



microLink

User and Installation Guide



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1 Revision History

Revision	Date	Comments
A	6/23/2019	Initial release
B	07/17/2019	Modified the FCC and added the IC regulatory statement
C	08/09/2019	Updated the skyStation statistics definitions and modified for uav files updating
D	08/12/2019	Updated the FCC and IC statements per the TCB
E	08/28/2019	Updated the RF exposure limits per the TCB
F	12/18/2019	Added Updating instructions for skyStation and microLink radios
G	7/21/2020	Updated configuration item descriptions. Updated firmware upgrade instructions.

2 Limited Warranty

uAvionix products are warranted to be free from defects in material and workmanship for one year from purchase. For the duration of the warranty period, uAvionix, at its sole option, will repair or replace any product which fails under normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost.

This warranty does not apply to cosmetic damage, consumable parts, damage caused by accident, abuse, misuse, water, fire or flood, damage caused by unauthorized servicing, or product that has been modified or altered.

IN NO EVENT, SHALL UAVIONIX BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Warranty Service

Warranty repair service shall be provided directly by uAvionix.

3 Contents

1	Revision History.....	3
2	Limited Warranty.....	4
3	Contents	5
4	Introduction.....	7
5	Specification	8
5.1	microLink Radio Technology	8
5.2	Regulatory Statements	9
5.2.1	FCC Statement.....	9
5.2.2	Industry Canada Statement.....	9
5.3	Ground Radio System (GRS) – skyStation	11
5.4	Airborne Radio System (ARS)	12
5.5	Typical System Configuration	12
5.6	Mechanical Specifications.....	14
6	Configuration	16
6.1	skyStation	16
6.2	Connection to the POE Network	17
6.3	skyStation Start-up and Connection.....	18
6.3.1	Apply POE power to the skyStation.....	18
6.3.2	Run skyLinkApp.exe.....	18
6.3.3	Connect to Mission Planner in TCP mode	20
6.3.4	skyLinkApp.exe	22
6.3.5	Status Tab.....	23
6.3.6	Maps Tab	25
6.3.7	Configuration Tab.....	26
6.4	skyStation Configuration and Health Webpage.....	31
6.4.1	Configuration Items	34
6.4.2	Health.....	37

6.5	Updating Devices.....	39
6.5.1	Updating skyStation	39
6.5.2	Updating Ground microLink Radio.....	42
6.5.3	Updating Airborne microLink Radio	42
7	Appendix A Quick Start Guide	45
8	Appendix B HERE2 GPS Sharing.....	50

4 Introduction

microLink is an aviation grade, miniature, Beyond Visual Line Of Sight (BVLOS) data link radio specifically designed for long range, robust, Unmanned Aircraft Systems (UAS) telemetry data links. Ideal for size, weight, power and performance sensitive applications, microLink operates in the 902-928MHz license-free ISM band.

5 Specification

5.1 microLink Radio Technology

- Dual radio architecture for true diversity
 - Path (spatial) diversity
 - Frequency diversity
 - Polarization gain
- Dynamic Medium and Multiple access, time and position synchronized, to support 100s of simultaneous links
 - Adaptive time and frequency spreading
- Global Positioning System (GPS) Coordinated Universal Time (UTC) link synchronization
- Status, integrity and health monitoring
- Environmental RTCA/DO-160G
- Software RTCA/DO-178C Level C
- Complex Hardware RTCA/DO-254 Level C
- FCC 47 CFR Part 15.247 ID 2AFFTC2XISM

Radio Specifications	
Band	902-928MHz ISM Band
Architecture	Dual Diversity Radios
Transmit Power	1W (4W EIRP)
Spreading	Code and Frequency
Bandwidth	200kHz
Receiver Sensitivity	
User Receiver	-118dBm
Control Receiver	-121dBm
Doppler Capture Range	±16kHz

5.2 Regulatory Statements

5.2.1 FCC Statement

FCC ID: 2AFFTC2XISM

This device meets the FCC requirements for RF exposure in public or uncontrolled environments.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

5.2.2 Industry Canada Statement

IC ID: 25261-C2XISM

In order to comply with FCC / ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

Afin de se conformer aux exigences d'exposition RF FCC / ISED, cet appareil doit être installé pour fournir au moins 20 cm de séparation du corps humain en tout temps.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

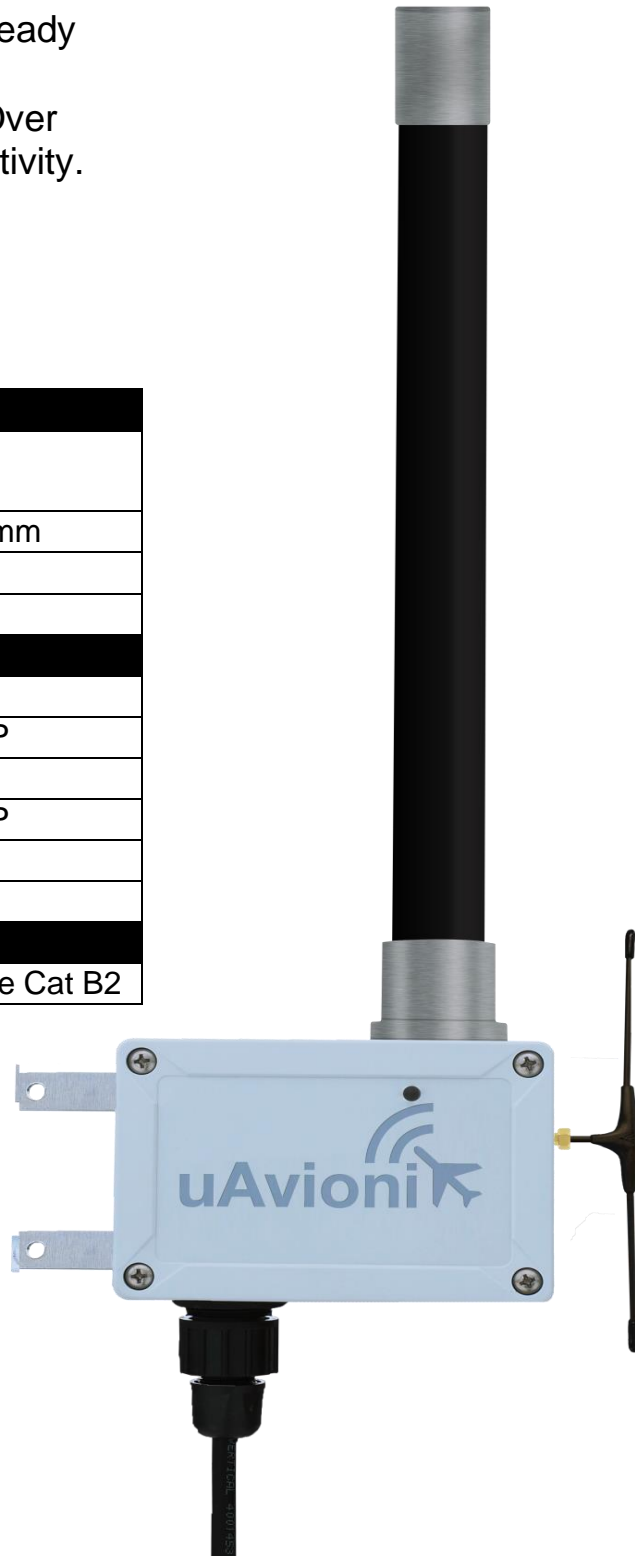
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1) l'appareil ne doit pas produire de brouillage;
- 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

5.3 Ground Radio System (GRS) – skyStation

- All-Weather Network-Ready microLink GRS
- TCP and UDP Power Over Ethernet (POE) connectivity.
- IP67 grade enclosure.
- Dual Dipole Antennas
- Pole Mounting Kit

Specification	Value
Input Power	POE 13W Peak
Size	122x82x60mm
Weight	500 grams
Operating Temp	-45 to 70°C
Interfaces	
User	
Protocol	TCP or UDP
Control	
Protocol	TCP or UDP
Timing/Position	
Position	Internal
Environmental	
DO-160G	Temperature Cat B2



5.4 Airborne Radio System (ARS)

- Transparent serial user data interface
- Plug and play with Ardupilot PixHawk autopilot
- Dual MMCX antenna connectors
- Supports NMEA/UBX GPS Sensors such as HERE2 and truFYX



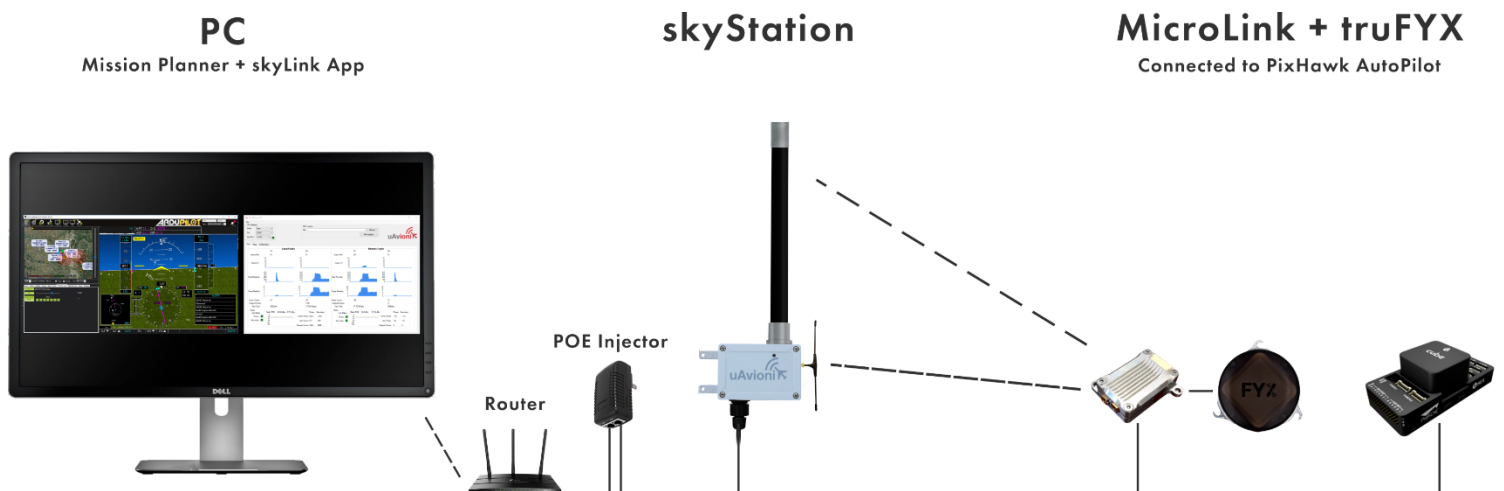
USER Interface (top connector)

Pin	Type	Physical	Port
1	5V	5V	
2	RXD	IN	Telem
3	TXD	OUT	Telem
4	RXD	IN	GPS
5	PPS	IN	1PPS
6	GND		

Timing/Position, Control Interface (bottom connector)

Pin	Type	Physical	Port
1	5V	5V	
2	RXD	IN	GPS
3	UTC	IN	1PPS
4	RXD	IN	Control
5	TXD	OUT	Control
6	GND		

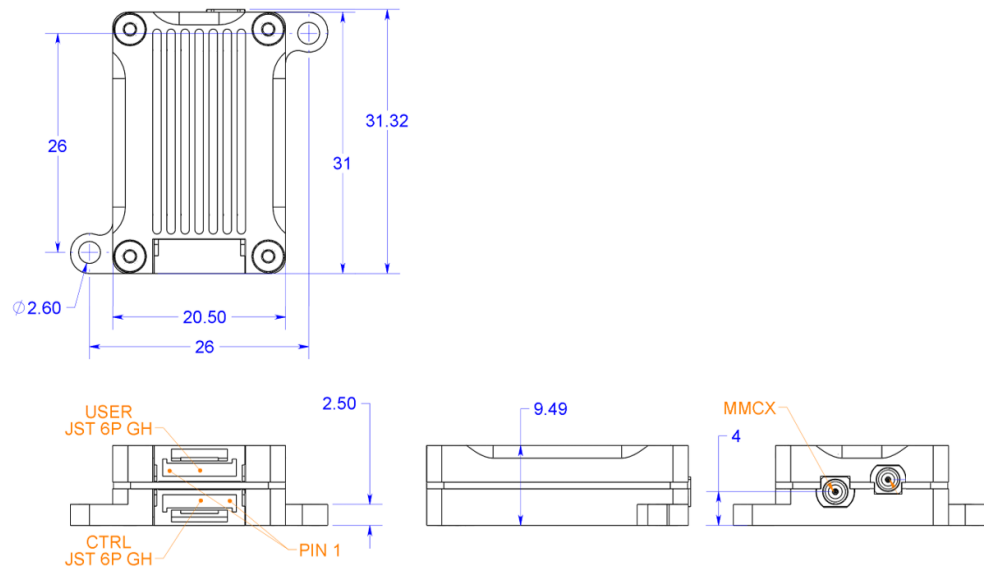
5.5 Typical System Configuration



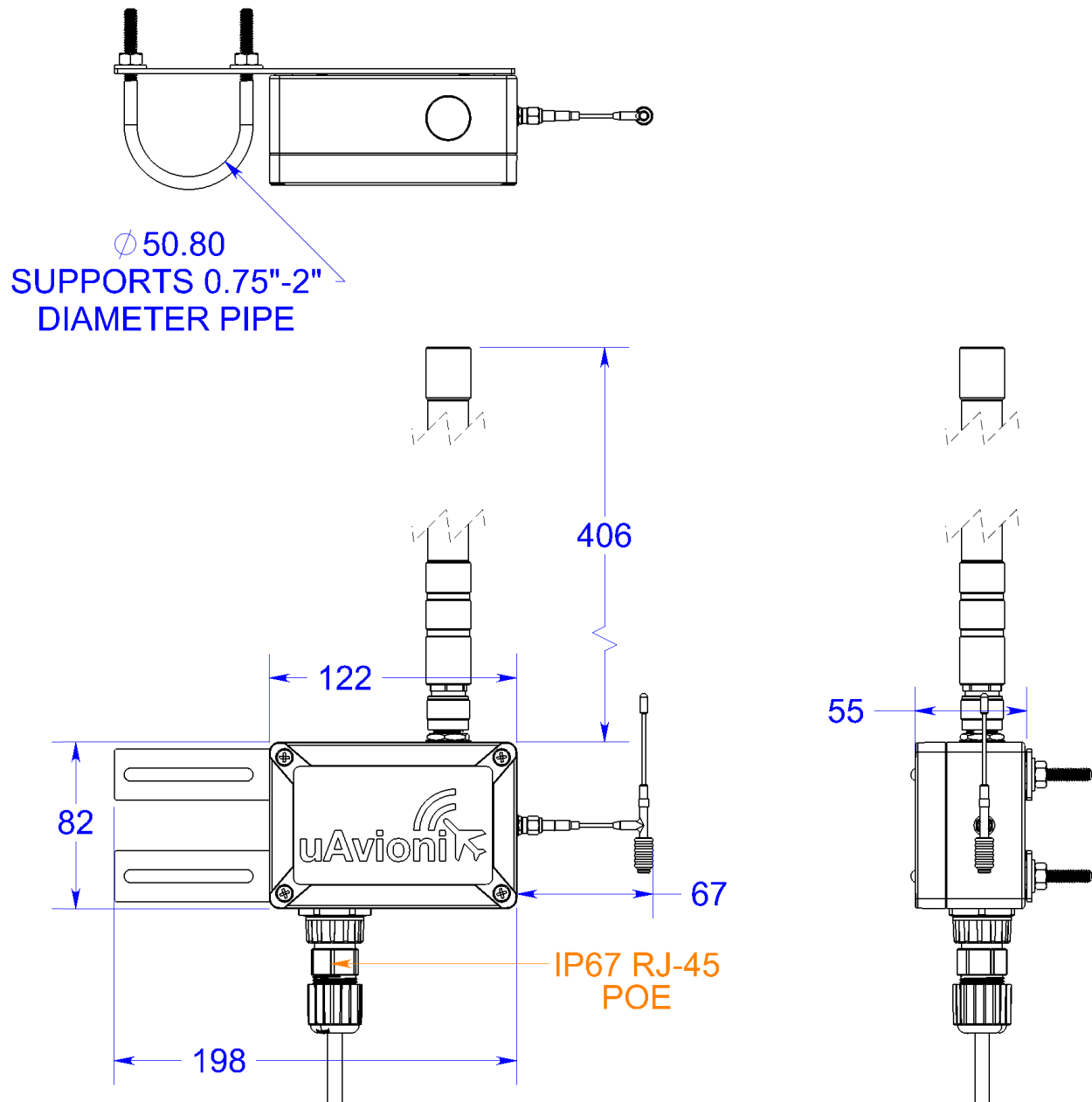
Ordering Part Numbers	
skyStation	UAV-1003057-001
microLink	UAV-1002868-001
GPS Options	
truFYX kit	UAV-1002500-001
HERE2 kit	UAV-1002956-001
Replacement Parts	
skyLink Dipole Antenna	UAV-1003060-001
MMCX 100mm	UAV-1003063-001
MMCX 200mm	UAV-1003063-002
GH 6p Cable	UAV-1003061001
GH 8p Cable	UAV-1003062-001

5.6 Mechanical Specifications

ARS



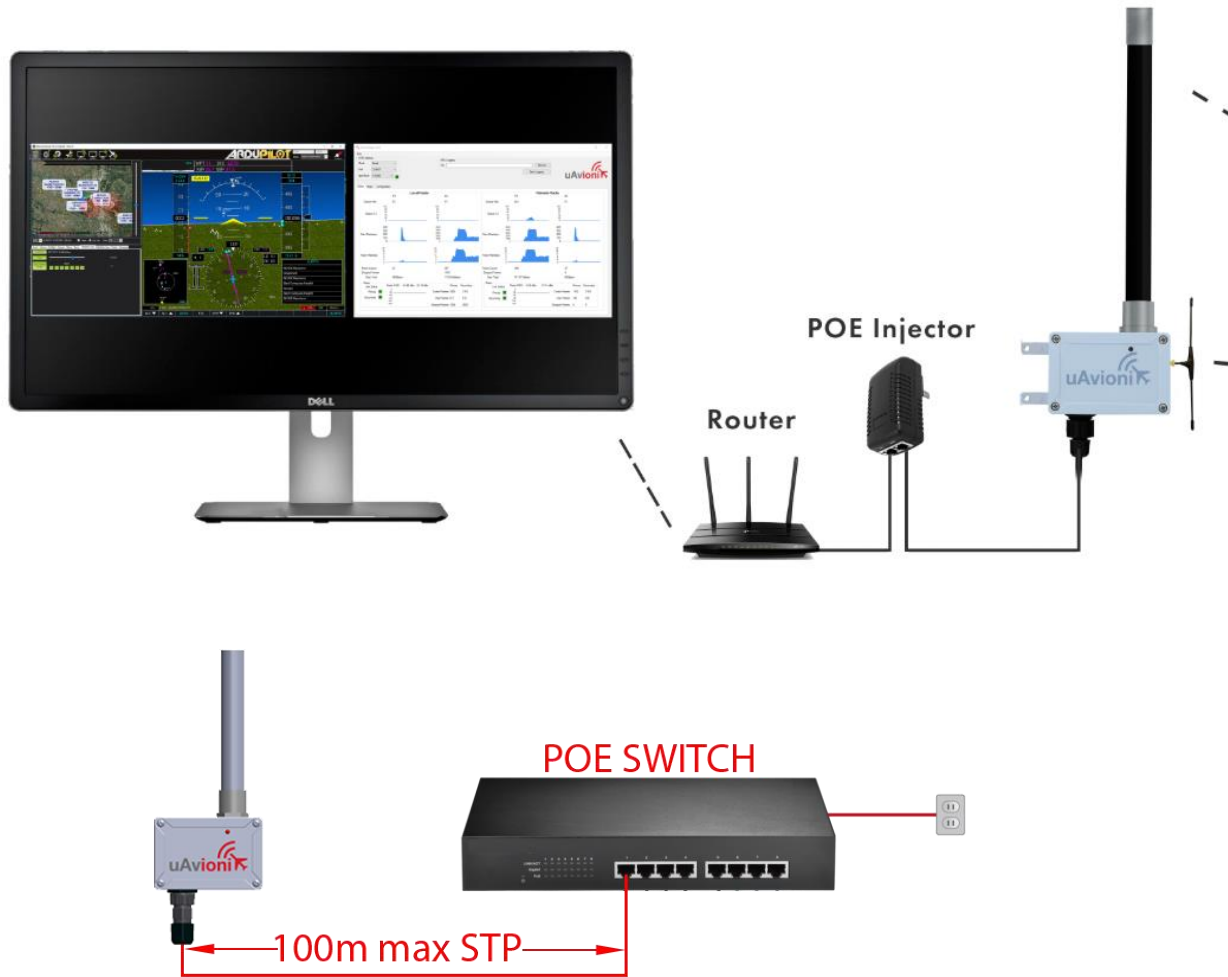
GRS



6 Configuration

6.1 skyStation

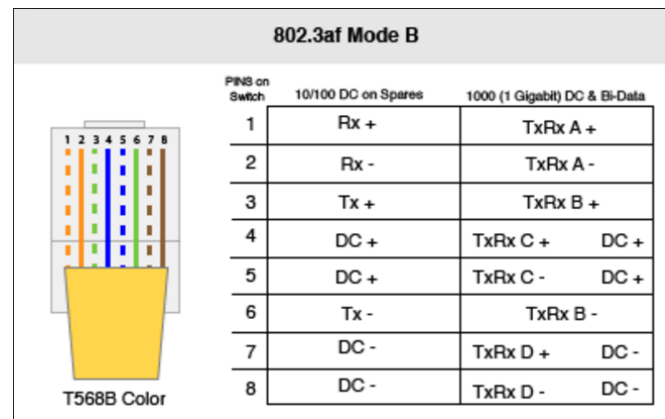
Connect skyStation to a POE switch or POE power injector.



6.2 Connection to the POE Network

POE Specifications:

Parameter	Value
Standard	803.3af (802.3at Type1)
Maximum power	15.4W
Voltage Range	37 – 57V
Maximum Current	350mA
Maximum Cable Resistance	20Ω
Supported Cabling	Shielded Cat 3 and Shielded Cat 5
Supported Modes	Mode A (endspan), Mode B (midspan)
Power Management	Power Class 0
Maximum Cable Length	100 meters



Caution!

Absolute maximum DC voltage +57 V. A higher DC voltage value will permanently damage the equipment!

6.3 skyStation Start-up and Connection

6.3.1 Apply POE power to the skyStation

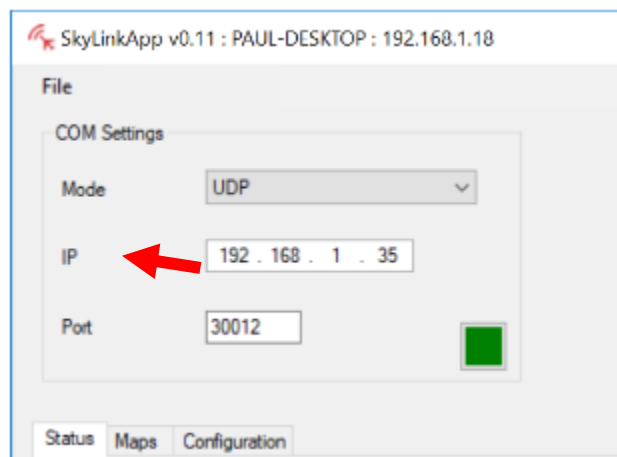
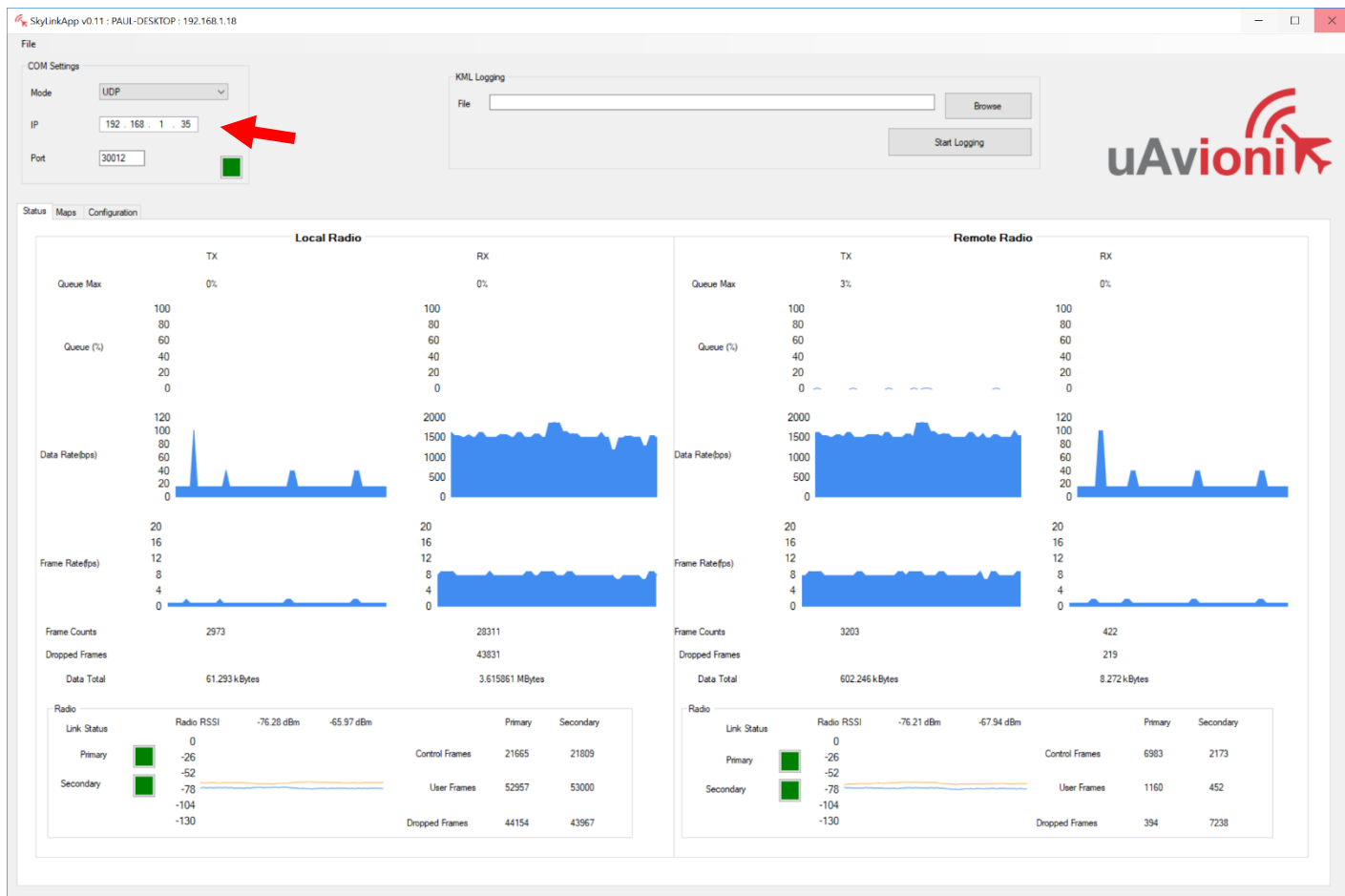
At power-up an IP address will be assigned to the skyStation by the local DHCP server. By default, the skyStation will start broadcasting the Control Channel information on UDP port 30012.

6.3.2 Run skyLinkApp.exe

skyLinkApp.exe will be listening for incoming Control data on UDP port 30012. When the data arrives, skyLinkApp.exe will begin graphing the radio link statistics.

NOTE: If you are not seeing the graphing as shown below it is likely your firewall is blocking the broadcast on port 30012. Please setup your firewall to allow skyLinkApp.exe broadcast access to port 30012.

skyLinkApp.exe will populate the IP address of the skyStation as noted with the red arrow below. This is the IP address of the skyStation which is to be used connection a ground control station like Mission Planner.



6.3.3 Connect to Mission Planner in TCP mode

Download and install Mission Planner from:

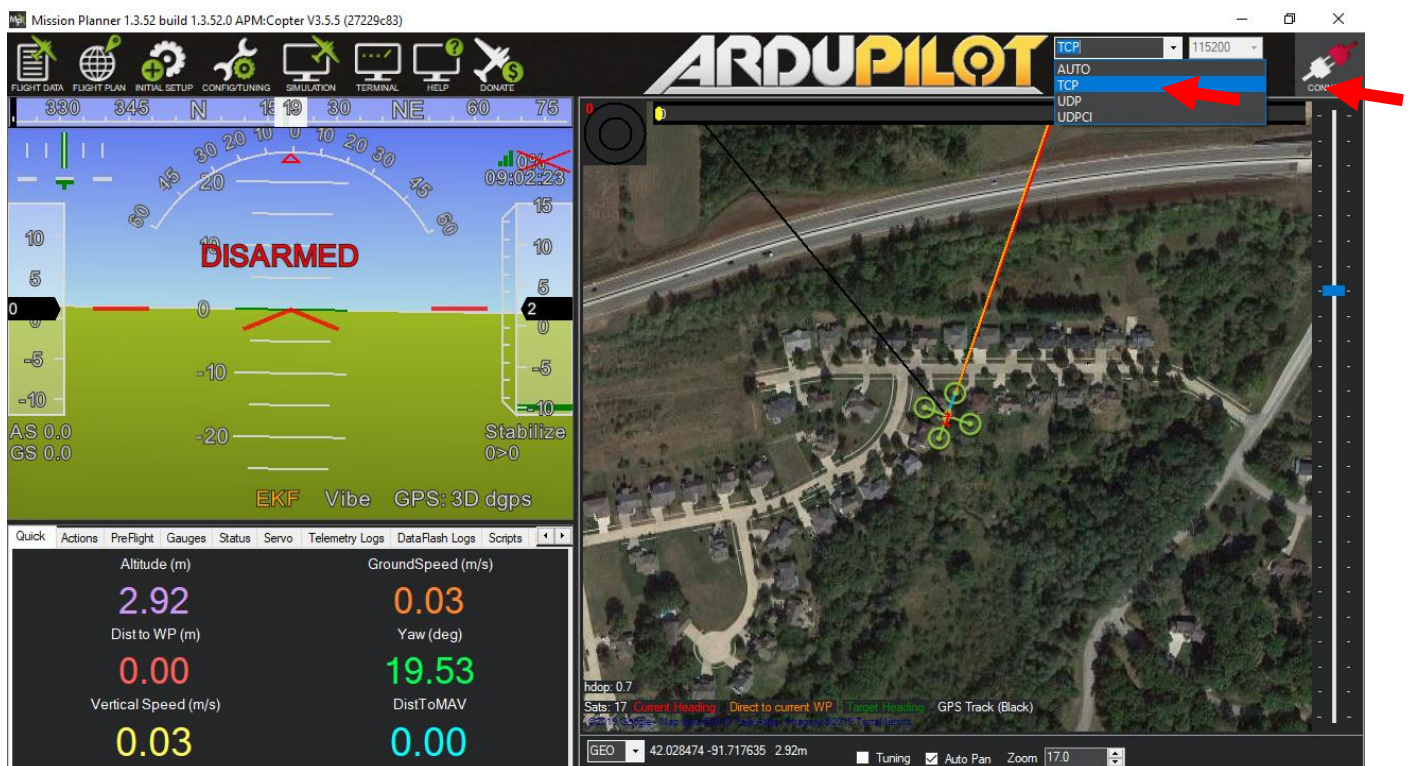
<http://firmware.ardupilot.org/Tools/MissionPlanner/>

<http://ardupilot.org/planner/docs/mission-planner-installation.html>

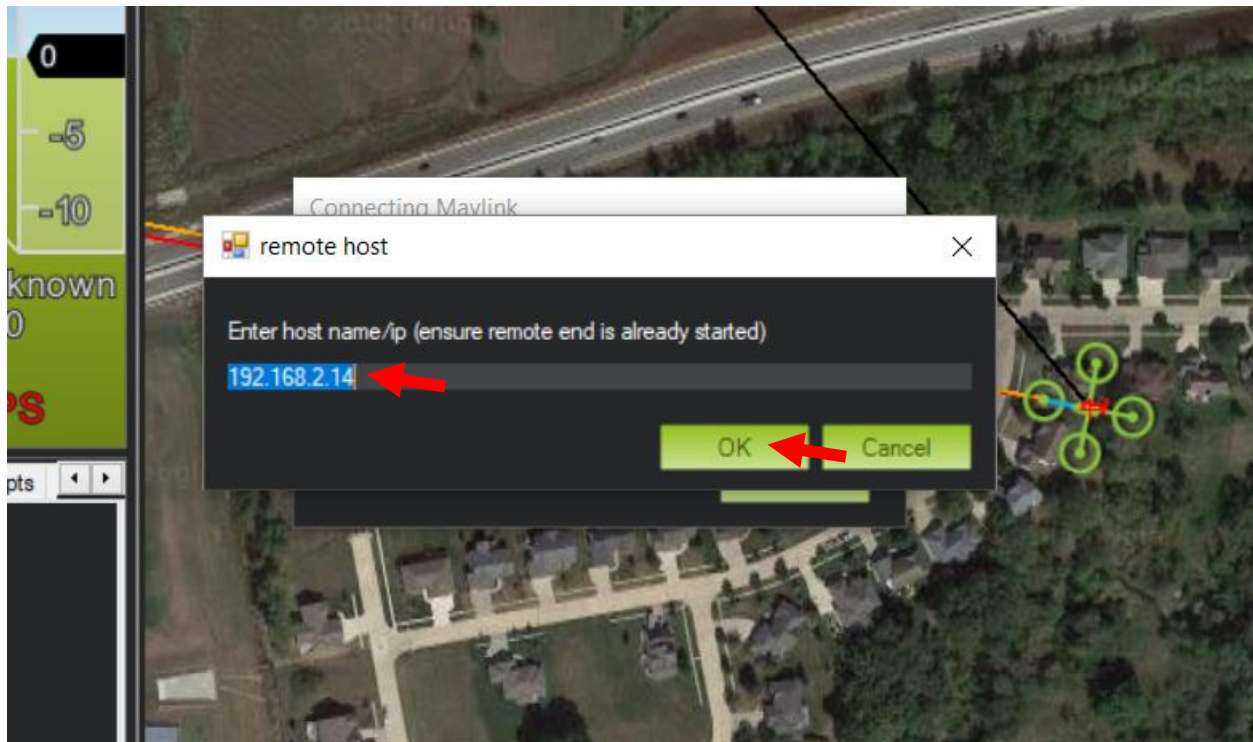
Verify that the flight controller and skyStation are powered and running and that skyLinkApp.exe is receiving data. Run Mission Planner and select the communications drop down menu.



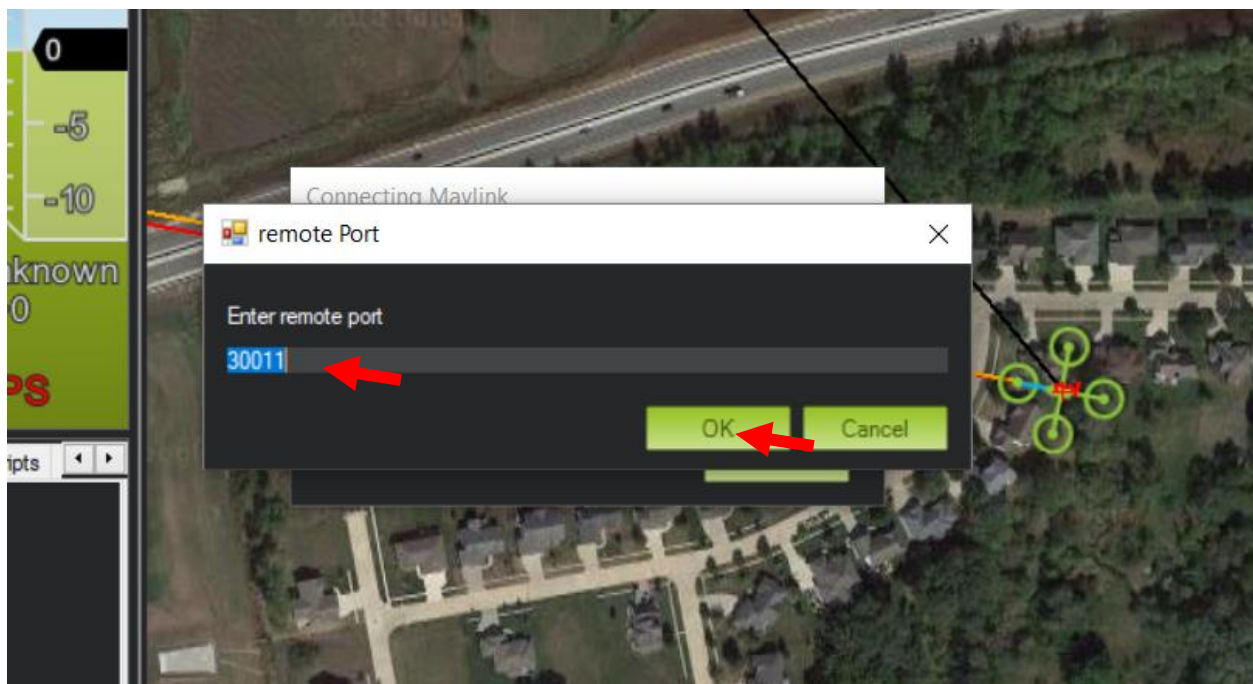
Select TCP as the communication mode and hit the Connect button on the upper right-hand corner.



Enter the skyStation IP address as found earlier in skyLinkApp.exe and click OK.



Enter port 30011 which is the skyStation default TCP port for Mission Planner and click OK.



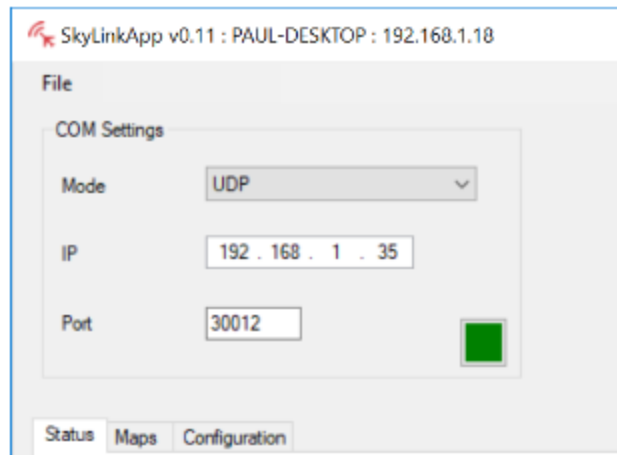
The TCP connection will now take off and you will see the system retrieving parameters as follows for the flight controller.



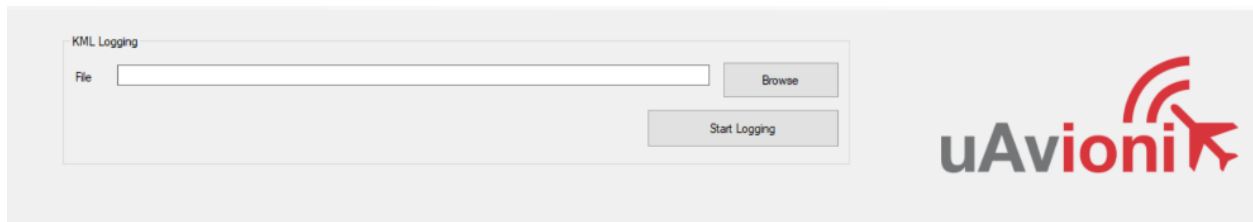
The skyStation is now in place and ready to host missions.

6.3.4 skyLinkApp.exe

skyLinkApp.exe is the uAvionix Control channel monitoring application. It is used or showing Status, Maps and Configuration information. It can be connected to the skyStation in TCP or UCP modes and the ports are configurable for network flexibility. The mode and port selection must match the skyStation Configuration page setup and the IP address is always the IP address of the skyStation.

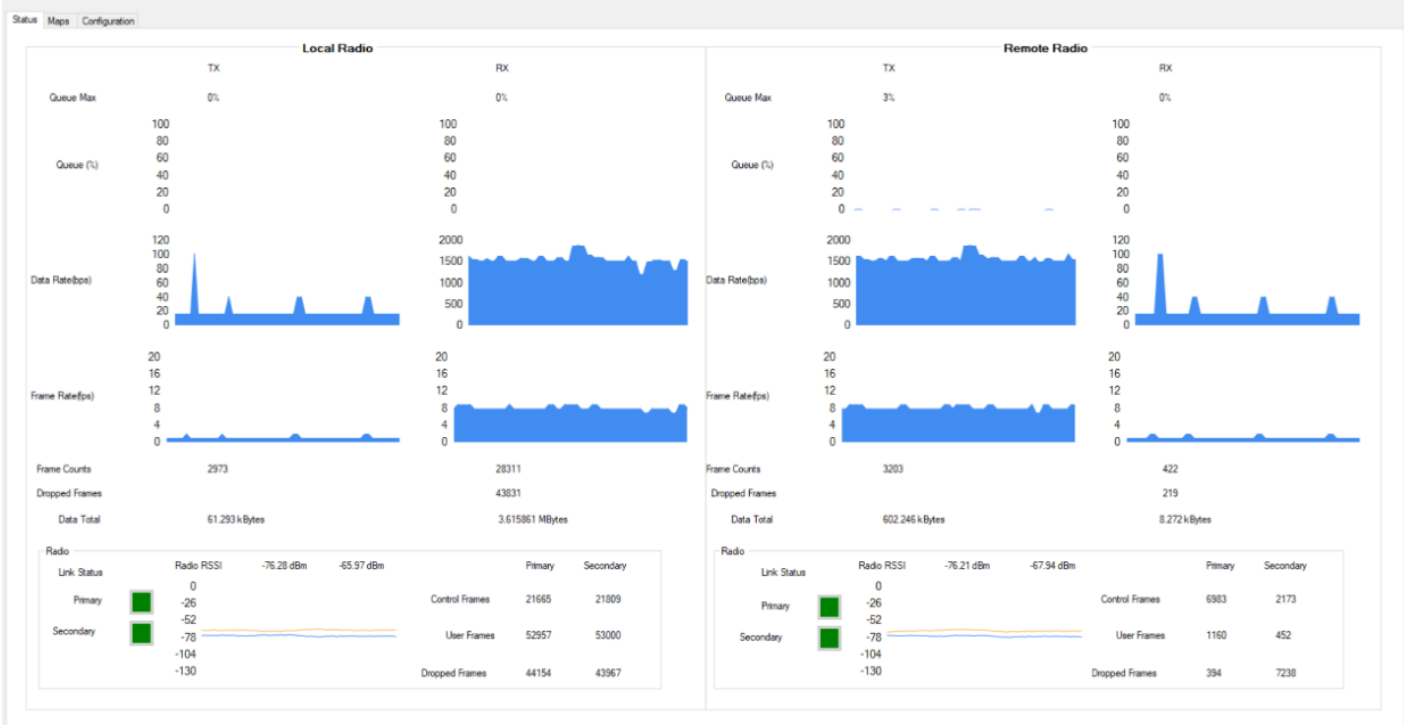


There is also a KML logging feature for importation into mapping software.

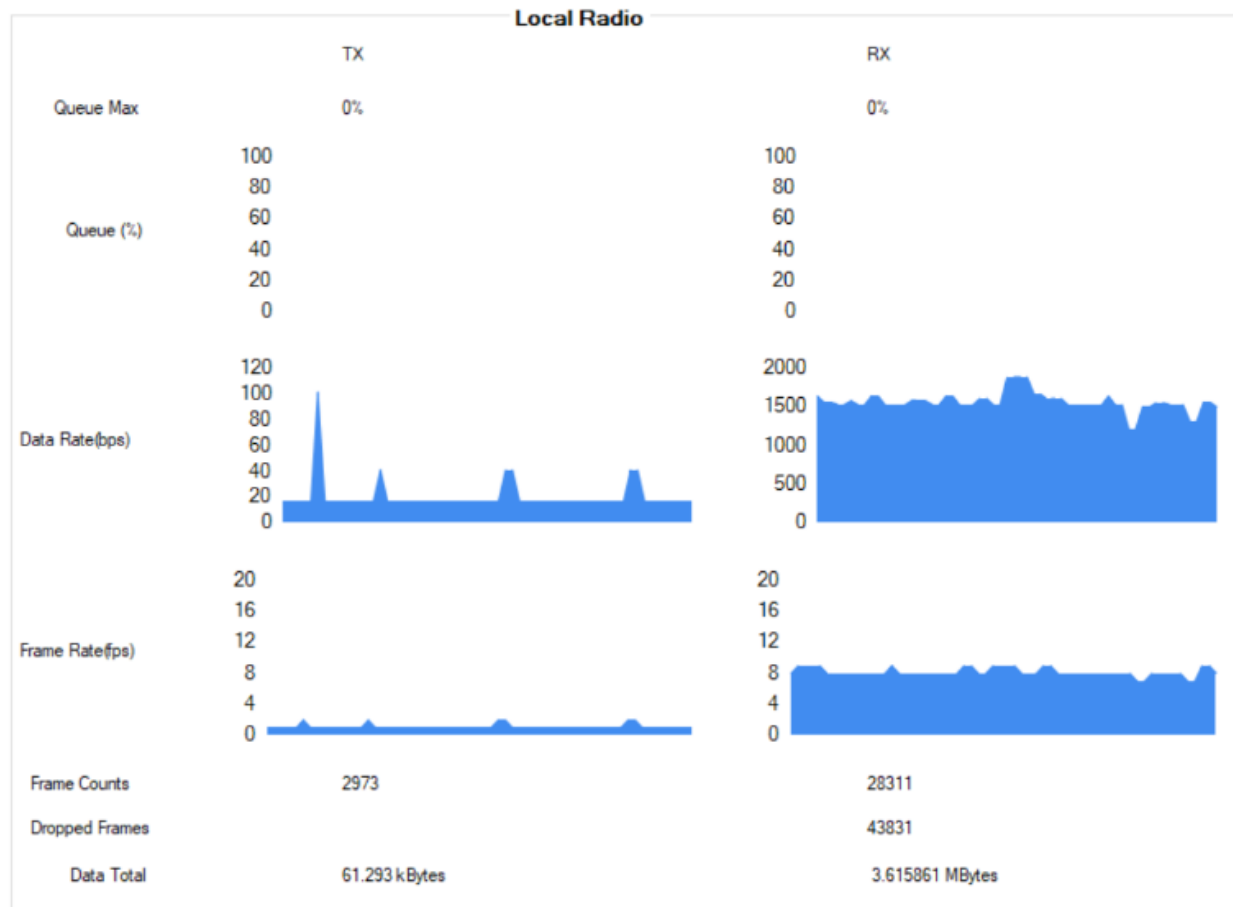


6.3.5 Status Tab

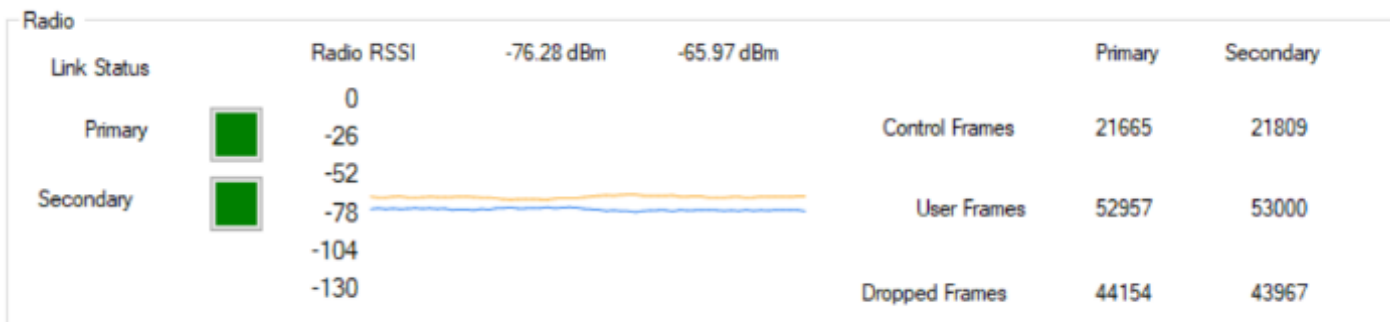
The status data is shown for both the local and the remote radios. It contains both transmit and receive information for the local and remote radios. This information includes memory queue depth information, transmit and receive data rates, frame rates, dropped frames and data totals. It also shows the RSSI's on the primary and secondary radios for both the local and remote radios giving the user comprehensive information on the state of the system.



Radio throughput and statistics detail shown below.

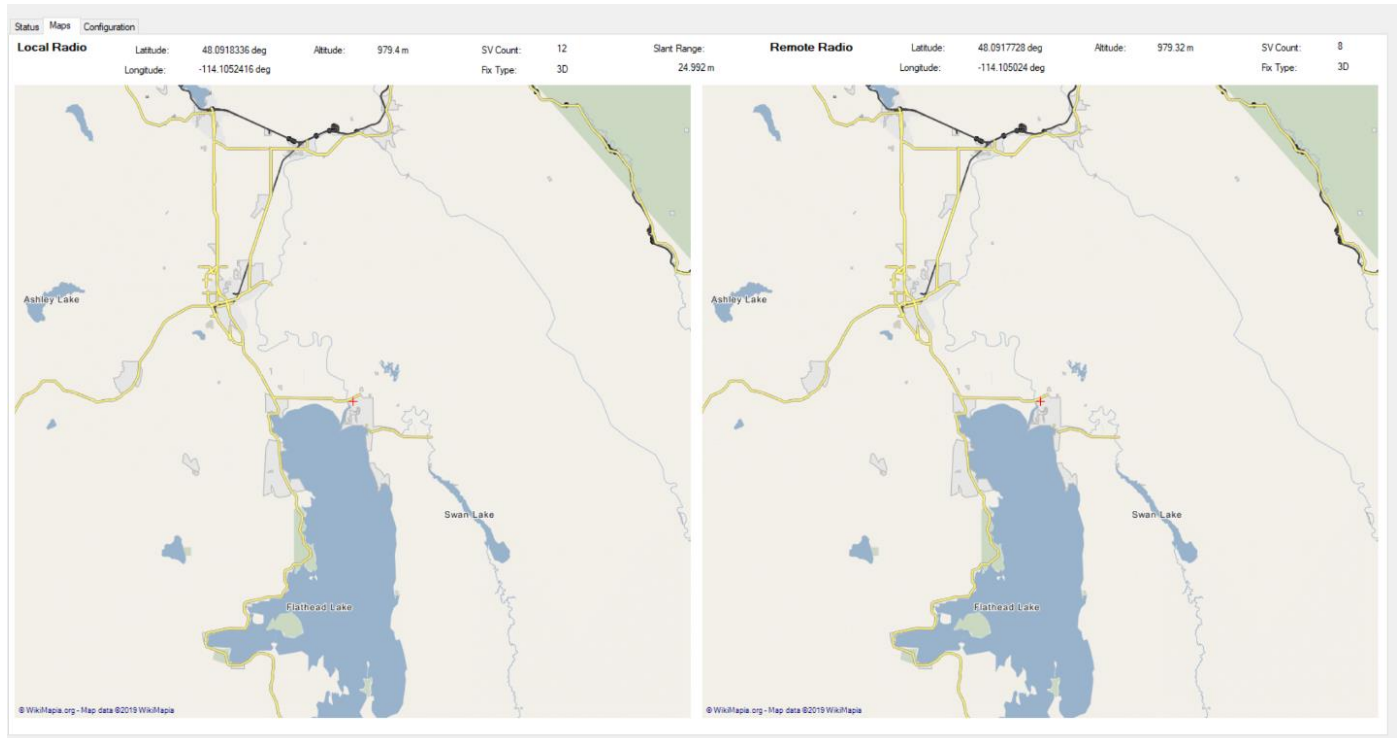


RSSI detail shown below.



6.3.6 Maps Tab

skyLinkApp.exe has a mapping tab for mapping the local radio skyStation radio as well as the remote aircraft radio. It includes latitude, longitude, altitude, GPS fix type, Slant Range and SV count.



6.3.7 Configuration Tab

skyLinkApp.exe also contains a Configuration page. This page is used for device settings and setup as well as system selecting the hop table scheme for the system.

Status

Maps

Configuration

Frequency	Sync Word
922.75	0x369C782
917.25	0x8817133B
917.75	0xF4DA06DB
905.00	0x864FCCD1
922.00	0x805A36B4
921.25	0x3D707C94
926.25	0x71487AC9
915.50	0x038C6E8A
914.75	0xD0D28EBC
909.00	0xA7FF20CA
921.75	0xD0D28EBC
919.75	0x7A4464D3
918.25	0x805A36B4
912.25	0x24F5DDF8
919.50	0xB83DB5BE
925.00	0xF1943021
916.50	0xD0D28EBC
923.00	0xC8310FB8
920.25	0xB83DB5BE
905.25	0x1E6AF037
911.25	0x8CFA479B
911.50	0xEF039589
919.00	0x58B5B3DD
922.50	0x038C6E8A
916.25	0x595EE8F0
915.75	0x0E28F1B0
924.50	0xC0908F8B
907.75	0x501433DE
922.25	0x9DA54FB7
920.00	0x527B11D4
902.75	0x17FF9E21
926.50	0x148DB580
926.00	0x08F849E7
923.50	0x5F303B56
908.50	0x595EE8F0
923.75	0x07BD9F26
909.50	0x038C6E8A
912.50	0x24F5DDF8
908.75	0x80692680
913.50	0x5FBD4093
921.50	0x7A4464D3
914.00	0x35D1FC97
917.25	0x4C676BDE

Hop Table Selector

Static

Load Hopping Table From File

Save Hopping Table To File

Randomly Generate Hopping Table

Default to ISM Hopping Table

Get Hop Table From Device

Save Hop Table To Device

Device Settings

Station Type

Ground

UTC Pulse Polarity

Positive

User Port Baud Rate

57600

GPS Port Baud Rate

115200

Control Port Baud Rate

115200

☐ Frame on UART Idle
 ☒ Frame when Stale

Framer MTU

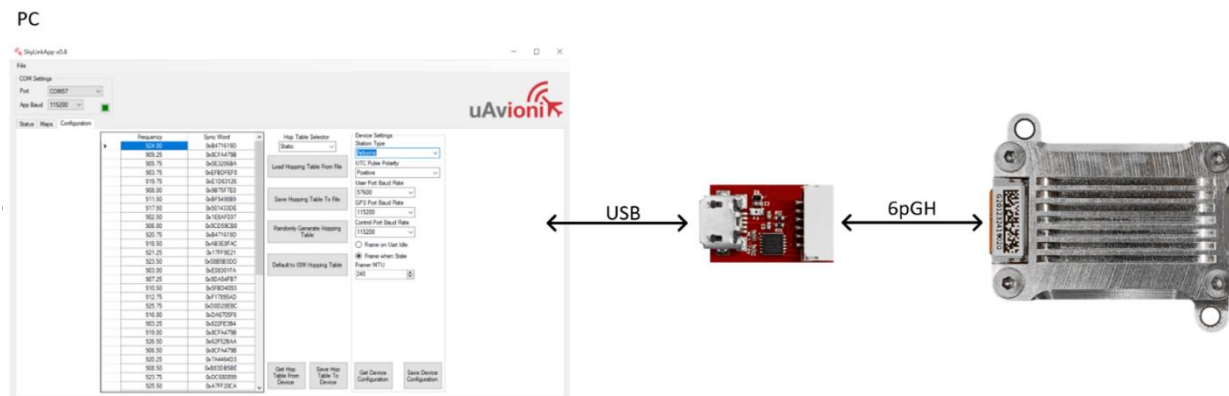
240

Get Device Configuration

Save Device Configuration

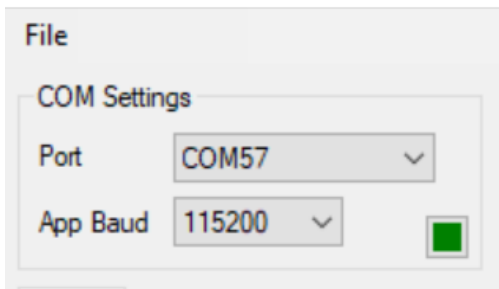
6.3.7.1 ARS Configuration

Connect as shown below then run skyLinkApp.



Select Port and set the App Baud to 115200.

 SkyLinkApp v0.8



On the Configuration Tab:

- Default to ISM Hopping Table
- Save Hop Table to Device
 - Station Type: Airborne
 - UTC Pulse Polarity: Positive
 - User Port Baud Rate: 57600
 - GPS Port Baud Rate: 115200
 - Control Port Baud Rate: 115200
 - Check Frame When Stale
 - Framer MTU: 240
- Save Device Configuration

Frequency	Sync Word
924.00	0xB471619D
909.25	0x8CFA479B
905.75	0x0E32068A
903.75	0xEFBDFF8
919.75	0xE1D63126
908.00	0x9B75F7E0
911.50	0xBF5498B9
917.50	0x501433DE
902.50	0x1E6AF037
906.00	0x5CD59CB8
920.75	0xB471619D
918.50	0xA83E8FAC
921.25	0x17FF9E21
923.50	0x58B5B3DD
903.00	0xE08301FA
907.25	0x9DA54FB7
910.50	0x5FBD4093
912.75	0xF17895AD
925.75	0xD0D28EBC
916.00	0xDA6705F6
903.25	0x822FE3B4
919.00	0x8CFA479B
926.50	0x62F52BAA
906.50	0x8CFA479B
920.25	0x7A4464D3
908.50	0xB83DB5BE
923.75	0xDC680899

Hop Table Selector
Static

Load Hopping Table From File

Save Hopping Table To File

Randomly Generate Hopping Table

Default to ISM Hopping Table

Device Settings
Station Type
Airborne

UTC Pulse Polarity
Positive

User Port Baud Rate
57600

GPS Port Baud Rate
115200

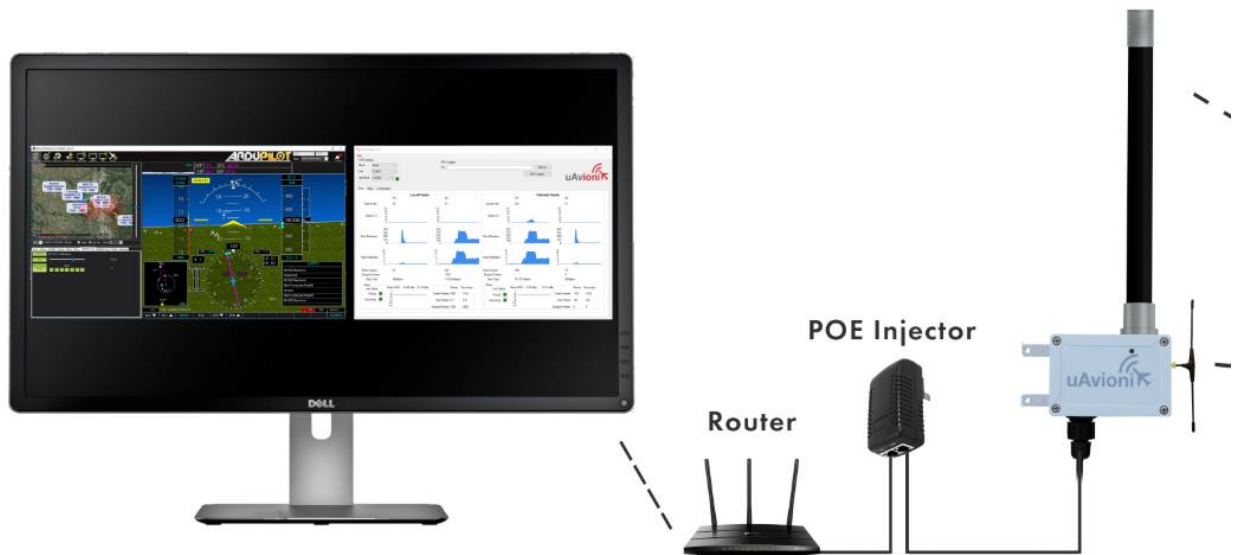
Control Port Baud Rate
115200

☐ Frame on Uart Idle
☒ Frame when Stale

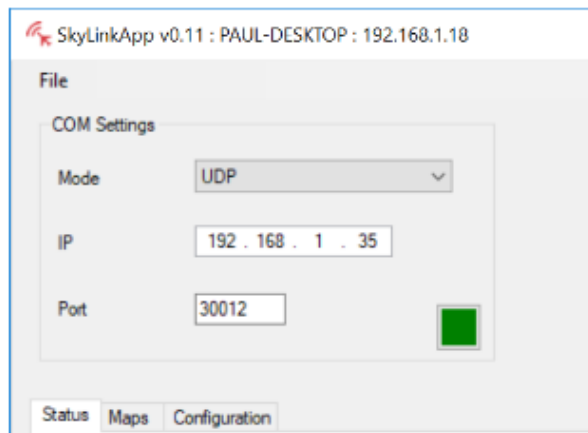
Framer MTU
240

6.3.7.2 GRS Configuration

Connect as shown below then run the skyLinkApp.



Select Port and set UDP / TCP as configured.



On the Configuration Tab:

- Default to ISM Hopping Table
- Save Hop Table to Device
 - Station Type: Ground
 - UTC Pulse Polarity: Positive
 - User Port Baud Rate: 57600
 - GPS Port Baud Rate: 115200
 - Control Port Baud Rate: 115200
 - Check Frame When Stale
 - Framer MTU: 240
- Save Device Configuration

Frequency	Sync Word
924.00	0xB471619D
909.25	0x8CFA479B
905.75	0x0E32068A
903.75	0xEFBDFF8
919.75	0xE1D63126
908.00	0x3B75F7E0
911.50	0xBF5498B9
917.50	0x501433DE
902.50	0x1E6AF037
906.00	0x5CD59CB8
920.75	0xB471619D
918.50	0xAB3E8FAC
921.25	0x177F9E21
923.50	0x59B5B3DD
903.00	0xE08301FA
907.25	0x9DA54FB7
910.50	0x5FBD4093
912.75	0xF17895AD
925.75	0xD0D28EBC
916.00	0xDA6705F6
903.25	0x322FE3B4
919.00	0x8CFA479B
926.50	0x62F52BAA
906.50	0x8CFA479B
920.25	0x7A4464D3
908.50	0xB83DB58E
923.75	0xDC680899

Hop Table Selector
Static

Load Hopping Table From File

Save Hopping Table To File

Randomly Generate Hopping Table

Default to ISM Hopping Table

Device Settings
Station Type
Ground

UTC Pulse Polarity
Positive

User Port Baud Rate
57600

GPS Port Baud Rate
115200

Control Port Baud Rate
115200

☐ Frame on Uart Idle
☒ Frame when Stale

Framer MTU
240

6.4 skyStation Configuration and Health Webpage

skyLinkApp.exe will give the IP address of the skyStation. The skyStation IP address can be also be determined without skyLinkApp.exe by accessing the local DHCP server and reviewing the connected devices or by using industry accepted network scanning tools. Directions for each DHCP server, router, or network scanning tool differ. Refer to the instruction manual for these devices or tools to help determine the IP address assigned to the skyStation. The MAC address for each skyStation can be found on the device housing.

The following pages can be viewed in your web browser.

Note nnn.nnn.nnn.nnn is the IP address of the skyStation.

- skyStation base URL:

<http://nnn.nnn.nnn.nnn/>

Displays Health statistics, position and version information. Use to program the target UDP address and Port number.

- skyStation status URL:

<http://nnn.nnn.nnn.nnn/api/v1/stats>

Displays the status json sentence/

- skyStation update URL:

<http://nnn.nnn.nnn.nnn/update>

Provides ability to update skyStation firmware.

The base URL displays configuration items as well as dynamic skyStation health statistics. The defaults for the User and Control channel connections is shown. All parameters can also be modified to fit your network needs.



Configuration

User Connection Type: ☐ UDP ☒ TCP

User UDP IP Address:

User UDP Port:

User TCP IP Address: (0.0.0.0 for TCP Server)

User TCP port:

Control Connection Type: ☒ UDP ☐ TCP

Control UDP IP Address:

Control UDP Port:

Control TCP IP Address: (0.0.0.0 for TCP Server)

Control TCP port:

Static IP Address: (0.0.0.0 for DHCP)

Subnet Mask:

Gateway IP Address:

DNS Address:

Reset Factory Defaults: ☐ RESET

Health

User Serial Total KB Received: 7884 User Serial Bytes/s: 2240 User TCP Bytes Received: 81547 User UDP Bytes Received: 0

Control Serial Total KB Received: 1177 Control Bytes/s: 342 Control TCP Bytes Received: 0 Control UDP Bytes Received: 0

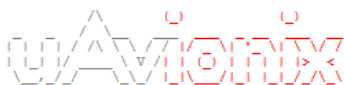
TCP Received: 14030 TCP Transmit: 6644 TCP Drops: 245

Free Space: 29992 Allocated Space: 15064

Version: 0.1.1

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Figure 6-1 Default skyStation Settings



Configuration

User Connection Type: ☐ UDP ☒ TCP

User UDP IP Address:

User UDP Port:

User TCP IP Address: (0.0.0.0 for TCP Server)

User TCP port:

Control Connection Type: ☒ UDP ☐ TCP

Control UDP IP Address:

Control UDP Port:

Control TCP IP Address: (0.0.0.0 for TCP Server)

Control TCP port:

Static IP Address: (0.0.0.0 for DHCP)

Subnet Mask:

Gateway IP Address:

DNS Address:

Reset Factory Defaults: ☐ RESET

[Update](#)

Health

User Serial Total KB Received: 54 User Serial Bytes/s: 0 User TCP Bytes Received: 15392 User UDP Bytes Received: 40451

Control Serial Total KB Received: 1404 Control Bytes/s: 341 Control TCP Bytes Received: 43 Control UDP Bytes Received: 0

TCP Received: 24117 TCP Transmit: 21167 TCP Drops: 10

Free Space: 29704 Allocated Space: 15352

Version: 0.1.3

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Figure 6-2 Typical skyStation Settings

6.4.1 Configuration Items

Configuration Item	Description
User Connection Type	These checkboxes indicate a connection type of UDP or TCP to the skyStation on the User connection. The default User connection setting is TCP. The User connection is typically a connection between the aircraft and the ground station software.

Configuration Item	Description
User UDP IP Address	When the User Connection Type is UDP, this parameter is the IP address of the computer running the ground control software. UDP datagrams will be sent by skyStation to the IP address specified in this field. The default value for this parameter is the broadcast address 255.255.255.255. This facilitates data delivery with minimal configuration.
User UDP Port	When the User Connection Type is UDP, this is the port number used for the User connection. Typically, the ground control software uses the user connection to communicate with the aircraft. The skyStation listens on this port and forwards any received UDP datagrams from ethernet to the aircraft. Any User connection data coming from the aircraft will be sent as an ethernet UDP datagram to [User UDP IP Address : User UDP Port]. The default User UDP port is 30010.
User TCP IP Address	When the User Connection Type is TCP, this parameter is used for the User connection to the ground station software. There are two modes of operation available. When this parameter is 0.0.0.0, the skyStation will act as a TCP server and listen for incoming connections. Alternatively, if this address is a valid IP address, the skyStation will act as a TCP client and will attempt to connect to a TCP server listening on [User TCP IP Address : User TCP Port]. 0.0.0.0 is the default setting for this parameter.
User TCP Port	When the User Connection Type is TCP, this is the port the TCP server listens on for incoming connections if configured as a server. Alternatively, it will be the port skyStation attempts to connect to if configured as a client (see User TCP IP address). The default User TCP port is 30011. Use care if choosing a different port number than the default so as to not conflict with other TCP services provided by the skyStation.
Control Connection Type	These checkboxes indicate a Control connection type of UDP or TCP to the skyStation. The default setting is UDP. The Control connection is typically a connection between the skyStation and a computer running aircraft ground configuration and health software such as skyLinkApp.exe.
Control UDP IP Address	When the Control Connection Type selected is UDP, this is the IP address of the computer running ground configuration and health software. UDP datagrams will be sent by skyStation to the IP address specified in this field. The default setting for this parameter is

Configuration Item	Description
	255.255.255.255 which results in data being broadcast to facilitate automatic discovery with skyLinkApp. If you do not wish to use broadcast, set this parameter equal to the IP address of the computer running skyLinkApp.
Control UDP Port	When the Control Connection Type is UDP, this is the port used by skyStation to listen for control data coming from skyLinkApp. skyStation will use [Control UDP IP Address : Control UDP Port] as the destination for control data going from skyStation to skyLinkApp. skyLinkApp must be configured with [skyStation IP Address : Control UDP Port] in the COM settings box in order to communicate with skyStation. The default value for this parameter is 30012.
Control TCP IP Address	When the Control Connection Type is TCP, this is the IP address of the computer running ground configuration and health software. There are two modes of operation available. When this parameter is 0.0.0.0, the skyStation will act as a TCP server and listen for incoming connections. Alternatively, if this address is a valid IP address, the skyStation will act as a TCP client and will attempt to connect to a TCP server listening on [Control TCP IP Address : Control TCP Port]. 0.0.0.0 is the default setting for this parameter. When using skyLinkApp, this parameter must be set to 0.0.0.0.
Control TCP Port	When the Control Connection Type is TCP, this is the port the TCP server listens on for incoming connections if configured as a server. Otherwise, it will be the port skyStation attempts to connect to if configured as a client (see Control TCP IP address). The default Control TCP port is 30013. Use care if choosing a different port number than the default so as to not conflict with other TCP services provided by the skyStation. If using a TCP Control Connection, skyLinkApp must be configured with [skyStation IP Address : Control TCP Port] in the COM settings box in order to communicate with skyStation.
Static IP Address	This is the fixed IP address number of the skyStation which will not change. The network administrator may assign this number. Set this field to 0.0.0.0 to enable DHCP.
Subnet Mask	Mask used with the skyStation IP address to differentiate between local and remote subnet destinations.
Gateway IP Address	Address used to send packets out of the local network.

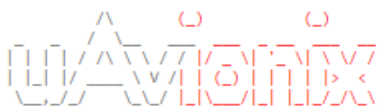
Configuration Item	Description
DNS Address	IP address of the Domain Name Service.
Reset Factory Defaults	By checking this box and hitting the Update button, all connection types, IP Addresses and ports will be restored to the factory default. This function also performs a system reset. The screenshot above documents the factory default settings.



When you modify any configuration item, press the Update button to store the changes. These fields are non-volatile and persist through power cycles.

6.4.2 Health

The Health section shows some real time statistics updated once every 2 seconds. It will show if we are sending and receiving serial data and at what rates. It shows TCP/IP stack health and diagnostic data as well as global memory usage data statistics.



Configuration

User Connection Type: ☐ UDP ☒ TCP

User UDP IP Address:

User UDP Port:

User TCP IP Address: (0.0.0.0 for TCP Server)

User TCP port:

Control Connection Type: ☒ UDP ☐ TCP

Control UDP IP Address:

Control UDP Port:

Control TCP IP Address: (0.0.0.0 for TCP Server)

Control TCP port:

Static IP Address: (0.0.0.0 for DHCP)

Subnet Mask:

Gateway IP Address:

DNS Address:

Reset Factory Defaults: ☐ RESET

Health

User Serial Total KB Received: 7884 User Serial Bytes/s: 2240 User TCP Bytes Received: 81547 User UDP Bytes Received: 0

Control Serial Total KB Received: 1177 Control Bytes/s: 342 Control TCP Bytes Received: 0 Control UDP Bytes Received: 0

TCP Received: 14030 TCP Transmit: 6644 TCP Drops: 245

Free Space: 29992 Allocated Space: 15064

Version: 0.1.1

[About / Copyrights](#)

Statistic	Description
User Serial Total KB Received	This is the total number of bytes received on the User serial channel in kilobytes

User Serial Bytes/s	This is the current number of bytes per second on the User serial channel
User TCP Bytes Received	This is the total number of TCP bytes received on the User channel when the User Connection type is TCP
User UDP Bytes Received	This is the total number of UDP bytes received on the User channel when the User Connection type is UDP
Control Serial Total KB Received	This is the total number of bytes received on the User serial channel in kilobytes
Control Bytes/s	This is the current number of bytes per second on the Control serial channel
Control TCP Bytes Received	This is the total number of TCP bytes received on the Control channel
Control UDP Bytes Received	This is the total number of UDP bytes received on the Control channel
TCP Received	This is the total number of TCP packets received by the TCP/IP stack
TCP Transmit	The number of TCP packets send by the stack
TCP Drops	The number of TCP packets dropped by the stack
Free Space	Memory free space
Allocated Space	Memory used space
Version	The version of software this skyStation running.

6.5 Updating Devices

The following sections outline the steps to update the firmware on the microLink radios and the skyStation. There are three updating procedures, one for the skyStation firmware, one for the ground-based radio internal to the skyStation, and one for the airborne radio. The firmware image used for the ground-based radio and the airborne radio is the same. You will need to download the PingBootFlasher.exe to update the airborne radio. Updating the skyStation and the ground radio is done via web interface.

6.5.1 Updating skyStation

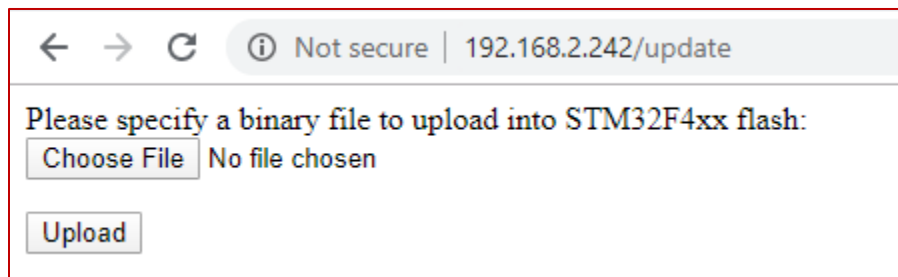
Download and save the “UAV” skyStation firmware image (e.g. skyStation_V_0_1_2.uav) onto a Mac or PC. Use the Chrome web browser. Other web browsers may have compatibility problems.

Connect the skyStation to the network via POE.

If not known, use a network scanning software to find the IP address of the skyStation. The MAC address will be labelled on the bottom of the skyStation.

When the IP address is known, open a web browser and in the URL search bar enter the IP address followed by “/update”

Ex: ###.###.###/update



Select “Choose File” and select the downloaded skyStation firmware. Then click “Upload”

DO NOT DISCONNECT THE SKYSTATION OR CLOSE THE WEBBROWSER UNTIL UPDATE IS COMPLETE

Once file upload is complete click the button that says “Reset MCU”




Once Reset is complete, unplug the skyStation from the POE and plug it back in to finish the update. Follow steps 1-3 to get reconnected the skyStation then go to the main IP page by entering the IP address in the URL search bar.

Ex: ###.###.###

Verify the device version has properly been updated.

← → ↻ ⓘ Not secure | 192.168.2.220



Configuration

User Connection Type: ☐ UDP ☒ TCP

User UDP IP Address:

User UDP Port:

User TCP IP Address: (0.0.0.0 for TCP Server)

User TCP port:

Control Connection Type: ☒ UDP ☐ TCP

Control UDP IP Address:

Control UDP Port:

Control TCP IP Address: (0.0.0.0 for TCP Server)

Control TCP port:

Static IP Address: (0.0.0.0 for DHCP)

Subnet Mask:

Gateway IP Address:

DNS Address:

Reset Factory Defaults: ☐ RESET

Health

User Serial Total KB Received: 0 User Serial Bytes/s: 0 User TCP Bytes Received: 0 User UDP Bytes Received: 0

Control Serial Total KB Received: 10 Control Bytes/s: 340 Control TCP Bytes Received: 0 Control UDP Bytes Received: 0

TCP Received: 63 TCP Transmit: 50 TCP Drops: 0

Free Space: 30384 Allocated Space: 14672

Version: 0.1.2

[Product Support](#)

6.5.2 Updating Ground microLink Radio

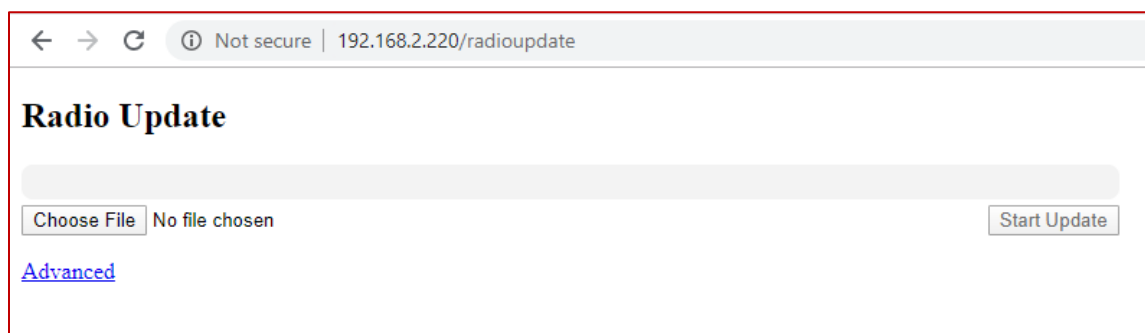
Download and save the most recent microLink “UAV” firmware (e.g. C2Dev_V_0_9.uav) onto a Mac or PC. Use the Chrome web browser. Other web browsers may have compatibility problems.

Connect the skyStation to the network via POE.

If not known, use a network scanning software to find the IP address of the skyStation. The MAC address will be labelled on the bottom of the skyStation.

When the IP address is known, open a web browser and in the URL search bar enter the IP address followed by “/radioupdate”

ex: ###.###.###/radioupdate



Select “Choose File” and select the downloaded microLink firmware. Then click “Start Update”

DO NOT DISCONNECT THE SKYSTATION OR CLOSE THE WEBBROWSER UNTIL UPDATE IS COMPLETE

When update is complete you will automatically be directed back to the main status page.

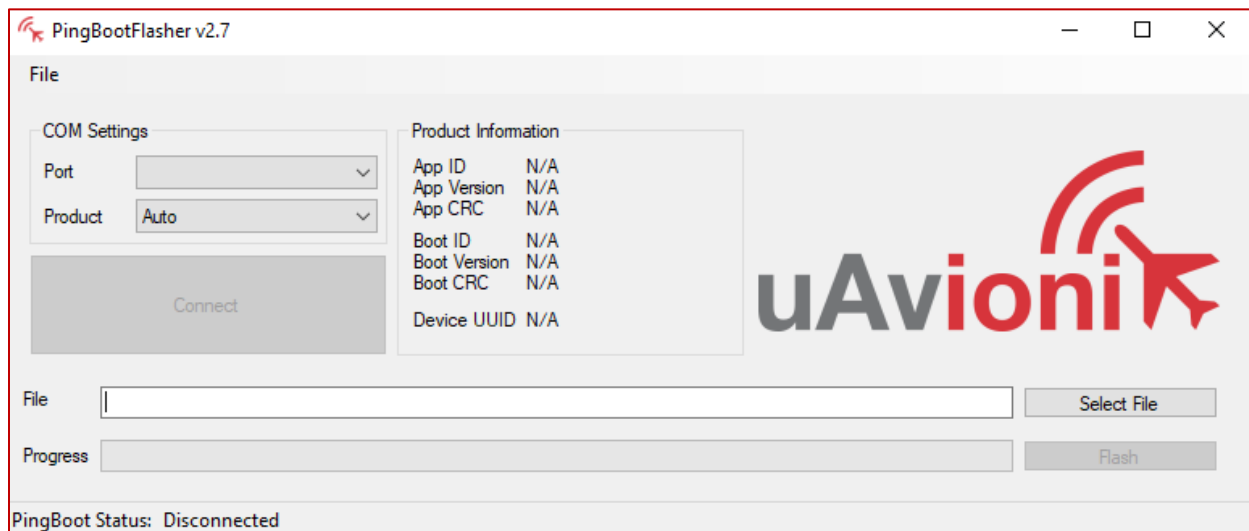
6.5.3 Updating Airborne microLink Radio

Connect the microLink airborne radio to a Mac or PC using the supplied “user” programming chip, 6 pin GH cable, and a micro-USB cable. Connect the microLink radio through the “User” port.

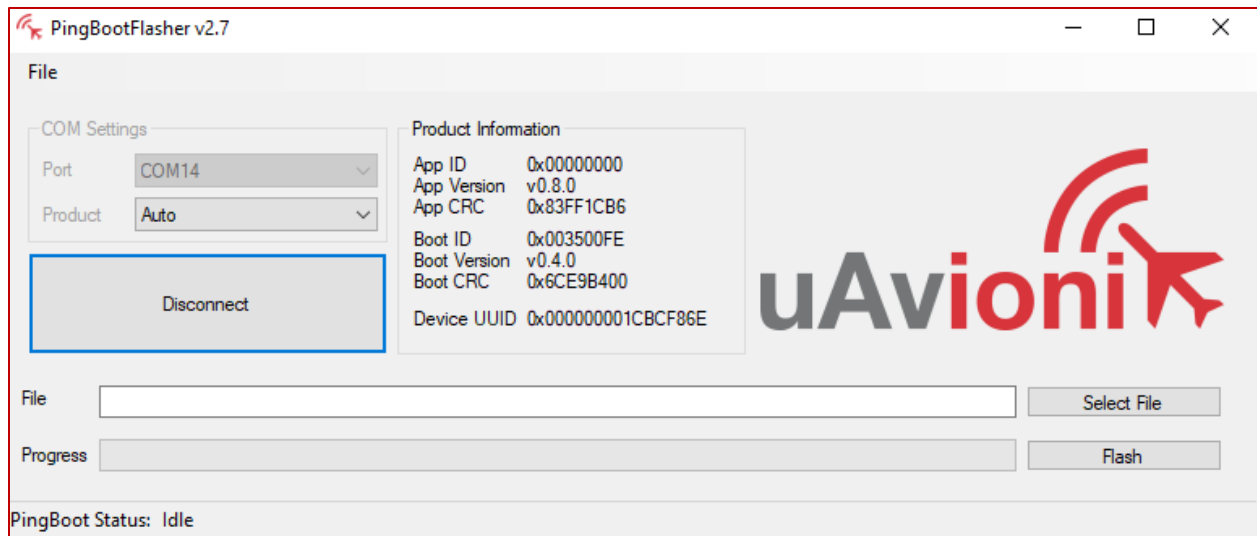


Download the PingBootFlasher (v2.7) software and the most recent microLink firmware onto a Mac or PC.

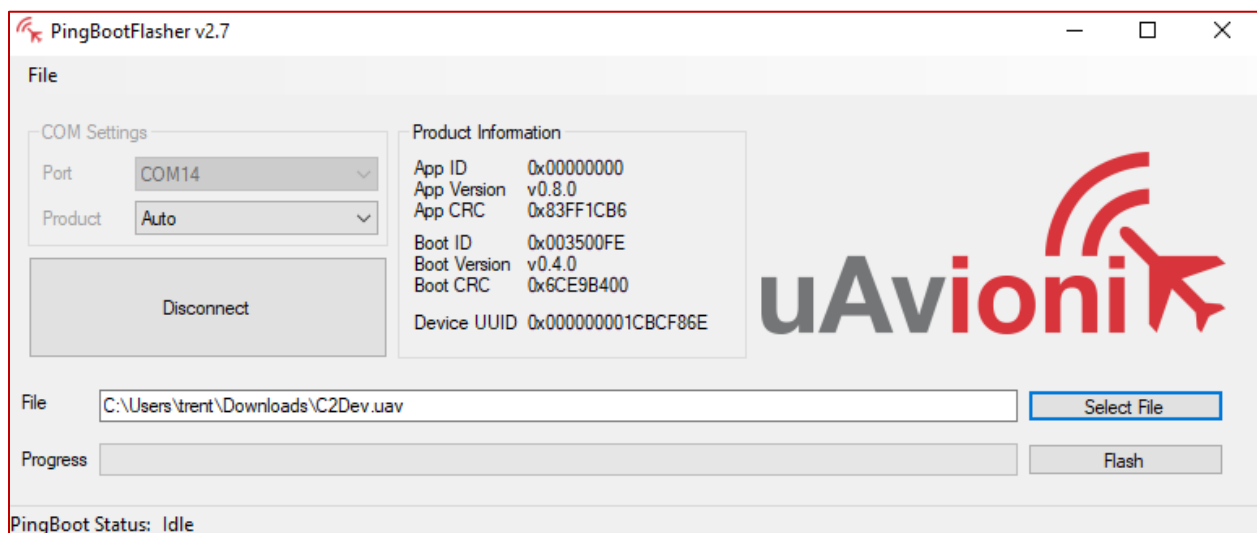
Run the PingBootFlasher software and connect to the microLink radio by selecting the correct COM port on the “Port” dropdown then press connect.



When connected you will see the current App Version and PingBoot Status: Idle on the PingBootFlasher software.



Click “Select File” and select the downloaded microLink firmware. Then click “Flash”



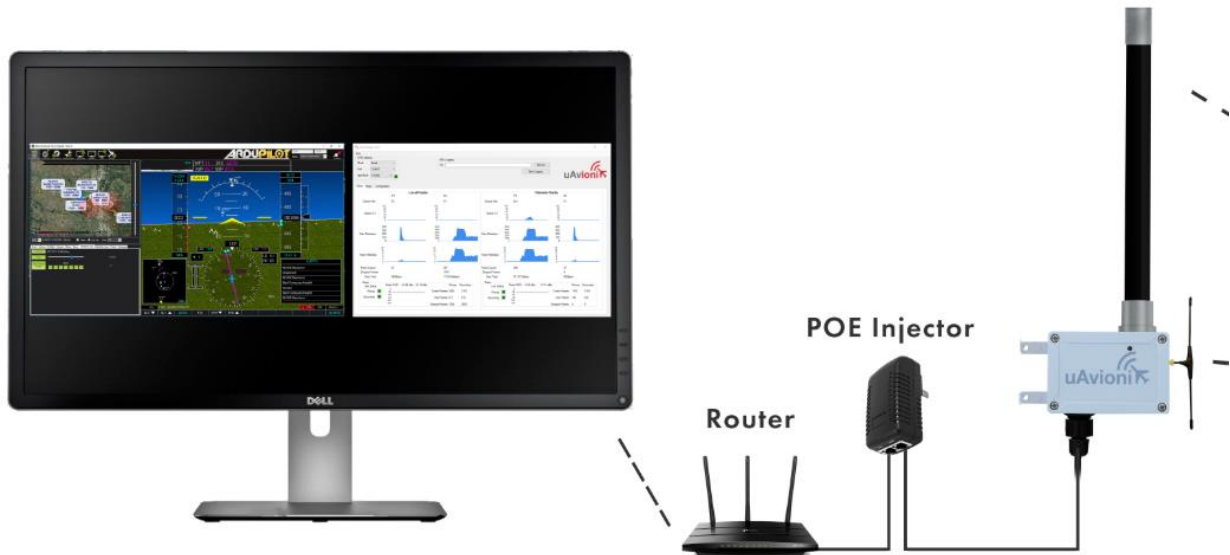
DO NOT DISCONNECT THE MICROLINK RADIO OR CLOSE THE PING BOOT FLASHER UNTIL UPDATE IS COMPLETE

When update is complete, unplug the microLink radio and plug it back into the Mac or PC.

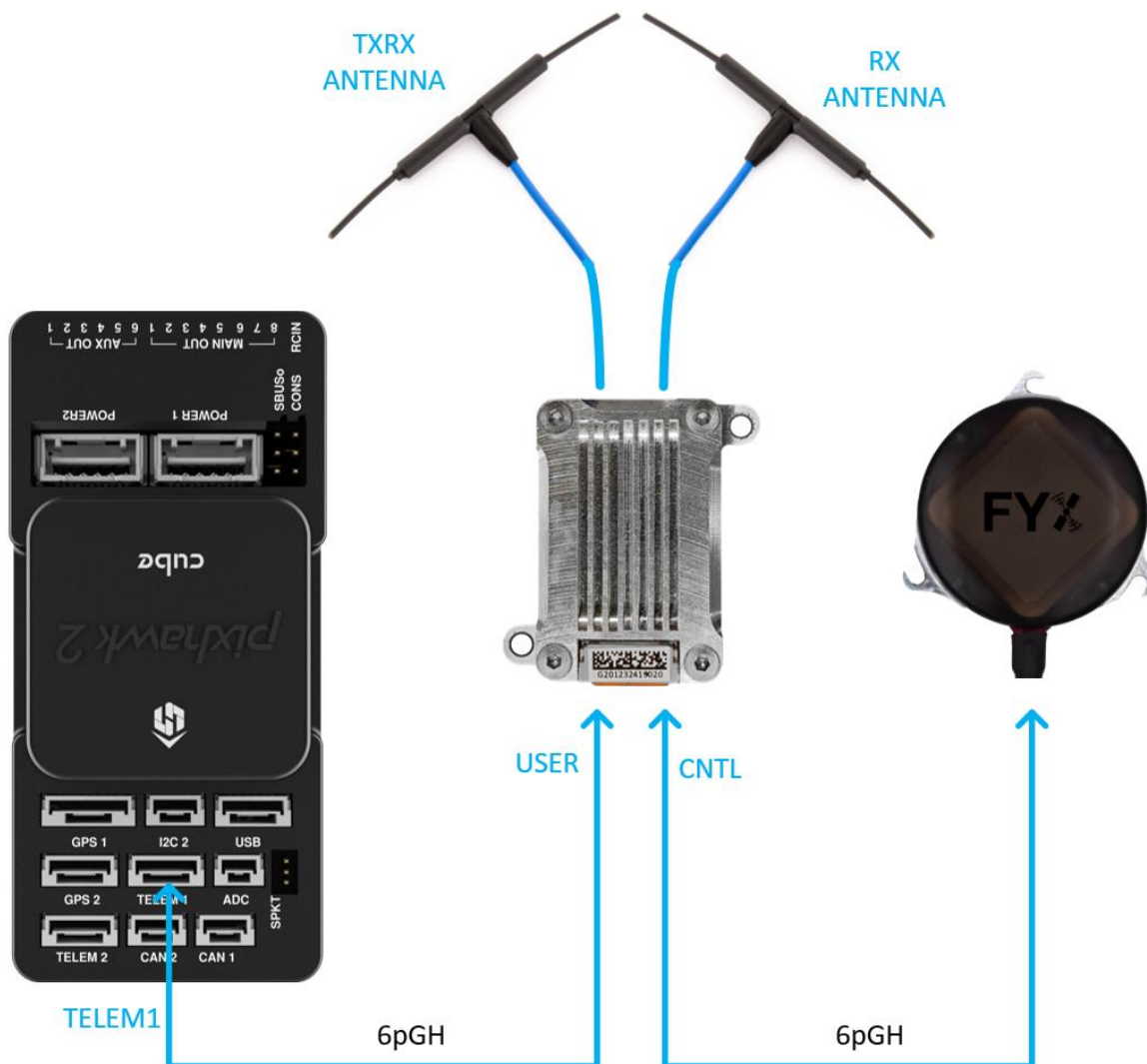
Reconnect the PingBootFlasher to the microLink radio and verify the App Version has updated.

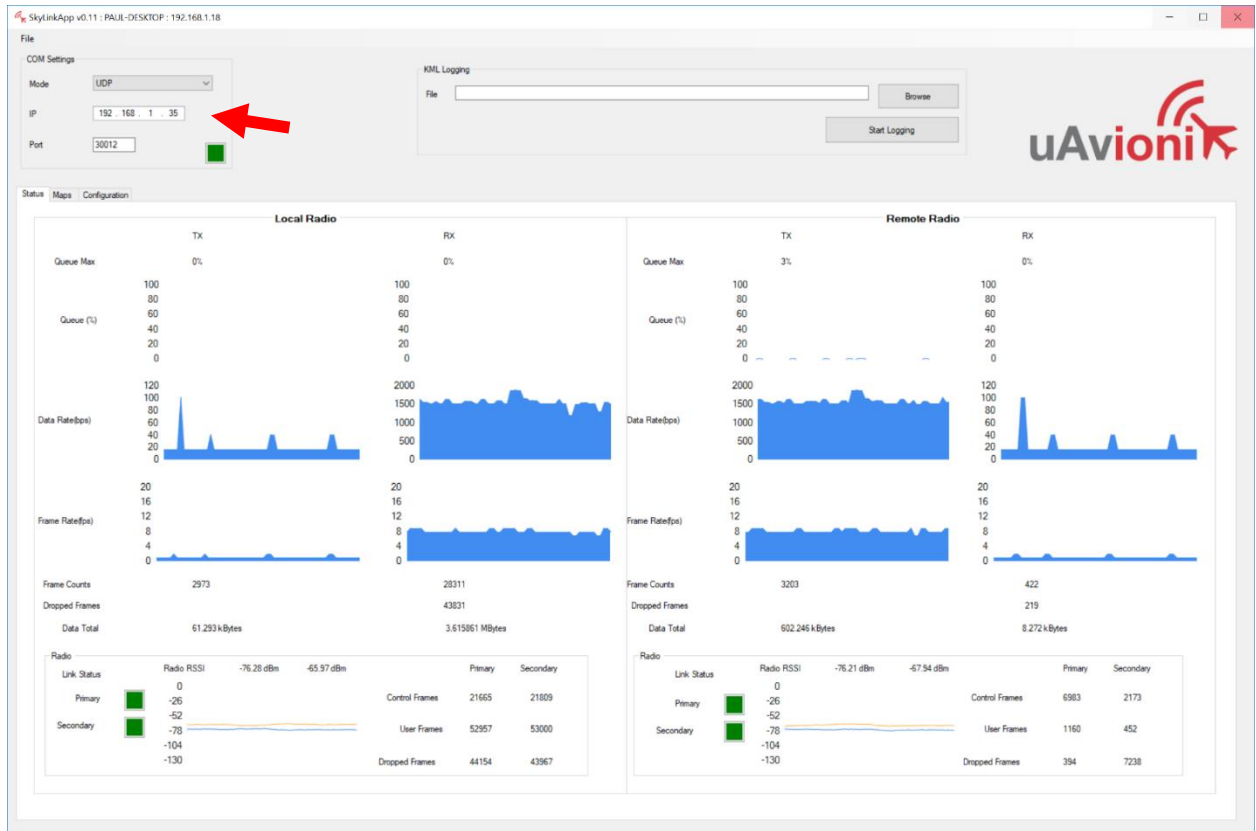
7 Appendix A Quick Start Guide

- Connect your skyStation to your command and control network and power it up.



- Connect the User radio port which is the top port on the radio to the Telemetry 1 port on your Pixhawk2.
- Connect the Control radio port which is the bottom port on the radio your truFYX GPS.
- Power on your aircraft flight control system.
- Launch the skyLinkApp.exe application available at www.uavionix.com and use it to validate communications as well as retrieve the skyStation IP address the DHCP server gives the skyStation for connecting to Mission Planner.

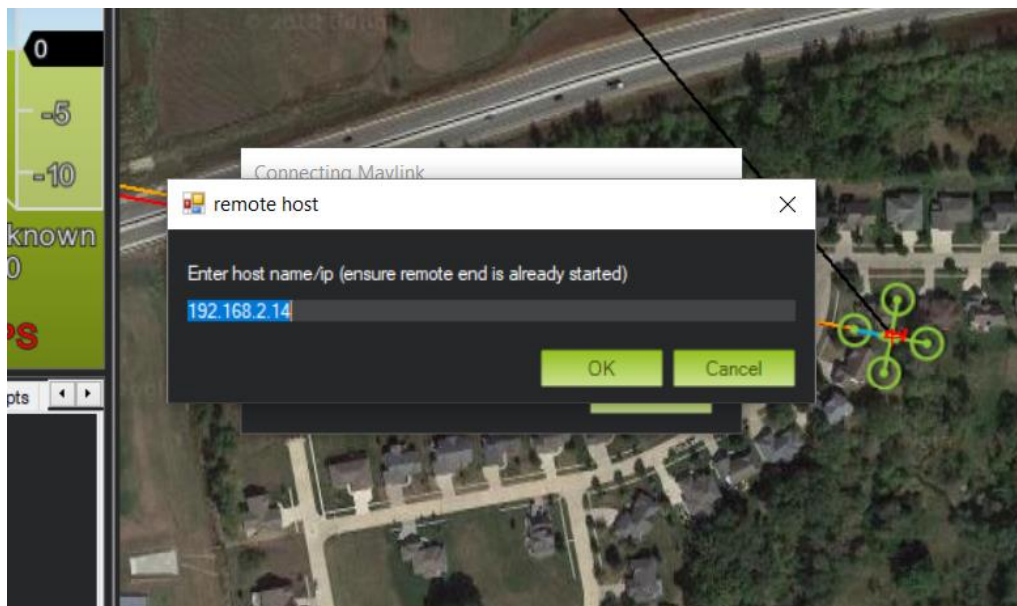




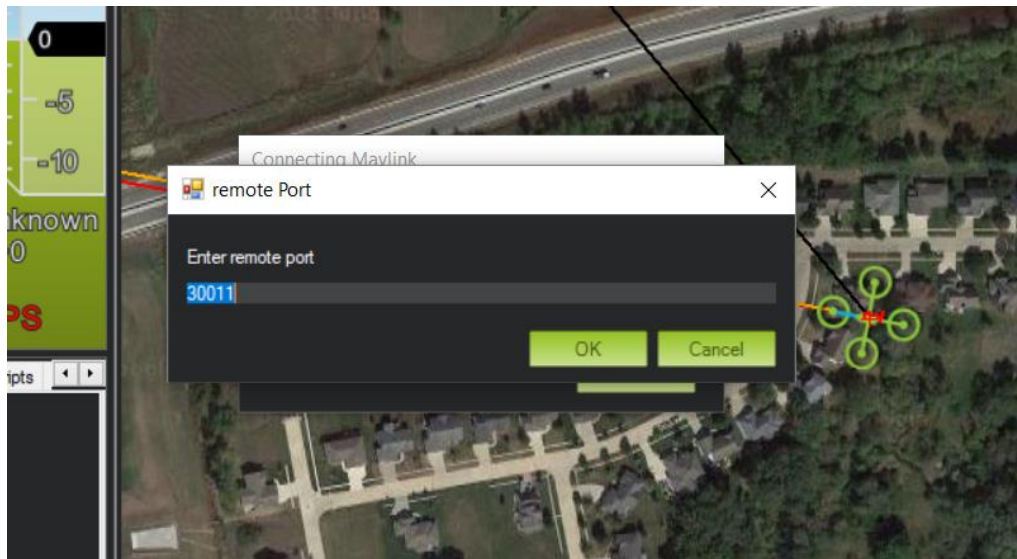
- Connect Mission Planner to the skyStation using a TCP connection to the skyStation IP Address and the default skyStation TCP port of 30011.



- Use the IP address of the skyStation obtained from the skyLinkApp or from your list of DHCP connected devices.



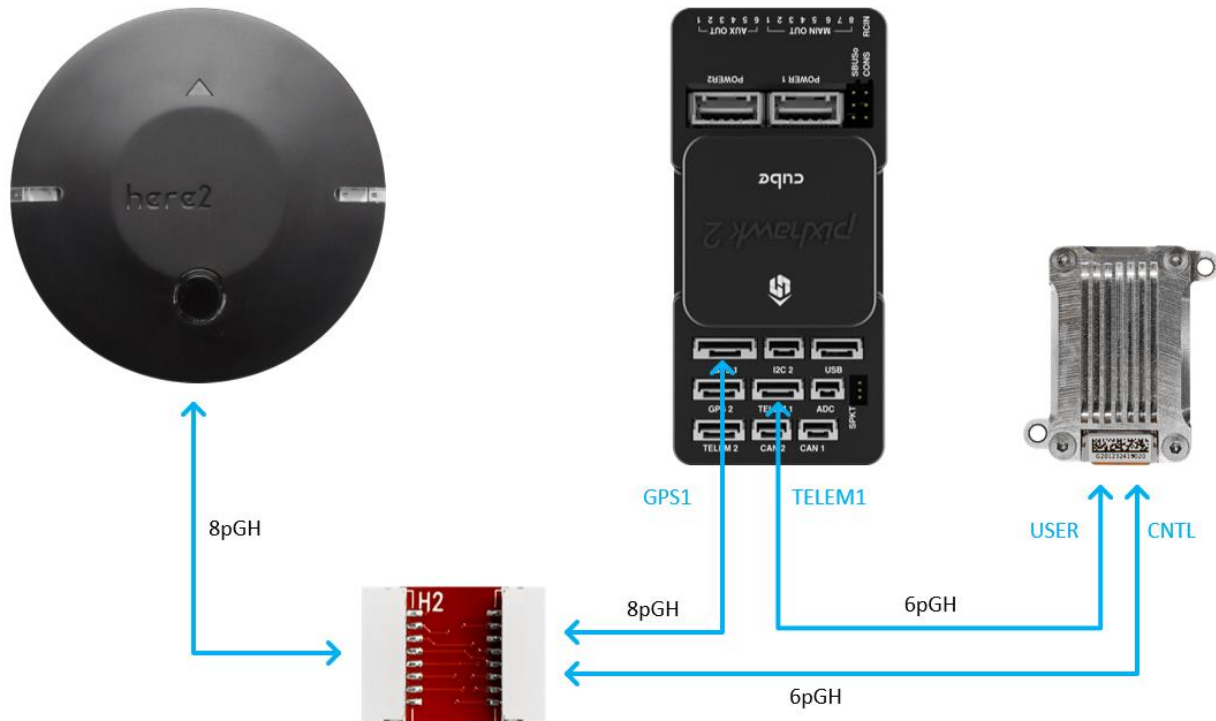
- Use the skyStation default port of 30011.



- Once connected and all the parameters are downloaded you are ready to plan your mission and fly!

8 Appendix B HERE2 GPS Sharing

HERE2 GPS Sharing shown below.



HERE2 GPS PCB

Jumper Pin 6 to the
'1PPS' Test Point
Blue Wire (shown)

