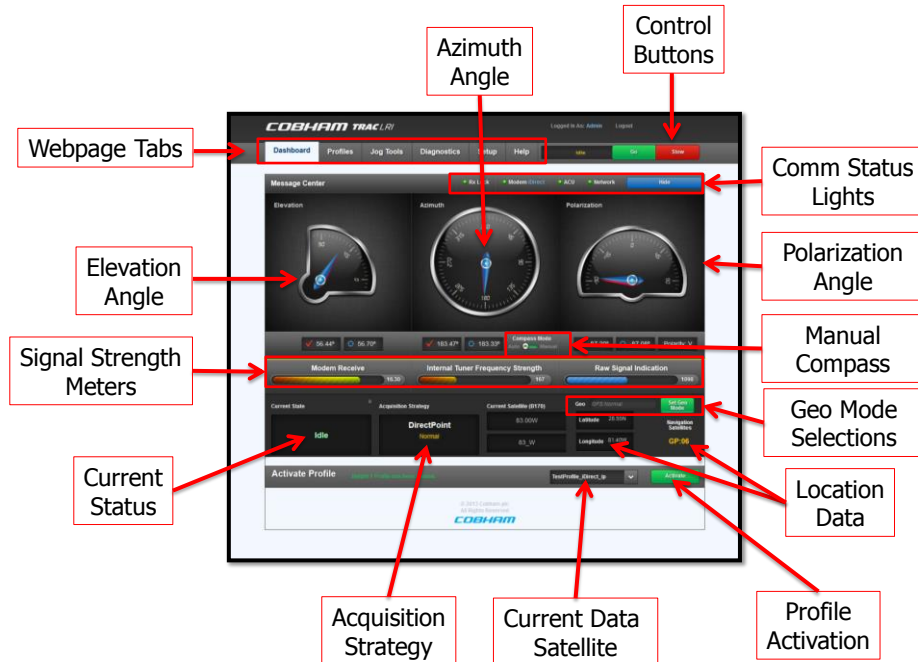
- User-friendly satellite terminal configuration and control
- Network-based access to ACU’s one-button “Run/Repeak” and “Stop/Stow” functionality
- Dashboard display that includes antenna acquisition parameters, alert status, modem-generated SNR (signal-to-noise ratio), internal tuner signal strength, diagnostics, as well as three-axis sensor visualizations for azimuth, elevation and polarization displays.
- Built-in memory can store hundreds of custom antenna profiles for many combinations of modems, RF equipment and satellites.
- Remote satellite alignment and performance data, making it possible for users to globally manage their remote terminal fleets.

1.1 General Description of System

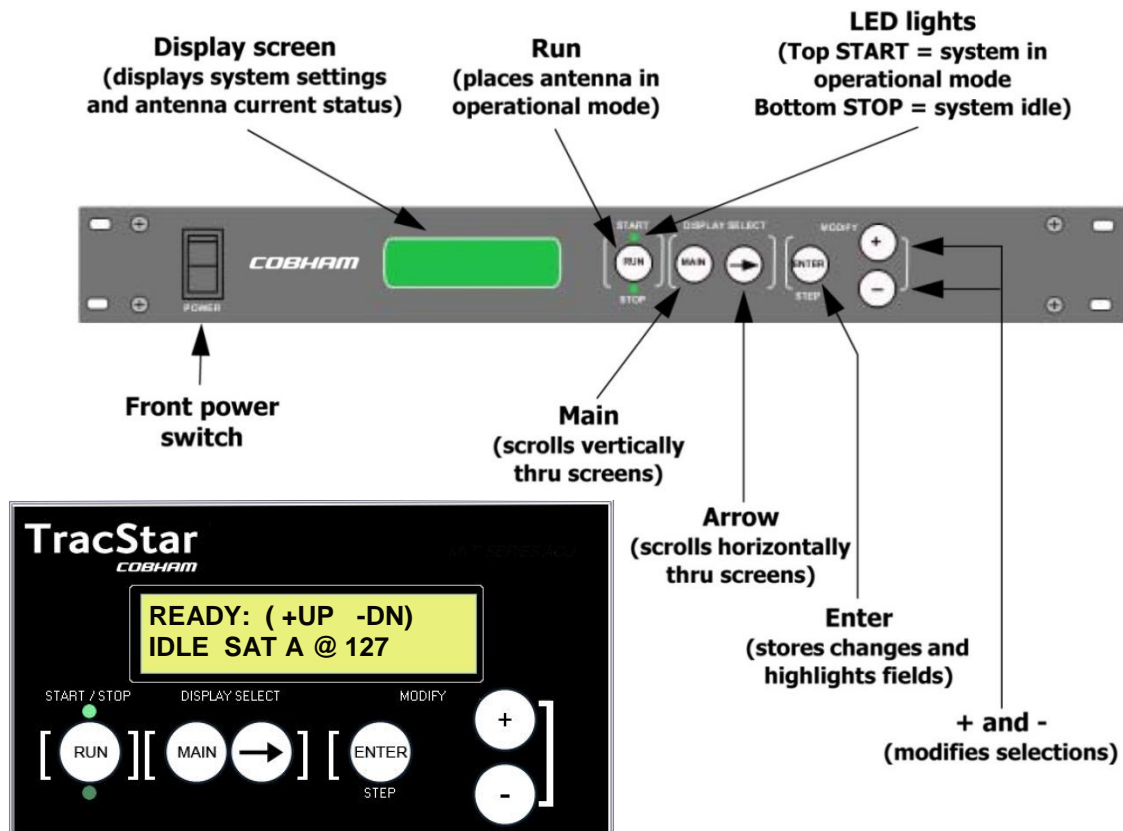
- The TracLRI-equipped Antenna Control Unit 1RU controller interface serve as I/O devices for the user’s antenna system, with the optional Indoor Display (IDD).
 - The TracStar control system itself resides on the antenna. No TracLRI profile data is stored in the controller’s ACU.
- Web & Ethernet capable display devices, ex. Tablets, computers, smartphones (not supplied by Cobham).



1.2 TracLRI DashBoard and Message Center



1.3 TracStar ACU Front Panel Display and IDD



There are four distinct groupings of functions in the operation of the TracStar Antenna Control Unit (ACU):

- *READY*
- *User Setup*
 - *LRI Info*
- *TECH SETUP*
- *Diagnostics*

NOTE: This procedure assumes you are running TracStar ACU Version 263. See Section 8 for further details.

2 Basic Antenna System Operations

NOTE: This section assumes you have created or have access to a valid profile, as described in section 2.4.

During actual ACU operation, the various page groupings are selected by pushing the **MAIN** button the appropriate number of times, thus moving “vertically” to select the desired group function. Users may scroll forwards through ACU page groupings by using the (→) key, or scroll horizontally backwards through the sequence of pages if the arrow button (←) is held down for three seconds. Regardless of what operation is displayed on the ACU display panel, returning to the **MAIN** menu may always be accomplished by continually pressing **MAIN** until “**READY**” displays. See the *TracStar Series Antennas Operations Instructions v4.1* for more information on the functional groupings.

2.1 One-Touch Deployment with TracStar ACU

- **Deploy**
 1. Connect antenna as shown in your antenna’s assembly procedures.
 - i. The MOD-SERIAL cable is required for modems using GPS input by serial. It may be a DB9-DB9 or a DB9-RJ45 w/a RJ45 jumper cable, depending on modem style.
 - ii. The TracLRI now brings native Ethernet connectivity to your VSAT modem, if supported. Connect your TracLRI and modem to a network switch to take advantage of this new capability.
 2. Apply power from the 1U rack mount power supply.
 3. Once the control panel interface displays “**READY**,” press the “**RUN**” button.

- **Stow**

1. Press the **MAIN** button until the display reads “**READY.**”
2. Observe green LEDs on the controller interface panel. If necessary, push “**RUN**” once for “READY/Idle” to be displayed.
3. Press the **(—)** button and hold for 2 seconds; allow antenna to fully stow.
4. Remove power from the antenna by turning off power to the power supply or the 1U rack mount panel.
5. Once power is removed, disconnect any cables necessary for transporting the antenna.

2.2 Turnkey Operation using TracLRI

This section provides a brief overview of key system operations functions located on the TracLRI Dashboard.

- Activate a Profile, Using Control Buttons, Using Communication Status Ribbon, Using Three-Axis Orientation Gauges, Reading Signal Strength, Reading Current State, Reading Current Location, Reading Current Satellite.

2.2.1 Activate a Profile

Utilize the Dashboard loader to **Active** any profile. User’s may also enable the Profile Switch located on the Profiles tab, which allows the user to assign any other profile as a specific “secondary” profile to Activate automatically upon failure to achieve Lock using the Primary profile. Configure this from the Profile page.

To activate any profile from storage:

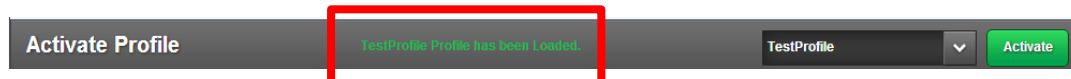
1. Go the Dashboard and Scroll down to the “Activate Profile” tool.



2. Open the dropdown list and click upon one of the stored profiles. Then, click the “**Activate**” button. After clicking the button, the word “Activating” will display in the Control Button area.




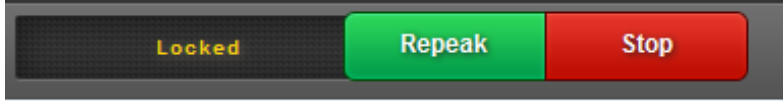
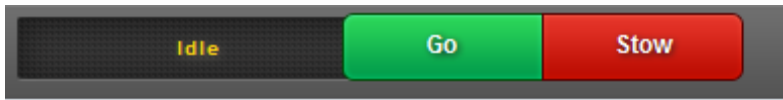
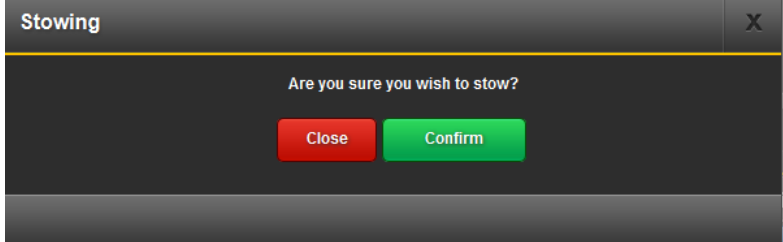



3. After activation, the tool will display a confirmation message. It is normal for the activation to require up to 10 seconds to load.



2.2.2 Control Buttons

The most important feature of the Dashboard is the Control Button section; this section is visible on every web page. Control Buttons have multiple states of operation, as well as a Control Status display area on the left-hand side of the buttons—which indicates the response of the system to your commands. When you click these control buttons, instant visual feedback is provided (i.e. through highlights or color changes) to indicate that the command was received; however, the system itself may take a few seconds to process and respond to the command through the Control Status display.





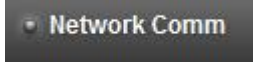
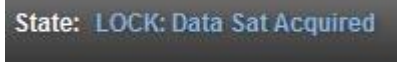
Description	Control Button State
After initial power-up, the system displays a “ Stowed ” status. A single green “ Go ” button is available.	
After clicking the “ Activate ” profile button, the word “ Activating ” displays temporarily during processing. See section 2.2.1 above.	
During acquisition, the “ Go ” button has been pushed. The system response is to grey-out the “ Go ” button and to display a “ Deploying ” status. Also, a “ Stop ” button becomes available.	
After an acquisition is complete, the “ Go ” button changes to “ Repeak ” and the “ Locked ” status is displayed.	
If the “ Stop ” button is pressed at any time during or after the acquisition, then the “ Stop ” button changes to “ Stow ” and the “ Go ” button becomes available. The “ Idle ” status is now displayed.	
If the “ Stow ” button is pressed, a confirmation window appears, asking whether you wish to stow. Click either the “ Close ” button to return to Idle state or click “ Confirm ” to proceed with Stowing .	
After choosing “ Confirm ” in the confirmation window, the system will begin to stow. Users can still click the “ Stop ” button at any time to abort and return to Idle state.	

2.2.3 Communication Status on Message Center Ribbon

Beneath the Control Buttons, the Message Center ribbon’s right side has system Status Lights visible, which correspond to the status of communications between the TracLRI and several other critical system functions listed in the table below. This ribbon also includes a Show/Hide button, which optionally collapses the entire Dashboard from view.

Status Lights:

- A green light indicates active communications
- A red light indicates disabled communications
- A grey light indicates the light has been disengaged via setup options

Description	Status Indicator
The Show/Hide buttons selectively collapse and show the main Dashboard page.	
This light indicates the status of Receive (Rx) Lock from your modem.	
This light indicates the overall status of the TracLRI’s communications with your modem, including the type of modem that was selected within the active profile.	
This light indicates the overall status of the TracLRI’s communications with your Antenna.	
This light indicates the overall status of the TracLRI’s communications with a specified network address, which is determined via ping tests. This status light can be either enabled or disabled while setting up a specific profile.	
When the “Hide” button is activated, the Dashboard will minimize from view and the System State moves up to the Communication Status Ribbon.	

2.2.4 Three-Axis Orientation Gauges

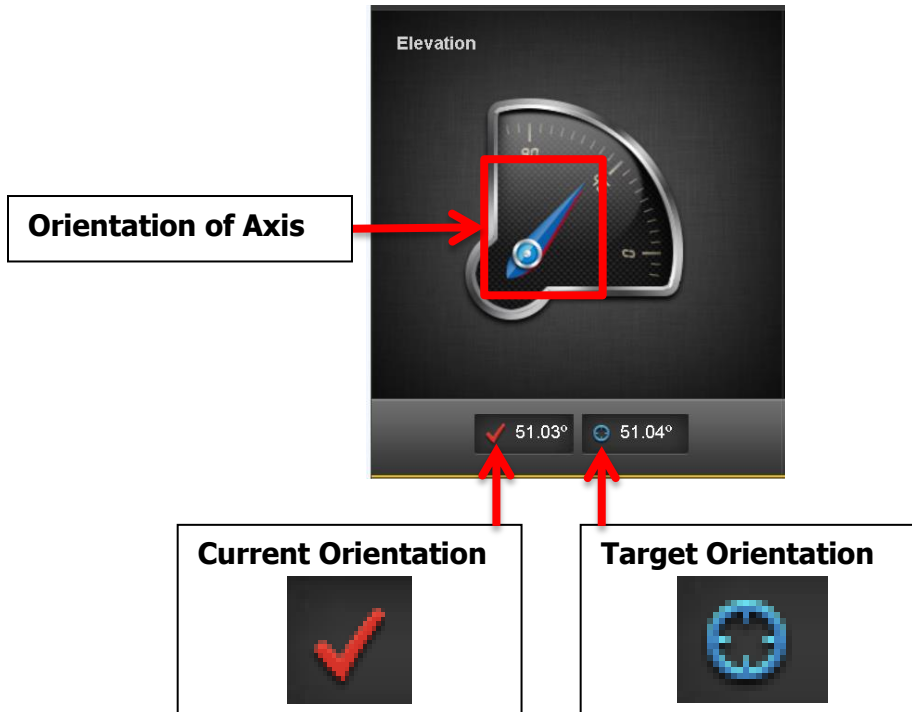
The Dashboard displays the current orientation of each axis in red, as well as the target orientation during a deployment sequence in blue. The current and target orientations are displayed by using dual-colored arrows, as well as numerical representations (in degrees) of these orientations.

Theory of Operation:

- The red-colored arrow indicates the actual, real-world orientation of each axis. A numerical representation of that current orientation is displayed beside the red checkmark underneath the gauges.
- The blue-colored arrow indicates the target orientation of each axis during a deployment. The numerical representation of that current orientation is displayed beside the blue target-like icon. This calculation of target orientation is based upon Navigation Satellite information (not corrected for base tilt). These are not generated until the

system has Navigation satellite Lock. Navigation satellites are principally GPS, but may be augmented by GLONASS if your antenna is GLONASS equipped.

The example below shows how the gauge appears at completion of an acquisition—with the red and blue arrows overlapping—which indicates the antenna has reached target orientation.



Cone of Error Overlay Graphic

During a normal auto-acquisition sequence, the system’s compass is automatically calibrated. This process is depicted on the Azimuth axis gauge using a red-colored, cone of error overlay graphic.

- Initially, the overlay will appear as fully red at the start of an acquisition, showing that compass has not been calibrated yet and therefore the gauge is not depicting a precisely accurate orientation.
- As the acquisition process proceeds, the automatic compass calibration begins to take effect. For a short time, while the Azimuth has an approximate compass bearing within 20-degrees of error, a smaller cone-like overlay graphic will appear. This nominal cone of error will remain in place until the gauge’s depiction of orientation is fully accurate and the acquisition is complete.

You will often notice a slight difference between Current and Target orientations; this difference is between a pure calculated angle and an actual real world angle adjusted for live sensor inputs and acquisition algorithms optimized for compliance. Small deviations are normal.



**Uncalibrated
Compass**



**Nominal Cone of
Error**

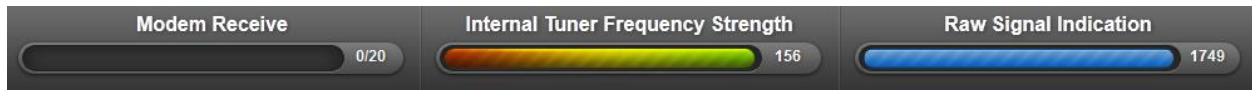


**Fully Calibrated
Compass**

2.2.5 Signal Strength

The TracLRI displays three distinct real-time signal strength meters, along with a numerical equivalent of each:

- Modem Receive, displayed as C/N or E_bN_o in increments from -5 to about 20, is supplied by modems in different formats.
- Internal Tuner Frequency Strength is displayed in increments from 0 to 500.
- Raw Signal Indication is displayed in increments from 0 to 3000. A number above 50 is considered valid (i.e. it surpasses the typical raw signal noise floor).

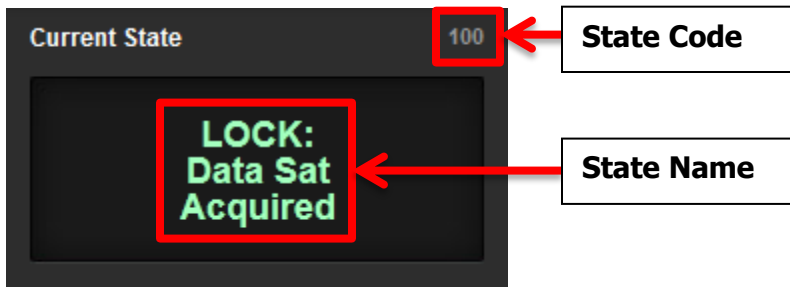


2.2.6 Current System State

The current state of the system is displayed prominently on the Dashboard, and is also placed within the Message Center’s Status Ribbon when the Dashboard is collapsed into *hidden* mode.

When displayed on the Dashboard, the Current State contains two elements:

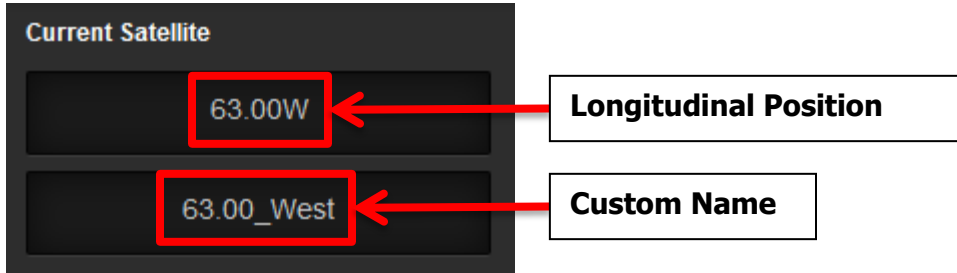
- **State Name:** a commonsense “Friendly” case statement names registered in a software lookup table.
- **State Code:** a system number linked to each registered state name.



2.2.7 Current Satellite

The current satellite, selected within the active profile, is displayed prominently on the Dashboard. The Current Satellite contains the longitude-based number linked with a user-defined name (set in profile).

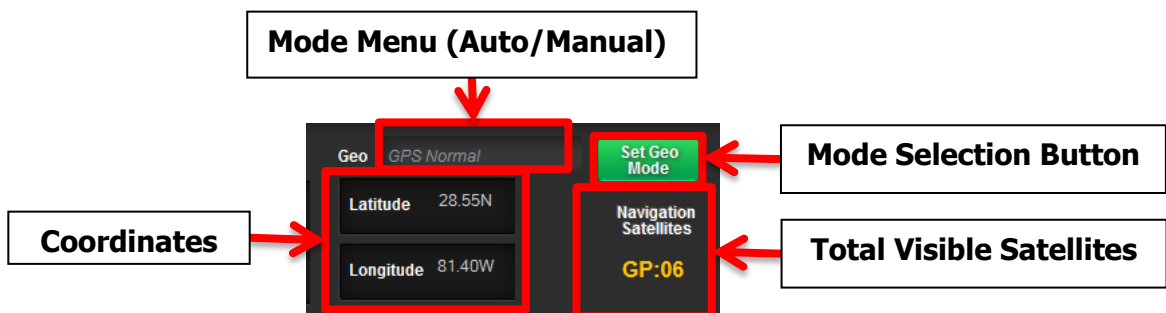
- **Longitudinal Position:** a data satellite identifier formatted within a Profile form.
- **Custom Name:** a user-defined phrase (letters, numbers, special characters) that is also formatted within a Profile form.



2.2.8 Current Location

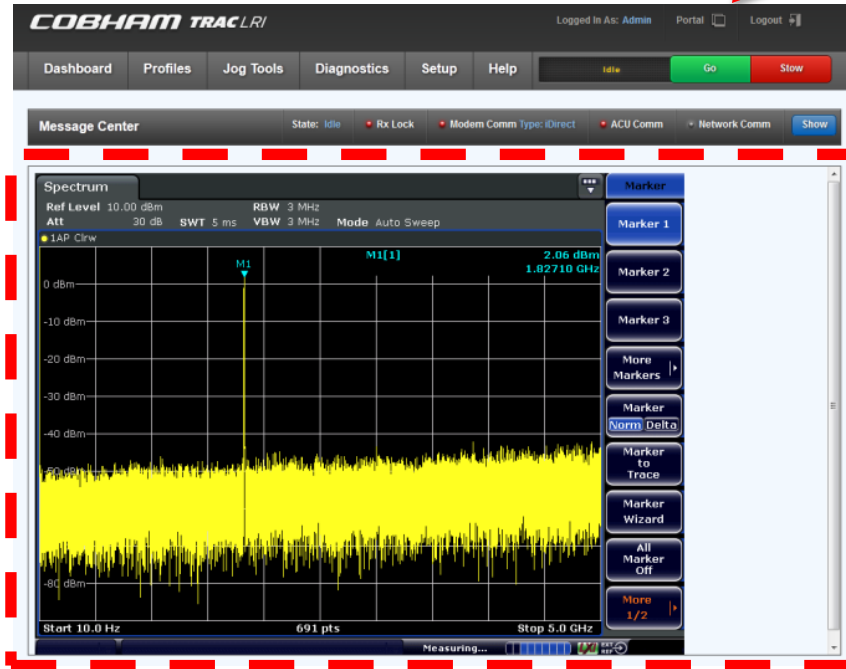
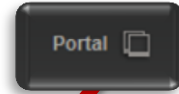
The current location, or "Geo," is displayed prominently on the Dashboard. The geo-location contains four elements:

- Geo Mode Menu that displays a dropdown list of supported modes of operation (such as Automatic or Manual) in your antenna system. The term "Normal" refers to an automatic mode of operation.
- Mode Selection Switch: switches the ACU between operation modes that were selected using the Mode Menu (see Section 6.2 for Manual Geo-Location Override).
- Latitude/Longitude Coordinates: displays either the automatic or manually generated coordinates.
- Navigation Satellites: displays the total number of visible navigation satellites, including GPS and GLONASS (if available, based on hardware integrated in your system).



2.3 Navigation Tips for Network Management Portals

Sample Embedded Application (real-time spectrum analyzer) within Portal Frame



NOTE: Anything can be included in an I-frame as long as it is self-contained and is public URL. How it works, what is supported, how stable it is, etc. is up to the application being included. For Apple device users, no third party plugins are supported on iOS devices, such as Java applets, Flash, etc.

2.3.1 Configure Custom Portal Setup

- Setup a Portal via URL string, and submit to the TracLRI.

Portal Setup

URL

I-frame Specifications: The embedded application must comply with screen dimensions of 1000 pixels in width, set by the TracLRI application.

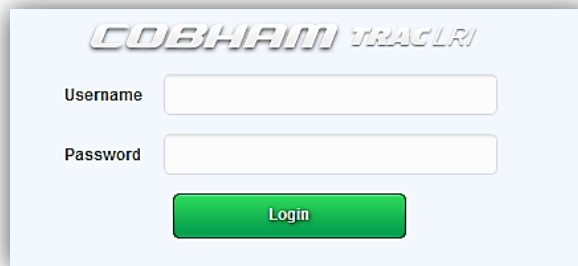
3 TracLRI Web Interface Overviews

The following sequence of images provides an overview of the main functions on each TracLRI webpage.

3.1 Login Page

The TracLRI is a password-protected web server. The default administrative login is:

- Username: admin
- Password: password



3.1.1 Resetting Administrative Password to Default

If the administrative password is ever lost, it may be reset to the default password by using **"Option 31"** within the ACU. Your ACU & TracLRI must already be connected and communicating in order for this to work. The following steps explain the procedure:

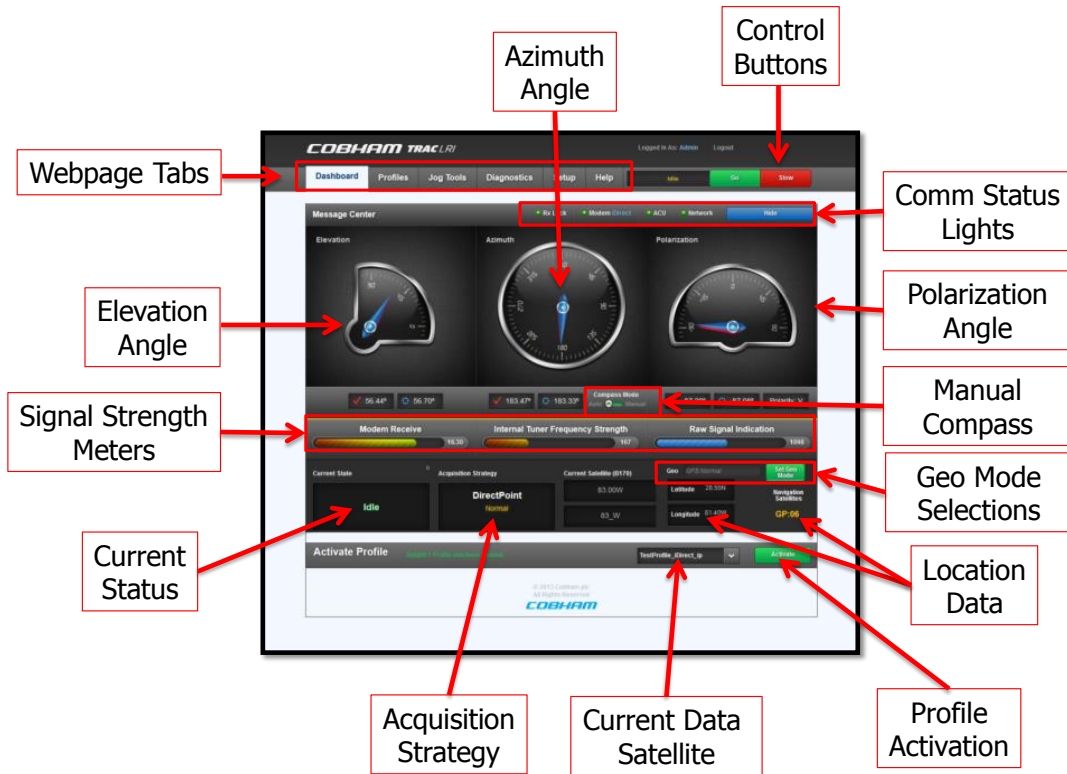
1. Once at the **"READY"** screen, press the **MAIN** button until you reach the **TECH SETUP** menu. Using the **(+)/(–)** buttons, change to **Code 13**, and press the **Enter** button.



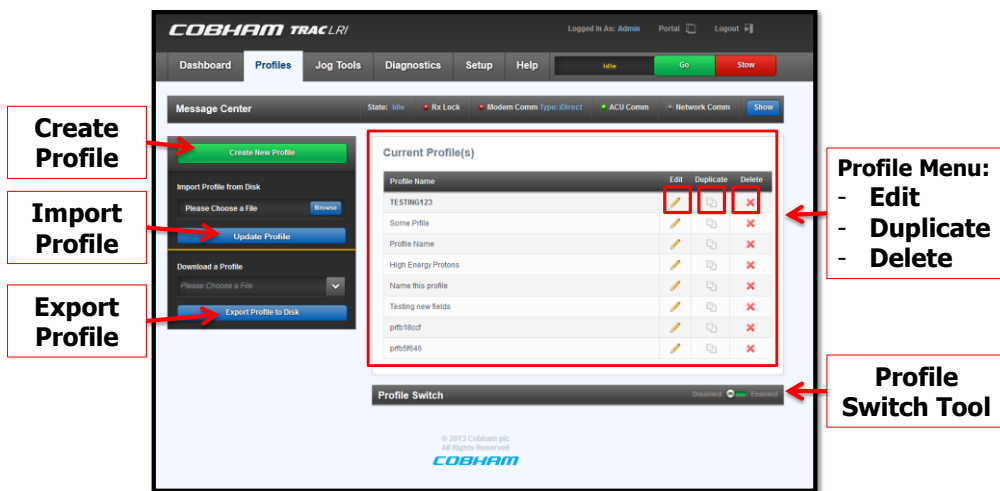
2. From **TECH SETUP** (**Code 13** should be flashing), press the **(→)** button once, which takes you to the **SET OPTION** page.
3. Press the **(–)** button once; the display will then indicate that **"Option 31"** is available. At this point, press the **Enter** button to send the password reset command. If the reset command does not take effect, repeat the process a second time.



3.2 Dashboard Page



3.3 Profile Page



3.4 Jog Tools Page

Drive to a Position

Jog Controls

Degrees Moved

Jog Increment

Location

Current Satellite

Pol Offset Value

Signal Strength

Pol Adjust

Rotate Pol 90-degrees

Tools:

- Return to Start
- Save Current PO
- Calibrate Compass
- Start Tx Carrier

3.5 Diagnostics Page

Default Diag Values

System IDs

Active Diag Values

Azimuth Axis		Elevation Axis		Polarity Axis	
Compass offset (0.00)		El. Base angle (-2.23)		Pl. Base angle (-0.92)	
		Elevation offset (-2.08)		Pl. Az. Offset (-1.90)	

Diag Value Selection Options

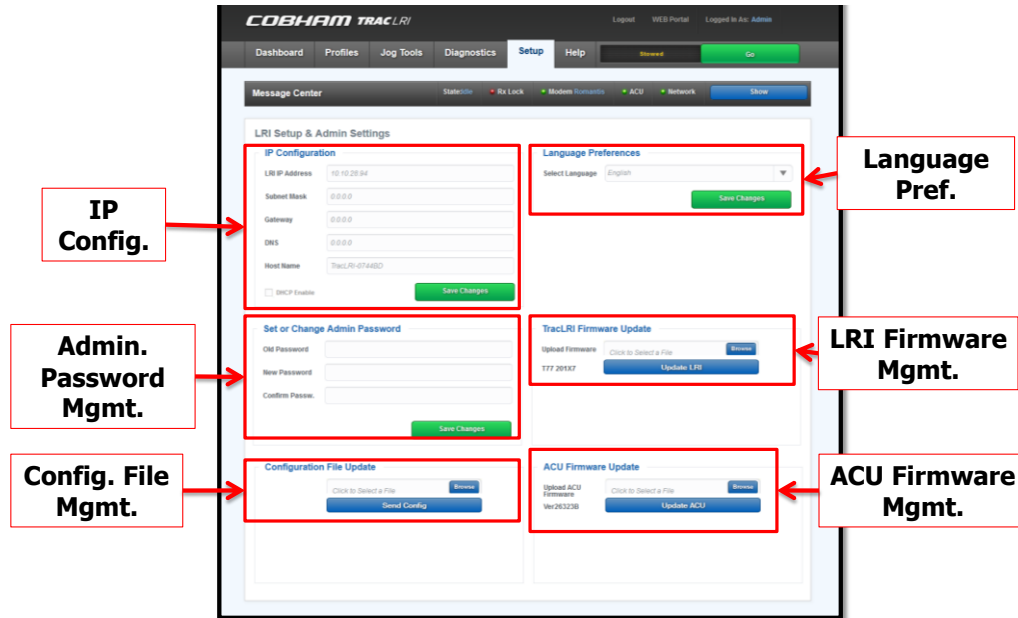
- 1. Az. Pot. Reading & Angle (Ar)
- 2. Az. Pot. Center (Aq)
- 3. Az. Enc. Reading & Angle (L-E)
- 4. Compass offset
- 5. Az. D.A.C. Motor Control (L-D)
- 6. Az. Heading, approximate (a)
- 7. Az. Sensor Input Delta (Ad)
- 8. Az. Enc. Scale Factor page (Enof, Kp, K)
- 9. Az. Pot. Scale Factor page (Pof, BL, VF)
- 10. Az. Scan Width (ASW)
- 11. El. Scan Width (Elsw)
- 12. El. Incl. Center (Eic)
- 13. El. Enc. Reading & Angle (M-E)
- 14. El. Base angle (Eba)
- 15. El. Base adjustment (Ebv)
- 16. El. Incl. Reading & Angle (Ei)
- 17. El. Enc. Scale Factor page (Enof, Kp, K)
- 18. El. Inc. Scale Factor page (Pof, BL, VF)
- 19. Elevation offset (Eo)
- 19. Pl. Mechanical Zero (PMZ)
- 20. Pl. Incl. Center (Pic)
- 21. Pl. Enc. Reading & Angle (N-E)
- 22. Pl. Base angle (Pba)
- 23. Pl. Base adjustment (Pbv)
- 24. Pl. Pot. Reading & Angle (Pp)
- 25. Pl. Enc. Scale Factor page (Enof, Kp, K)
- 26. Pl. Pot. Scale Factor page (Pof, P1, M)
- 27. Pl. Az. Offset (Pao)
- 28. Pl. Mechanical Offset (Pm)

Export Calibration

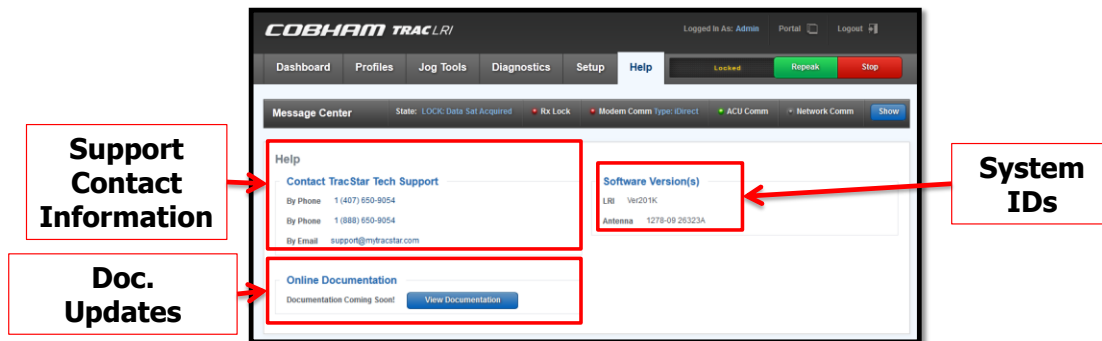
Long-Term Calibration Save

Import Calibration

3.6 Setup Page



3.7 Help Page



4 TracLRI First-time Setup Instructions

Below are the steps necessary to initially setup TracLRI with your antenna system, when you are activating TracLRI with an existing system for the first time. This procedure assumes your ACU is already running the latest firmware that is optimized for full TracLRI compatibility. If necessary, see procedure in Section 7 for conducting ACU Software updates.

This procedure consists of four different parts:

- **Initial ACU Configuration:** This section covers configuring your antenna via the ACU front panel or hand-held display unit (IDD), and finding the IP address via the ACU where your TracLRI resides.
- **Network (IP) Setup Utility:** This section instructs you on configuring your TracLRI's TCP/IP address by using the "TracLRI IP Setup" utility.
- **Hardware Configuration:** Device connections, cabling options and requirements.
- **TracLRI Profile Configuration:** Configuring the TracLRI itself via its web-based options. This includes instructions on building a profile, basic operations, etc.

4.1 Hardware Configuration

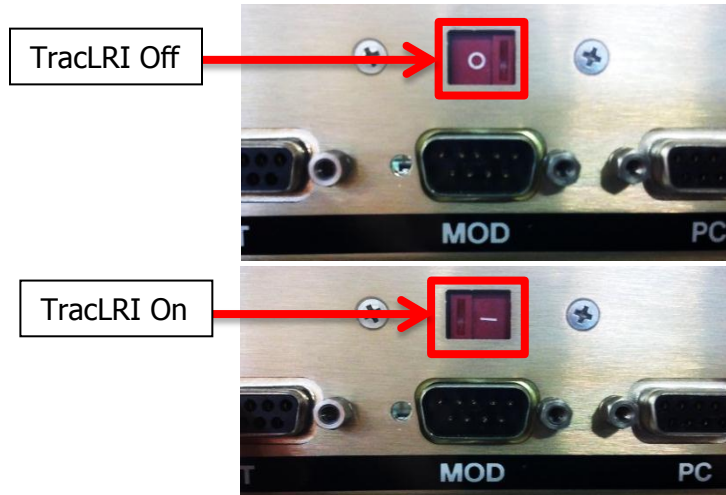
- **Network RJ-45 Port:** TracLRI specifically adds the ability to connect your TracStar antenna as an Ethernet-enabled networked appliance for the first time. This is a standard implementation of a client 10/100 Ethernet networking adaptor, so no special cabling or drivers are required. Software is only required to upload a new software image to the TracLRI or as an optional method for administering IP information.
- **Modem Connection:** If TracLRI is to be connected to a modem by network implementation, the modem must have auto-sense or there must be a hub or switch in between the two devices, and it must be configured for an IP address on the same subnet as the modem. In some cases the modem can support multiple subnets in which case TracLRI needs to be on the same as the connected port is configured for; Ex. iDirect 5000 series or Gilat Skyedge II Pro series.
- **Serial DB-9 Port:** Serial connections are identical to, and backwards compatible with, legacy communications methodologies such as Console connection with Advantech, Comtech, Gilat, iDirect, etc.

See images below for example port layout for Cobham TracStar ACU with integrated TracLRI. The port & bypass switch functions are identical for the 300-Watt and the 1000-Watt model versions but the 1000-Watt version is shown below.

4.2 Initial ACU Configuration

1. On the rear of the ACU, locate the TracLRI bypass switch. The factory default position is set at "0" (Off). Slide the switch to the "1" (On) position.

NOTE: You may prefer to use a pen or paperclip to change the switch's position.



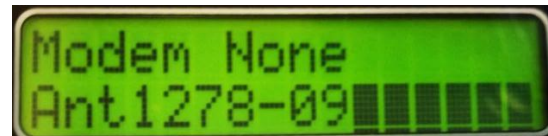
- Power on your ACU; the display screen will show several messages during initialization: **"Power Up," "Monitor Check," "Loading,"** and **"READY."** However do not deploy the antenna when the display reads **"READY."**



- Once at the **"READY"** screen, press the **MAIN** button until you reach the **TECH SETUP** menu. Using the **(+)**/**(-)** buttons, change to **code 13**, and press the **Enter** button.



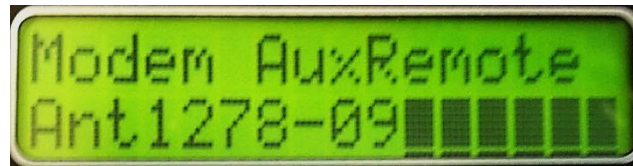
- From **TECH SETUP (Code 13)** should be flashing), press the **"→"** (arrow) button until you reach the **Modem** Page, then press the **Enter** button until the cursor is highlighting the **Modem** type currently set on your system.



- Using the **(+)**/**(-)** buttons, change this value to be **"AuxRemote,"** and then press the **Enter** button.

NOTE: The cursor should move to the next field on this page. If **AuxRemote** is still highlighted, the new value has not been stored.

NOTE: From this point forward, all communications with your modem will be handled by the TracLRI and not the antenna; however, in the case of serial communications the port cabling will remain exactly the same.



6. Press the **MAIN** key to return to the main menu. Notice the scrolling message of "**READY... Idle @ sat... Stowed**" will be displayed. Then, power cycle the ACU (turn it off and then back on), with at least a 2 second pause between power-down and powering-up the device again.



7. To identify the TracLRI's current TCP/IP address & hostname via the ACU, press the **MAIN** button to the **User Setup** screen, then press the (**→**) button until you reach the "**LRI INFO:**" page. Displayed on the bottom line of this page will be the current address configuration of your TracLRI.

NOTE: The IP address will appear 15 to 20 seconds after power-up. If the address is displaying all zeros followed by a question mark (?), this indicates the address is still loading and will require a few additional moments to populate.



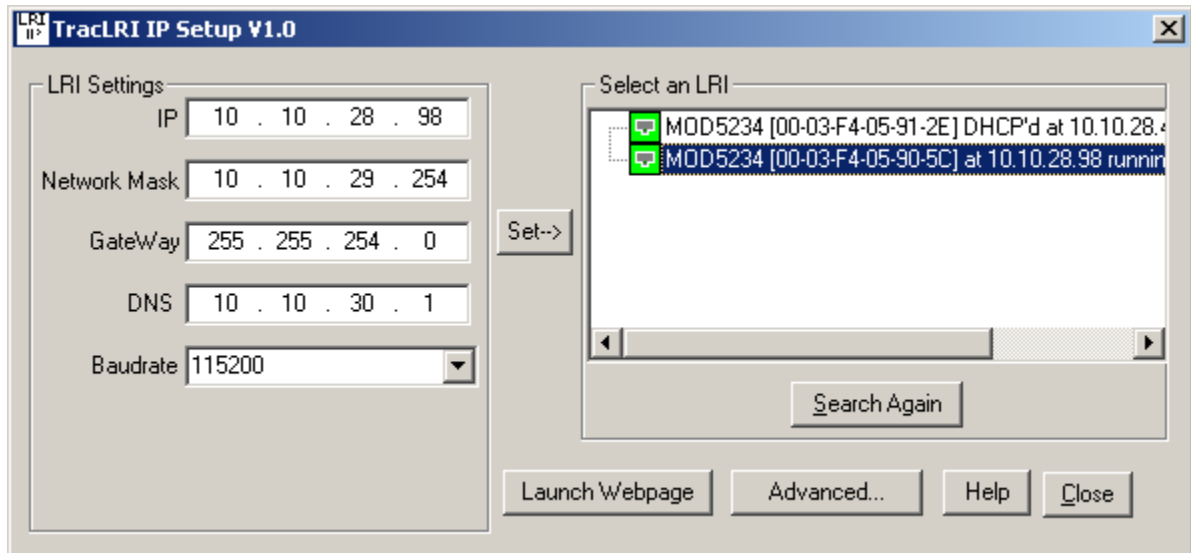
Your antenna is now configured for use with the TracLRI.

4.3 Configuring Network Access to TracLRI via IP Setup Utility

On a PC connected by Ethernet cable to the TracLRI, use the TracLRI IP Setup Utility program to find and configure the TracLRI's IP address. If you do not already have this program, please login to our online Support center at www.mytracstar.com/esupport and browse our Knowledge base or search for it as "TracLRI IP Setup." Save the file to your computer. No install is necessary, though you may need to configure your computer's firewall to enable this application.

1. Locate and open the program by double-clicking the file “**TracLRI IP Setup.exe.**”
When it first opens, the fields may be blank until the program detects a TracLRI.

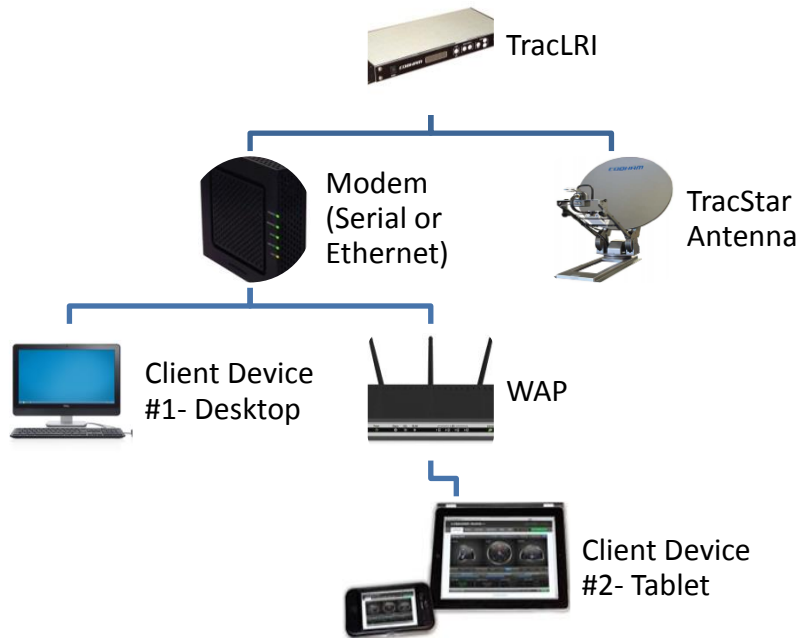
NOTE: In the case where you are not plugged in directly to your TracLRI, your computer must be on the same network segment as the TracLRI in order for the program to detect it; it will not work through any type of network address translation device (NAT).



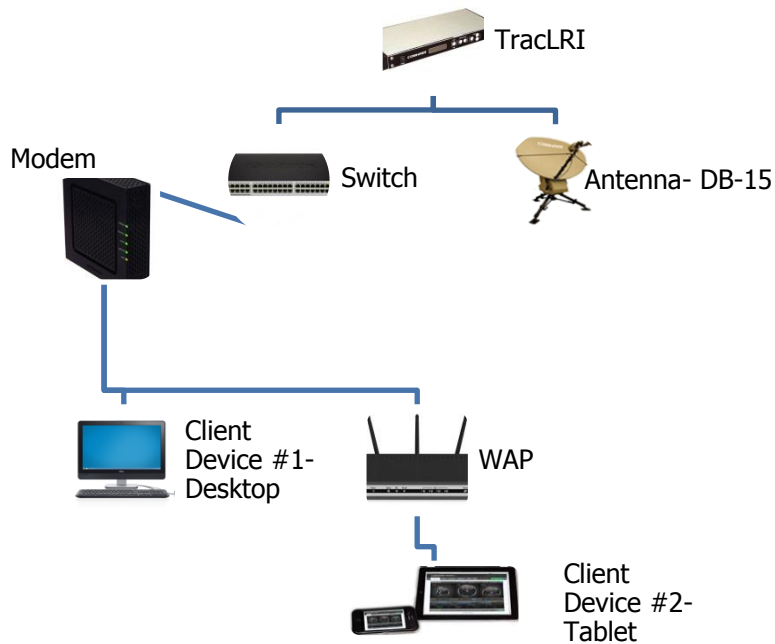
2. To configure your TracLRI with a new address, your computer must be configured with an IP in the same subnet as the TracLRI. For each setting you will change, use your mouse to overwrite or select, then clear and type anew the values as shown above. Finally, click “**Set→**” and the configuration will be applied to the TracLRI. You will see it disappear from the list momentarily while the new configuration is applied. You can also click “**Search again**” after a few seconds to accelerate this process.
3. To have the Utility open the TracLRI web interface via your default web browser and proceed with the next part of the setup process, click “**Launch Webpage.**” Otherwise, you can type in the TracLRI’s IP address directly into your browser’s address bar.

Your TracLRI is now configured for a TCP/IP (v4) address.

4.3.1 Typical Configuration A – Direct connection:



4.3.2 Typical Configuration B – Switched connection



5 TracLRI Profile Configuration

The Profile Page of the TracLRI allows the user to utilize the following tools:

- Creating a new profile, Editing / Deleting a stored profile, Automatic Backup Profile-Switch tool, Import/Export a saved profile, and managing various basic and advanced profile stored parameters.

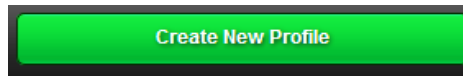
Items in Profile Creation / Edit form include (but are not limited to) those listed in the list below.

- Profile name, modem type, modem connection type and login information, Acquisition Strategy, data satellite name (longitude / frequency band /symbol rate), reference satellite information, Polarity, Polarization Angle Offset, LNB Configuration.

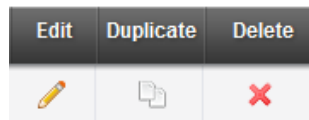
5.1 Managing Profiles

TracLRI automatically starts your profile with the configuration of your currently connected antenna however you may change any of the information as desired.

1. From the Profiles page, click **“Create new Profile”** in the top left hand side of the page, directly below the Message Center ribbon.



2. At any time, you may Edit a profile and re-save the desired changes to it.



5.1.1 Activating Primary Profiles

Utilize the Dashboard loader to activate any profile. User’s may also enable the Profile Switch located on the Profiles tab, which any other profile to be assigned as a specific “Backup” profile to Activate automatically.

To activate any profile from storage:

1. Go the Dashboard and Scroll down to the **“Activate Profile”** tool.



- Open the dropdown list and click upon one of the stored profiles. Then, click the “**Activate**” button.



After activation, the tool will display a confirmation message. In addition, on the Current Profiles menu located on the Profiles page, the activated profile will move to the top of the list and its name will appear in boldface type.



5.1.2 Backup Profile Switch Tool

- Enable the **Profile Switch** tool on the Profile page.
- Select a Backup profile from the storage list.
- Submit the selection by pressing the “**Select Backup Profile**” button.

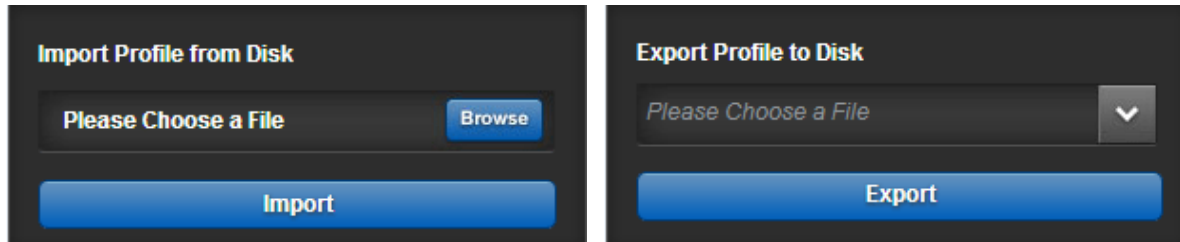


When a secondary profile has been activated, a confirmation message saying “**Backup Profile [NAME] has been Loaded**” will also appear on the Activate Profile tool.

5.1.3 Profile Exchange Tool (“Import/Export Profile Mode”)

To import or export any profile between TracLRI storage and a user’s own local disk:

1. Browse to desired Profile in storage. To browse, click inside the box itself rather than clicking the Browse button (the "Browse" button itself will be utilized in future version of software).
2. Confirm exchange by pressing the **Update** button.



5.2 Creating Profiles

5.2.1 Edit Profiles Names

You will see the page as displayed below, with a default system generated file name. You may change this to any ASCII character filename of your choosing up to 255 characters, including spaces and special characters. We recommend a name which suggests its usage, such as MAINH1ModemDirectPoint.

Use the "**Save Changes**" button to retain any changes made to the profile. The profile itself is stored on the local server. After pressing save, you will receive a confirmation that the profile has been saved—and then you will be prompted to either **Continue Editing** or **Go to Dashboard**.



5.2.2 Edit Satellite Location Parameters

Longitude: The Longitude field is the nominal assigned orbital location of the geosynchronous satellite your network connection is established through, expressed in degrees of longitude, marked as **East** or **West** in the dropdown list options. Input the number and select the appropriate directional value from the dropdown. An example would be for Horizons 2, enter 74.00 West as shown below.

Create New Profile

Basic Profile Information

Profile Name

Longitude West ▼

Satellite Name

Polarity Type Vertical Horizontal No Polarity

Polarization Offset

Network Comm On Off

5.2.3 Edit Satellite Polarity Parameters

Polarity Type: Select the receive polarity of your network. For users with co-polarized feed systems, this will be the same as your transmit polarity. For users with circular polarized systems, or where automatic polarization is not required, select “No Polarity.”

Polarization Offset: If you operate on a network which requires a specific additional offset to the automatic polarity calculation of your antenna, you may enter it here. Valid values are +55 to -55. Further optimization for individual antenna performance is performed from TracLRI’s “Jog Tools” page.

5.2.4 Edit Network Communications Parameters

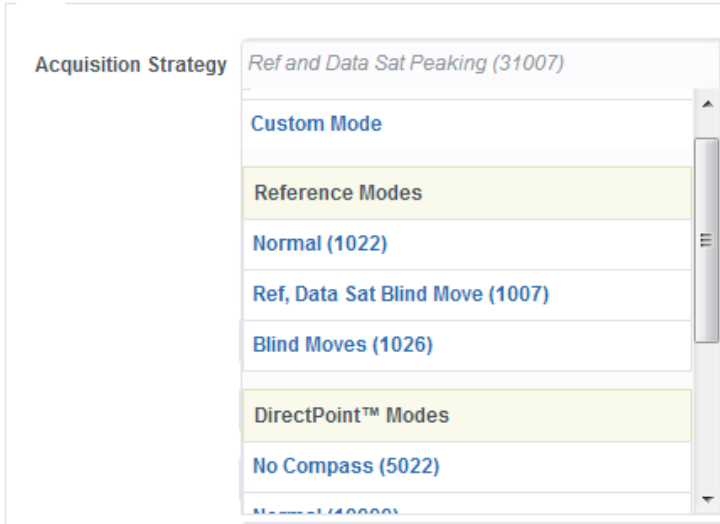
Network Comm: When this optional field is set to “**On**,” the TracLRI checks for IP connectivity by sending ICMP requests to the specified address at the interval configured. This requires connectivity to the satellite modem’s network. As an example, a public IP address is shown below. Alternatively, users may opt for a private IP at the teleport, which is also an effective way to show satellite link connectivity if public internet connection is limited. If this option is set to “**Off**,” the the “Network Comm” status icon will be greyed out on the Status Ribbon.

Network Comm On Off

Network IP Ping Interval seconds

5.2.5 Edit Satellite Acquisition Parameters

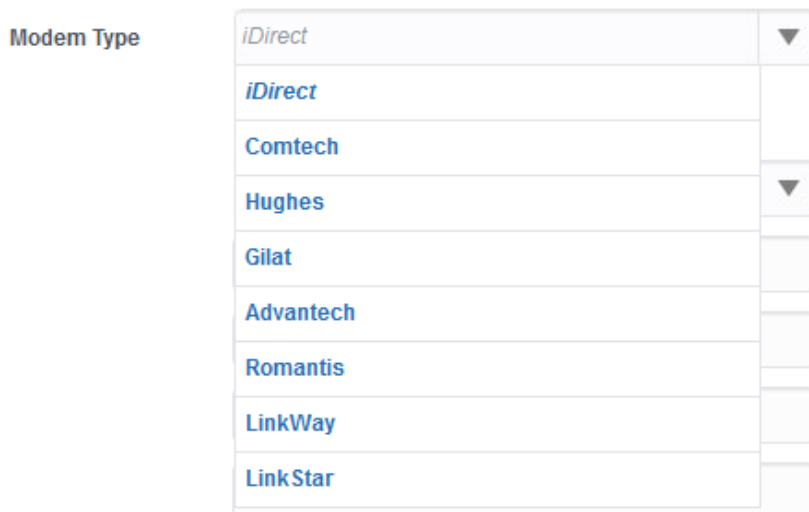
Acquisition Strategy: From this dropdown you will select the method of satellite acquisition. Or, select “**Custom Mode**” if you have been directed (i.e. by Cobham technical support) to enter a “lockword” that is not available on the list.



NOTE: All acquisition strategies are subdivided by family; Reference and DirectPoint modes. The most commonly used methods are predefined in the dropdown, with the standard numeric function (also known as “lockword”) combination displayed in parenthesis to the right, as seen above. Additionally, by selecting “Custom Mode,” users can input their own combination of lockword functions.

5.2.6 Edit Satellite Modem Parameters

Users will encounter various fields of modem configuration parameters, depending on the options selected.



Acquisition Strategy ▼

Modem Type ▼

Connection Type Serial Ethernet

Modem Baud Rate ▼

Modem Baud Rate

- Select Modem Baud Rate
- 2400
- 4800
- 9600
- 19200
- 28800
- 38400
- 57600
- 115200

5.2.7 iDirect Modem Beam Selection

For users with iDirect modems, the Profile’s Satellite Modem includes support for a beam designation. A beam number can be selected from the dropdown in the profile. This feature seamlessly facilitates a *beamswitch* within an iDirect modem. For instance, a user can use the Profile Switch tool that identifies a backup profile that is configured to utilize a different beam than the primary profile. In this instance, the TracLRI will issue the proper commands to the modem to switch from its current beam to another beam. Once the command is issued, the modem will reset and attempt to use the new beam.

Beam Lock

NOTE: The TracLRI must log in to the modem before querying available beams. For initial configuration, you must configure TracLRI with login credentials, then save the profile and allow TracLRI to log into the modem. Once the Modem Comm status light is green, you can edit the profile to show available beams for selection. Then, resave the profile at that point.

In current iteration of software, the “**Lock**” checkbox is not utilized.

5.3 Managing Advanced Profile Information.

5.3.1 Edit Advanced Satellite Frequency Band Parameters

Frequency Band

Frequency Band

LO Frequency .

Freq. Band Begin .

Freq. Band End .

Tuner Bandwidth

LNB Gain

Frequency Band

Frequency Band

Please Select a Frequency Band

Ku Band

USAdvb

Ka Band

C Band

X Band

100

5.3.2 Edit Advanced Satellite Tracking Parameters

Tracking Settings

Step Gain	<input type="text" value="0.00"/>
Tracking Gain	<input type="text" value="15.00"/>
Tracking Delay	<input type="text" value="3"/>
Lock Threshold	<input type="text" value="7.50"/>

5.3.3 Edit Advanced Satellite Scan Settings

Scan Settings

Variable Scan	<input type="text" value="20.00"/>
Az. Scan Width	<input type="text" value="4000.00"/>
El. Scan Width	<input type="text" value="60.00"/>

5.3.4 Edit Beacon Settings Parameters

Beacon Settings

Frequency Scan	<input type="text" value="0.00"/>
Attenuation	<input type="text" value="0.00"/>
Beacon Receiver	<input type="text" value="None"/> ▼
Baud Rate	<input type="text" value="9600"/>

Beacon Receiver None ▼

Select Beacon Receiver

None

ASC350

Novella

SSC3430

5.3.5 Edit Advanced Data Satellite Parameters

Data Satellite Config

Satellite F1 Freq.

Satellite F2 Freq.

Sat. Symbol Rate

5.3.6 Edit Reference Satellite Parameters

Reference Satellite

Primary

Satellite Longitude West ▼

Satellite Name

Satellite F1 Freq.

Satellite F2 Freq.

Sat. Symbol Rate

Secondary

Satellite Longitude West ▼

Satellite Name

Satellite F1 Freq.

Satellite F2 Freq.

Sat. Symbol Rate

6 Advanced Operations

The following advanced operations are covered in this chapter:

- IP Address Configuration
- Manual GPS Override
- Manual Compass Override
- Jog Tools Operations
- Diagnostic Mode Operations
- Updating TracLRI Software

6.1 IP Address Configuration

On the Setup page, utilize the IP Configuration tool to configure your networking preferences.

IP Configuration

LRI IP Address	65.104.194.148
Subnet Mask	65.104.194.145
Gateway	255.255.255.249
DNS	0.0.0.0
Host Name	LRI912E

DHCP Enable

Save Changes

6.1.1 Host Name ("DHCP Mode")

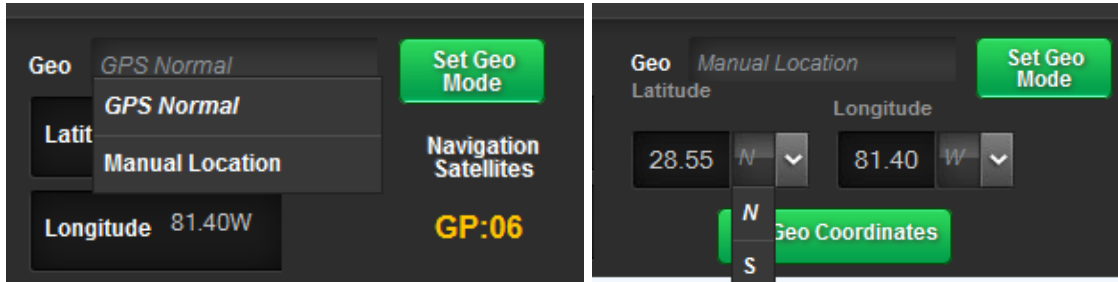
When DHCP is enabled, the name that is shown in the Setup page will be registered in the DHCP/DNS servers and also with Netbios in Microsoft networks.

- To access the unit in DHCP mode, you can alternatively type the **Host Name** in the WEB browser.

If DHCP is disabled and if a valid static IP address is configured, the **Host Name** will be registered only as a Netbios name (MS style).

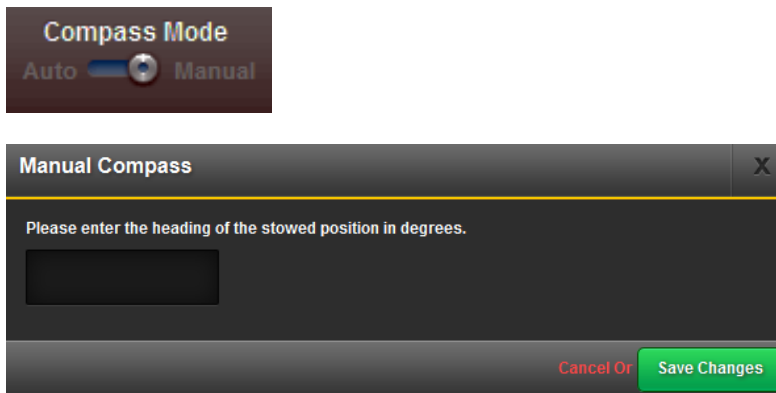
6.2 Manual Geo-Location Override

First, choose “Manual Location” from the Mode Menu, and click “Set Geo Mode” button to confirm the operation. Then enter the location coordinates, then click the “Set Geo Coordinates” button to send the command to the system.



6.3 Manual Compass Override (“Enter Heading” Mode)

Enter heading of the stowed position in degrees, then click **Save Changes**.



6.4 Advanced Manual Jog Tools

The Jog Tools page of the TracLRI allows the user to perform the numerous functions:

- Automatic Compass Calibration and electronic clinometer allow for very quick manual acquisition
- Complete real-time feedback from sensors and tuner for positive lock
- Drive-to-position command (in degrees)
- Conduct manually peaking and cross-polarization alignment
- “Gross” & “fine” step-size adjustment options and tracking display of movements made

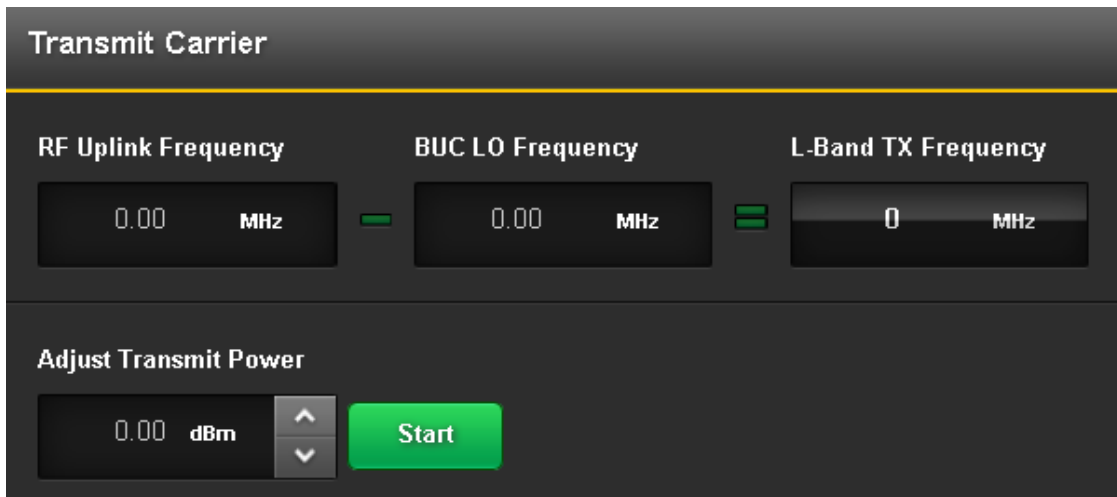
Similar functions are available within the ACU rack-mount menu structure; see *TracStar Series Antennas Operations Instructions v4.1* for further information.

Function Description	Display Element
<p>The Start and Stop button will enter and exit the system from Jog mode. When the system is in Jog mode, the green "Start" button changes to a red "Stop" button, and the word "Jogging" appears in the Control Status window.</p>	
<p>The Select Increment tool allows user to set the step size of movements achieved when clicking on Jog buttons. Available increments: 0.1°, 0.2°, 0.5°, 1.0°</p> <p>The Azimuth and Elevation axes each have two jog buttons:</p> <p>Elevation:</p> <ol style="list-style-type: none"> Up Down <p>Azimuth (Az):</p> <ol style="list-style-type: none"> CounterClockwise (CCW) Clockwise (CW) <p>The Pol axis can be jogged using the CW or CCW buttons, which is governed by the increment selected above. Alternatively, the Pol can be rotated 90-degrees CW and CCW.</p>	
<p>The Drive to a Position tool allows users to manually input a specific position into each axis and submit them to ACU. Pressing the Drive to a Position button triggers a popup window. Manual inputs (Az, El, Pol) within the window can either be sent or Canceled prior to sending.</p>	

<p>The Degrees Moved tool displays the degrees of Az/EI/Pol adjustments that have been made since entering Jog mode, along with an icon showing the overall direction of movement in each axis.</p>	
<p>As manual jog movements are made, the calculated Pol Offset Value is displayed in a separate window.</p>	
<p>This PO value will not become permanent unless it is saved using the Save Current Pol Offset button.</p>	
<p>The Return to Starting Position button will return the antenna to the starting position where it was at beginning of Jog session.</p>	

6.4.1 Start Transmit Carrier

This feature is specific to iDirect Modems. In the current iteration of software, this tool is under construction—therefore, utilization is not recommended at this time.

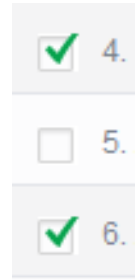


6.5 Advanced Diagnostic Tools

The **Diagnostics page** of the TracLRI allows the user to view numerous operational parameters in a single glance, all of which are updated in real-time from the ACU. Similar functions are available within the ACU menu structure.

By using the Preset dropdown list, several **Default** selections of preset parameters are available for reference. To toggle on and off the display of specific parameters, use the numbered checkboxes located beside all items within the menu structure. Up to five (5) can be selected for each axis.

A custom **Session** that only displays a user’s desired view of parameters can be initiated at any time. The custom selections remain available for display again, even if a user navigates away from the Diagnostics page by choosing “**Session**” in the Preset dropdown list.

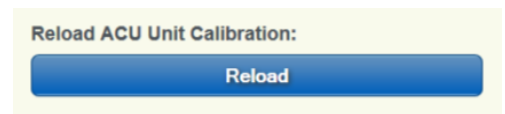
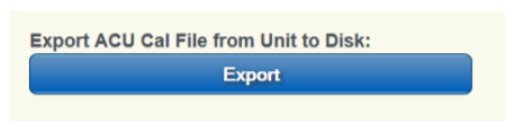
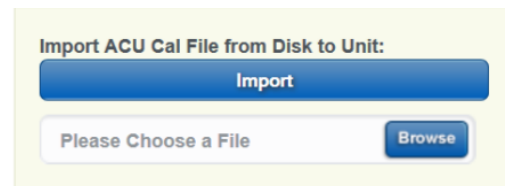


6.5.1 Recovery Tools (“Import/Export Calibration Mode”)

A Calibration file is information regarding the factory settings for an antenna system. TracLRI can facilitate the transfer of a calibration file to and from the ACU on the antenna. You may also reload the current calibration file.

NOTE: The ACU is capable of storing only one calibration at a time, so be advised that using the Import function will overwrite the calibration file that resides on the ACU at that time. Damage to the antenna caused by use of this function, except under the guidance of TracStar support personnel, voids the warranty.

- To browse for a file to **Import**, click inside the box itself rather than clicking the Browse button (the “Browse” button itself will be utilized in future version of software).
- To export the current calibration to a local disk, click the **Export** button.
- To reload the current calibration, simply click the **Reload** button.



7 Software Management TracLRI System

- 7.1 TracLRI Firmware Update
- 8.1 TracStar ACU Firmware Update
- 8.2 Update to TracStar Monitor 2.4

Precautions: **RF Precautions**

No RF precautions should be necessary as this procedure can be executed with the antenna stowed, in idle mode not pointing, or acquired.

Process Precautions

End user must be careful to follow all steps in order and not interrupt the file upload until fully completed or risk corrupting the update and making your antenna inoperable!

Skills Required:

The following steps require the technician to be familiar with the Antenna's ACU Interface, have adequate understanding of how to use HyperTerminal or similar terminal communications program, or be able to follow instructions over the phone from TracStar support personnel.

Tools Required:

- ✓ Computer with DB-9 Serial communications port (or USB adaptor)
- ✓ TracStar Cobham provided Software Utility program
- ✓ Standard 9-pin (DB-9 RS232) Male- Female serial cable

Procedure:

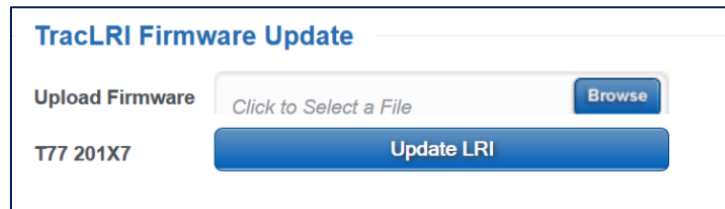
1. Determine if a firmware update is required.
2. Save the attached .hex file, .s19 file, and .zip to your local drive.
3. To use the utility, extract to a folder and then install the software.

7.1 Updating TracLRI Software

This section explains two methods for updating the firmware on the TracLRI. Using these tools assumes the user has updated firmware available in storage on a local disk or network. One method is for using the internal TracLRI Firmware Update tool on the LRI's Setup page, and the other method requires the external TracStar Software Update Utility using a Windows Operating System. This second method is only required for older, beta-test versions of the LRI software that did not yet have access to the TracLRI Firmware Update tool functionality.

Method 1 – updating the TracLRI software via internal TracLRI Firmware Update tool:

1. Navigate to the TracLRI's Setup page.
2. Locate the TracLRI Firmware Update tool seen below.



3. Click the "Browse" button and navigate through your local storage to the desired firmware update file.
4. Once the file is selected, click the "Update LRI" button. The update will commence.

Method 2 – updating the TracLRI Software via external TracStar Software Update Utility:

1. Power on the TracLRI, and verify that the Green LED on outside of the TracLRI illuminates.
2. On a PC running Windows OS, go to **Control Panel** and then select **Network and Sharing Center. Fig. 1**

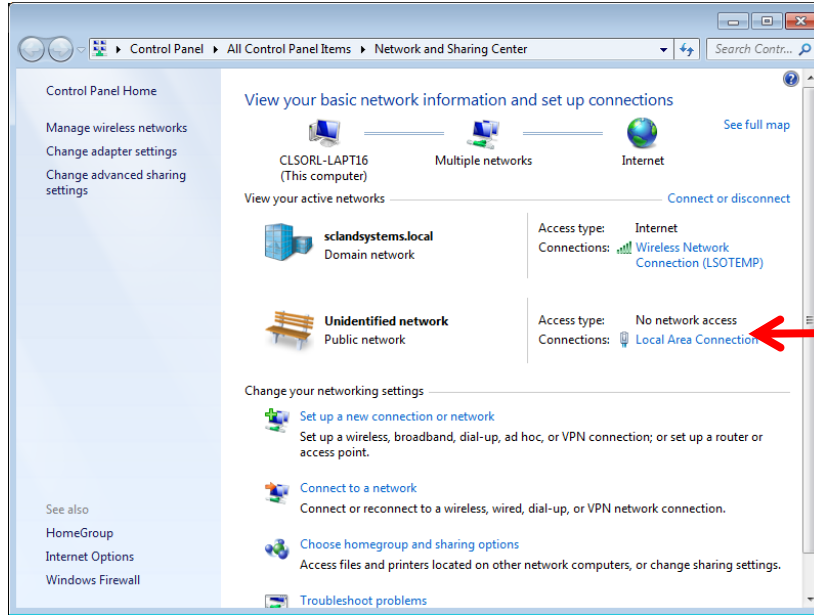


Figure 1. Network Configuration Window

3. Look on the right hand side, in the "Active Networks" section and verify that a new LAN connection exists.
4. Open the TracLRI Setup program and verify that the TracLRI appears in the "Select an LRI" window on the right-hand side of screen. **Fig.2**

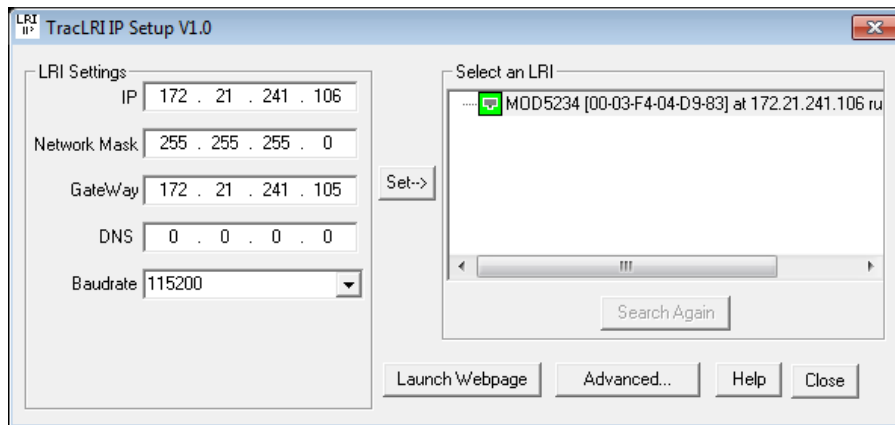


Figure 2. TracLRI Setup Window

5. Write down the TracLRI "IP" address on the first line on the left side of the screen.
6. Return to the Network connections window **Fig. 1** and click on the LAN connection and then click the **Properties** button in the status window. **Fig. 3**

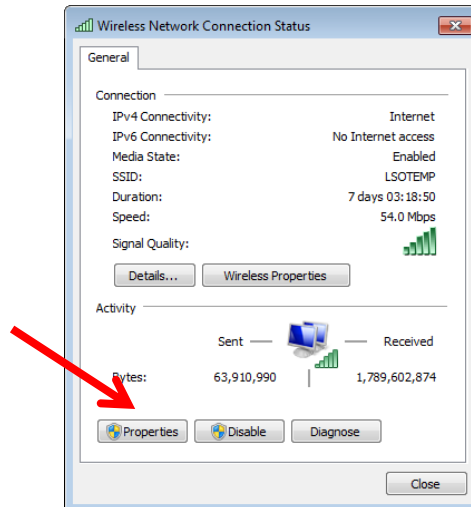


Figure 3. Connection Status Window

7. Click to highlight **IPv4** protocol, and then click the **Properties** button. **Fig. 4**

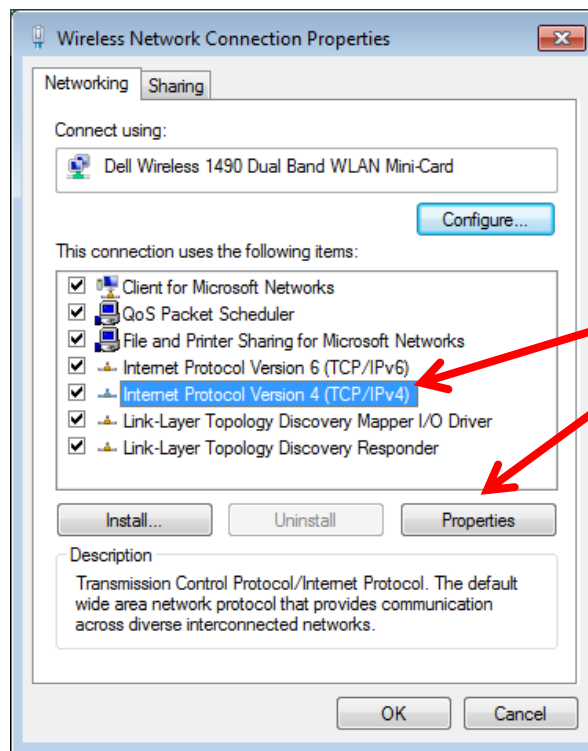


Figure 4. Connection Properties

8. Configure your IP settings based on the TracLRI IP address that you recorded in step 6, using the TracLRI IP address as the Default Gateway, and make the IP address for the PC one number higher than the Gateway as shown below, then click **OK**. **Fig. 5**

NOTE: Enter 4.2.2.1 for the DNS server address.

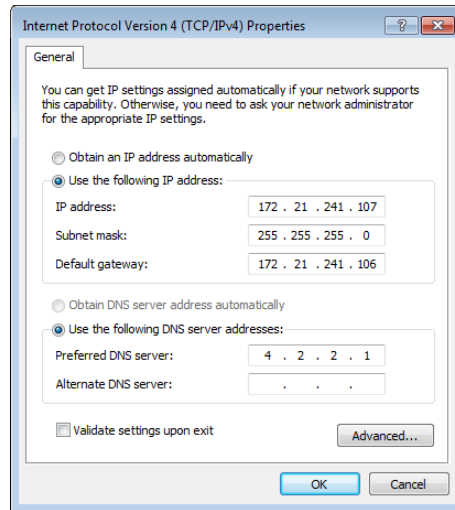


Figure 5. TCP/IP Properties

9. Exit out of the networking windows, and open the TracLRI Updater program. **Fig. 6**

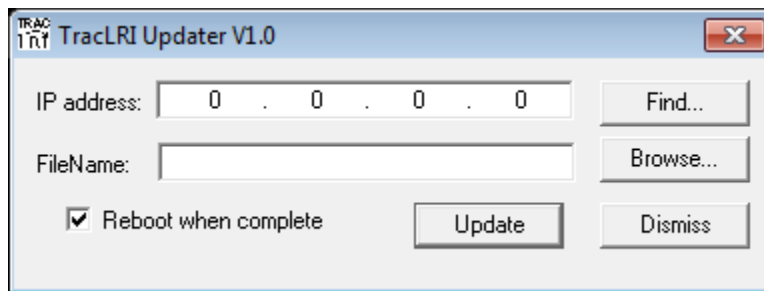


Figure 6. TracLRI Updater Window

10. Select the **"FIND..."** button to select the TracLRI to program.
11. An TracLRI with its machine number and IP address should appear in the "FIND" window after a short search. **Fig. 7**

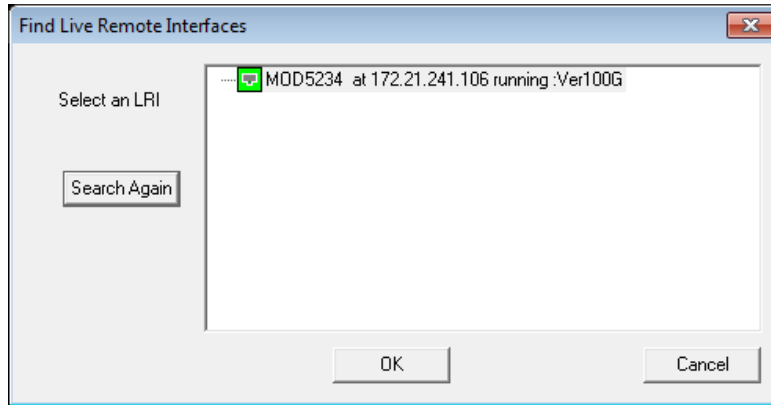


Figure 7. Find LRI Window

12. Select the TracLRI to program and click **OK**.
13. At this point the current IP address assigned by DHCP should appear in the IP Address line. **Fig.8**

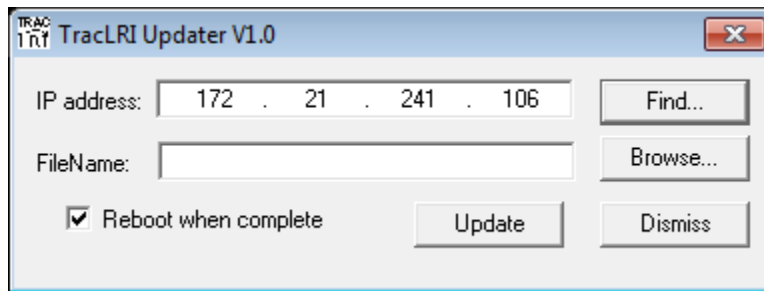


Figure 8. Updater w/ TracLRI selected

14. Now select the “**Browse...**” button to choose the version of software you wish to load.
15. Locate the appropriate “xxxxxx.S19 file on the computer to load, select it and click **OPEN**.

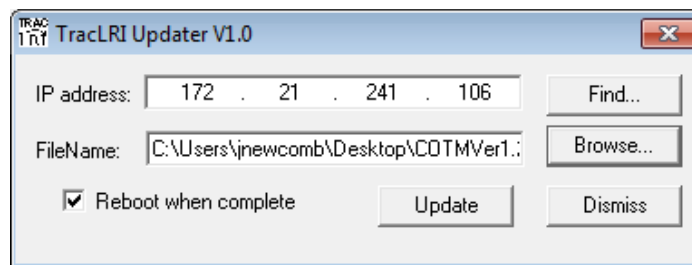


Figure 9. Updater w/ File selected

16. The file location should have appeared in the “FileName” line of the Updater window as shown above. **Fig. 9**

17. Now click the **"Update"** button and the load should begin. A bar graph will display the progress. Once the load is complete the following screen should appear after a few seconds. **Fig. 10**

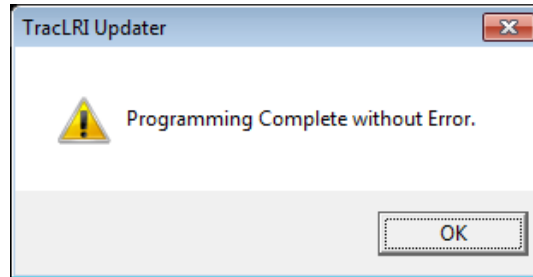


Figure 10. Successful Load Message

NOTE: If an error message occurs check your connections and IP address configuration for the TracLRI you are trying to update.

8 TracStar ACU Firmware Software Loading Utility Procedure

This chapter describes in step-by-step detail how to update the operating firmware on a TracStar antenna. This procedure is written based on current revision systems (2.xx) with backwards compatible details in brackets [] where differs for older versions.

Precautions: RF Precautions

No RF precautions should be necessary as this procedure can be executed with the antenna stowed, in idle mode not pointing, or acquired.

Process Precautions

End user must be careful to follow all steps in order and not interrupt the file upload until fully completed or risk corrupting the update and making your antenna inoperable!

Skills Required:

The following steps require the technician to be familiar with the Antenna's ACU Interface, have adequate understanding of how to use HyperTerminal or similar terminal communications program, or be able to follow instructions over the phone from TracStar support personnel.

Tools Required:

- Computer with DB-9 Serial communications port (or USB adaptor)
- TracStar Cobham provided Software Utility program
- Standard 9-pin (DB-9 RS232) Male- Female serial cable

Procedure:

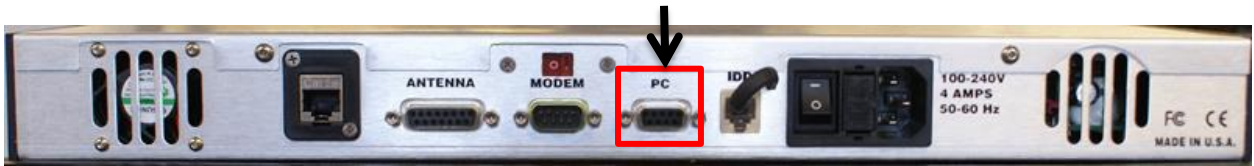
1. Save the attached .hex file, .s19 file, and .zip to your local drive.
2. To use the utility, extract to a folder and then install the software.

NOTE: If your system is already running software 26321G or higher you can skip to section 8.2.

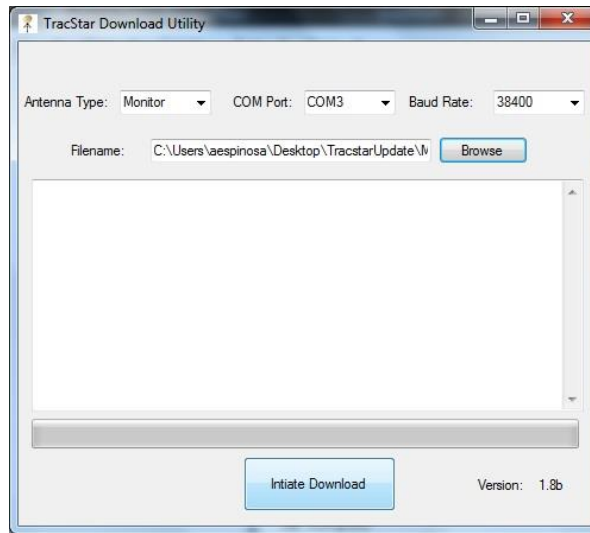
If you are running 223XX software you can also skip to section 8.2, you may update the monitor if you choose to; however, it is not needed for these versions. **WARNING: DO NOT LOAD MAIN2.63 TO A SYSTEM RUNNING 2.23, 2.29, 2.64).**

8.1 Updating Monitor Version To 2.4

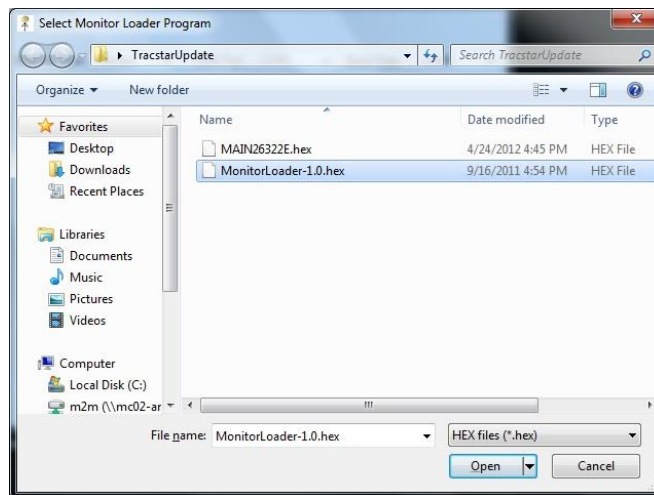
1. Turn the power off on the controller.
2. Connect the serial cable from your computer to the PC port on the back of the ACU.



3. Open the download utility program. Under the Antenna Type menu select the **"Monitor"** option. Then select your COM Port and set the Baud Rate to 38400.
4. Then click on the **Browse** button and select the **"Mon24.s19"** file.



5. Click on the **"Initiate Download"** button and you see a window to **"Select Monitor Loader Program."** Then Select the file and press "Open."

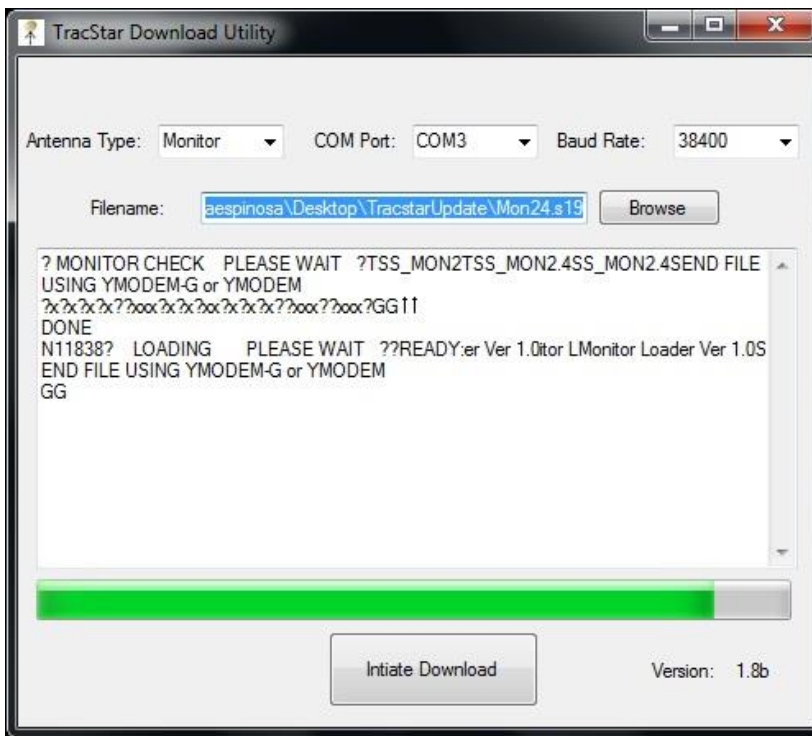


8. On the controller press the MAIN x2 to the **TECH SETUP** menu and set the code to "13" using the (+)/(-) buttons and press **ENTER**.

- Press (→) x2 to the **SET TEST** menu and press the (←) once to select the "LOAD MONITOR" option.
- Press **ENTER** and then the (+), you should see a **RUN NOW** in the top right and press **ENTER** again.

The program will load another small file and you will get pop up with "Software Load Completed!!!"

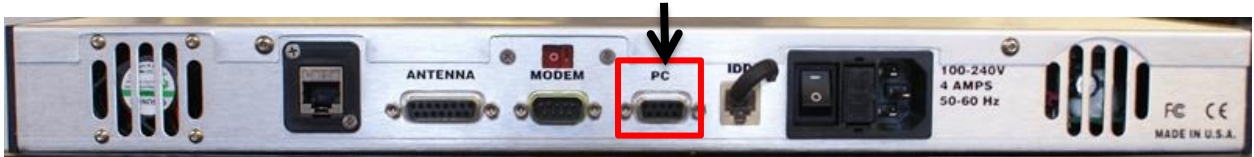
The controller will reboot and come back to the **READY** screen.



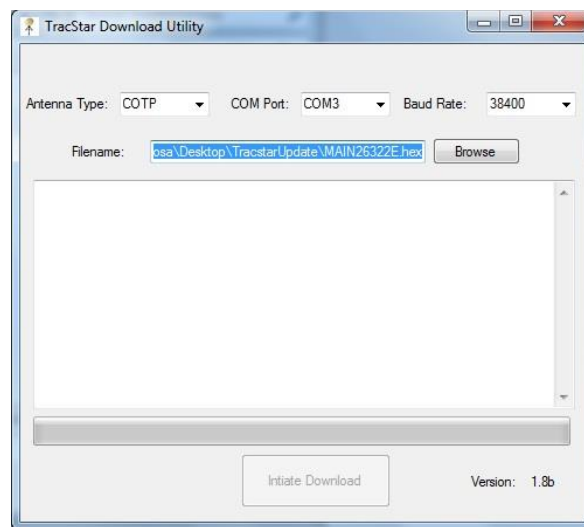
NOTE: You have successfully updated the monitor to version 2.4, now proceed to load the system software file. Power off controller before proceeding to the next step.

8.2 Updating System Software

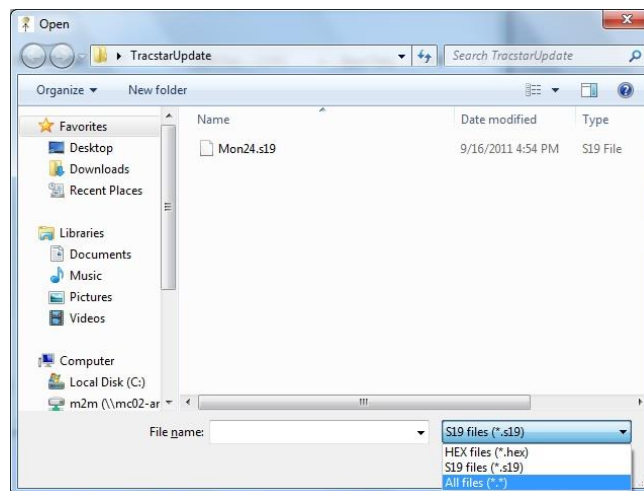
1. Turn the power off on the controller.
2. Connect the serial cable from your computer to the PC port on the back of the ACU.



3. Open the download utility program. Under the Antenna Type menu select the "COTP" option. Then select your COM Port and set the Baud Rate to 38400. Then click on the Browse button and select the "MAIN2XXXX.hex" file.



NOTE: If you cannot see the file you may need to change the file type selection to All files (*.*)



6. Press the **MAIN** to the **USER SETUP** screen and verify that the controller displays the software version that you just loaded.
7. Verify and make all the changes necessary after the update.
8. Save the settings.
 - a. Press "**MAIN**" to "**TECH SETUP**" and set the code to "**13**" using the **(+)**/**(-)** buttons and the press **Enter**.
 - b. Press **(→)** 2 times to the "**SET TEST**" screen.
 - c. Press **(-)** 2 times to the "**EPP SAVE**" option.
 - d. Press "**Enter**" and you will see a **CANCEL** on the top right of the screen, press **(+)** and it will change to RUN NOW and press **Enter** again.
 - e. The process will take 10-15 seconds and it will show "**OPER DONE**" when finished.
 - f. Press "**MAIN**" back to the **READY** screen. You may now continue with your normal operation.

8.3 Long-Term Calibration Save (coming soon)

Save Settings to Antenna's Flash

Save

9 Troubleshooting

Emergency / 24 Hour Support

Emergency and critical support specialists answer the phones 24/7.

1-407-650-9054 (8AM-5PM East Coast Time) | 1-888-650-9054 (After Hours)

9.1 Performance Tips

If after a number of unsuccessful scans or several minutes have passed and no "LOCK" indication is present on the display:

- Turn off power and check cable and power connections to all equipment, being careful to observe all warnings. Ensure the satellite modem is connected properly. Reapply Power.
- Ensure there is a clear, unobstructed view towards the equator relative to the antenna's position.
- Check leveling of antenna. Auto-correction software will accommodate up to $\pm 10^\circ$ of error in the mounting plane of the antenna. Begin the process again.
- If the controller display shows "LOCK" and baseband equipment, such as Voice of IP, is available and Internet access is not available, check IP addressing of your computer and set to "DHCP."

