

Installation and Operation Manual

QTrack™ Antenna System



Quasonix, Inc.
6025 Schumacher Park Dr.
West Chester, OH 45069
17 October 2022

***** Preliminary 0.15 *****

Specifications subject to change without notice.

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Table of Contents

1	Introduction	1
1.1	Description	1
1.2	Nomenclature	2
1.2.1	Options and Accessories.....	2
1.2.2	Standard Package Contents	3
2	Specifications.....	4
3	Installation Instructions	6
3.1	Mechanical.....	6
3.1.1	System Configuration	6
3.1.2	2U Rack-Mount Controller.....	6
3.2	Thermal.....	7
3.3	Electrical	7
3.3.1	2U Controller Rear Panel Connections	8
4	Operating Instructions.....	9
4.1	Local Antenna Control Unit (ACU) Operation.....	9
4.1.1	Remote ACU Operation	9
4.1.1.1	Remote Access Set Up, LAN.....	9
4.1.1.2	Remote Access Set Up, WAN	9
4.2	ACU Main Operations Indicators and Manual Control	10
4.2.1	ACU Menu Bar	11
4.2.1.1	Logging	11
4.2.1.2	Status.....	12
4.2.1.3	Settings	13
4.2.1.3.1	This Computer	14
4.2.1.3.2	ACU	14
4.2.1.3.3	Calibration.....	14
4.2.1.4	Tools	14
4.2.1.5	Help.....	15

4.2.2	Axis Control	16
4.2.3	Camera Control	18
4.3	System Tracking	18
4.3.1	Basic Tracking	18
4.3.2	Target Dynamics	19
4.3.3	Multipath Clipping Angle (MPC)	19
4.3.4	Acquire	20
4.3.5	Search	21
4.3.6	Designate Mode	21
4.3.6.1	Immediate Designate Mode	22
4.3.6.2	Program Designate Mode	22
4.3.7	True North Calibration	23
4.4	Slaving and Burn File Operation.....	24
4.5	Basic GUI Tool Set Functions.....	24
4.5.1	Logging.....	25
4.5.2	Hand Wheel Test.....	26
4.5.3	Joystick Test.....	27
5	Maintenance Instructions.....	28
6	Product Warranty	29
7	Technical Support and RMA Requests.....	30
8	Appendix A – Transmitter Control.....	31
9	Appendix B – Acronym List.....	33

List of Figures

Figure 1: QTrack™ Antenna System Part Number Construction	2
Figure 2: Typical System Configuration, Local Operation	6
Figure 3: Mechanical Drawing – 2U Front View.....	7

Figure 4: Mechanical Drawing – 2U Back View	7
Figure 5: Mechanical Drawing – 2U Top View	7
Figure 6: 2U Front Panel	7
Figure 7: 2U Rear Panel	8
Figure 8: Typical System Configuration, Remote Operation—LAN Access	9
Figure 9: Typical System Configuration, Remote Operation—WAN Access	10
Figure 10: QTrack ACU Desktop Icon	11
Figure 11: QTrack ACU Graphical User Interface	11
Figure 12: Menu Bar, Logging Icon	12
Figure 13: Menu Bar, Logging Enabled	12
Figure 14: Menu Bar, Status Icon	12
Figure 15: Status Window	13
Figure 16: Menu Bar, Settings Icon	13
Figure 17: Settings Window	14
Figure 18: Menu Bar, Tools Icon	15
Figure 19: Tools Window	15
Figure 20: Menu Bar, Help Icon	15
Figure 21: Help Window <TBA>	15
Figure 22: Axis Control Window, Red Servo Button	16
Figure 23: Axis Control Window, Servo Button Changed to Green	16
Figure 24: Elevation, Tracking Error, Azimuth Windows	17
Figure 25: Axis Control Window, Manual Mode Buttons	17
Figure 26: Camera Control Window	18
Figure 27: Track Settings Window	19
Figure 28: AGC Window	20
Figure 29: Acquire Settings Window	20
Figure 30: Search Settings Window	21
Figure 31: Axis Control Window, Designate Button	22
Figure 32: Axis Control Window	22
Figure 33: Settings Window	23
Figure 34: True North Window	24
Figure 35: Tools Window	25
Figure 36: Logging Window	25
Figure 37: Elevation and Azimuth Input Control Windows	26
Figure 38: Hand Wheel Test Window	26
Figure 39: Joystick Test Window	27
Figure 40: QTrack ACU Graphical User Interface	31

Figure 41: Tx Control Window 31

Figure 42: Transmitter Window, Tx Settings Tab..... 32

List of Tables

Table 1: Model Configuration Example..... 2

Table 2: 2U Rear Panel Connectors 8

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1 Introduction

1.1 Description

This document describes the installation and operation of the Quasonix QTrack™ Antenna System and is updated to match RDMS™ System Version 19.3. The QTrack™ antenna is enhanced by our industry-leading innovations, including our ultra-fast electronic scanning, enhanced system status graphics, and intuitive user interface. The standard QTrack Antenna System includes:

Dual Axis Pedestal Assembly

- Dual-axis positioner, slip ring, and two channel rotary joint assembly

SCM Antenna Assembly

- SCM antenna, with LHCP and RHCP outputs capable of operation at any or all of the following bands:
1435.5 MHz to 1534.5 MHz
1750.0 MHz to 1850.0 MHz
2200.5 MHz to 2394.5 MHz
4400.0 MHz to 5150.0 MHz
(Extended operating frequencies available)
- A two-by-two antenna array providing dual axis tracking capability
- An RF assembly integrated behind the antenna array containing:
 - Tracking hybrid assemblies
 - Band pass filters for each polarization
 - Low noise RF preamplifiers for each polarization

Rack Mounted 2U Control Unit

- Ethernet control and status
- HDMI video port for interfacing to HDMI monitor (available accessory bundle)
- Front and rear panel USB ports for connecting keyboard and mouse (available accessory bundle)

System Cable Set (Length to be specified by Customer)

- Two LMR-400 RF cables
- One Control umbilical cable

Note: Cables can be any length between 25 and 250 feet, as defined by the customer.

The QTrack™ Antenna System is manufactured by:

Quasonix, Inc.
6025 Schumacher Park Drive
West Chester, OH 45069
CAGE code: 3CJA9

1.2 Nomenclature

The QTrack™ Antenna System is available in a number of variations, depending on the options specified at the time of order. The features and modes installed in each unit are identified in the model number, as depicted in Figure 1.

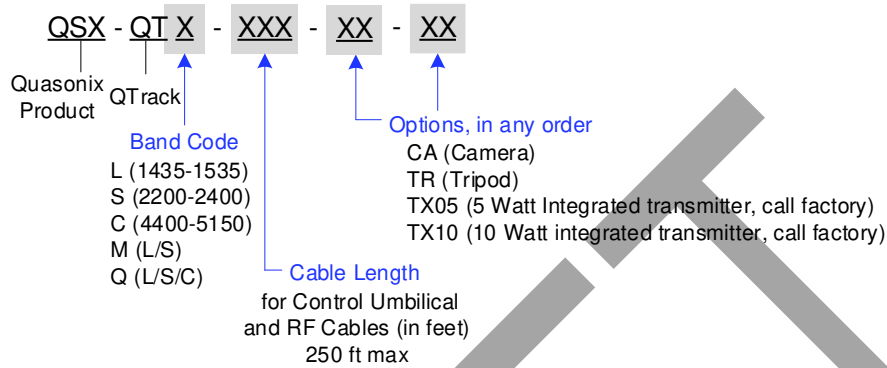


Figure 1: QTrack™ Antenna System Part Number Construction

For example, model number QSX-QTM-050-CA-TR defines a unit configured as shown in Table 1.

Table 1: Model Configuration Example

Identifiers	Description
QSX	Quasonix product
QT	QTrack Antenna System
M	L and S bands
050	Cable length for control umbilical and RF cables, in feet (250 ft maximum)
CA	Camera option
TR	Tripod option

Specifications are subject to change. Contact Quasonix for questions regarding your specific system.

1.2.1 Options and Accessories

The available options and accessories include:

CA	Camera
TR	Tripod
TX05	5 Watt Integrated transmitter
TX10	10 Watt Integrated transmitter

QX-AC-HWHEELS	Dual USB hand wheels
QX-AC-KVMKIT	Keyboard, mouse, monitor and monitor rack mounting frame

1.2.2 Standard Package Contents

The contents of the shipment include the following:

- Round antenna
- Dual-Axis positioner
- 2U rack mount controller
- (2) 161005-xxx Coaxial cables
- QC-CBL005-XXX QTrack control umbilical cable

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2 Specifications

Antenna Specifications	
Operating Frequency	1435.0 - 2500.0 MHz continuous 4400.0 - 5250.0 MHz continuous
Polarization	Simultaneous Right Hand and Left Hand Circular
Axial Ratio	2.0 dB maximum
Antenna Type	Electronic Scanning
Array Size (Diameter)	13.25 inches nominal
Weight	< 15 lbs (7 kg)
Antenna Gain (nominal, linear polarized receive, RHCP and LHCP outputs combined)	1435.0 MHz +7.0 dB 2400.0 MHz +10.0 dB 4400.0 MHz +9.0 dB 5250.0 MHz +9.0 dB
Antenna Beamwidth (3 dB) (nominal)	40°
Sidelobes (nominal)	10 dBp
Environmental	
Temperature	Operating -30°C to +55°C Storage -40°C to +71°C
Relative Humidity	Up to 100%, including condensation (radome protected)

Pedestal Specifications	
Type	Elevation/Azimuth
Backlash	≤ 0.2 degrees
Azimuth Velocity	≥ 30°/sec
Azimuth Acceleration	≥ 20°/sec ²
Travel Azimuth	Continuous
Pan Axis Speed/Range	0.005° – 50°/sec, 360° continuous rotation
Tilt Axis Speed/Range	0.005° – 12°/sec at 50 lb-ft, 180° (±90°)
Elevation	-90° to +90° (Software, Electrical, and Mechanical limited provided)
RF Cabling Capability	Two RF channels supporting frequencies through C-band, VSWR 2.0:1 Maximum each RF channel

Weight	25 lbs nominal
Power Requirements	115 VAC, 60 Hz, 1Ø
<i>Environmental</i>	
Operating Temperature	-30°C to +55°C
Storage Temperature	-40°C to +71°C
Relative Humidity	Up to 100%, including condensation (radome protected)
Rain	Up to 4 inches per hour
Ice	1/2 inch, Radial
Wind	Operating 50 MPH (80 Km/Hr), Gusting to 65 MPH (105 Km/Hr), Survival at 120 MPH (193 Km/Hr)

3 Installation Instructions

3.1 Mechanical

3.1.1 System Configuration

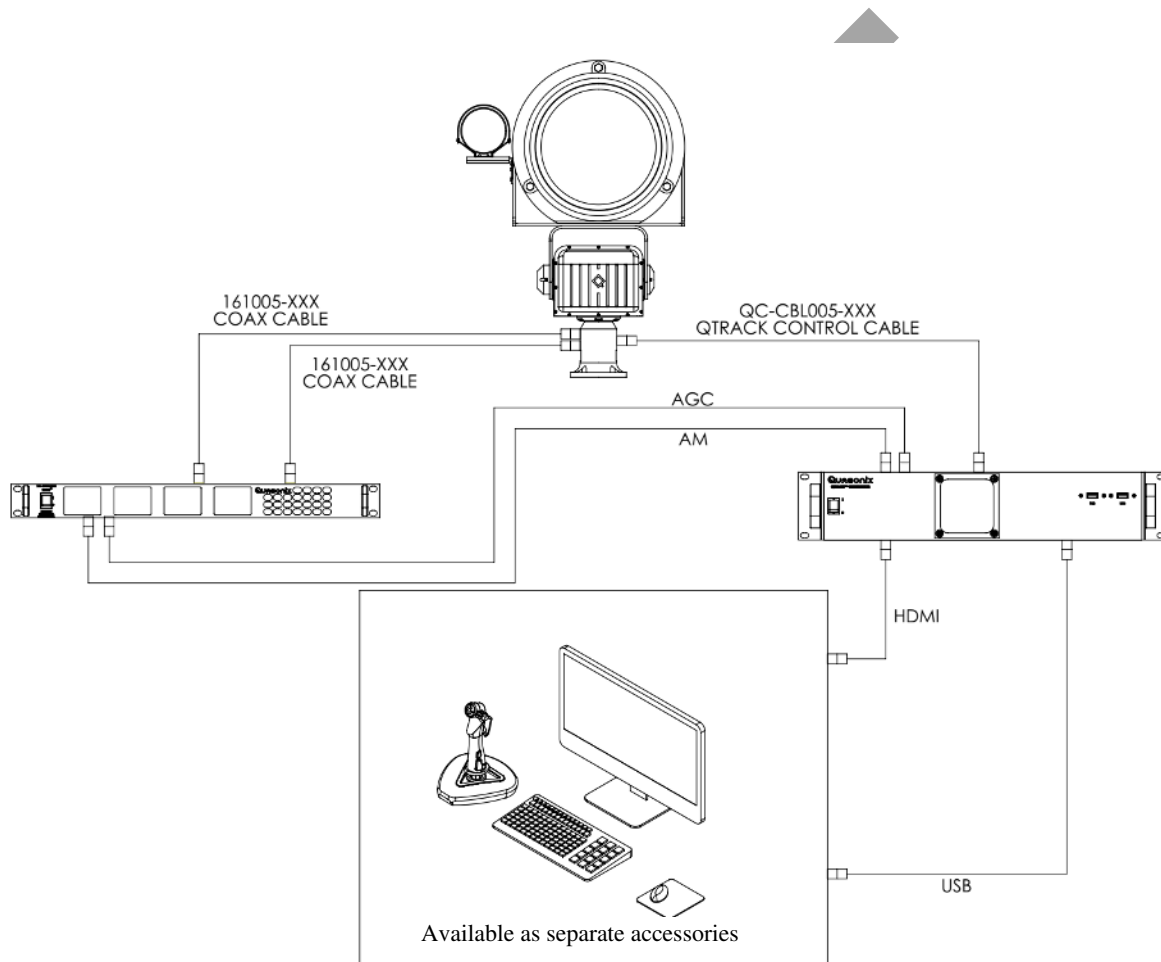


Figure 2: Typical System Configuration, Local Operation

3.1.2 2U Rack-Mount Controller

The 2U QTrack™ Antenna Controller enclosure fits in a standard 19" rack, occupying just 2U of rack space. Mechanical layouts are provided in [Figure](#).

<<subject to change—check with Frank>>

Figure 3: Mechanical Drawing – 2U Front View

Figure 4: Mechanical Drawing – 2U Back View

Figure 5: Mechanical Drawing – 2U Top View

3.2 Thermal

The storage temperature of the QTrack™ Antenna System is rated for -40°C to +71°C, while the operating temperature is rated for -30°C to +55°C. It is recommended that the unit be kept in a temperature controlled environment to minimize the risk of operating (or storing) outside the ranges specified.

The 2U Controller features cooling vents on the back of its aluminum chassis. These vents must be kept entirely unobstructed in order to allow for maximum airflow through the system. Whenever feasible, it is helpful to leave an open rack space above and below the 2U Controller for additional heat dissipation.

3.3 Electrical

Two USB ports are located on the front panel along with the power switch, as shown in Figure 6. All 2U Controller electrical connections are located on the rear panel, as shown in Figure 7.



Figure 6: 2U Front Panel

3.3.1 2U Controller Rear Panel Connections

Rear panel connectors are the same for all 2U Controllers. Connectors are present whether the feature is ordered or not. The electrical interface connectors are shown in Figure 7.



Figure 7: 2U Rear Panel

Functional descriptions and electrical characteristics for each connector located on the rear panel are described in Table 2.

Table 2: 2U Rear Panel Connectors

Name	Description
USB	USB-A 3.0 (blue connector) for local mouse and keyboard
PC HDMI	Local connection to monitor for GUI
Positioner	D38999/20WJ43SN multi-pin connector for control umbilical
USB	USB-A 2.0 (white connector) for local mouse and keyboard
Camera HDMI	Video connection for integrated camera (CA option)
VGA	Female HD-15, Standard VGA video
Communication	Male DB-9, RS-232 comm port
Ethernet	RJ-45, Enables network access
AGC In	BNC, 1 kOhm, AGC feedback from receiver
AM In	BNC, 75 Ohm, AM feedback from receiver
TX Clock In	BNC, 75 Ohm TTL, Clock input for optional integrated uplink transmitter
TX Data In	BNC, 75 Ohm TTL, Data input for optional integrated uplink transmitter
Power (far right side)	IEC-320-C14, Supplies AC power to the unit, 100 to 240 VAC, 50/60 Hz

4 Operating Instructions

4.1 Local Antenna Control Unit (ACU) Operation

The QTrack™ Antenna System is operated via the PC Interface. With a keyboard, monitor, and mouse, users may connect to the ACU and run the QTrack™ client software which is located on the desktop.

4.1.1 Remote ACU Operation

The Local ACU and connected QTrack™ System can be controlled remotely by installing the client software on the remotest device and connecting to the ACU through an Ethernet connection. Figure 8 and Figure 9 show the connections necessary for remote access.

4.1.1.1 Remote Access Set Up, LAN

1. Set remote PC IP address to 10.1.1.11.
2. Install client software on a remote PC.
3. Open QTrack ACU desktop icon on remote PC. ACU should automatically connect when the application opens.
4. A small window displays while attempting to connect. If connection never occurs, click on the ACU Settings button, and ensure QTrack server IP is set to 10.1.1.10.

When connected, full access to ACU functionality should be available from the remote PC.

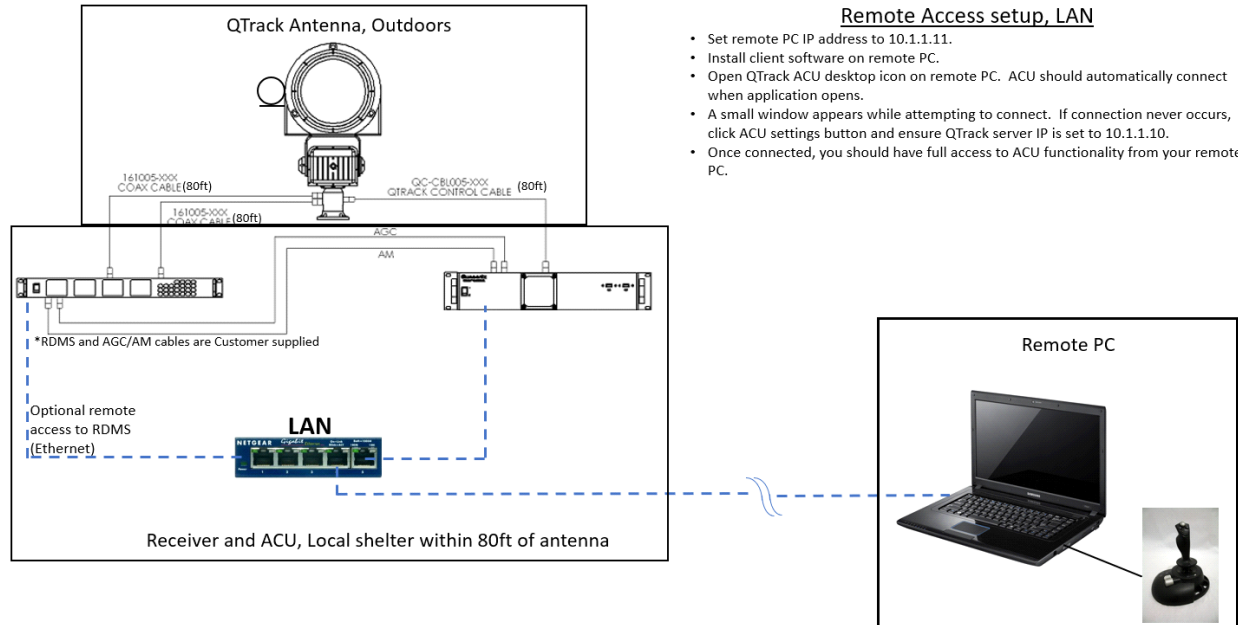


Figure 8: Typical System Configuration, Remote Operation—LAN Access

4.1.1.2 Remote Access Set Up, WAN

1. Configure the Router to connect 10.1.1.10 on the LAN side.

2. Configure the Router to connect to your desired network on the WAN side.
3. Install the client software on a remote PC.
4. Open the QTrack ACU desktop icon on the remote PC. The ACU automatically attempts to connect to the IP address saved in the configuration.
5. A small window displays while attempting to connect. If connection never occurs, click on the ACU Settings button, then ensure the IP is set appropriately.

When connected, full access to ACU functionality should be available from the remote PC.

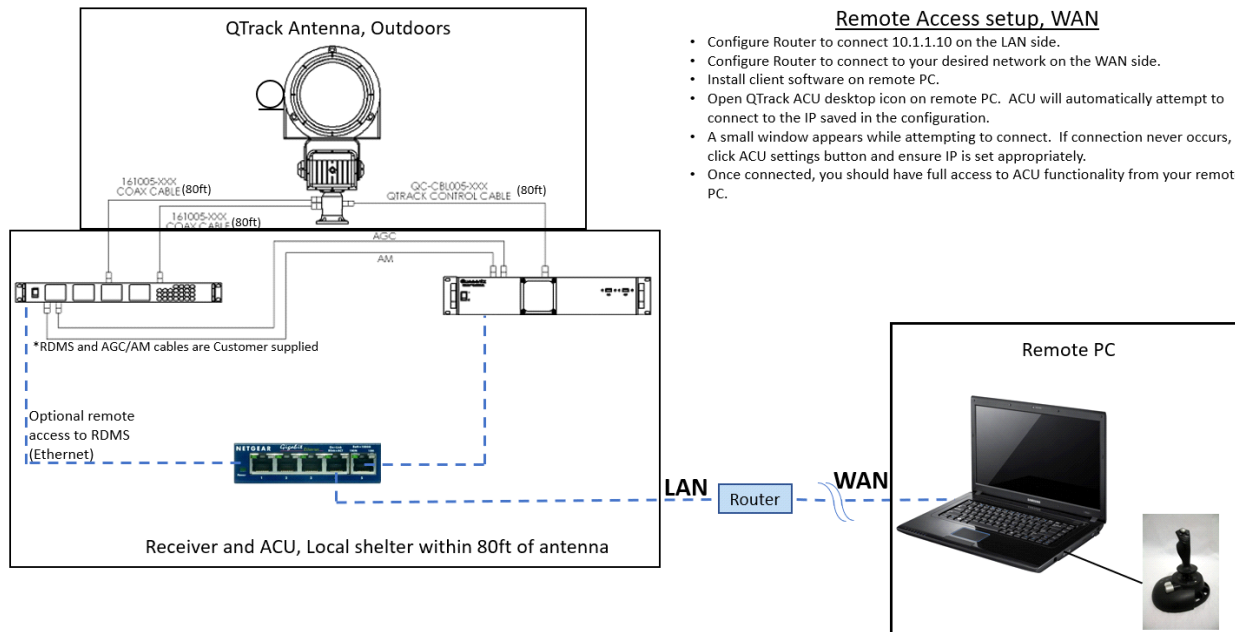


Figure 9: Typical System Configuration, Remote Operation—WAN Access

4.2 ACU Main Operations Indicators and Manual Control

This section covers the simple main system operations that are available from the front panel of the ACU Graphical User Interface (GUI). The front panel contains the operational selection buttons, as well as the display feedback readouts and indicators. The System Operation buttons are described in the next section.

Note: Be sure the receiver AM Bandwidth is set to 15,000, and the receiver AGC Scale (dB/V) is set to 20. Connect the Receiver combiner AGC and AM outputs to the respective ACU inputs.

1. Connect the ACU to the antenna pedestal, then turn the system on.
2. Click on the QTrack ACU desktop icon, as shown in Figure 10.

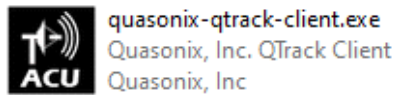


Figure 10: QTrack ACU Desktop Icon

The QTrack ACU Graphical User Interface (GUI) displays, as shown in Figure 11.

Note: This display is for a QTrack with the TX option.



Figure 11: QTrack ACU Graphical User Interface

4.2.1 ACU Menu Bar

The ACU Menu Bar consists of icons which provide access to functionality including Logging, Status, Settings, Tools, and Help.

4.2.1.1 Logging

The ACU is equipped with a logging feature which allows tracking status information such as AZ/EL position, tracking error, RSSI, and much more to be logged and saved to a local .txt file.

The Logging icon, shown in Figure 12, enables and disables the logging function. The icon illuminates green when logging is enabled, as shown in Figure 13.

Refer to section 4.5.1 for more detailed information about logging.



Figure 12: Menu Bar, Logging Icon



Figure 13: Menu Bar, Logging Enabled

4.2.1.2 Status

The Status icon, shown in Figure 14, opens a live status reporting window for the motion controller and user inputs, shown in Figure 15.



Figure 14: Menu Bar, Status Icon

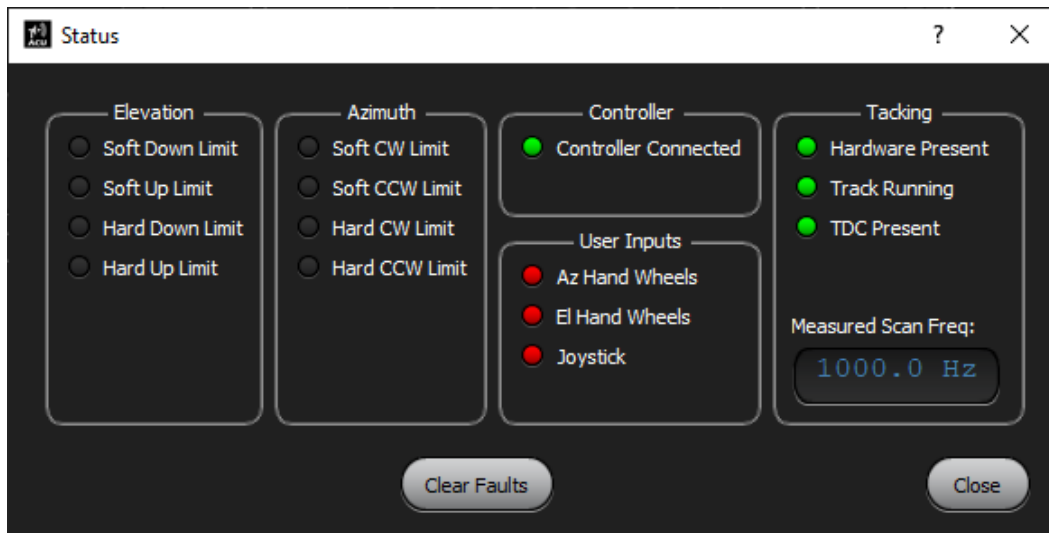


Figure 15: Status Window

4.2.1.3 Settings

The Settings icon, shown in Figure 16, opens the Settings window, shown in Figure 17. It is used to set or view parameters within the ACU.



Figure 16: Menu Bar, Settings Icon

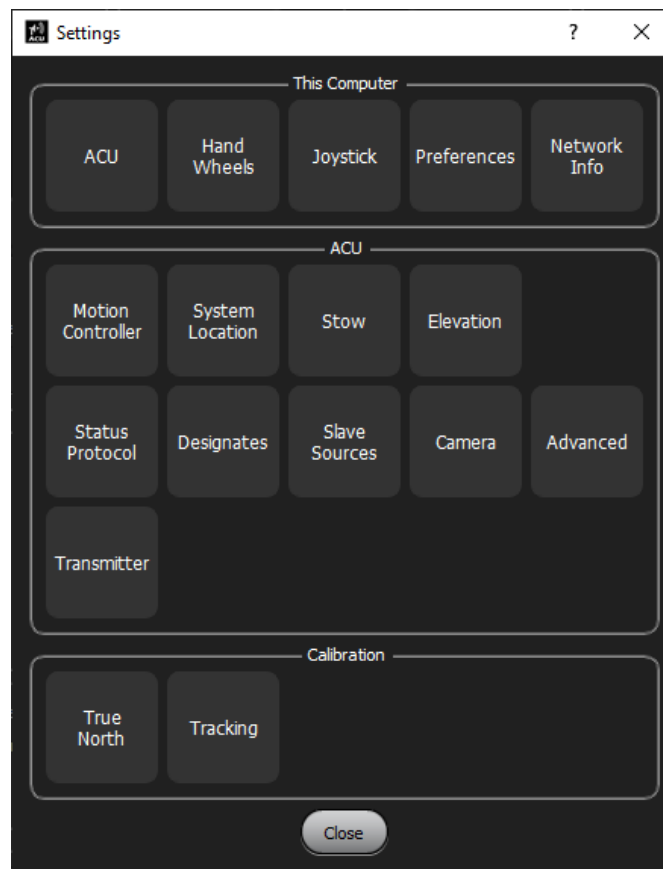


Figure 17: Settings Window

There are three main sections in the Settings window: This Computer, ACU, and Calibration.

4.2.1.3.1 This Computer

This Computer settings let the user Enable, Disable, and Modify user input controls such as hand wheels, joystick, and keyboard. The ACU selection shows the server IP address at 10.1.1.10. Do not modify this address as it is critical for operation.

4.2.1.3.2 ACU

The ACU section is used to set system location coordinates and user defined position designates. Refer to section 8 (Appendix A) for transmitter control information. Most other settings in this section should not be modified without Quasonix approval.

4.2.1.3.3 Calibration

Calibration is for True North Settings only. Refer to section 4.3.7 for True North Settings information. Do not modify Tracking settings as these are critical for operation. The QTrack™ system does not require a periodic calibration.

4.2.1.4 Tools

The Tools icon, shown in Figure 18, opens the Tools window, shown in Figure 19. It is used to set logging parameters, restart and shut down the server, and test joystick and hand wheel inputs. Refer to section 4.5 for more information about the Tools window.



Figure 18: Menu Bar, Tools Icon

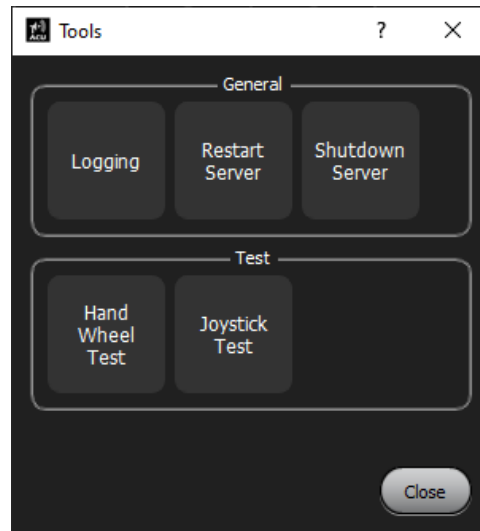


Figure 19: Tools Window

4.2.1.5 Help

The Help icon, shown in Figure 20, opens the Help window, shown in Figure 21. The Help window contains contact information, client version, and server version for the unit.



Figure 20: Menu Bar, Help Icon

Figure 21: Help Window <TBA>

4.2.2 Axis Control

The Axis Control section, shown in Figure 22, shows the available independent axis control modes, the servo On-Off button, and the (right hand side) Gear Icon (hot buttons) used for immediate display of the linked control and parameter input windows. When activated, those windows display directly to the right of Axis Control.

1. In the Axis Control window, select the red Servo power button, as shown in Figure 22.

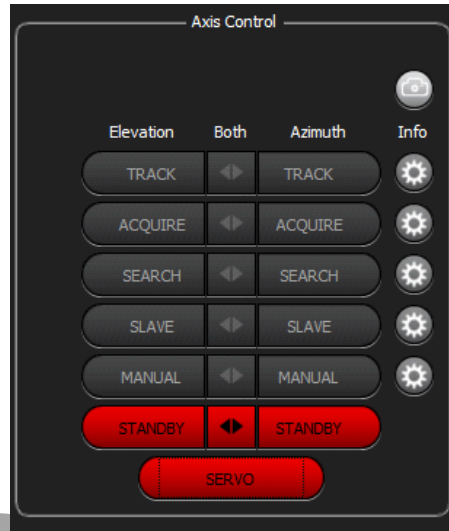


Figure 22: Axis Control Window, Red Servo Button

The ACU Servo power button illuminates green, as shown in Figure 23.



Figure 23: Axis Control Window, Servo Button Changed to Green

Note the Azimuth and Elevation indicators with resolution of 0.01° , indicating the pedestal pointing in EI and AZ frame of reference.

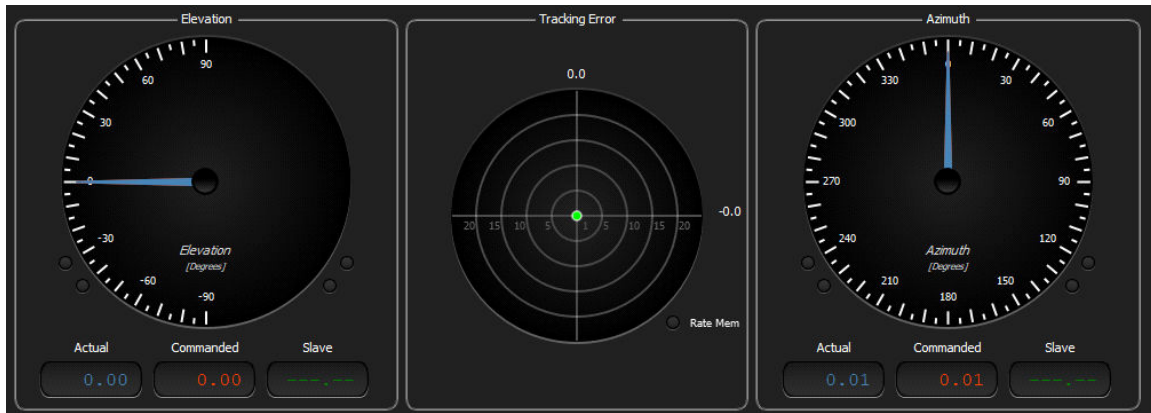


Figure 24: Elevation, Tracking Error, Azimuth Windows

- On the Axis Control window, select Manual Mode, as shown in Figure 25, and verify that the Hand Wheel Position illuminates green for both Elevation and Azimuth Input Controls.



Figure 25: Axis Control Window, Manual Mode Buttons

- Operate the ACU hand wheels, and verify the pedestal responds both Elevation and Azimuth commands.

Alternatively, control the Elevation and Azimuth with the up/down and left/right arrows on the attached keyboard.

4.2.3 Camera Control

1. Click on the Camera button in the top right of the Axis Control pane. The camera control panel displays, as shown in Figure 26.



Figure 26: Camera Control Window

2. Select live video to view live video feed.
3. Control the camera's Zooming, Focus, and Exposer through this window.

4.3 System Tracking

This section describes the basic Azimuth and Elevation searching and tracking functions of the ACU and the attached QTrack System.

Note: During these tests, the receiver and boresight transmitter are tuned for SOQPSK at 1 Mb/s, 2201 MHz (S band). Prior to performing any of the following tracking tests, turn off the boresight power, and Zero the receiver AGC. Ensure that the ACU has the appropriate band (L, S, or C) selected for the frequency used. Select the band by clicking on the RX Band button until S band is selected.

4.3.1 Basic Tracking

Basic tracking operation uses the following steps.

1. From the ACU, slew the antenna to the boresight.
2. Turn on the Boresight RF.
3. Select Track. The antenna will slew to the tracking position.
4. Select Manual. Change the Azimuth and/or the Elevation by about 10°. Note that when track is engaged, the antenna will reacquire the boresight.

4.3.2 Target Dynamics

Target Dynamics controls the tracking speed of the antenna. It may be desirable to slow the tracking when noise or interference becomes evident.

1. On the Axis Control window, click on the gear button located to the right of the track button, and open the Track Settings window, as shown in Figure 27.

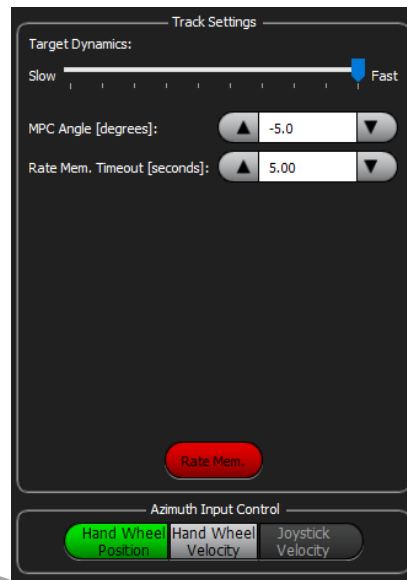


Figure 27: Track Settings Window

2. Move the antenna off by about 10°. Note the speed in which it tracks.
3. In the Track Setting window, set the Target Dynamics slider to about mid-scale. Note the slower tracking speed.
4. Set the Target Dynamics slider to about 1/10th scale. Note the slow tracking speed.
5. Place the slider back to 100%.

4.3.3 Multipath Clipping Angle (MPC)

The Multipath Clipping Angle sets the minimum angle that the antenna can point downwards. When a larger signal is observed from a multipath reflection (primarily from the ground), this setting restricts the antenna's lower positioning.

1. Track to the center. Select the gear next to the Track button.
2. In Track settings, set the MPC Angle [degrees] to about 2 degrees larger than the Elevation tracking angle.
3. From the AGC window, select the MPC button. It will turn yellow, as shown in Figure 28, and the minimum elevation will be limited at the MPC Angle.

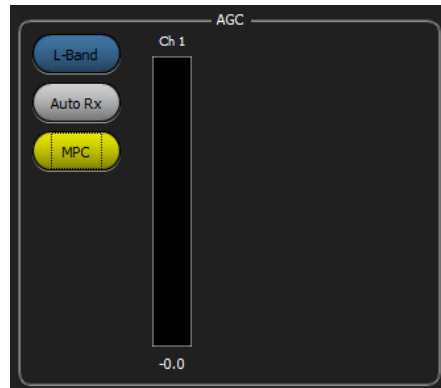


Figure 28: AGC Window

4. De-select MPC by clicking on the MPC button again. Note that the Elevation angle returns to the original position.

4.3.4 Acquire

Acquire allows the ACU to stop tracking when the received level gets below the Threshold minus the Hysteresis and to re-acquire when the signal level rises above the Threshold.

1. Click on the gear next to the Acquire button to display the Acquire Settings window.

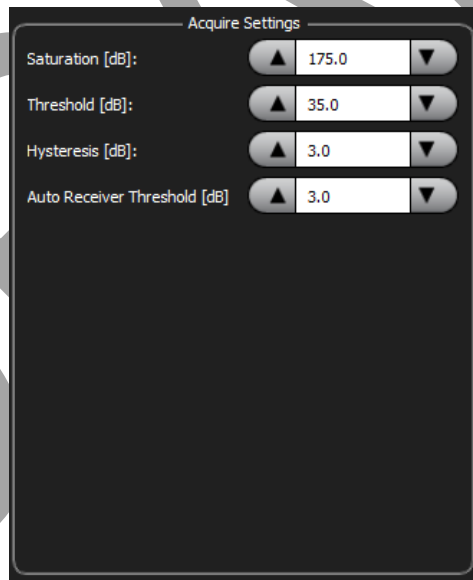


Figure 29: Acquire Settings Window

2. Note that the Saturation [dB] and Auto Receiver Threshold [dB] setting do nothing for the QTrack system. They should be set to 99 so they do not activate.
3. Set the Threshold to 10 dB and the Hysteresis to 3 dB. These will allow the tracking to continue until the received level reaches 10-3 or 7 dB above the RF Zeroed level.

4. Adjust the boresight transmitter power level for a received level of approximately 15 dB above AGC Zero. Select Acquire. Verify that the signal is tracking, the Acquire button is yellow, and the Track button is green.
5. Decrease the boresights power in 1 dB steps, and verify the Tracking continues until a receive level of less than 7 dB above zero is reached. The Track button turns grey and the position freezes at the last position.
6. Increase the signal level until the Track illuminates green indicating it is again tracking. Note that the receive level is greater than 10 dB above Zero.
7. De-select Acquire, and return to Manual.

4.3.5 Search

Search allows the ACU to go into search mode when the signal is lost. It uses the threshold and hysteresis values set in the Acquire Settings to activate/deactivate the search pattern.

1. Select the gear next to the Search button to display the Search Settings window.

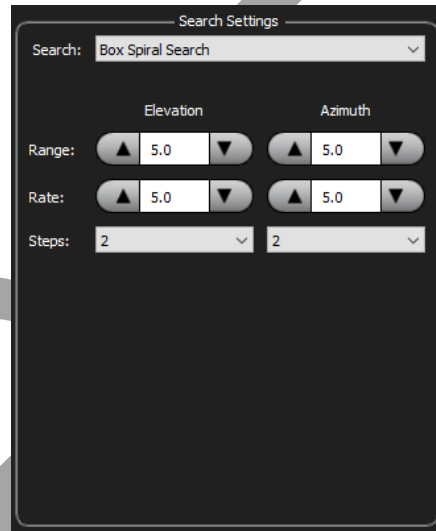


Figure 30: Search Settings Window

2. From the drop down menu, either Box Spiral or Raster search can be selected. Select Box Spiral Search.
3. Enter a 10° range for both Elevation and Azimuth and a 5°/sec Rate for each.
4. Set the boresight power for about 40 dB above AGC Zero level.
5. On the ACU, select Acquire, then search. Note the system is tracking.
6. Remove the boresight power, and the system will enter the defined search pattern.
7. Turn the boresight power on, and the QTrack will lock on.
8. De-select Acquire, and return to Manual.

4.3.6 Designate Mode

While in manual mode, the user can select the DESIGNATE button (at the top of the Axis Control window, as shown in Figure 31) to enter an Azimuth or Elevation axis commanded angle by clicking on or touching the

Up/Down arrows, located just above the program designates list, as shown in Figure 32. The software keypad displays enabling the operator to enter the desired angle, which displays in the Elevation or Azimuth entry field. Selecting the GO button sends the axis to the desired (entered) position. There are two modes: Immediate Designate mode and Program Designate mode, as described in the next sections.



Figure 31: Axis Control Window, Designate Button

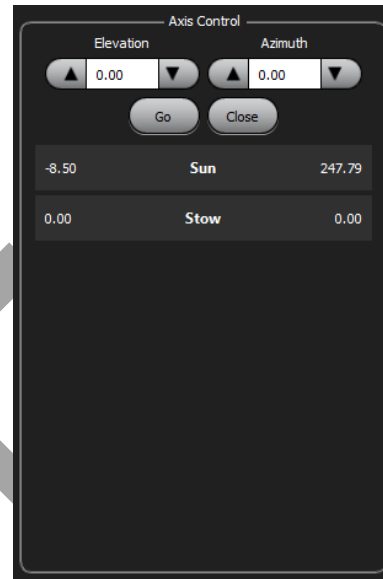


Figure 32: Axis Control Window

4.3.6.1 Immediate Designate Mode

1. Select Manual mode.
2. Select the Designate button in the manual mode area to reveal the Designates Selections.
3. In the AZ and EL command angle spin boxes, enter a legitimate coordinate set using the keypad in the dialog box.
4. Click on the GO button, and verify that the antenna slews to the designated position (+/-0.2°).
5. Select the CLOSE button.
6. Verify that the ACU reverts to the manual mode of operation upon completion of the antenna travel, and the Manual mode buttons are returned.

4.3.6.2 Program Designate Mode

1. Select Manual.
2. Select the Designate Button to reveal the Designates Selections.
3. Select a pre-Programmed coordinate set.
4. Click on the GO button.
5. Verify that the antenna slews to the selected position (+/-0.2°).
6. Select the CLOSE button.

7. Verify that the ACU reverts to the Manual mode of operation upon completion of the antenna travel.

4.3.7 True North Calibration

Verify that a True North Calibration capability is available to the operator.

Note: Prior to Setting the North Pointing Position, the Antenna's Earth Location, correct time, and altitude should be entered into the System Location area of the ACU.

1. Select the Settings – Calibration - True North button, as shown in Figure 33, to display the True North window, shown in Figure 34.

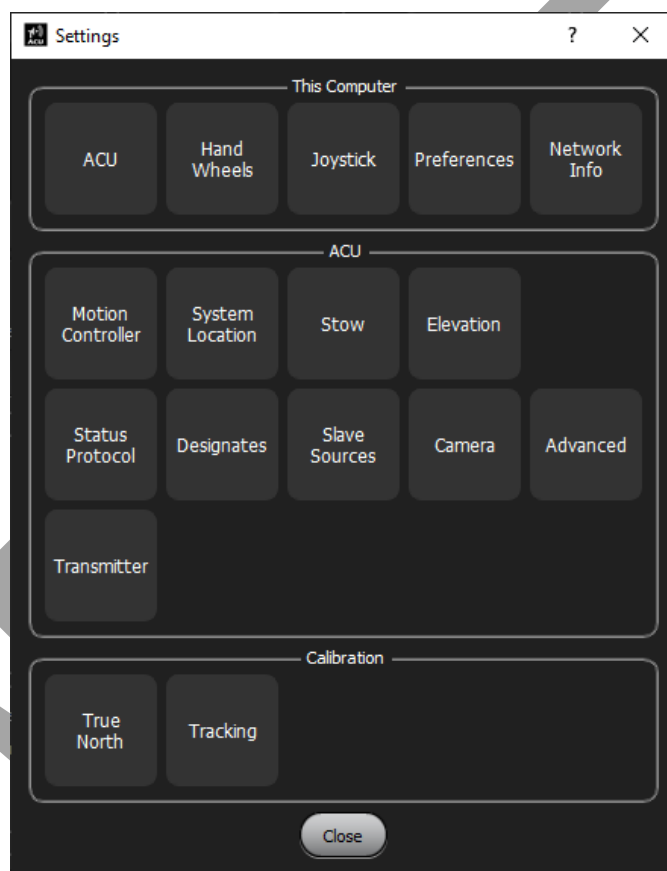


Figure 33: Settings Window

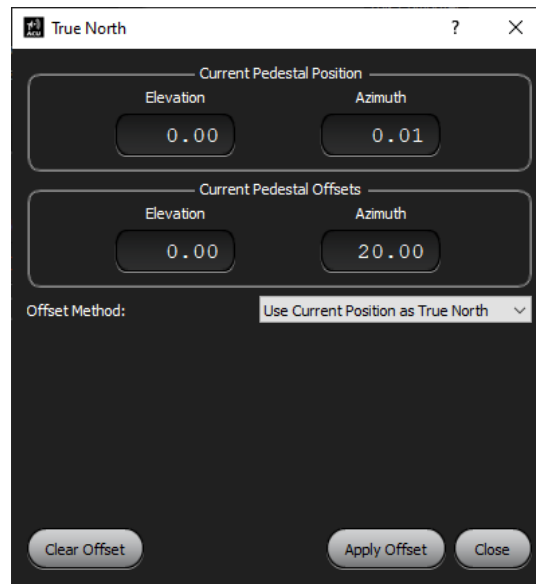


Figure 34: True North Window

2. Verify that values can be manually programmed for the Azimuth angle parameter for the operational modes present (manual and sun).
3. Verify that a Clear All Offsets button is present, and that when selected, all True North calibration data is discarded.
4. Aim the antenna at the sun.
5. Select Use Current Pedestal Position as True North in the north drop down menu.
6. Select Apply Offset. Ensure the new Azimuth North pointing angle is present.
7. Slew the antenna away from the sun, then select the Designate button in the Manual mode area.
8. Choose Sun from the menu, select the GO button, and the antenna should slew back to the sun position.

4.4 Slaving and Burn File Operation

The Customer provides pointing data via Ethernet. The ICD can be supplied, if required.

4.5 Basic GUI Tool Set Functions

The following Basic GUI (Tool) functions are described in this section. Select the Tools icon from the Tool bar, as shown in Figure 35. Three tool functions can be accessed here: Logging, Hand Wheel Test, and Joystick Test.

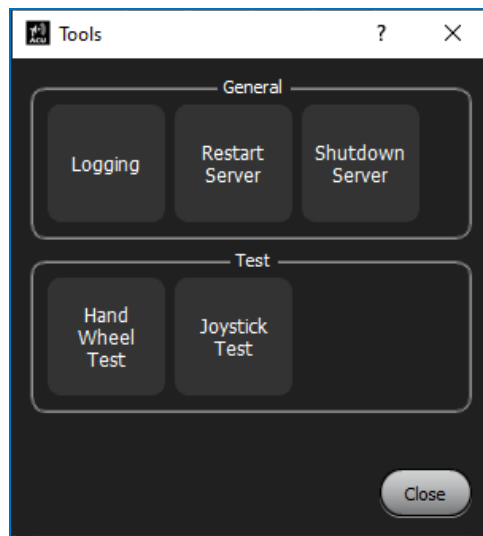


Figure 35: Tools Window

4.5.1 Logging

1. Select the Logging button to access the Logging window. The Options tab is shown in Figure 36.

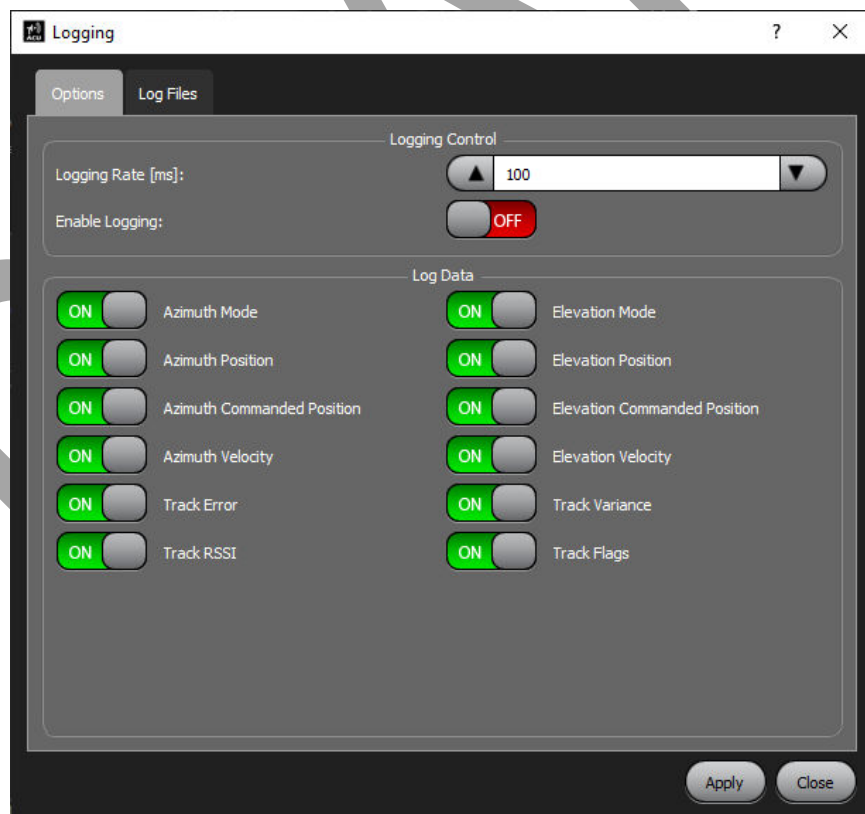


Figure 36: Logging Window

2. Turn on all available logging parameters for recording.
3. Close the Logging Window and the Settings Menu.
4. Select the Logger Icon from the Tool bar. It should turn green when selected (the Logger function is recording).
5. Turn the logging off by reselecting the Logger icon in the lower tool bar.
6. Return to the Logging window, Log Files tab, to ensure a log file has been created.
7. Click Download to save the file to desired location.

4.5.2 Hand Wheel Test

1. Enable hand wheels by selecting the Settings button from the Tool bar.



Figure 37: Elevation and Azimuth Input Control Windows

2. Select the Hand Wheels button, then check the enable hand wheels box.
3. Click on Save and close the Settings window.
4. Select the Tools Icon from the Tool bar.
5. Select the Hand Wheel Test.

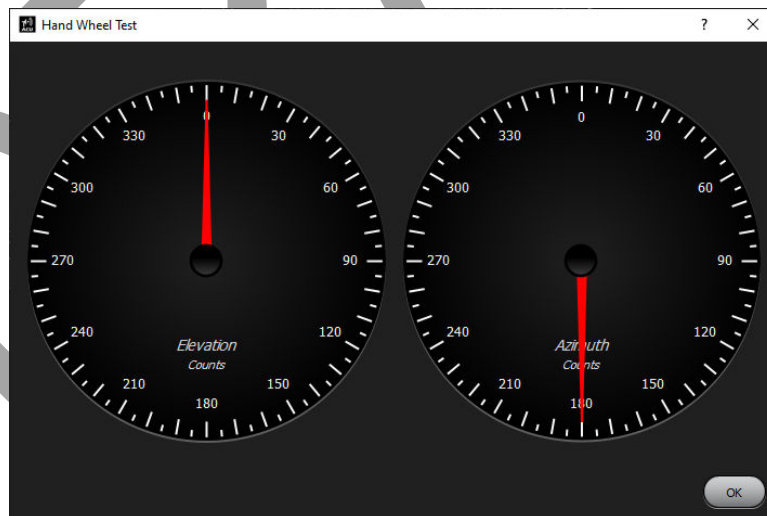


Figure 38: Hand Wheel Test Window

6. Rotate the Azimuth hand wheel. Ensure the Azimuth on-screen pointer rotates with the ACU hand wheel input.

7. Rotate the Elevation hand wheel. Ensure the on-screen Elevation pointer rotates with the EL hand wheel input.

4.5.3 Joystick Test

1. Enable the Joystick by selecting the Settings button from the tool bar.
2. Select the Joystick button and check the Enable box.
3. Select desired joystick from drop down menu.
4. Click on Save and close the Settings window.
5. Select the Tools icon from the tool bar.
6. Select the Joystick button to launch the Joystick test window.

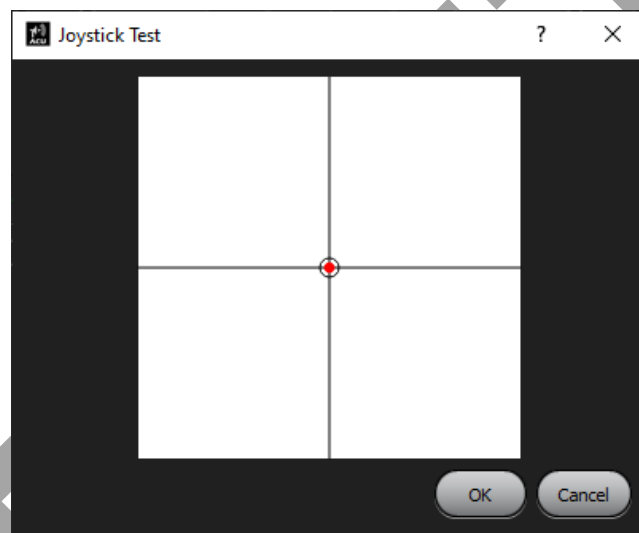


Figure 39: Joystick Test Window

7. Move the attached joystick in the Azimuth direction (side to side) and be sure the Joystick test follows the motion on the window.
8. Move the joystick in the Elevation direction (up and down), and ensure the test follows on the window.

5 Maintenance Instructions

The QTrack™ Antenna System requires no regular maintenance, and there are no user-serviceable parts inside.

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6 Product Warranty

The QTrack™ Antenna System carries a standard parts and labor warranty of one (1) year from the date of delivery.

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7 Technical Support and RMA Requests

In the event of a product issue, customers should contact Quasonix via phone (1-513-942-1287) or e-mail (support@quasonix.com) to seek technical support. If the Quasonix representative determines that the product issue must be addressed at Quasonix, a returned materials authorization (RMA) number will be provided for return shipment.

Authorized return shipments must be addressed in the following manner:

**Quasonix, Inc.
ATTN: Repair, RMA #
6025 Schumacher Park Drive
West Chester, OH 45069**

To ensure that your shipment is processed most efficiently, please include the following information with your product return:

- Ship To – Company name, address, zip code, and internal mail-drop, if applicable
- Attention/Contact person – Name, Title, Department, Phone number, email address
- Purchase Order Number – If applicable
- RMA Number – provided by the Quasonix representative

Please note that Quasonix reserves the right to refuse shipments that arrive without RMA numbers.

8 Appendix A – Transmitter Control

A QTrack™ system with the TX(xx) option has an embedded uplink transmitter. These systems operate in both L and S bands, and must transmit and receive in separate bands.

The QTrack™ ACU GUI contains a Tx Control window, as shown in Figure 40, to facilitate transmitter operation.



Figure 40: QTrack ACU Graphical User Interface

The Tx Control window displays frequency and modulation (band) settings. Two LED indicators provide connectivity and RF status. The two buttons enable/disable transmitter and RF Output.

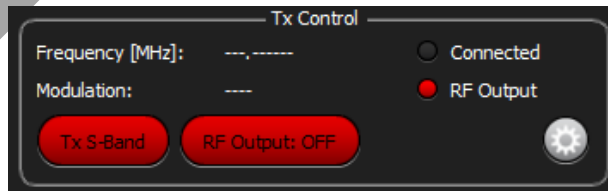


Figure 41: Tx Control Window

To set the transmit frequency and other parameters, select the settings (gear) button in the lower right corner for the Tx Control window. The Transmitter window, Tx Settings tab is shown in Figure 42.

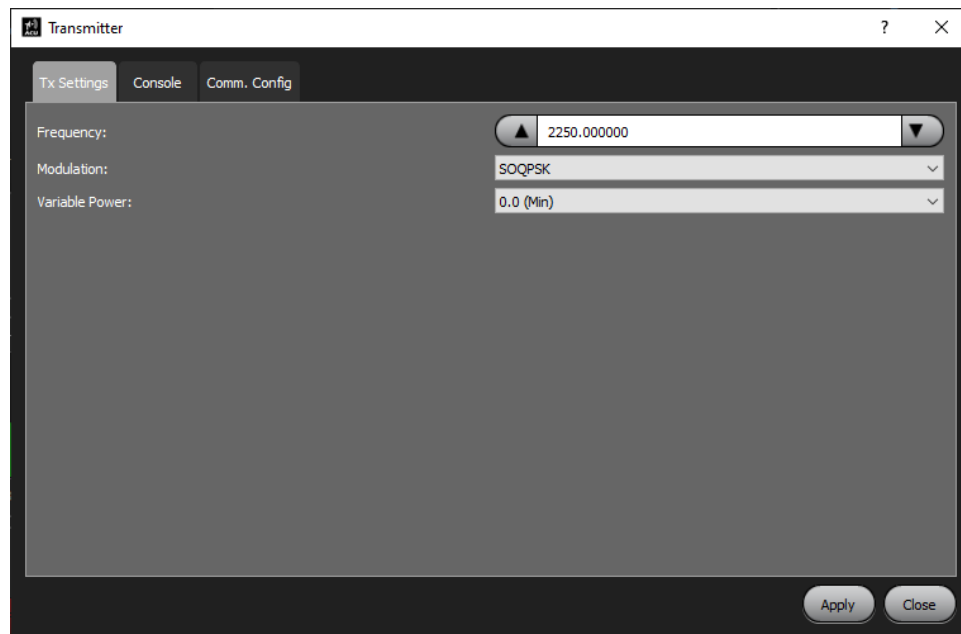


Figure 42: Transmitter Window, Tx Settings Tab

There are three tabs available on the Transmitter window: Tx Settings, Console, and Comm. Config.

- TX Settings – Contains typical transmitters settings for Frequency, Modulation, and Variable Power. Ensure the selected transmit frequency is in a different band than the desired receive band. The ACU will not enable RF if this set the same as the receive band.
- Console tab – Provides the serial interface to the transmitter
- Comm. Config – Contains IP address information for the transmitter serial interface. **Do not modify these parameters as they are critical for system operation.**

9 Appendix B – Acronym List

Acronym	Description
ACU	Antenna Control Unit
AGC	Automatic Gain Control
AM	Amplitude Modulation
AQPSK	Variant of Quadrature Phase Shift Keying
ARTM	Advanced Range Telemetry
AUQPSK	Variant of Quadrature Phase Shift Keying
AZ	Azimuth
BEP	Bit Error Probability
BER	Bit Error Rate
BNC	Bayonet Neill-Concelman Connector (RF Connector)
BPSK	Binary Phase Shift Keying
CCW	Counterclockwise
CD	Compact Disk
CPM	Continuous Phase Modulation
CW	Clockwise
CWM	Cable Wrap Meter
DACU	Digital Antenna Control Unit
DB-9	D-subminiature 9 pin Serial Connector
DC	Diversity Combiner
DHCP	Dynamic Host Configuration Protocol
DPM	Digital Phase Modulation
DQE	Data Quality Encapsulation
DQM	Data Quality Metric
EL	Elevation
FPGA	Field Programmable Gate Array
G/T	Gain per Temperature
GPS	Global Positioning System
GUI	Graphical User Interface

Acronym	Description
IF	Intermediate Frequency
IP	Internet Protocol
kbps	Kilobits per second
KHz	Kilohertz
LCD	Liquid Crystal Display
LDPC	Low Density Parity Check
LED	Light-emitting Diode
LHCP	Left Hand Circularly Polarized
LNA	Low Noise Amplifier
mbps	Megabits per second
MCX	Snap on subminiature connector
MHCPM	multi-h Continuous Phase Modulation
MHz	Megahertz
MPC	Multipath Clipping Control
N	(connector type) Threaded RF connector
OQPSK	Offset Quadrature Phase Shift Keying
PCB	Printed Circuit Board
PCMFM	Pulse Code Modulation/Frequency Modulation
PM	Phase Modulation
PSK	Phase Shift Keying
QPSK	Offset Quadrature Phase Shift Keying
RDMS	Receiver DeModulator Synchronizer
RF	Radio Frequency
RHCP	Right Hand Circularly Polarized
RJ-45	Ethernet Connection Jack
RM	Rack-Mount
RS-232	Recommended Standard 232 (Serial Communications)
SAW	Sawtooth Wave
SDI	System Degradation Indication
SNR	Signal to Noise Ratio

Acronym	Description
SOQPSK	Shaped Offset Quadrature Phase Shift Keying
SOQPSK-TG	Shaped Offset Quadrature Phase Shift Keying –Telemetry Group
STC	Space-Time Coding
TDC	Top Dead Center
TRL	Tracking Loop
TTL	Transistor Logic
UDP	User Datagram Protocol
UQPSK	Unbalanced Quadrature Phase Shift Keying
USB	Universal Serial Bus
VAC	Voltage Alternating Current
WAN	Wide Area Network