# GNSS Configuration Guide

## for PAS Systems


PHASEONE

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# Table of Contents

# 1 Introduction

## 1.1 Scope

This manual describes how to configure the Global Navigation Satellite System (GNSS) components in PAS systems running iX Flight Pro.

If you purchased the GNSS option from Phase One, the GNSS is preconfigured by Phase One accordingly. Refer to this guide if you need to reset the GNSS to the original Phase One configuration as detailed in the following sections:

- Section 2 - Overview
- Section 3 - Hardware Connections
- Section 4 - Configuring the AP+ through the Browser User Interface
- Section 5 - Configuring the POS AVX 210 through the Browser User Interface
- Section 6 - Configuring the POSAV V6 through POSView
- Section 7 - Configurating iX Flight Pro GNSS Settings

## 1.2 Applicable Documents

| Item | Manual |
|---|---|
| Phase One iX Controller/PAS Controller | Connecting to the iX Controller Using Remote Desktop Connection |
| Phase One iX Flight Pro | iX Flight Pro Operation Guide |
| Phase One PAS 150MP MK2 | PAS 150MP MK2 Operation Guide |
| Phase One PAS 280MP MK2 | PAS 280MP MK2 Operation Guide |
| Phase One PAS Pod | PAS Pod Operation Guide |

## 1.3 List of Terms and Abbreviations

| Term/Abbreviation | Description |
|---|---|
| GNSS | Global Navigation Satellite System. |
| IMU | Inertial measurement unit. |
| INS | Inertial Navigation System.<br>**Note**<br>Applanix refers to some IMU Settings pages as “INS”. |
| PPS | Pulse-per-second (time synchronization output mark). |

# 2 Overview

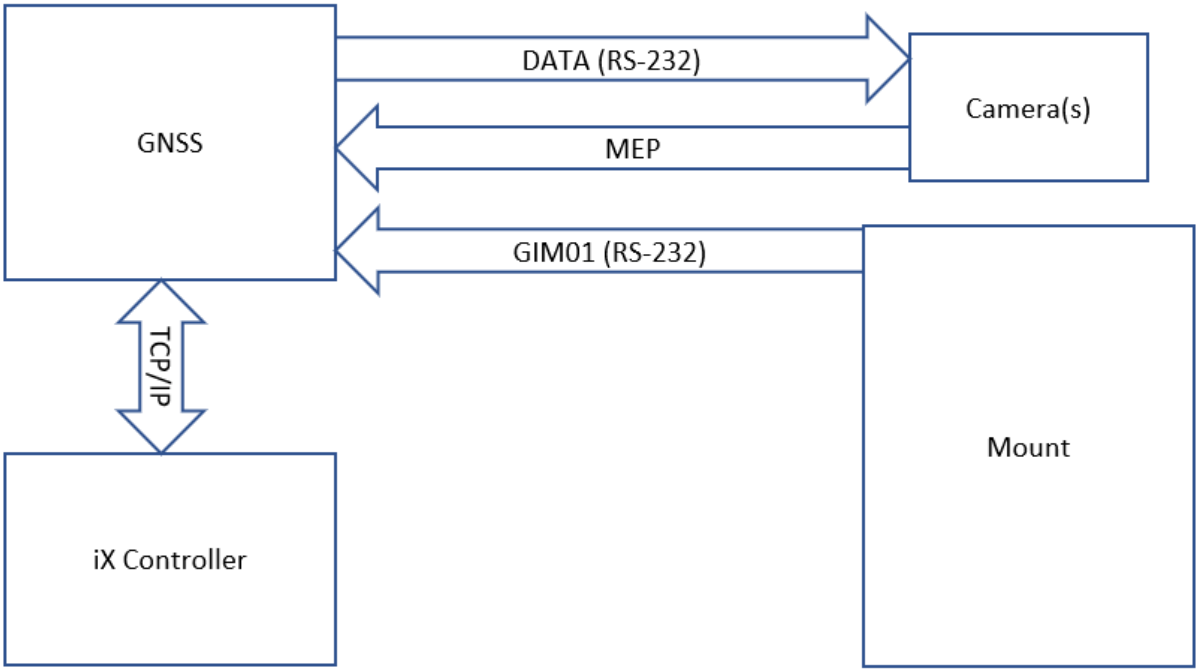
Phase One Aerial Systems (PAS) uses Applanix solutions hardware and software to provide GNSS services for its platforms as follows:

- Trimble AP+XX on iX Controller MK5-based systems and PAS Pod
- POS AVX 210 on iX Controller MK4 and iX Controller MK5-based systems
- POSAV V6 on iX Controller MK4 and iX Controller MK5-based systems

> **Note**
>
> Throughout this document, all GNSS and communication data referring to iX Controller MK5 is also applicable to iX Controller MK6.

The following figure shows the GNSS commands and data transferred between PAS system components and the GNSS. The signals flow is the same for both an internal GNSS card and an external GNSS unit.

**Data and Signal Flow between PAS Components**



# 3 Hardware Connections

## 3.1 AP+XX in iX Controller MK5-Based Systems

### 3.1.1 Compatible Hardware

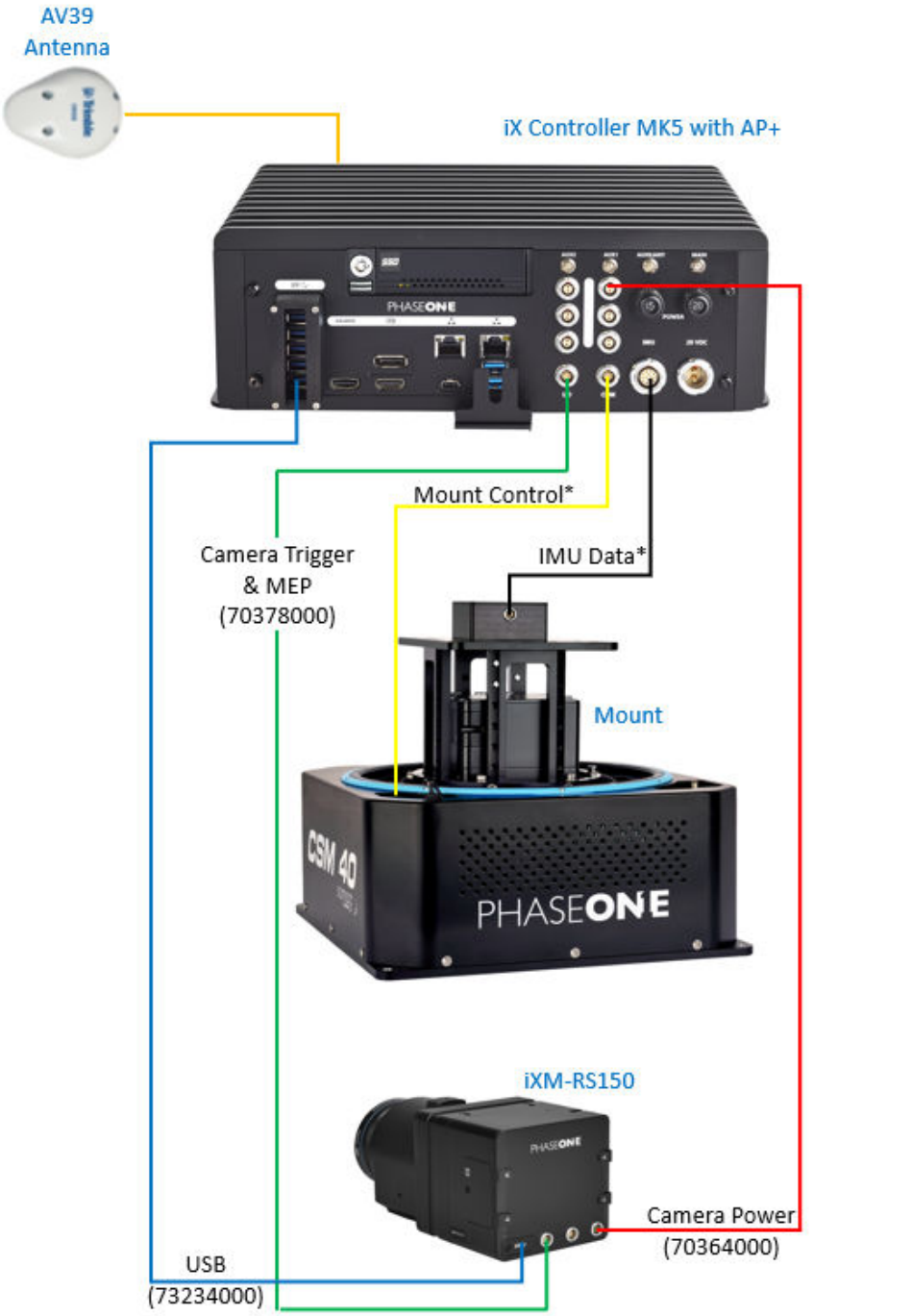
- AP+ pre-installed in iX Controller MK5
- IMU-69, IMU82, IMU91, IMU57

### 3.1.2 Connecting Cables between Components

The following table and figure show the connections between system components for a PAS iX Controller MK5-based system with an internal AP+ GNSS.

> **Note**
>
> - The figure shows a single band system without the Multisync cable between cameras.
> - Aircraft power cables are not shown.

| Cable P/N | Description | Connections |
|---|---|---|
| 70364000 | Power cable, iX Controller/Camera (one for each camera) | 1. iX Controller, AUX2 ports<br>2. iXM-XXX, right-LEMO port |
| 73234000 | USB cable (one for each camera) | 1. iX Controller, USB port<br>2. iXM-XXX, USB port |
| 70378000 | Camera trigger, MEP and image data | 1. iX Controller, I/O port<br>2. iXM-RS150, left LEMO port (on one of the cameras) |
| 75007000 (if more than one camera is present – not shown in figure below) | Multisync cable | 1. iXM-RS150, middle LEMO port (on the same camera to which the Camera trigger & MEP cable is connected)<br>2. iXM-RS150, left LEMO port (on the other camera) |
| 73260000, 3 m<br>73285000, 0.5m<br>73293000, 1.6 m | Mount control | 1. iX Controller, COM port<br>2. Mount, INTERFACE port |
| 73267000 for IMU69, 3 m<br>73273000 for IMU82/IMU91/IMU57, 5 m<br>73278000 for IMU82/IMU91/IMU57, 3 m<br>75098270 for IMU82/IMU91/IMU57, 8 m | IMU data | 1. iX Controller, IMU port<br>2. IMU |
| - | Antenna cable (supplied with antenna) | • iX Controller (rear panel) |


AV39
Antenna
iX Controller MK5 with AP+
Mount Control*
Camera Trigger
& MEP
(70378000)
IMU Data*
Mount
iXM-RS150
Camera Power
(70364000)
USB
(73234000)
*See table for cable details

## 3.2 AP+ XX in PAS Pod

### 3.2.1 GNSS Options

The following Applanix AP+ cards integrated in the PAS Controller can be used with the following IMU models:

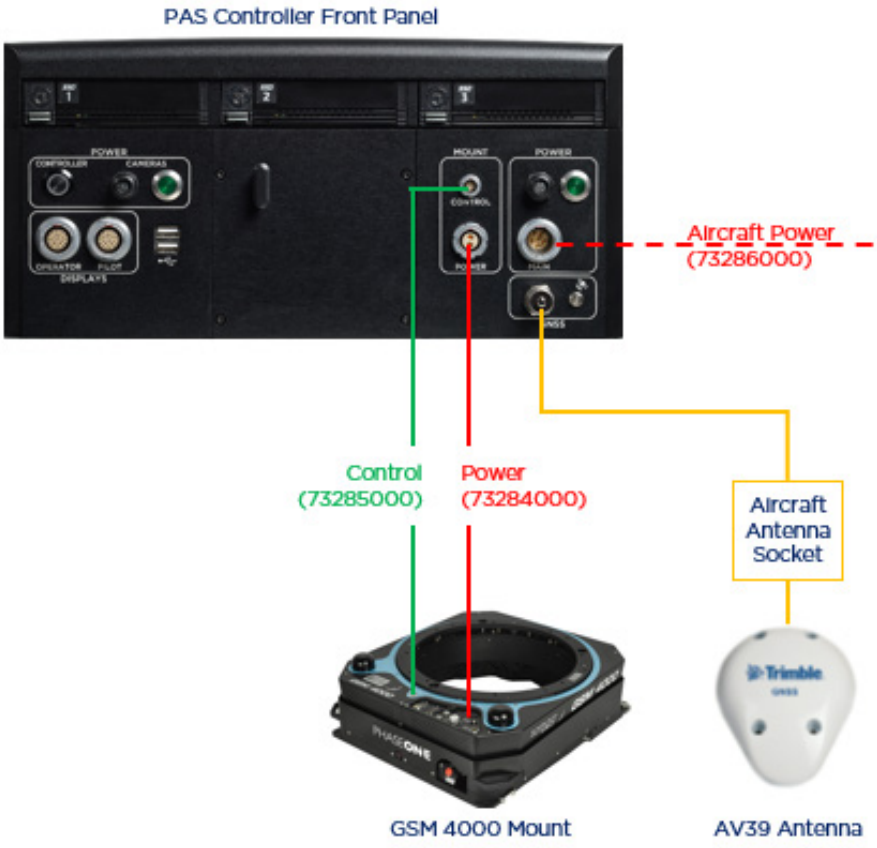
- AP+ 510 with IMU-91
- AP+ 610 with IMU-57

### 3.2.2 Connecting Cables between Components

The following table and figure show the connections between system components for a PAS Controller-based system with an internal AP+ GNSS.

> **Note**
>
> Aircraft power cables are not shown.

| P/N | Description | Connects to |
|---|---|---|
| 73284000 | iX Controller to Somag GSM 4000 mount power cable | 1. iX Controller, POWER<br>2. Somag Mount, POWER SOCKET |
| 73285000 | iX Controller to Somag GSM 4000 mount control cable | 1. iX Controller, CONTROL<br>2. Somag Mount, INTERFACE |
| - | Antenna cable (supplied with antenna) | iX Controller GNSS port |



## 3.3 POS AVX 210 on iX Controller MK5-Based Systems

> **Note**
>
> To use an external GNSS unit with an iX Controller MK5, you must first disable the internal AP+ GNSS - see section 3.6 - Using an iX Controller MK5-based System with an External GNSS.

### 3.3.1 GNSS Options

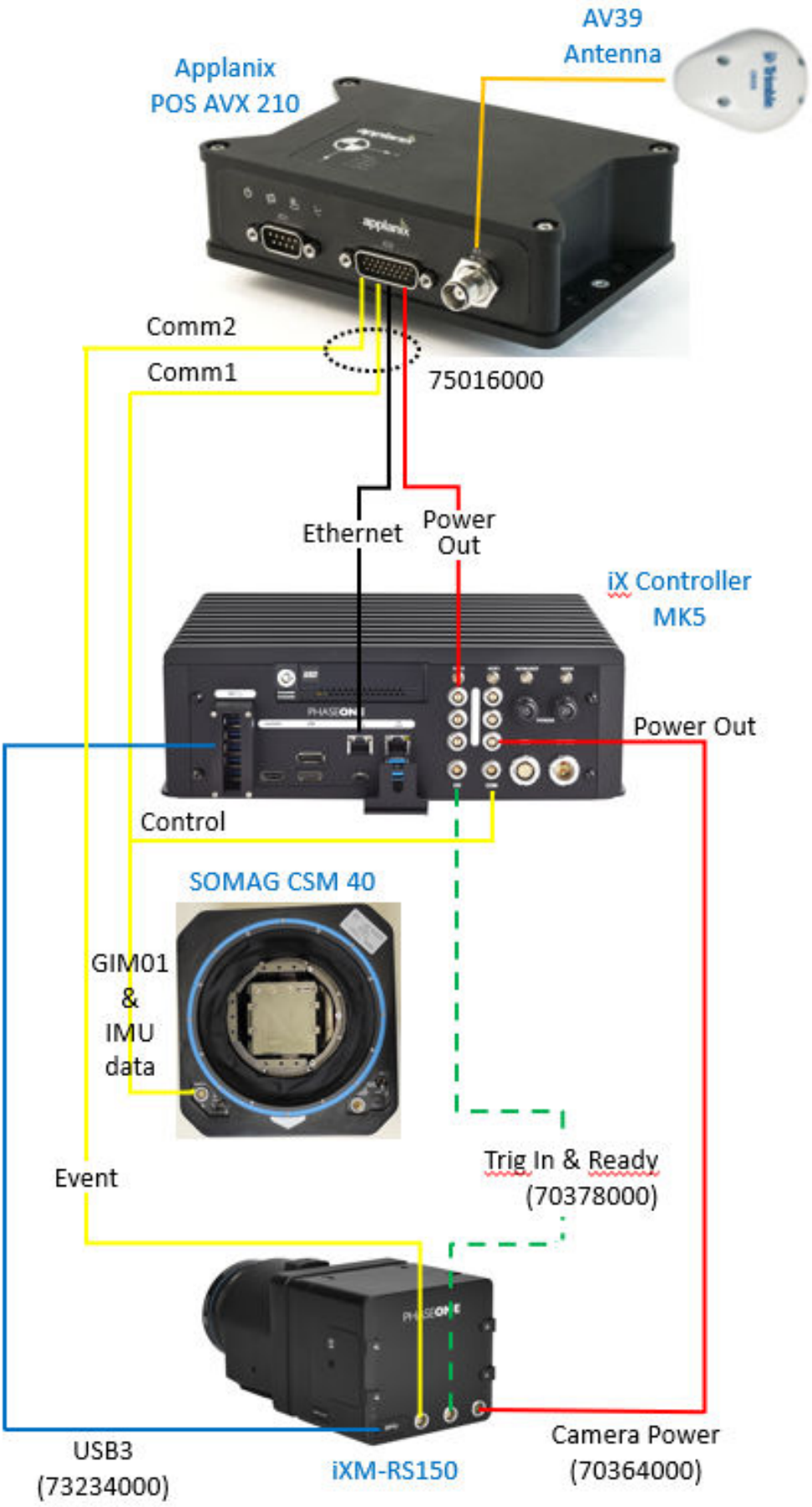
The POS AVX 210 includes an internal IMU.

### 3.3.2 Connecting Cables between Components

The following table and figure show the connections between system components for a PAS iX Controller MK5-based system with a POS AVX 210 GNSS.

> **Note**
>
> Aircraft power cables are not shown.

| P/N | Description | Connects to |
|---|---|---|
| 75016000 | PAS Communication cable | 1. D-Type connector to POS AVX 210 IO2 port<br>2. **iX Controller-PWR** connector to an iX Controller, AUX2 power out port<br>3. **iX Controller-COM** connector to iX Controller, COM port<br>4. **SOMAG mount-INT** connector to Mount INTERFACE port<br>5. **iX Controller-ETH** connector to iX Controller Ethernet port<br>6. **iX Camera-I/O** connector to iXM-XXX left LEMO port |
| 70364000 | Power cable, iX Controller/Camera | 1. iX Controller, AUX2 power out port<br>2. iXM-XXX, right LEMO port |
| 73234000 | USB cable | 1. iX Controller, USB port<br>2. iXM-XXX, USB port |
| 70378000 | Camera control cable (trigger) | 1. iX Controller, IO port<br>2. iXM-XXX, middle LEMO port |
| - | Antenna cable (supplied with antenna) | 1. Aircraft Antenna Connector<br>2. POS AVX 210, A1 |


AV39
Antenna
Applanix
POS AVX 210
Comm2
Comm1
75016000
Ethernet
Power
Out
iX Controller
MK5
Power Out
Control
SOMAG CSM 40
GIM01
&
IMU
data
Event
Trig In & Ready
(70378000)
USB3
(73234000)
iXM-RS150
Camera Power
(70364000)

## 3.4 POS AVX 210 on iX Controller MK4-Based Systems

### 3.4.1 GNSS Options

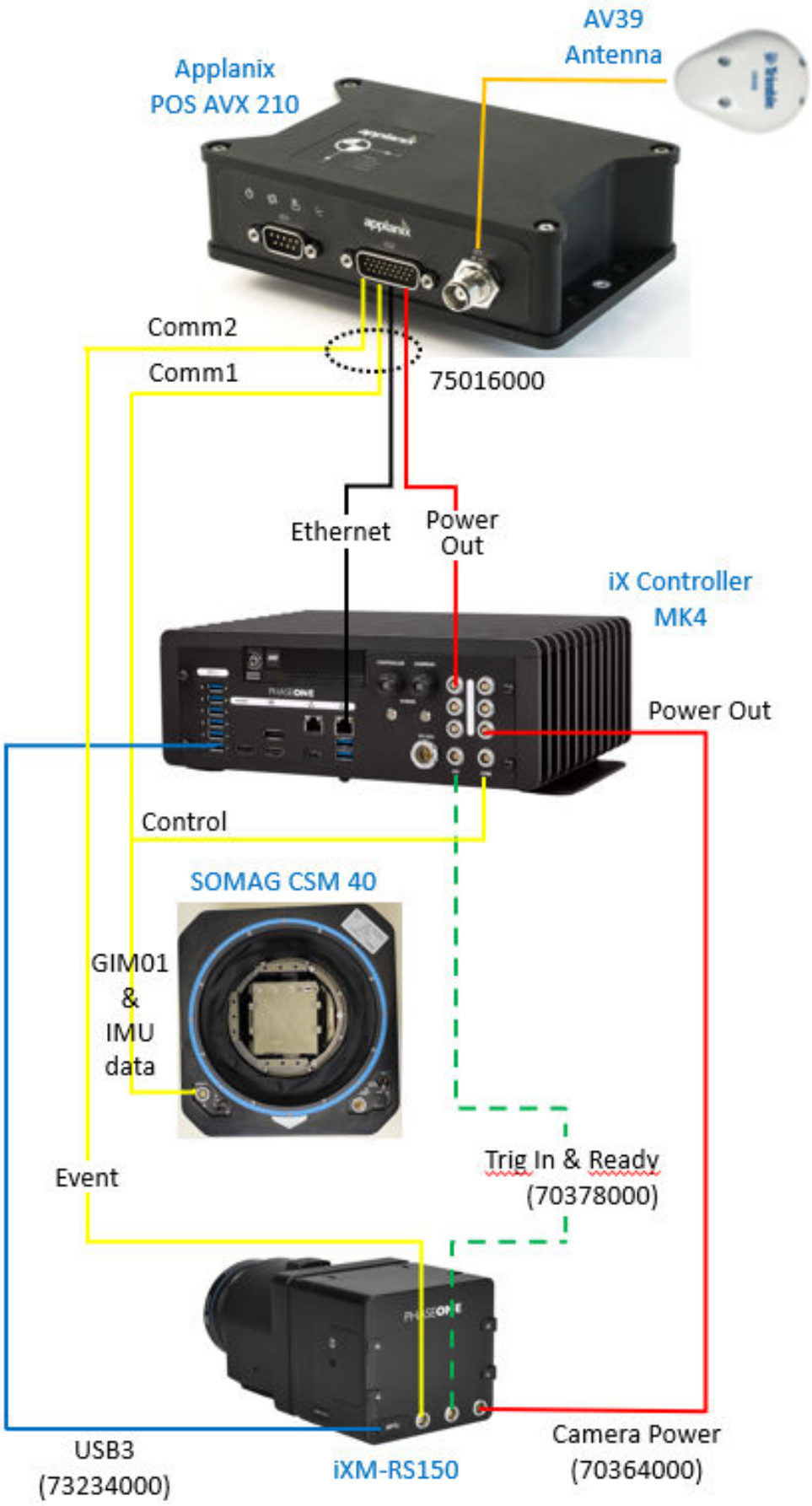
The POS AVX 210 includes an internal IMU.

### 3.4.2 Connecting Cables between Components

The following table and figure show the connections between system components for a PAS iX Controller MK4-based system with a POS AVX 210 GNSS.

> **Note**
>
> Aircraft power cables are not shown.

| P/N | Description | Connects to |
|---|---|---|
| 75016000 | PAS Communication cable | 1. D-Type connector to POS AVX 210 IO2 port<br>2. **iX Controller-PWR** connector to an iX Controller, AUX2 power out port<br>3. **iX Controller-COM** connector to iX Controller, COM port<br>4. **SOMAG mount-INT** connector to Mount INTERFACE port<br>5. **iX Controller-ETH** connector to iX Controller Ethernet port<br>6. **iX Camera-I/O** connector to iXM-XXX left LEMO port |
| 70364000 | Power cable, iX Controller/Camera | 1. iX Controller, AUX2 power out port<br>2. iXM-XXX, right LEMO port |
| 73234000 | USB cable | 1. iX Controller, USB port<br>2. iXM-XXX, USB port |
| 70378000 | Camera control cable (trigger) | 1. iX Controller, IO port<br>2. iXM-XXX, middle LEMO port |
| - | Antenna cable (supplied with antenna) | 1. Aircraft Antenna Connector<br>2. POS AVX 210, A1 |


AV39
Antenna
Applanix
POS AVX 210
Comm2
Comm1
75016000
Ethernet
Power
Out
iX Controller
MK4
Power Out
Control
SOMAG CSM 40
GIM01
&
IMU
data
Event
Trig In & Ready
(70378000)
USB3
(73234000)
iXM-RS150
Camera Power
(70364000)

## 3.5 POSAV V6 on iX Controller MK4/MK5-Based Systems

> **Note**
>
> To use the POSAV V6 with an iX Controller MK5, you must first disable the AP+ - see section 3.6 - Using an iX Controller MK5-based System with an External GNSS.

### 3.5.1 GNSS Options

The POSAV V6 can use the following external IMUs:

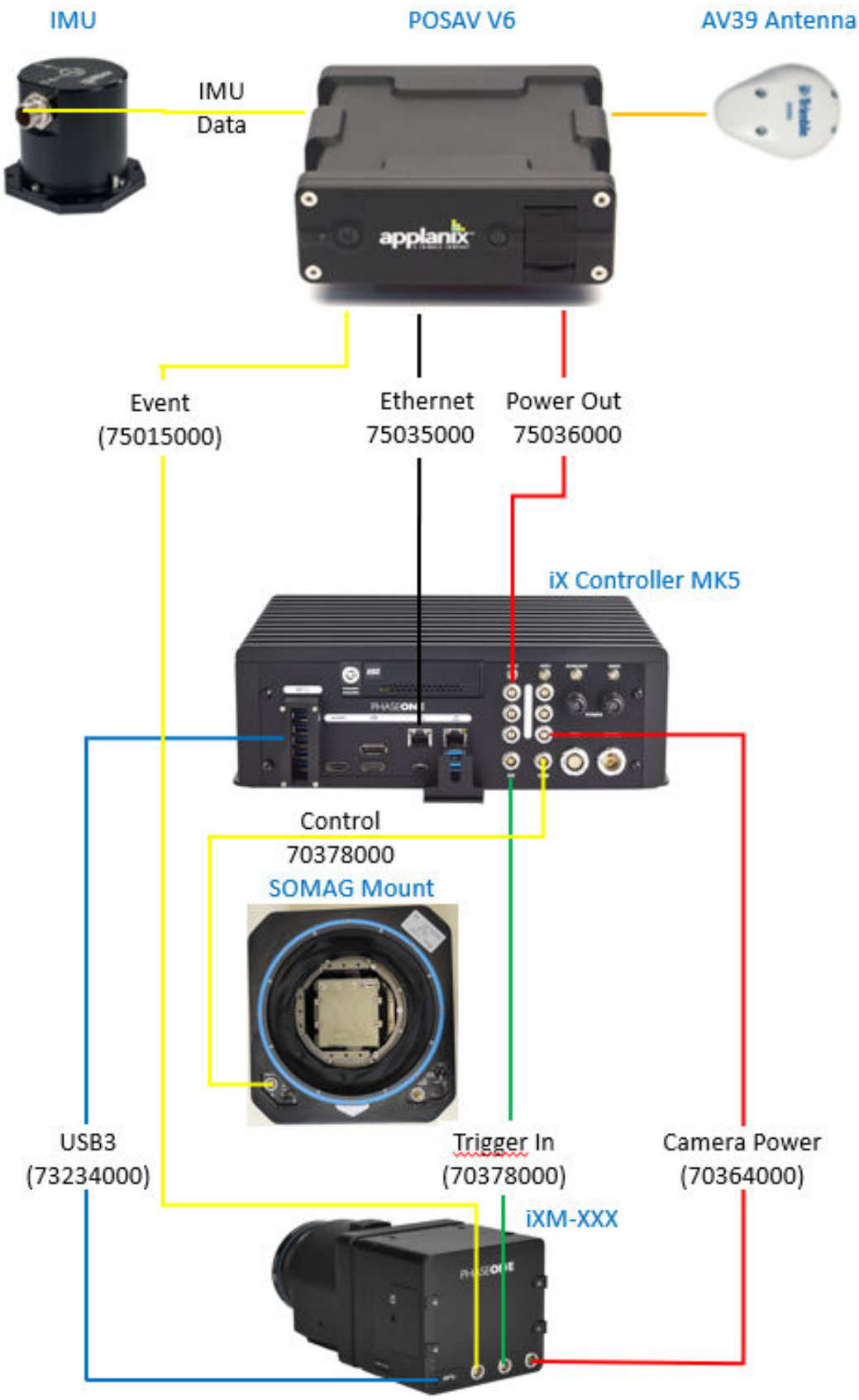
- Applanix IMU 82
- Applanix IMU 91
- Applanix IMU 57

### 3.5.2 Connecting Cables between Components

The following table and figure show the connections between system components for a PAS iX Controller MK5-based system with a POSAV V6 GNSS.

> **Note**
>
> Aircraft power cables are not shown.

| P/N | Description | Connects to |
|---|---|---|
| 75035000 | Ethernet | 1. iX Controller, Ethernet port<br>2. POSAV V6, Ethernet port. |
| 75036000 | Power cable, iX Controller/POSAV V6 (red ring on connectors) | 1. iX Controller, AUX2 power out port<br>2. POSAV V6, PWR (red ring on connector) |
| 73260000/ 73285000/ 73293000 | iX Controller/SOMAG mount cable | 1. iX Controller, COM port<br>2. SOMAG mount, INTERFACE port |
| 75015000 | POSAV V6/Camera cable (event) (blue ring on connector) | 1. POSAV V6, IO3 port. (blue ring on connector)<br>2. iXM-XXX, left LEMO port |
| 70364000 | Power cable, iX Controller/Camera | 1. iX Controller, AUX2 power out port<br>2. iXM-XXX, right LEMO port |
| 73234000 | USB cable | 1. iX Controller, USB port<br>2. iXM-XXX, USB port |
| 70378000 | Camera control cable (trigger) | 1. iX Controller, IO port<br>2. iXM-XXX, middle LEMO port |
| - | Antenna cable (supplied with antenna) | 1. Aircraft Antenna Connector<br>2. POSAV V6, A1 |
| - | IMU data cable (blue ring on connectors) | 1. IMU<br>2. POSAV V6, IMU |


IMU
POSAV V6
AV39 Antenna
IMU
Data
Event
(75015000)
Ethernet
75035000
Power Out
75036000
iX Controller MK5
Control
70378000
SOMAG Mount
USB3
(73234000)
Trigger In
(70378000)
Camera Power
(70364000)
iXM-XXX

## 3.6 Using an iX Controller MK5-based System with an External GNSS

This section describes the additional actions required for disabling the AP+ card in an iX Controller MK5 using an external GNSS.

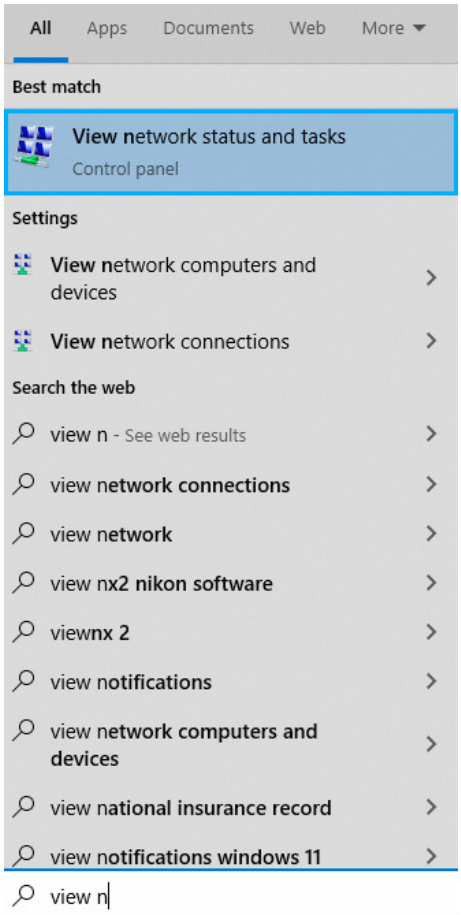
> **Note**
>
> - To connect components for a POS AVX 210 on iX Controller MK5-Based system, see section 3.3 - POS AVX 210 on iX Controller MK5-Based Systems.
> - To connect components for a POS AV V6 on iX Controller MK5-Based system, see section 3.5- POSAV V6 on iX Controller MK4/MK5-Based Systems.

### 3.6.1 Modifying the iX Controller Communication Configuration

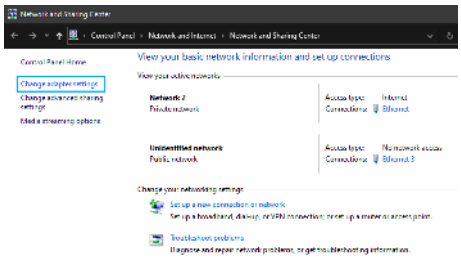
iX Controller MK5 has an internal AP+ GNSS card that communicates on the same IP address used by the external Applanix GNSS. The first step will be to disable the internal communication. The second step will be to configure the iX Controller's right ethernet port to communicate at the required address.

#### 3.6.1.1 Disabling AP+ Internal Communications

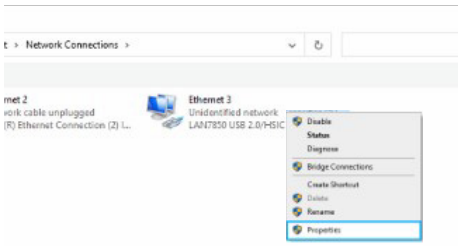
1. In the Windows search box, type view n and tap **View network status and tasks**.



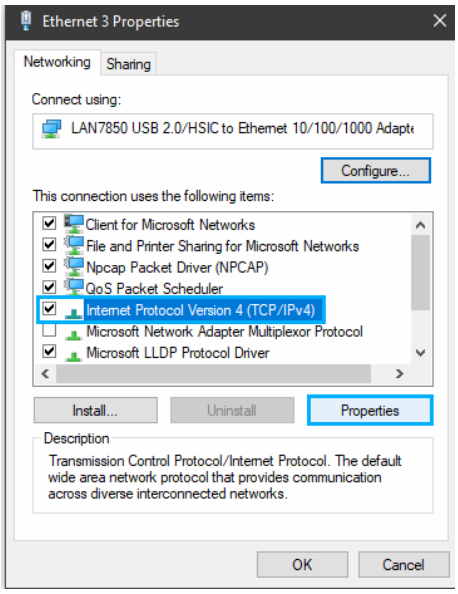
2. Tap **Change adapter settings**.



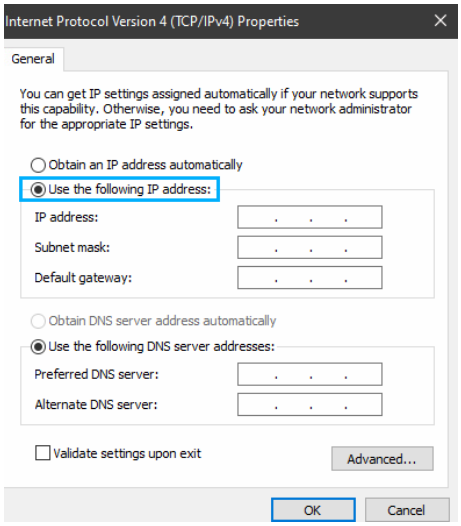
3. Tap and hold the AP+ network connection (it uses the LAN7850 hardware) and tap **Properties**.




4. Tap **Internet Protocol Version 4 (TCP/IPv4)** and tap **Properties**.

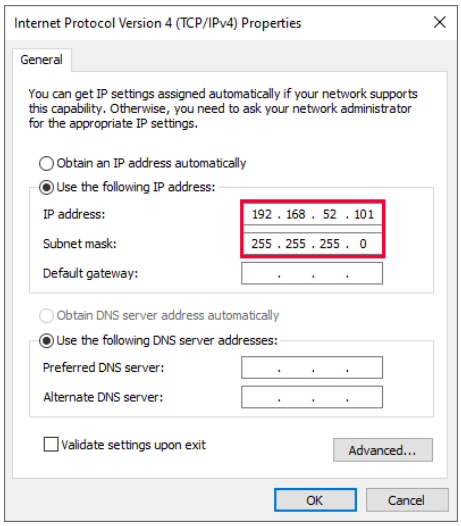



5. Tap **Use the following IP address** checkbox.



6. Type the following IP address:
   192.168.52.101

7. If the Subnet mask field is not filled in automatically, type
   255 255 255 0.



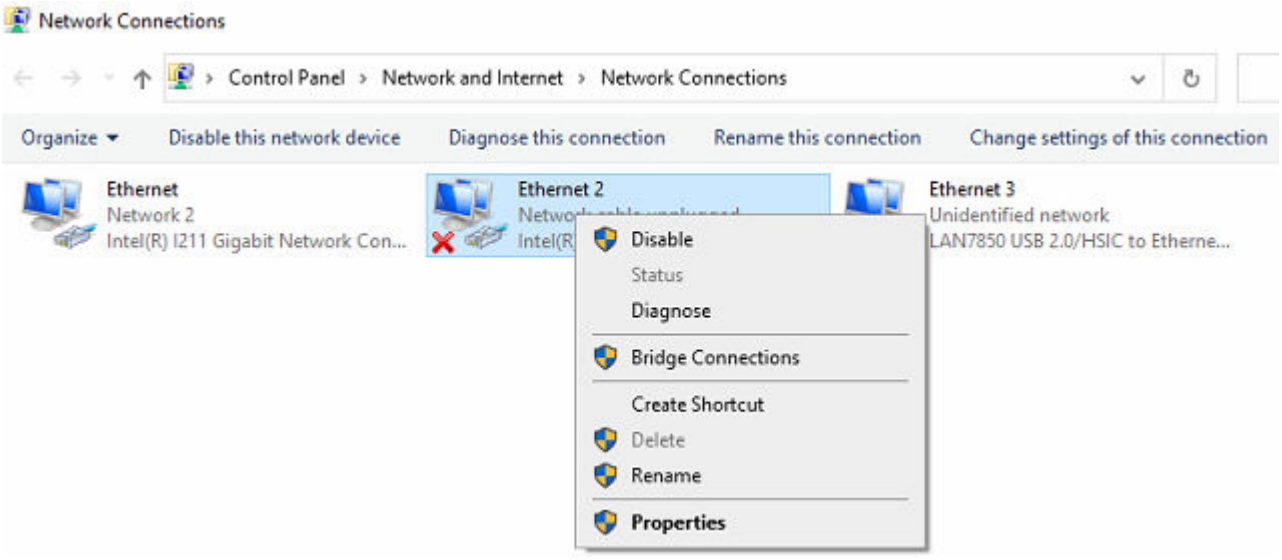

8. Tap OK.

9. Close all network windows.

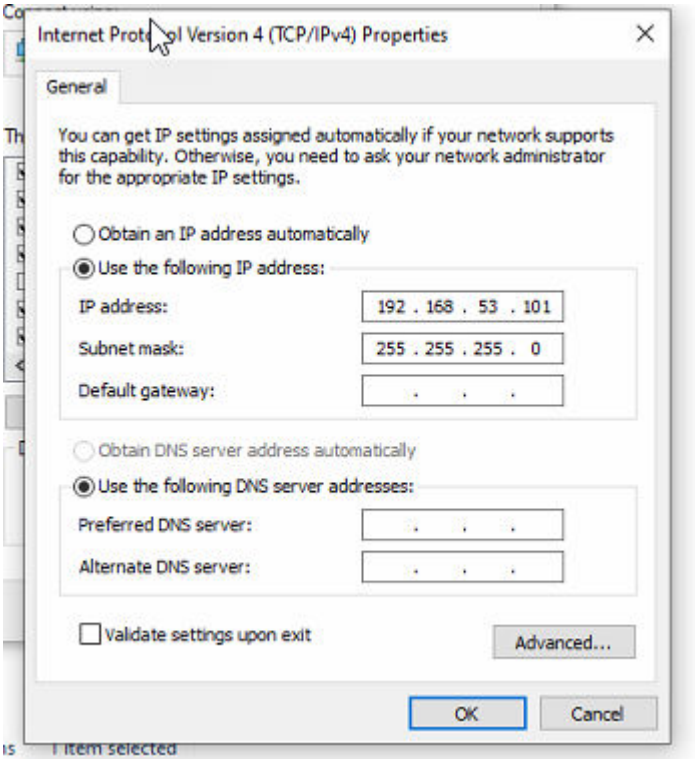
### 3.6.1.2 Modifying the iX Controller Right Ethernet Port

For communication with external GNSS.

1. Tap/click the ethernet 2 port and tap/click on properties.



2. Change the IP properties as shown here:




3. Tap/click OK.

### 3.6.2 Installing Software on the iX Controller MK5

**If not yet installed, install the following software on the iX Controller MK5:**

1. iX Flight Pro (download from https://www.phaseone.com/download-categories/ix-flight-pro-software/).

   If you are using an POSAV V6, install POSView from Applanix's support page.

# 4 Configuring the AP+ through the Browser User Interface

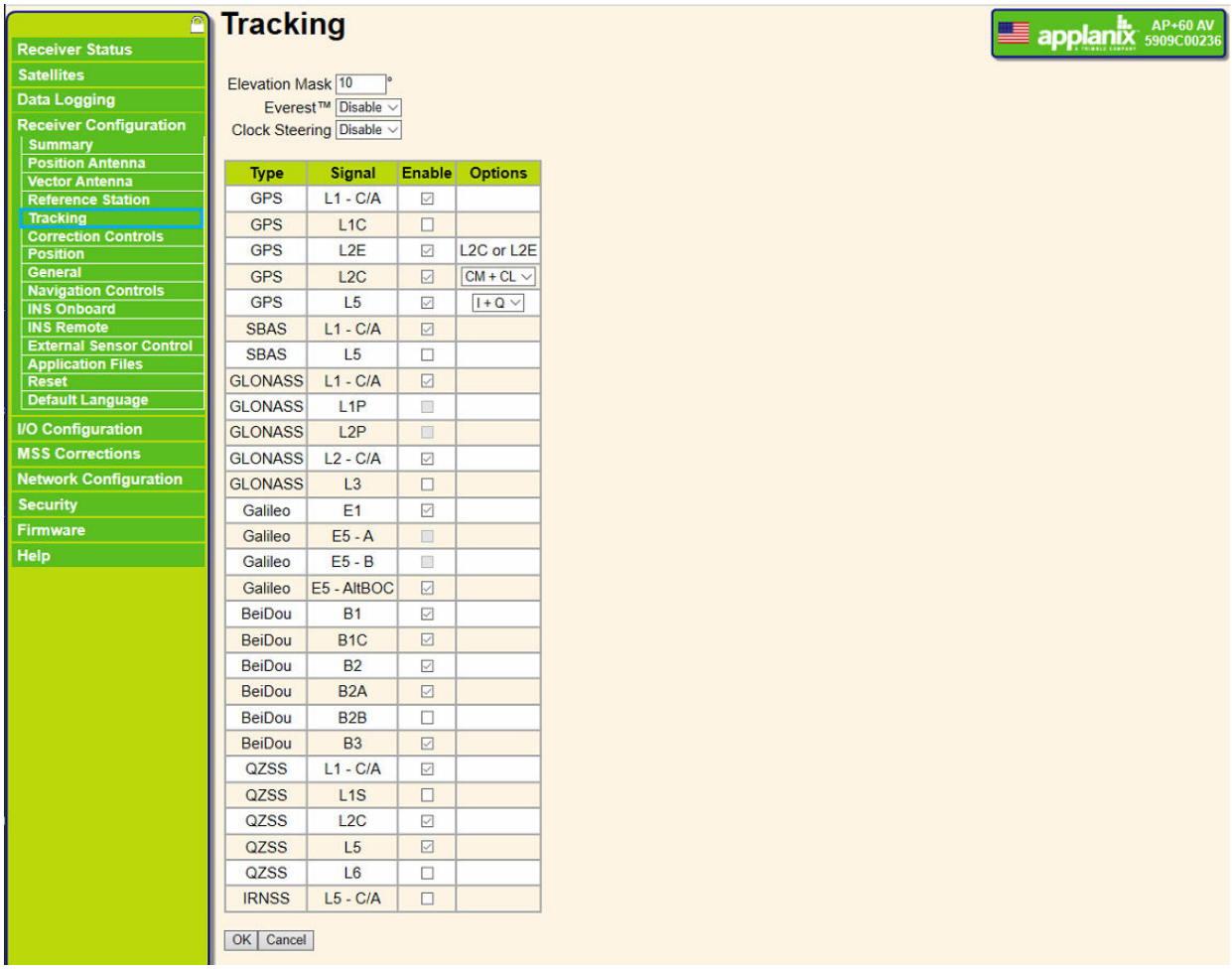
## Note

- Make sure your system is updated with the latest Applanix firmware.
- The following screenshots and configurations were taken from a system using the following hardware/firmware:
  - Applanix hardware: APX-15 V3
  - Active Firmware Version: 8.21.004
  - Active Core Engine Version: 5.60

## 4.1 Configuring the Receiver

### 4.1.1 Tracking

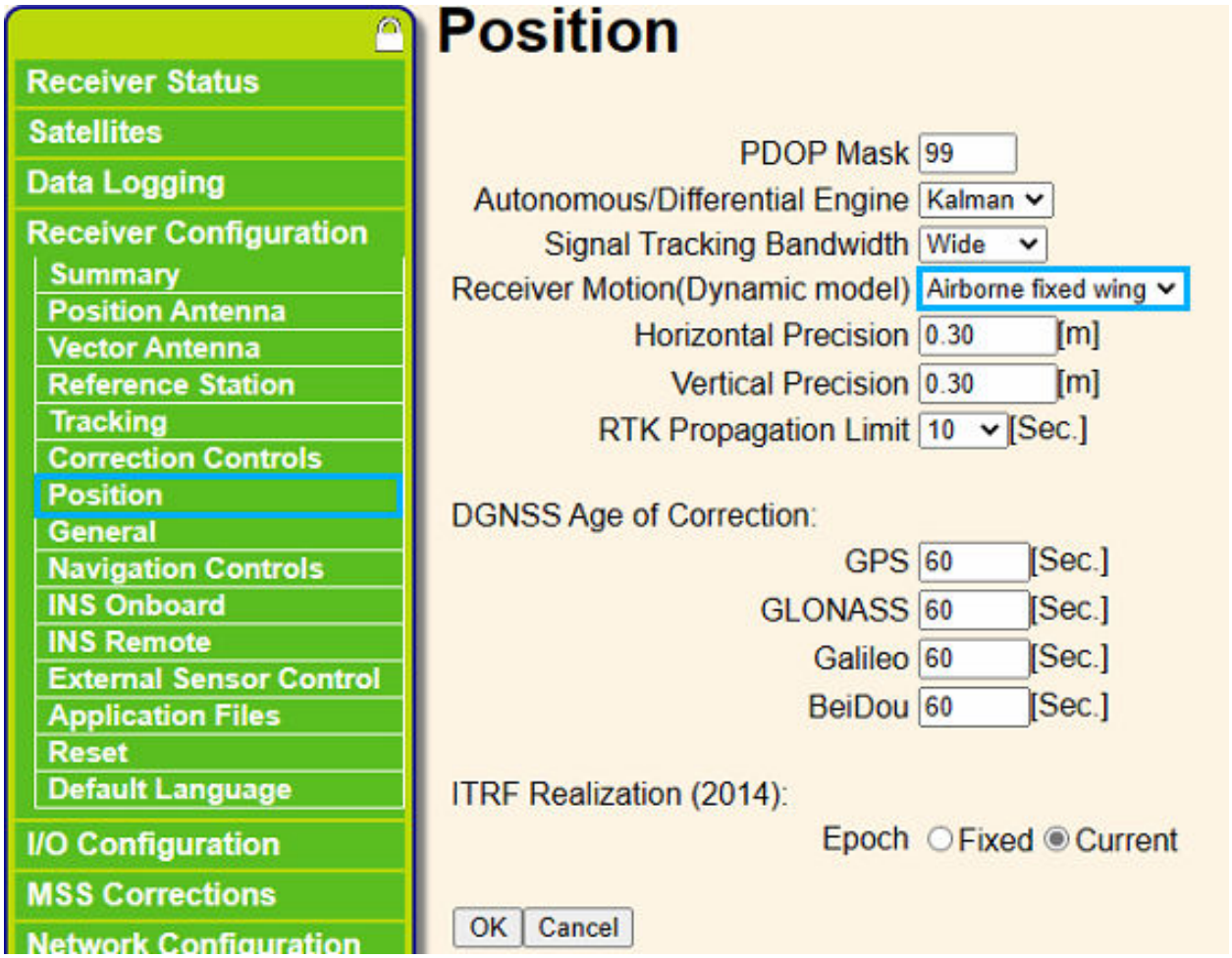
1. In the menu, under **Receiver Configuration**, tap/click **Tracking** and configure the parameters as shown following:




2. Tap/click **OK**.

### 4.1.2 Position

1. For fixed wing aircraft - in the menu, under **Receiver Configuration**, tap/click **Position** and configure the outlined parameter as shown following:

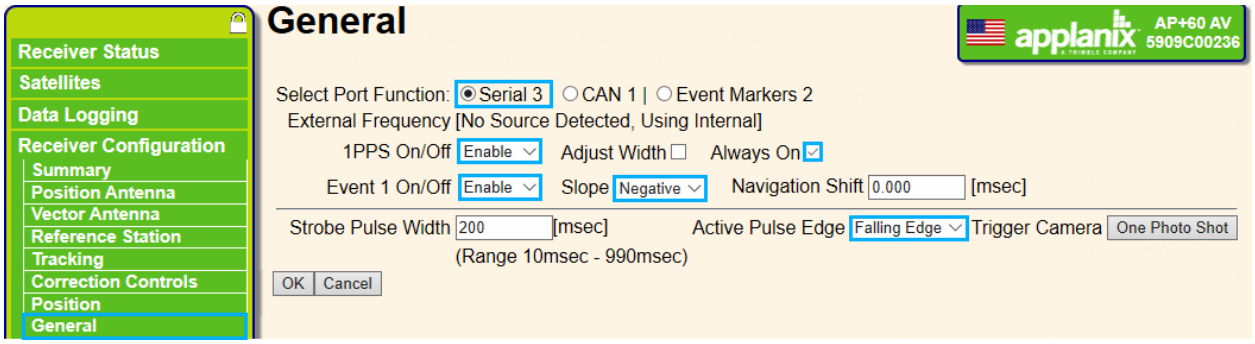



| Parameter | Setting |
|---|---|
| Receiver Motion (Dynamic model) | Airborne fixed wing |

2. Tap/click **OK**.

### 4.1.3 General

1. In the menu, under **Receiver Configuration**, tap/click **General** and configure the parameters as shown following:



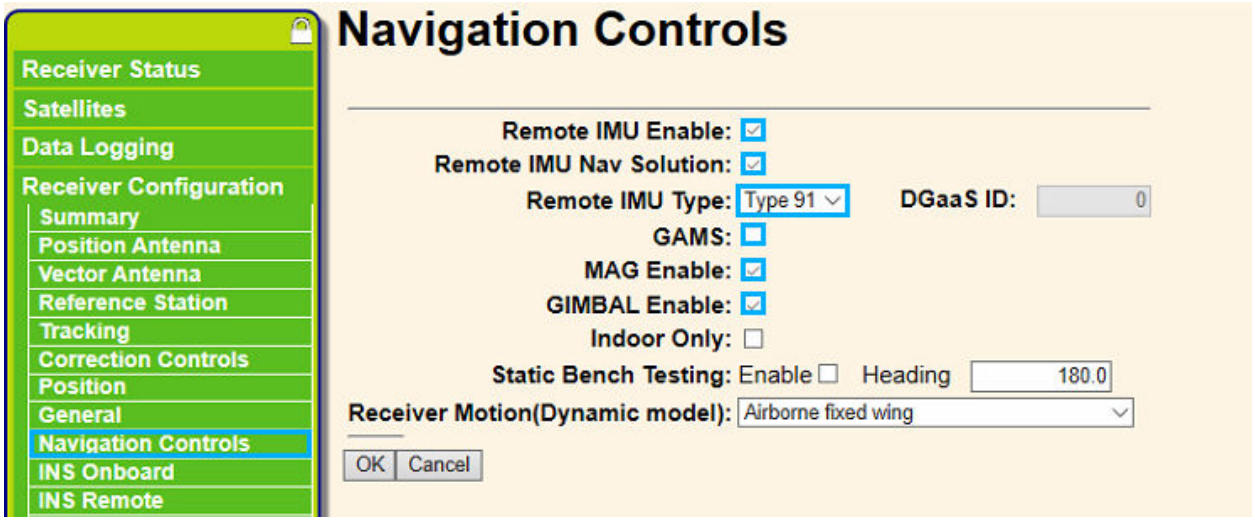

| Parameter | Setting |
|---|---|
| Select Port Function | Serial 3 |
| 1PPS On/Off | Enable |
| 1PPS Always On | Selected |
| Event 1 On/Off | Enable |
| Event 1 Slope | Negative |
| Strobe Pulse Width Active Pulse Edge | Falling Edge |

2. Tap/click **OK**.

### 4.1.4 Navigation Controls

1. In the menu, under **Receiver Configuration**, tap/click **Navigation Controls**, and configure the outlined parameters as following:

> **Note**
>
> These settings assume an external IMU and mount are used and the aircraft is fixed wing.




| Parameter | Setting |
|---|---|
| Remote IMU Enable | Select only if using external IMU. |
| Remote IMU Nav Solution | Select only if using external IMU. |
| Remote IMU Type | If using an external IMU, select the IMU model. |
| GAMS | Unselected. |
| MAG Enable | Selected |
| GIMBAL Enable | Selected |
| Static bench Testing | Unselected<br>**Warning**<br>Make sure that Static bench testing is NOT selected. |

2. Click **OK**.

### 4.1.5 Configuring Internal IMU

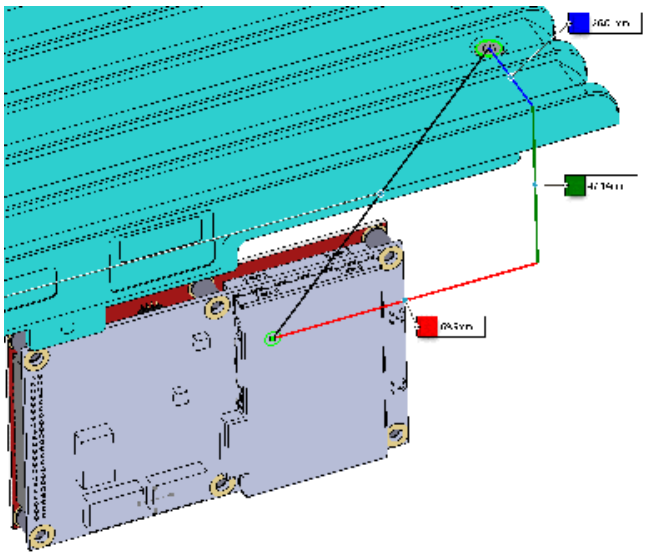
This section describes the orientation and lever arm of the AP+ card internal IMU, as installed in the iX Controller MK5 controller.

> **Note**
>
> If your system is using an external IMU, skip this section.

**Note**

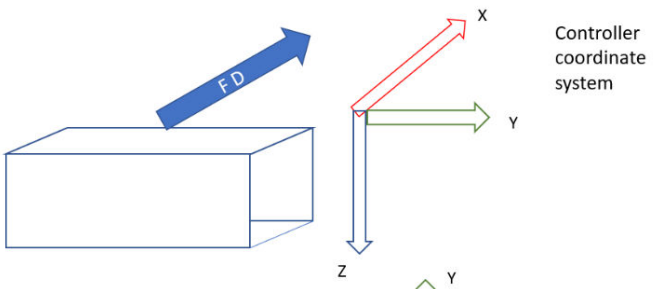
When measuring the IMU lever arm for the internal IMU, you may use the following as a reference point:

- iX Controller - right aft screw head center.



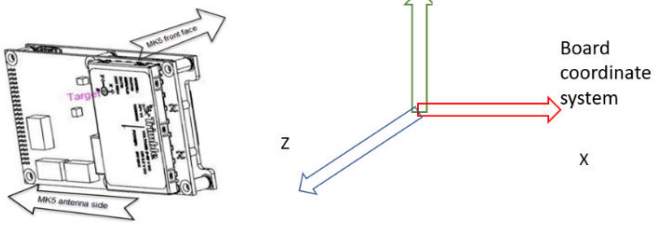
The following measurements are from the screw head center to the internal IMU measurement center in a controller coordinate system (shown below):

- X: -26.01mm
- Y: -69.9 mm
- Z: +47.14 mm




The rotations to align the internal IMU to the controler flight direction will be :

- Around X axis -90
- Around Z axis  90




### 4.1.6 Configuring Remote IMU

This section describes how to configure a system using an external IMU.

> **Note**
>
> You also need to configure the Remote IMU parameters as described in section 4.1.4 - Navigation Controls.

### 4.1.7 IMU Remote Parameters

> **Note**
>
> Settings for the following parameters depend on your specific system:
> - Reference to IMU Lever Arm
> - Reference to IMU Mounting Angles

1. In the menu, under **Receiver Configuration**, tap/click **INS Remote.**
2. In the **INS Remote** window, tap/click **IMU Remote** and configure the following parameters:

**Reference to IMU Lever Arm [m]**


| Parameter | Setting |
|---|---|
| X | For each axis, enter the distance from the mount rotation center to the IMU measurement center. |
| Y | |
| Z | |

Reference to IMU Mounting Angles [Deg]


| Parameter | Setting |
|---|---|
| X | In **Reference to IMU Mounting Angles**. all values are zero (equal to the aircraft axis) when:<br>• X of the IMU is towards the direction of flight<br>• Y is to the right<br>• Z is down<br>Enter the difference in angles between the IMU X, Y, and Z axis and the aircraft X, Y, and Z axis.<br>Verify the values using the interactive diagram in the right pane. |
| Y | |
| Z | |

3. Click **OK**.
4. Reboot receiver for the changes to take effect.

### 4.1.8 GNSS Antenna Parameters

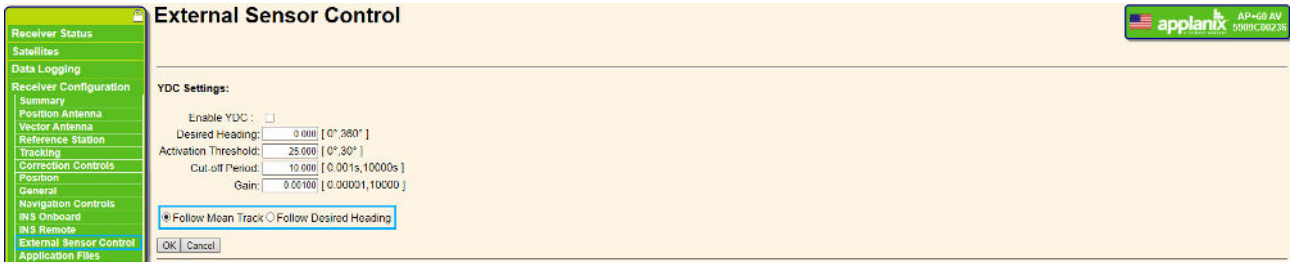
1. In the menu, under **Receiver Configuration**, tap/click **INS Remote.**
2. In the **INS Remote** window, tap/click **GNSS Antenna** and configure the following parameters:


| Parameter | Setting |
|---|---|
| X | For each axis, enter the distance from the mount rotation center to the antenna. |
| Y | |
| Z | |
| 1-σ | |

3. Click **OK**.
4. Reboot receiver for the changes to take effect.

### 4.1.9 External Sensor Control

> **Note**
>
> Phase One does not use YDC. Verify that YDC is NOT checked.




| Parameter | Setting |
|---|---|
| **Enable YDC** (Yaw Drift Correction) | Unselected<br>**Note**<br>Phase One applications do not use YDC. |

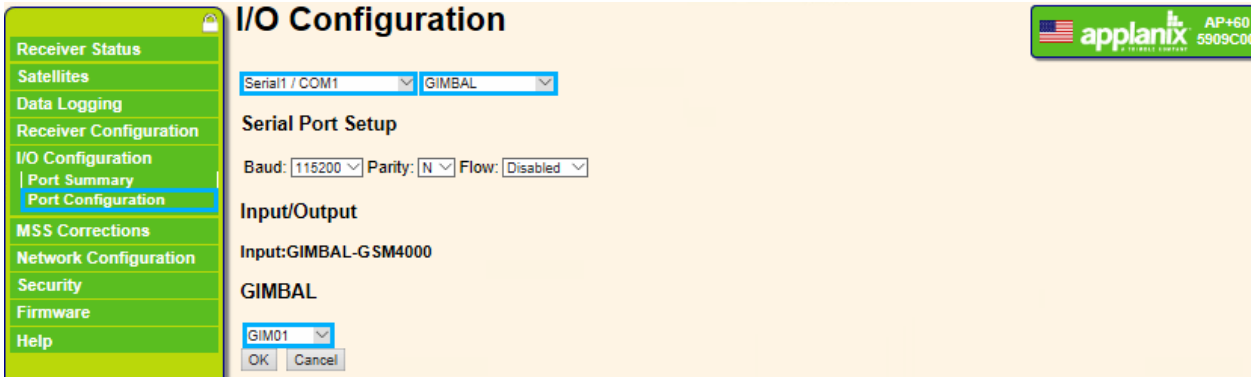
1. Click **OK**.

## 4.2 Configuring I/O Ports

### 4.2.1 Gimbal Communication I/O Settings

**For Systems Using SOMAG CSM40/DSM400/GSM4000 mount:**

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters as shown following:

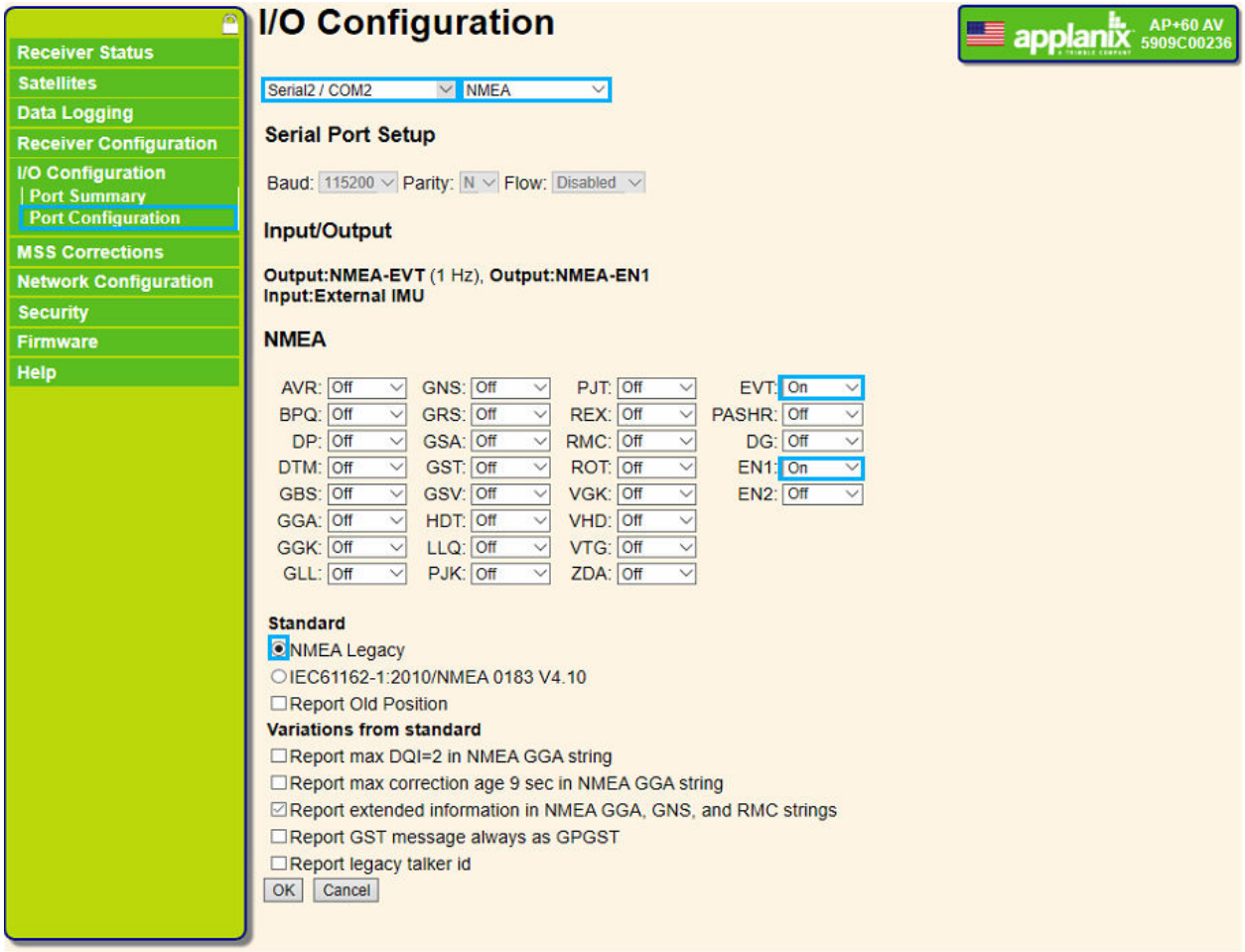



| Parameter | Setting |
|---|---|
| GIMBAL | GIM01 |

2. Click **OK**.

### 4.2.2 Camera communication I/O Settings

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters as shown following:



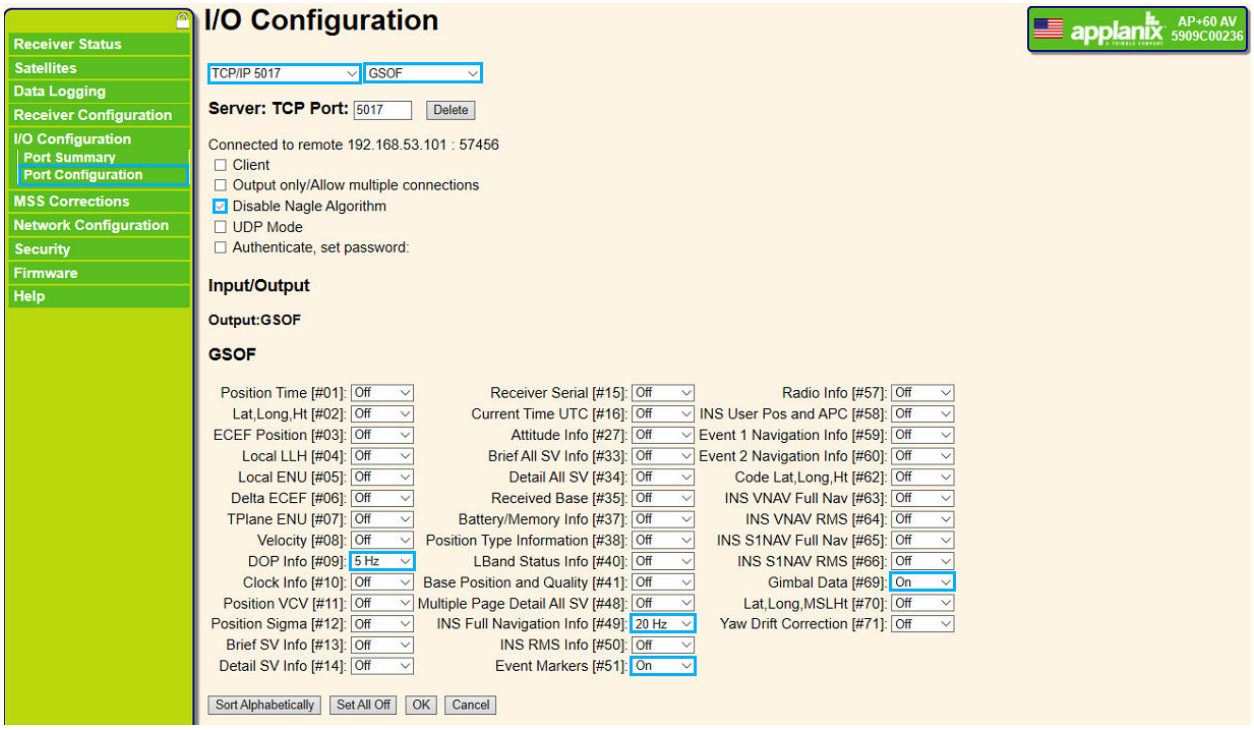

| Parameter | Setting |
|---|---|
| EVT | On |
| EN1 | On |
| NMEA Legacy | Selected |

2. Click **OK**.

### 4.2.3 TCP/IP Settings for Communication with iX Flight Pro

#### 4.2.3.1 5017 - GSOF

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters for **TCP/IP 5017 GSOF** as shown following:

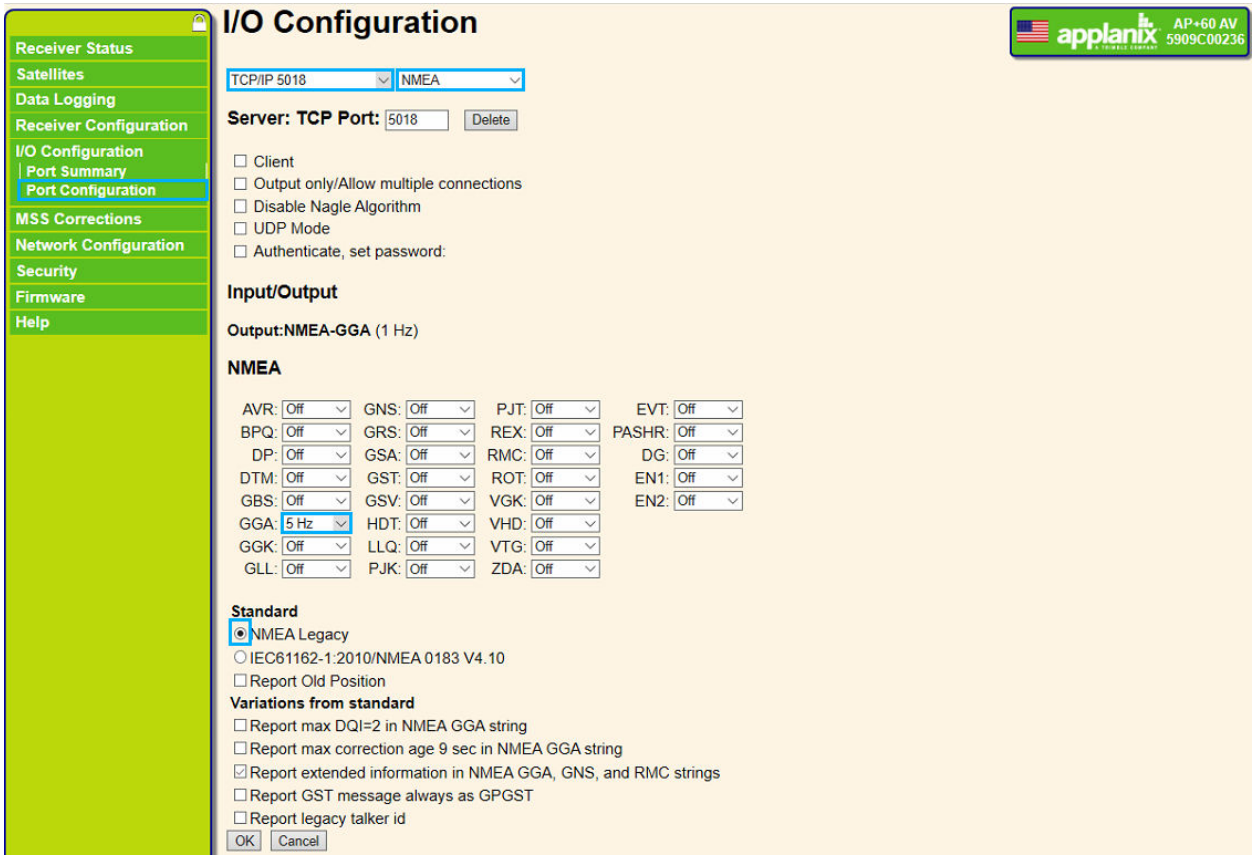



| Parameter | Setting |
|---|---|
| DOP Info [#09] | 5 Hz |
| INS Full Navigation Info [#49] | 20 Hz |
| Event Markers [#51] | On |
| Gimbal Data [#69] | On |

2. Click **OK**.

#### 4.2.3.2 TCP 5018 - NMEA

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters for **TCP/IP 5018 NMEA** as shown following:




| Parameter | Setting |
|---|---|
| GGA | 5 Hz |

2. Click **OK**.

#### 4.2.3.3 TCP 5019 – T04

Configure TCP/IP 5019 as shown below when you want iX Flight Pro to record T04 on iX Controller SDD in addition to recording the T04 in the GNSS system (requires compatible GNSS firmware).

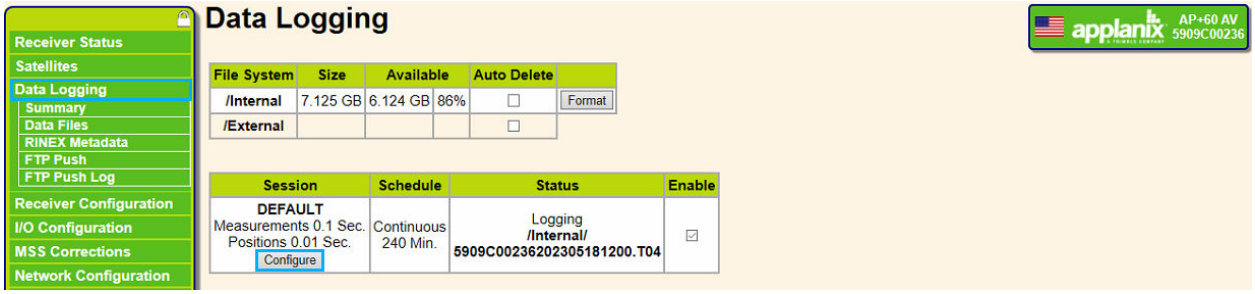
1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters for **TCP/IP 5019** as shown following:


| Parameter | Setting |
|---|---|
| Disable Nagle Algorithm | Selected |
| ETHERNET LOG | Enabled |

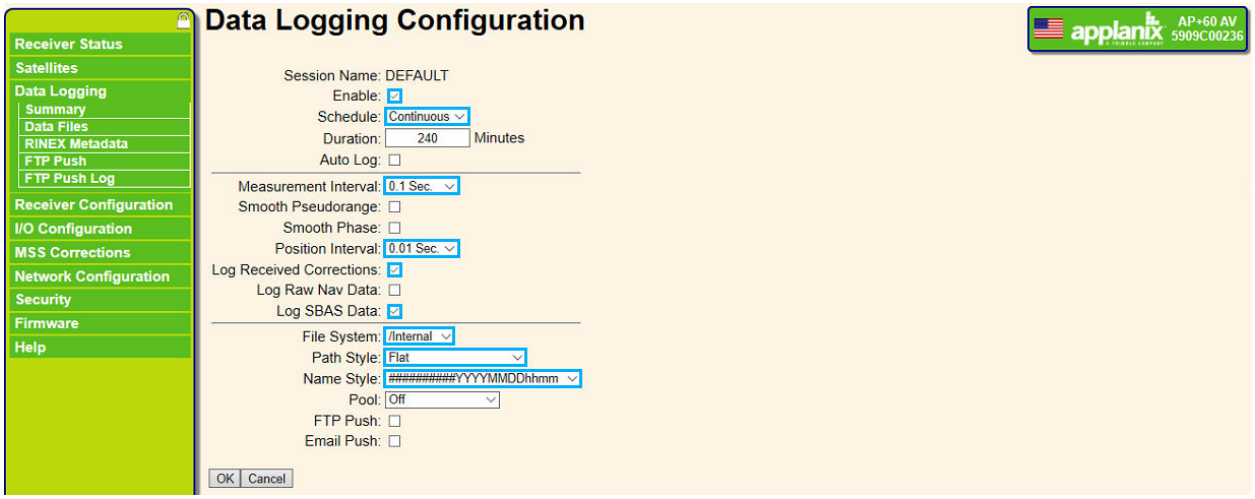
2. Click **OK**.

## 4.3 Configuring Data Logging

1. In the menu, click **Data Logging**, and click **Configure**.




2. Configure the parameters as shown following:

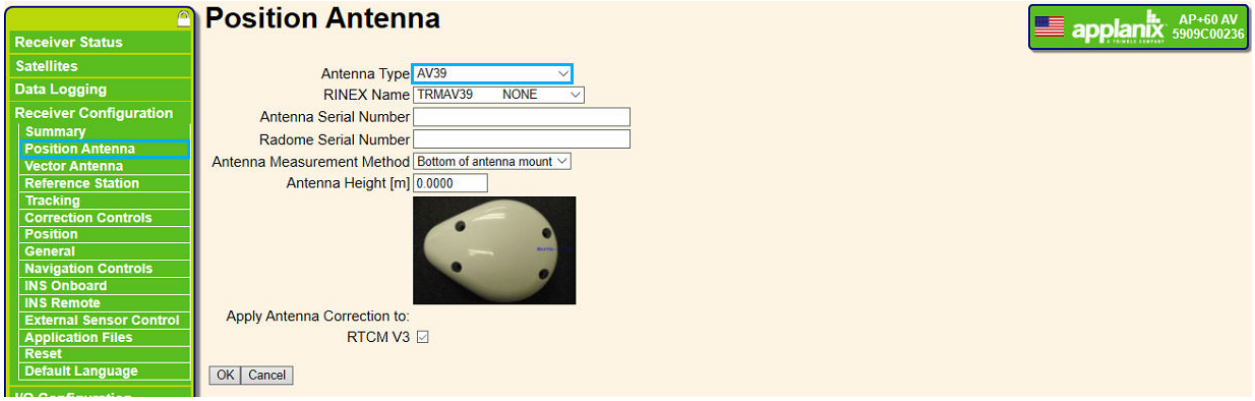



| Parameter | Setting |
|---|---|
| Enable | Selected. |
| Schedule | Continuous. |
| Measurement Interval | 0.1 Sec. |
| Position Interval | 0.01 Sec. |

3. Click **OK**.

## 4.4 Configuring the Antenna

1. In the menu, under **Receiver Configuration**, click **Position Antenna** and configure the outlined parameter as shown following:




| Parameter | Setting |
|---|---|
| Antenna Type | Select the antenna installed on your aircraft.<br><br>**Note**<br>Phase One supplies the AV39 antenna with the system. |

2. Click **OK**.

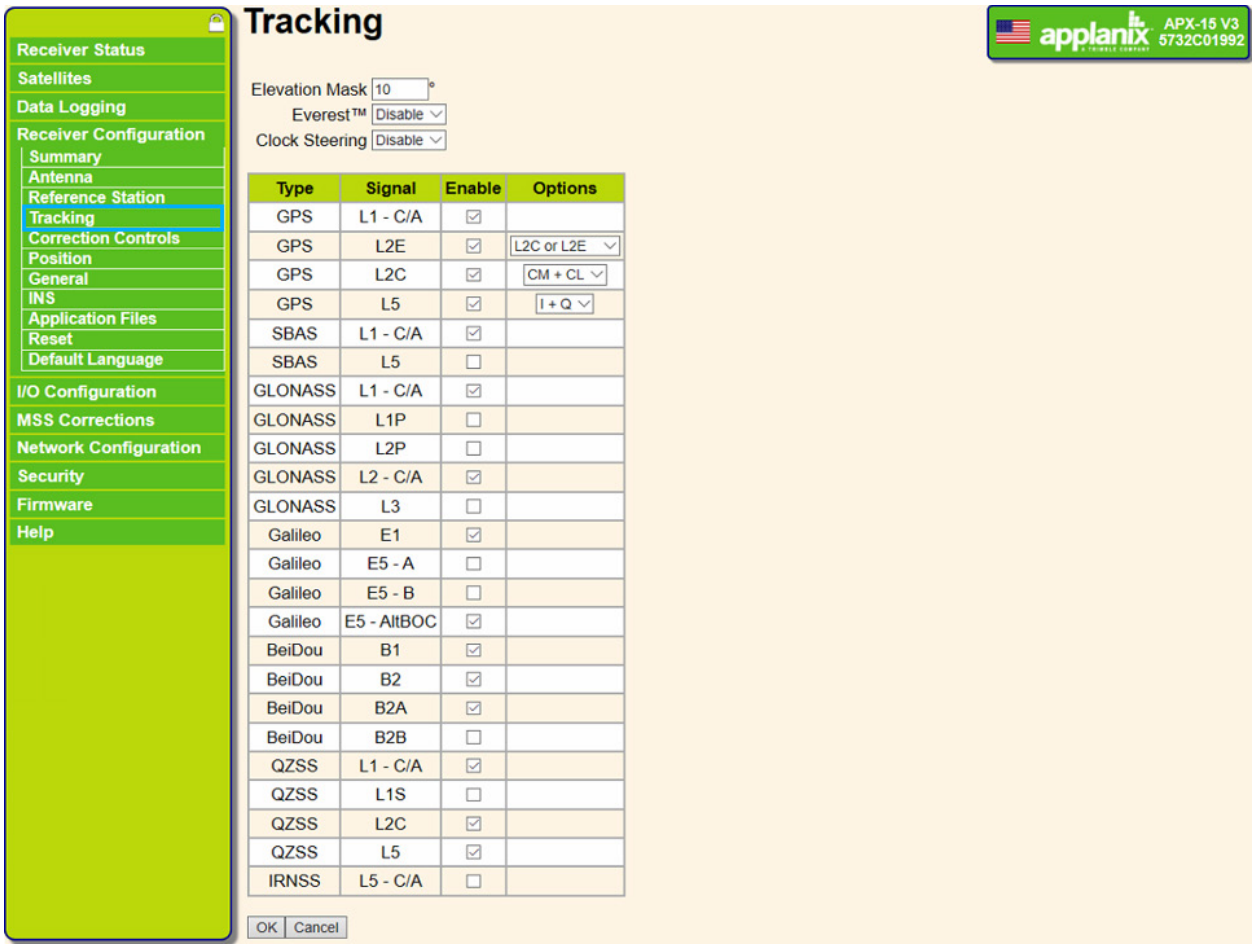
# 5 Configuring the POS AVX 210 through the Browser User Interface

> **Note**
>
> - Make sure your system is updated with the latest Applanix firmware.
> - The following screenshots and configurations were taken from a system using the following hardware/firmware:
>   - Applanix hardware: APX-15 V3
>   - Active Firmware Version: 8.21.004
>   - Active Core Engine Version: 5.60

## 5.1 Configuring the Receiver

### 5.1.1 Tracking

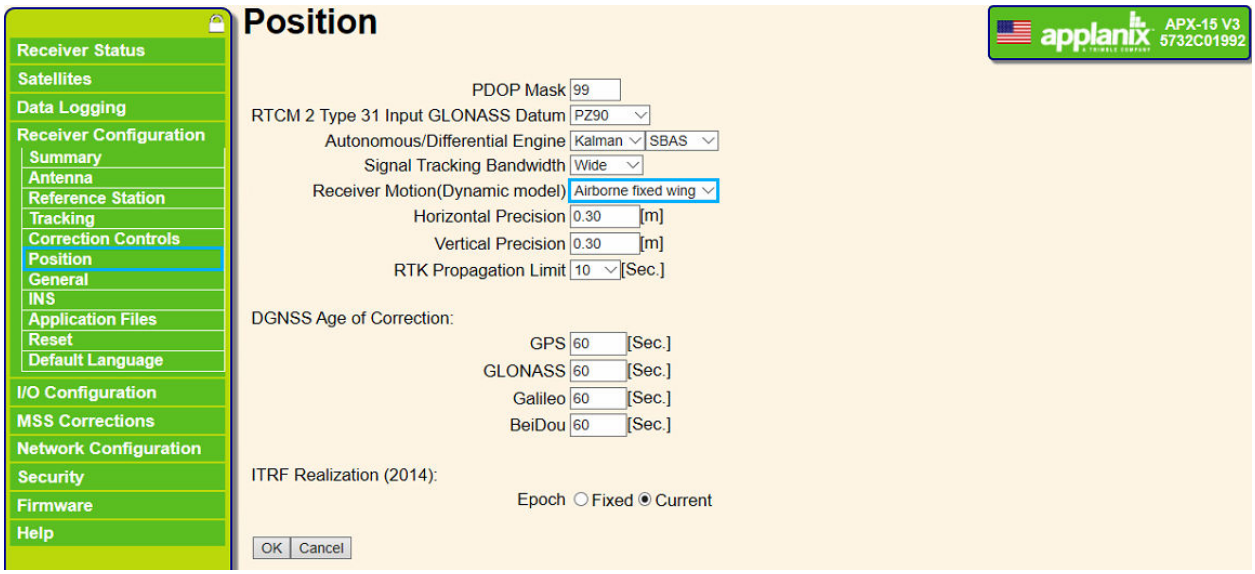
1. In the menu, under **Receiver Configuration**, tap/click **Tracking** and configure the parameters as shown following:




2. Tap/click **OK**.

### 5.1.2 Position

1. For fixed wing aircraft - in the menu, under **Receiver Configuration**, tap/click **Position** and configure the outlined parameter as shown following:

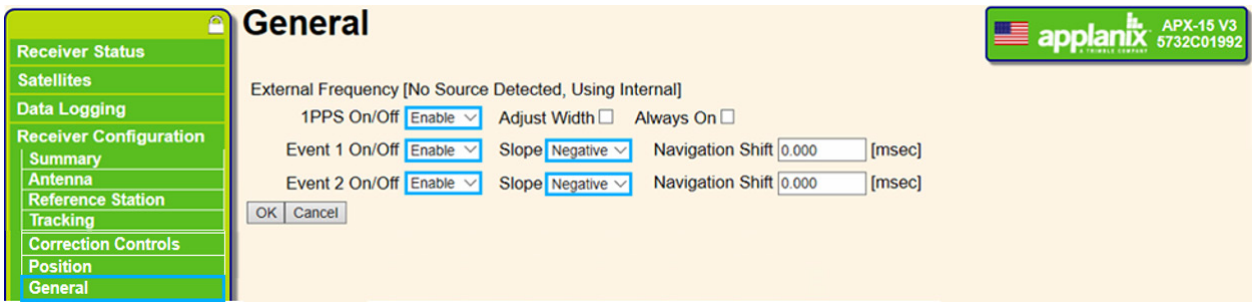



| Parameter | Setting |
|---|---|
| Receiver Motion (Dynamic model) | Airborne fixed wing |

2. Tap/click **OK**.

### 5.1.3 General

1. In the menu, under **Receiver Configuration**, tap/click **General** and configure the parameters as shown following:




| Parameter | Setting |
|---|---|
| 1PPS On/Off | Enable |
| Event 1 On/Off | Enable |
| Event 1 Slope | Negative |
| Event 2 On/Off | Enable |
| Event 2 Slope | Negative |

2. Tap/click **OK**.

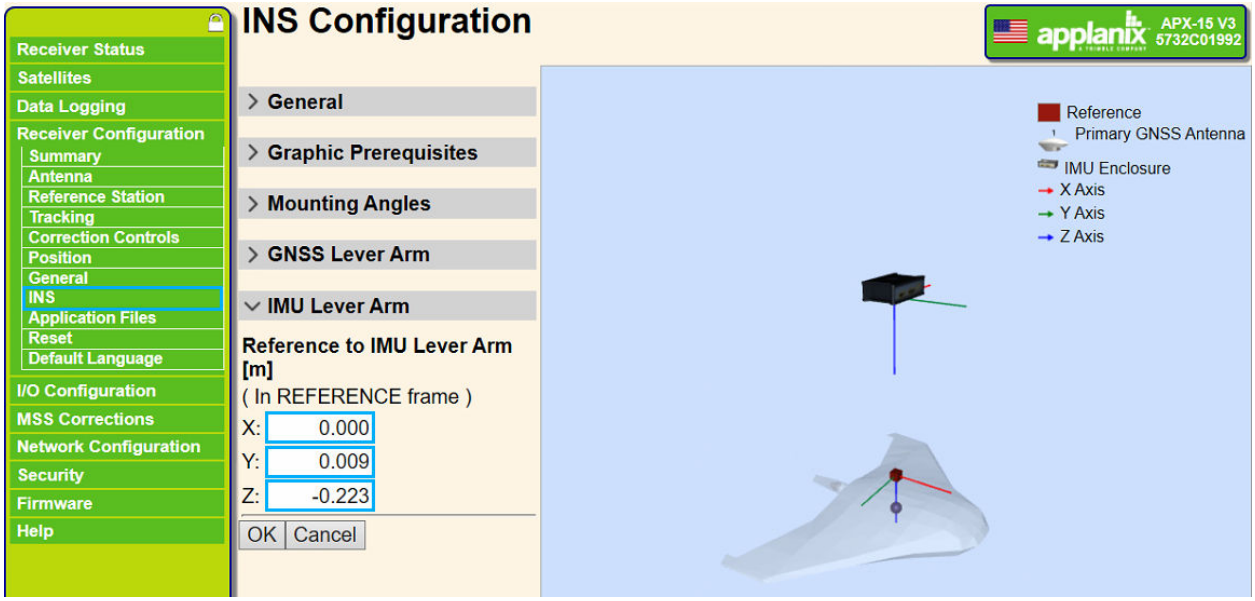
### 5.1.4 Configuring INS

> **Note**
>
> Settings for the INS parameters depend on your specific system:

#### 5.1.4.1 IMU Lever Arm

1. In the menu, under **Receiver Configuration**, tap/click **INS.**
2. In the **INS Configuration** window, tap/click **IMU Lever Arm** and configure the following parameters: as relevant for your system:

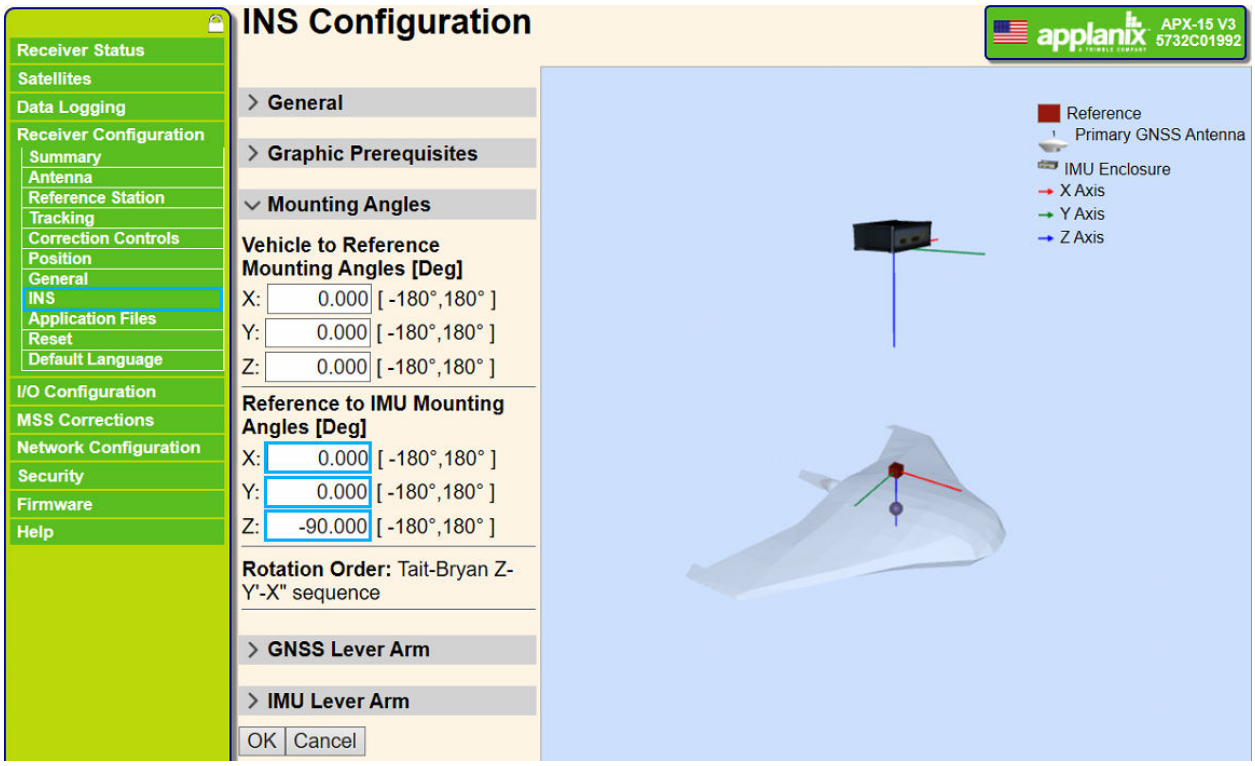
**Reference to IMU Lever Arm [m]**




| Parameter | Setting |
|---|---|
| X | For each axis, enter the distance from the mount rotation center to the IMU measurement center. |
| Y | |
| Z | |

### 5.1.4.2 Mounting Angles

1. In the menu, under **Receiver Configuration**, tap/click **INS.**
2. In the **INS Configuration** window, tap/click **Mounting Angles** and configure the **Reference to IMU Mounting Angles [Deg]** parameters as relevant for your system:

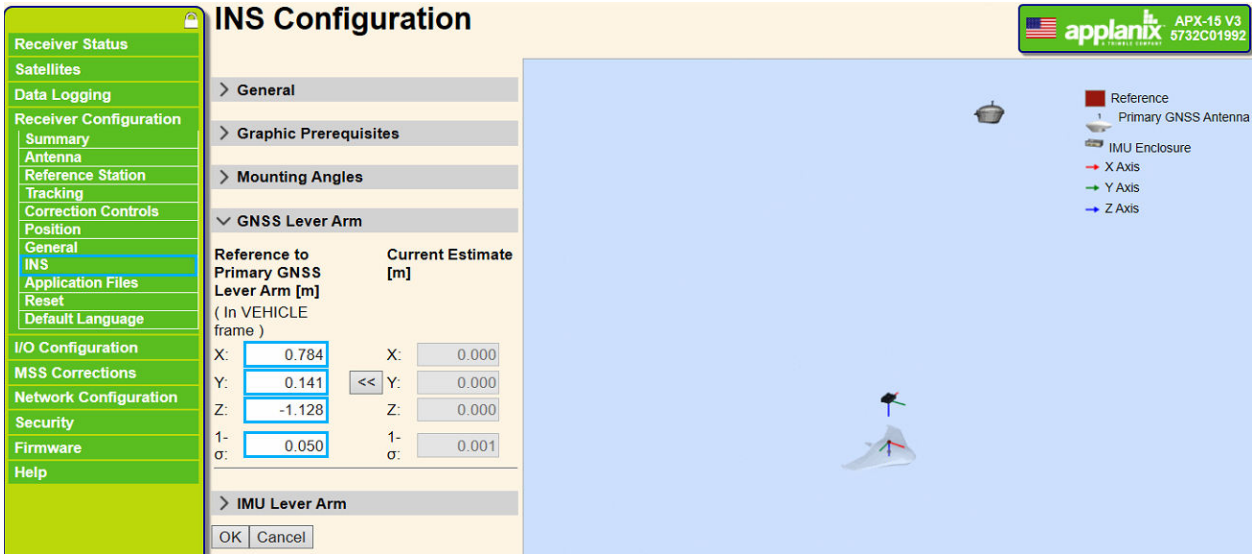



| Parameter | Setting |
|---|---|
| X | In **Reference to IMU Mounting Angles**. all values are zero (equal to the aircraft axis) when:<br>• X of the IMU is towards the direction of flight<br>• Y is to the right<br>• Z is down<br>Enter the difference in angles between the IMU X, Y, and Z axis and the aircraft X, Y, and Z axis.<br>Verify the values using the interactive diagram in the right pane. |
| Y | |
| Z | |

3. Click **OK**.
4. Reboot receiver for the changes to take effect.

### 5.1.4.3 GNSS Lever Arm

1. In the menu, under **Receiver Configuration**, tap/click **INS.**
2. In the **INS Configuration** window, tap/click **GNSS Lever Arm** and configure the **Reference to Primary GNSS Lever Arm [m]** parameters as relevant for your system:



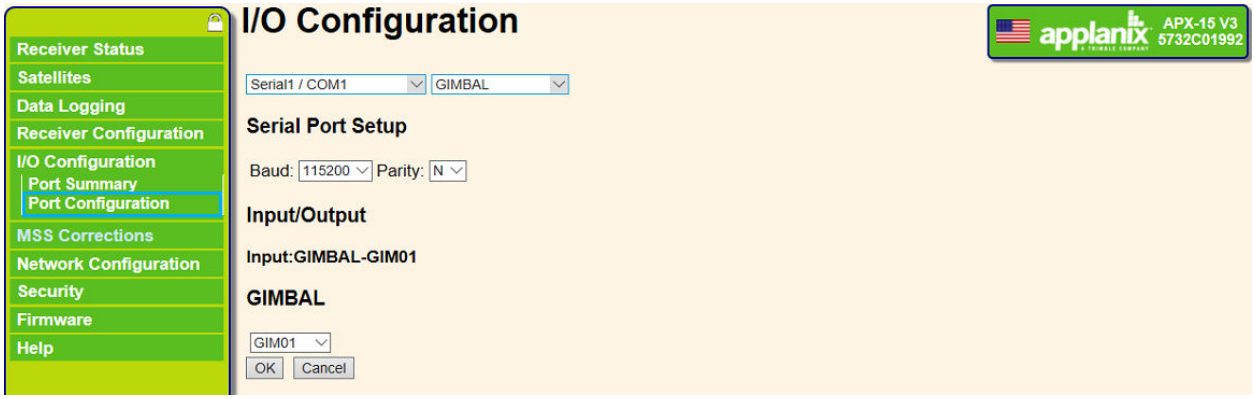

| Parameter | Setting |
|---|---|
| X | For each axis, enter the distance from the mount rotation center to the antenna. |
| Y | |
| Z | |
| 1-σ | |

3. Click **OK**.
4. Reboot receiver for the changes to take effect.

## 5.2 Configuring I/O Ports

### 5.2.1 Gimbal I/O Settings

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters as shown following:

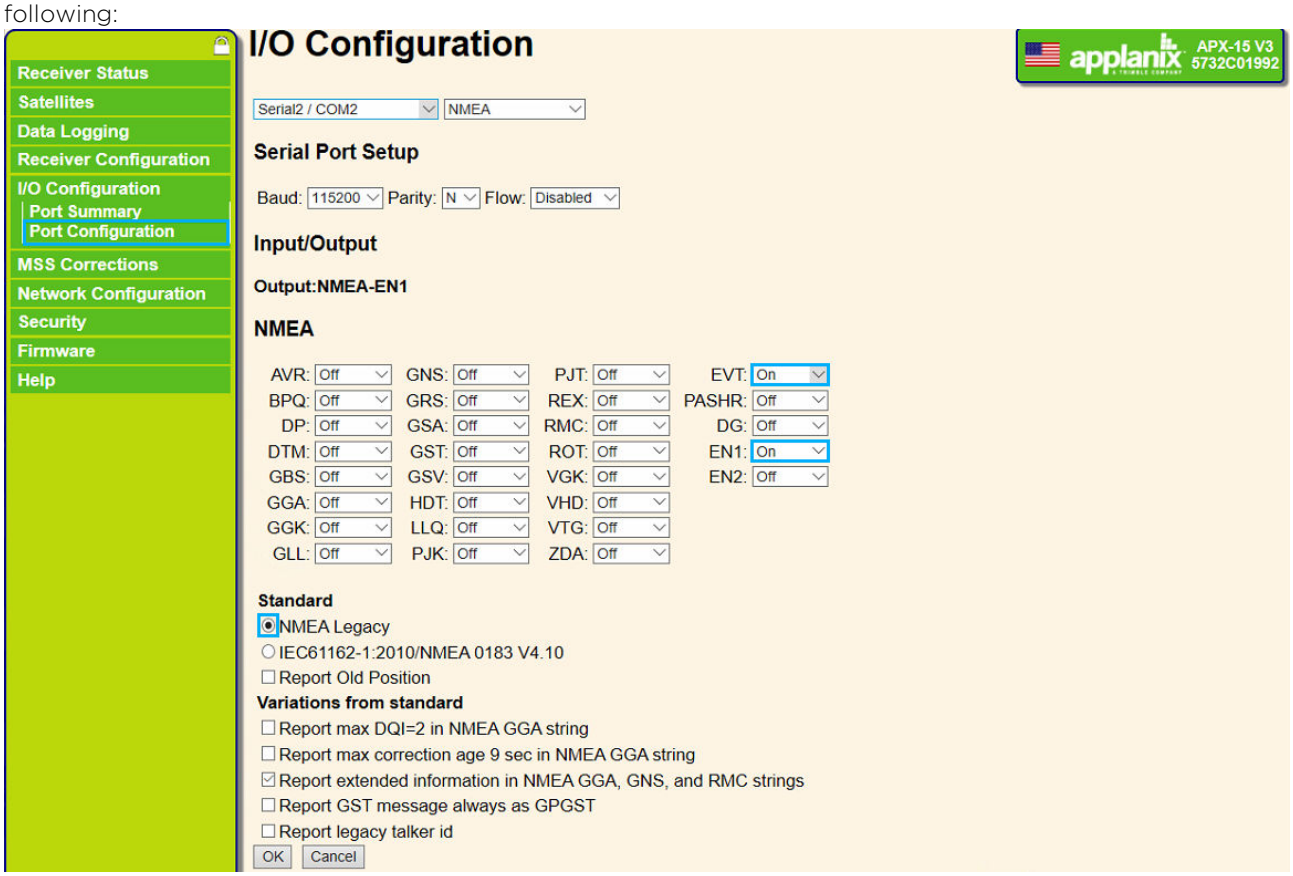



| Parameter | Setting |
|---|---|
| GIMBAL | GIM01 - to obtain gimbal data recorded in T04 files. |

2. Click **OK**.

### 5.2.2 Camera I/O Settings

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters as shown following:




| Parameter | Setting |
|---|---|
| EVT | On |
| EN1 | On |
| NMEA Legacy | Selected |

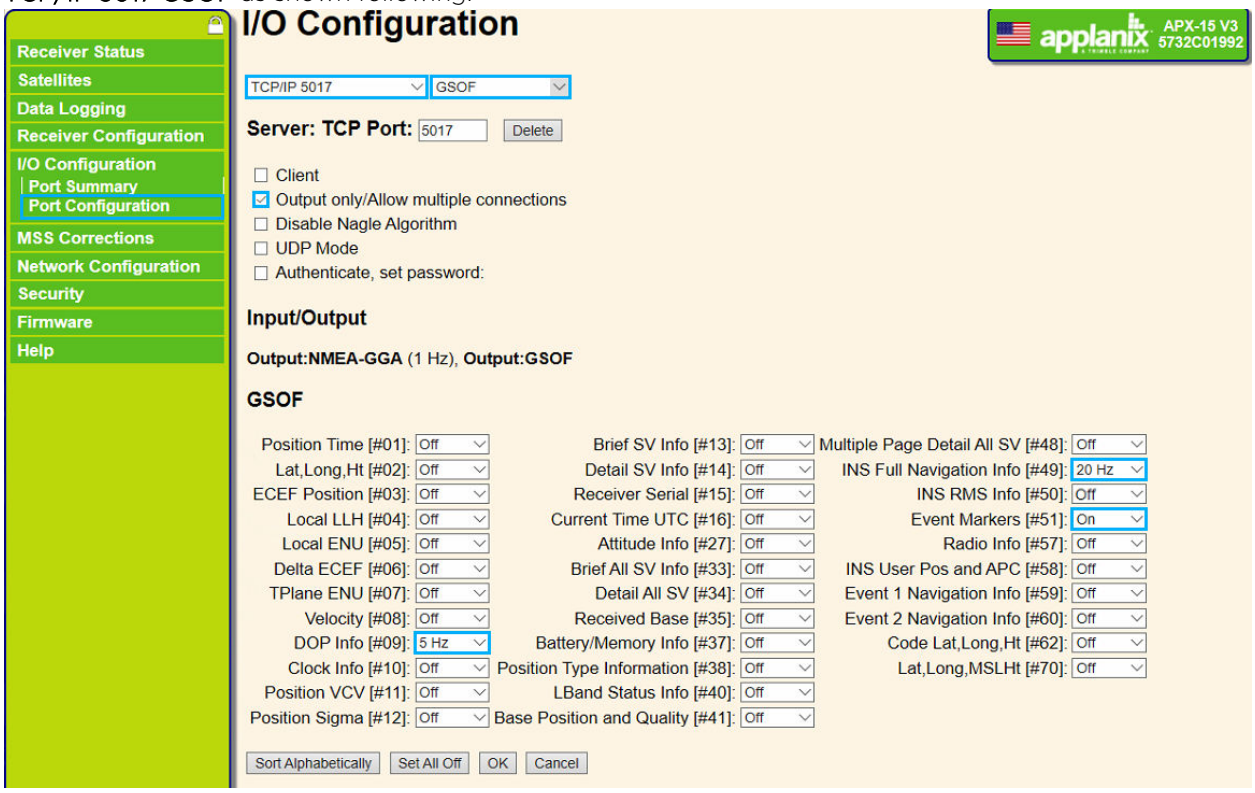
> **Note**
>
> The above configuration assumes that the camera is configured for Applanix.

2. Click **OK**.

### 5.2.3 TCP/IP Settings for Communication with iX Flight Pro

#### 5.2.3.1 5017 - GSOF

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters for **TCP/IP 5017 GSOF** as shown following:

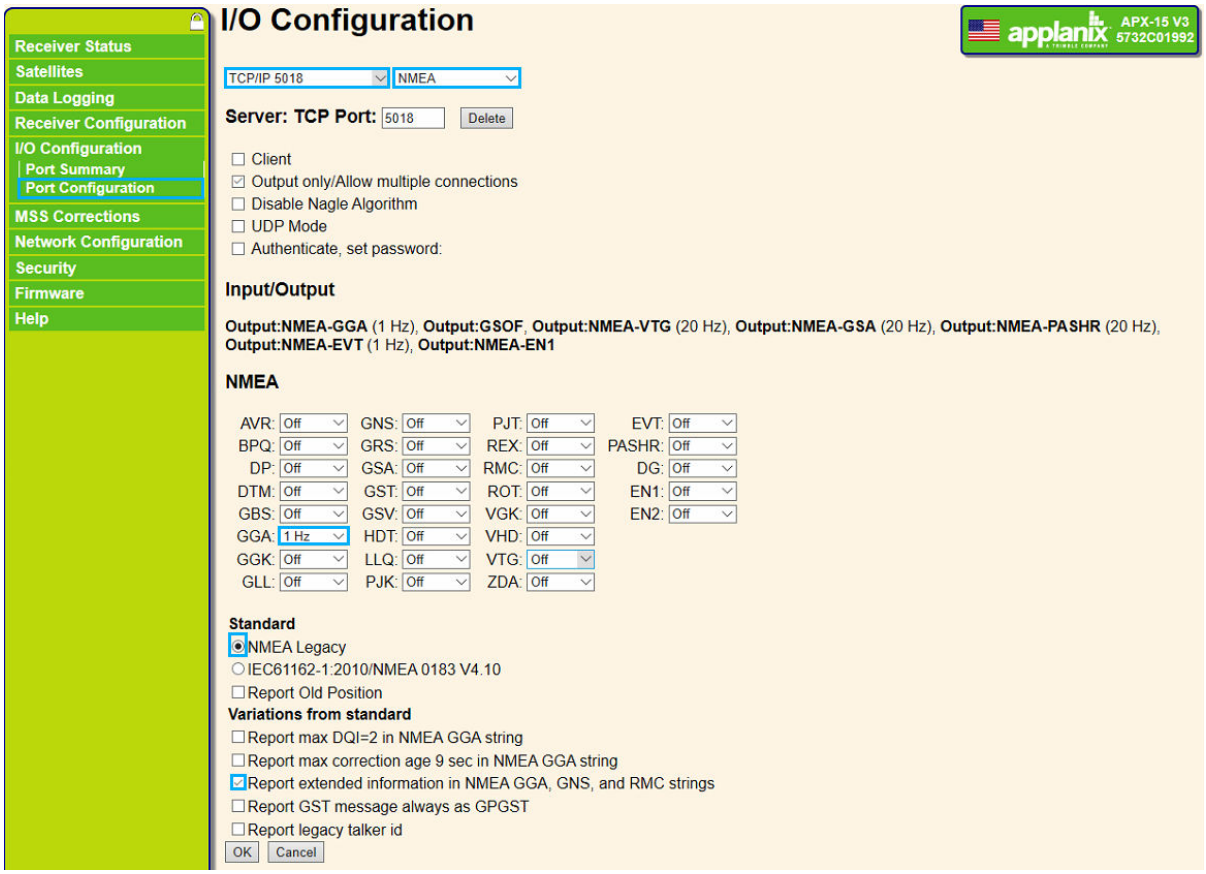



| Parameter | Setting |
|---|---|
| Output only/Allow multiple connections | Selected |
| DOP Info [#09] | 5 Hz |
| INS Full Navigation Info [#49] | 20 Hz |
| Event Markers [#51] | On |

2. Click **OK**.

### 5.2.3.2 TCP 5018 - NMEA

1. In the menu, under **I/O Configuration**, click **Port Configuration** and configure the parameters for **TCP/IP 5018 NMEA** as shown following:

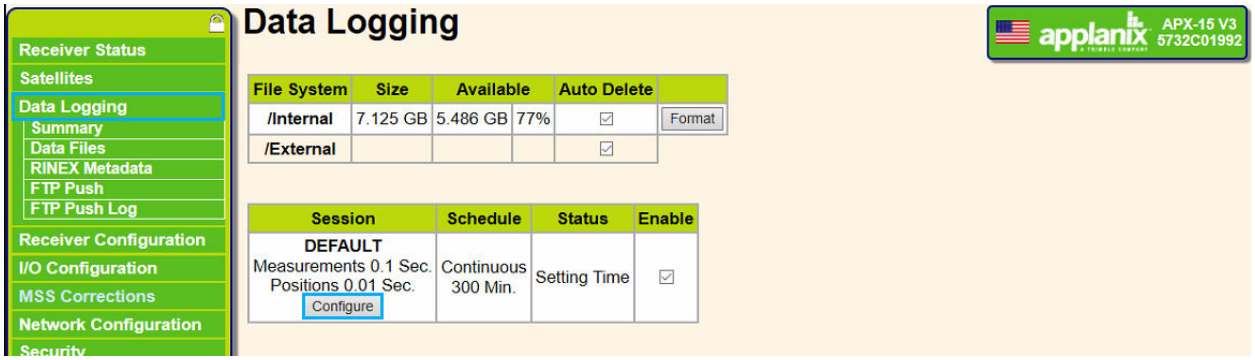



| Parameter | Setting |
|---|---|
| Output only/Allow multiple connections | Selected |
| GGA | 1 Hz |
| NMEA Legacy | Selected |
| Report extended information in NMEA GGA, GNS, and RMC strings | Selected |

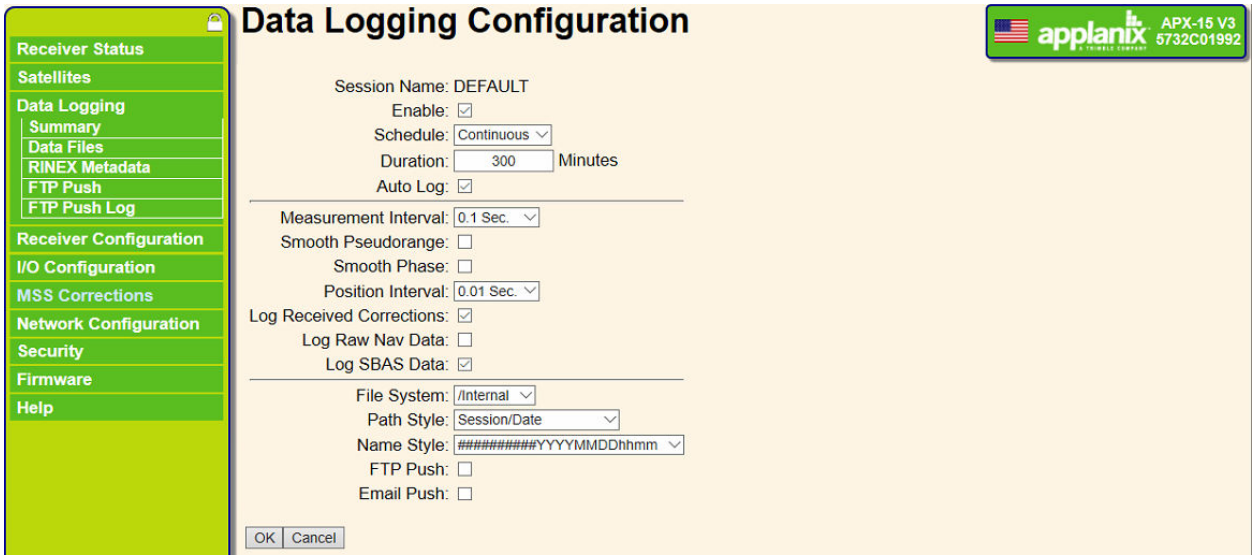
2. Click **OK**.

## 5.3 Configuring Data Logging

1. In the menu, click **Data Logging**, and click **Configure**.




2. Configure the parameters as shown following:

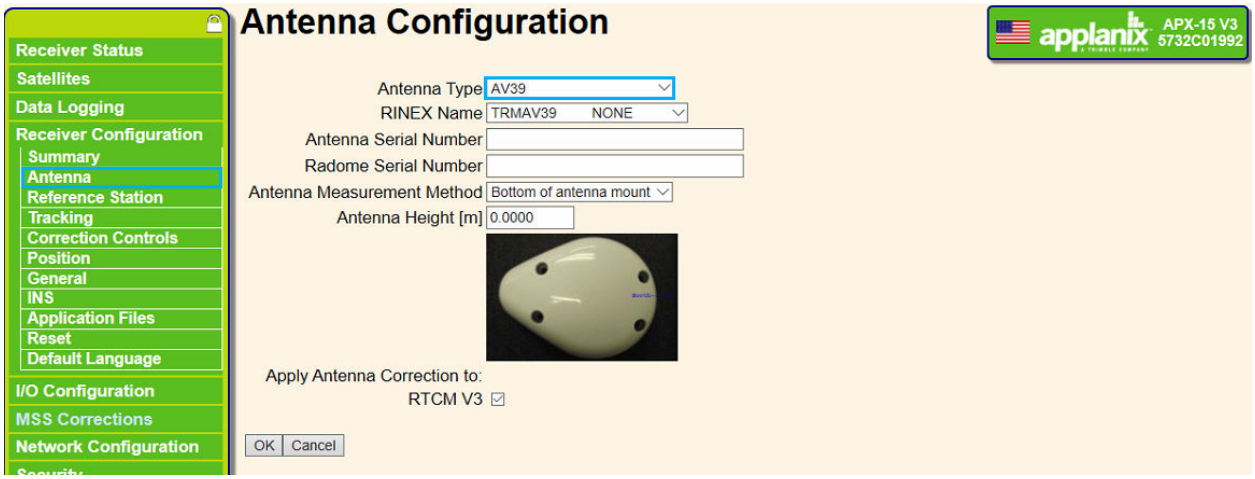



| Parameter | Setting |
|---|---|
| Enable | Selected. |
| Schedule | Continuous. |
| Duration | Enter the number of minutes per one file (the GNSS will create another file if the duration is exceeded). |
| Measurement Interval | 0.1 Sec. |
| Position Interval | 0.01 Sec. |

3. Click **OK**.

## 5.4 Configuring the Antenna

1. In the menu, under **Receiver Configuration**, click **Position Antenna** and configure the outlined parameter as shown following:




| Parameter | Setting |
|---|---|
| Antenna Type | Select the antenna installed on your aircraft.<br>**Note**<br>Phase One supplies the AV39 antenna with the system. |

2. Click **OK**.

# 6 Configuring the POSAV V6 through POSView

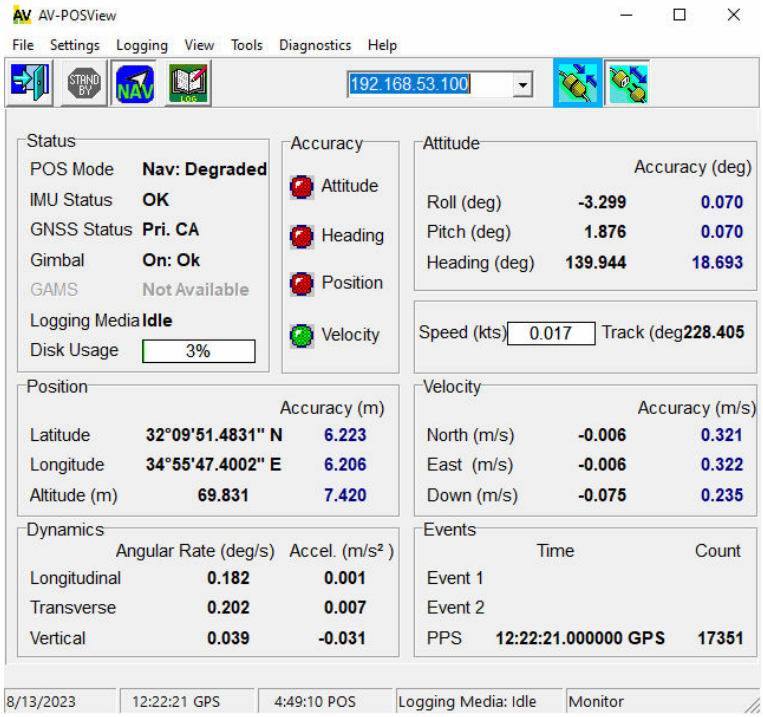
## Note

- Make sure your system is updated with the latest Applanix firmware.
- The following screenshots and configurations were taken from a system using the following hardware/firmware:
  - Applanix hardware: AV-510 Version 6
  - Firmware Version: 1.6-12
  - Software: POSAV Version 11.23

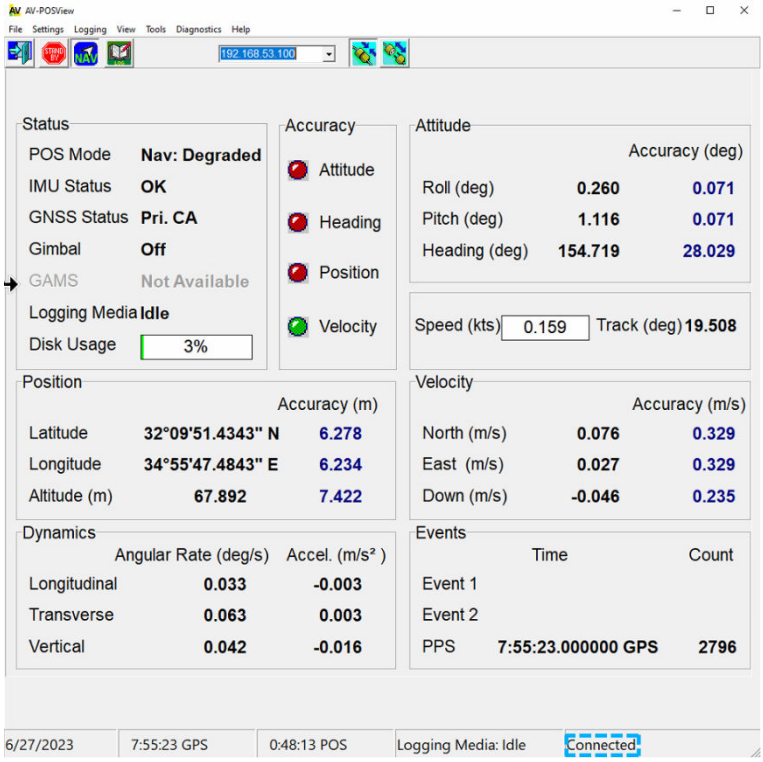
1. Tap/click PosView  .

## 6.1 Connecting to the POS-AV GNSS

1. Tap/click the Connect icon.



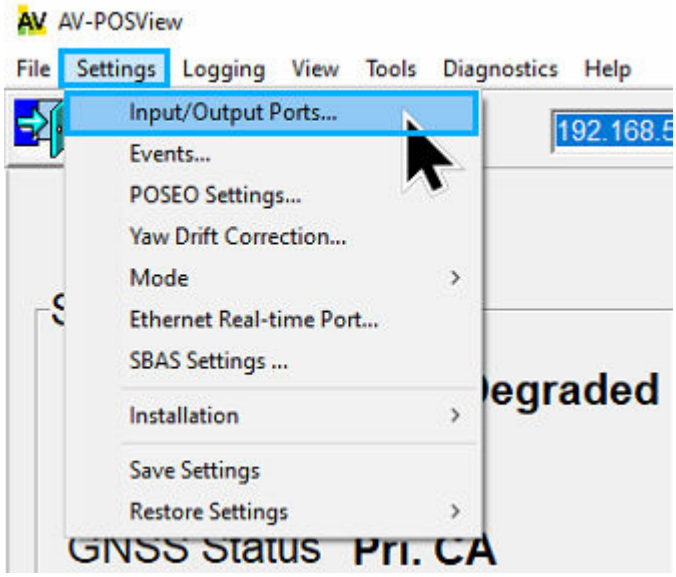
2. Verify the status bar displays **Connected**.



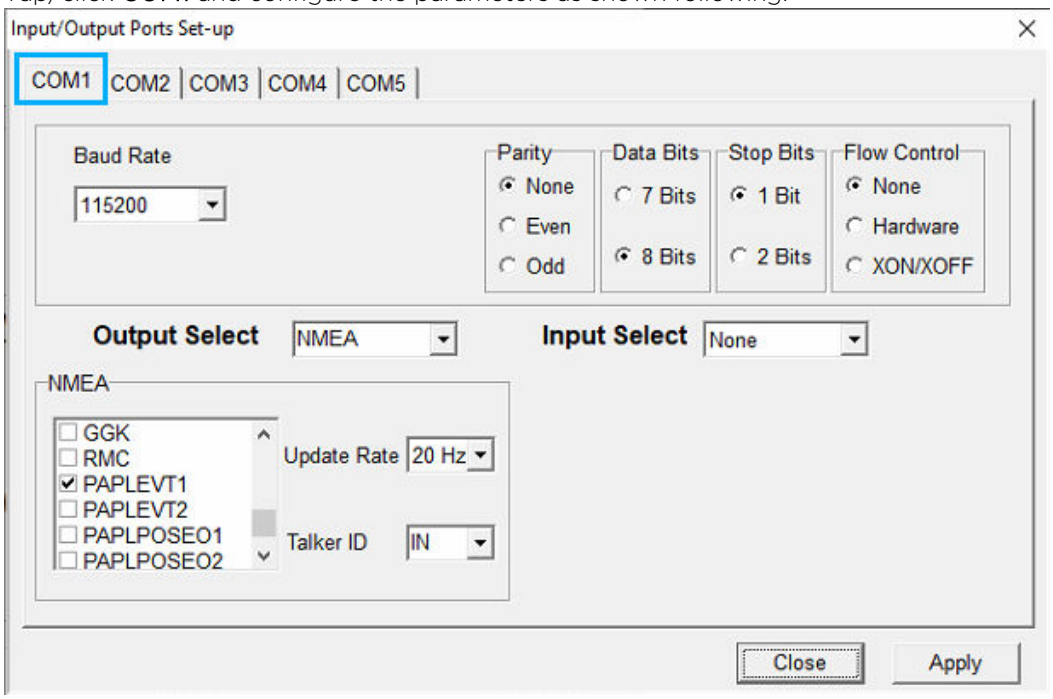
## 6.2 Configuring I/O Ports

### 6.2.1 COM1 - NMEA

1. On the main menu, tap/click **Settings** > **Input/Output Ports**.




2. Tap/click **COM1** and configure the parameters as shown following:

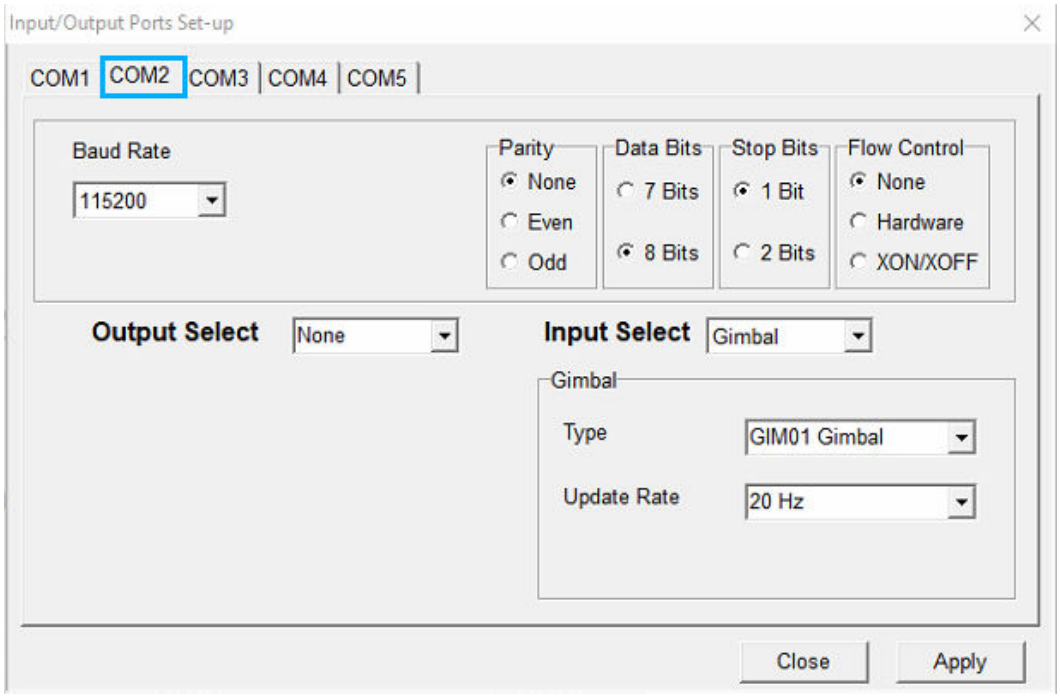



| Parameter | Setting |
|---|---|
| PAPLEVT1 | Selected |

3. Tap/click **Apply**.

### 6.2.2 COM2 – GIM01

1. Tap/click **COM2** and configure the parameters as shown following:

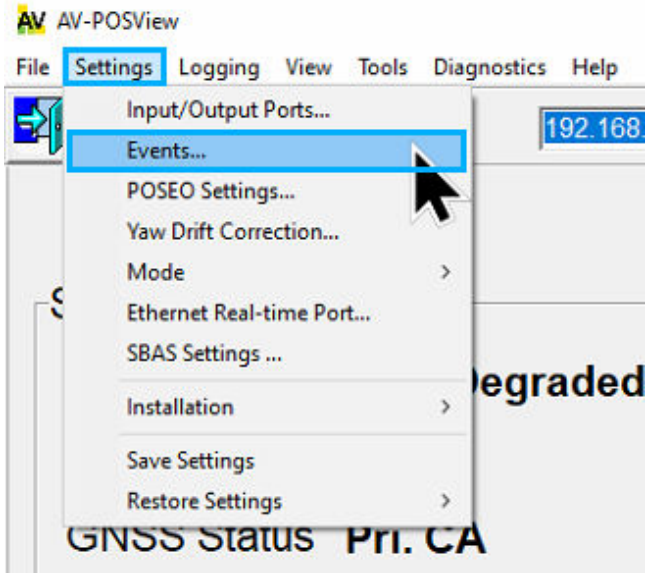



| Parameter | Setting |
|---|---|
| Input Select | Gimbal |
| Type | GIM01 Gimbal |

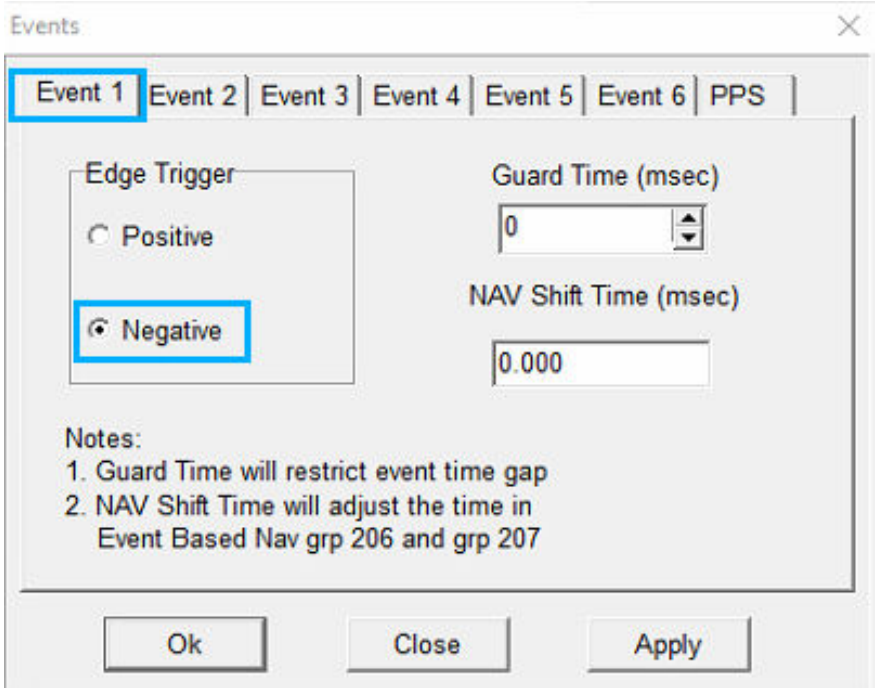
2. Tap/click **Apply**.

## 6.3 Configuring Events

1. On the main menu, tap/click **Settings** > **Input/Output Ports**.




2. Tap/click **Event1** and configure the parameters as shown following:

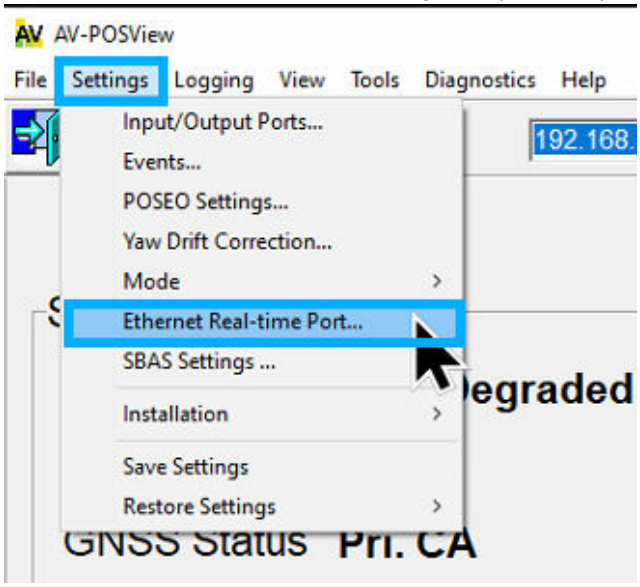



| Parameter | Setting |
|---|---|
| Edge Trigger | Negative |

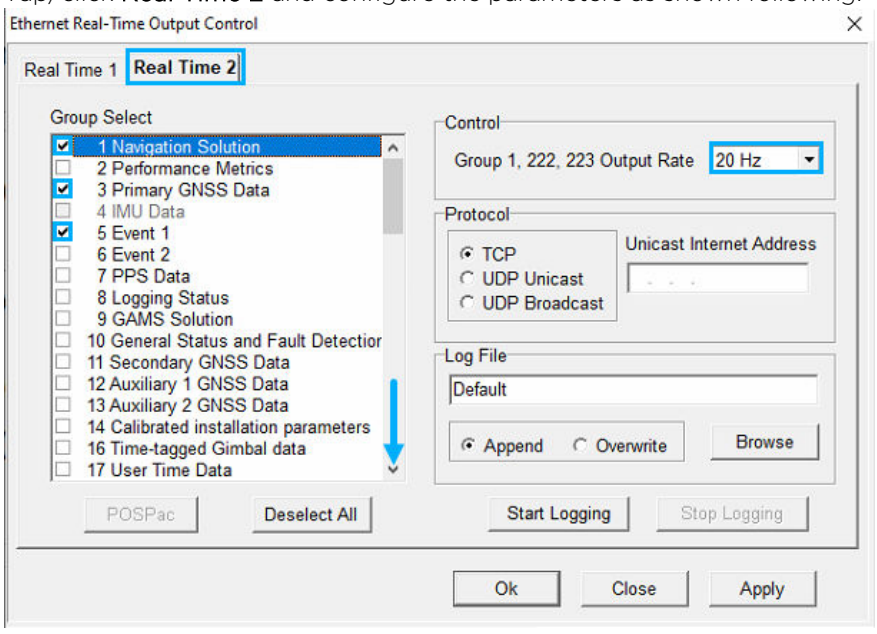
3. Tap/click **Apply** and then **OK**.

## 6.4 Configuring Ethernet Real-Time Output Control

1. On the main menu, tap/click **Settings** > **Input/Output Ports**.




2. Tap/click **Real Time 2** and configure the parameters as shown following:

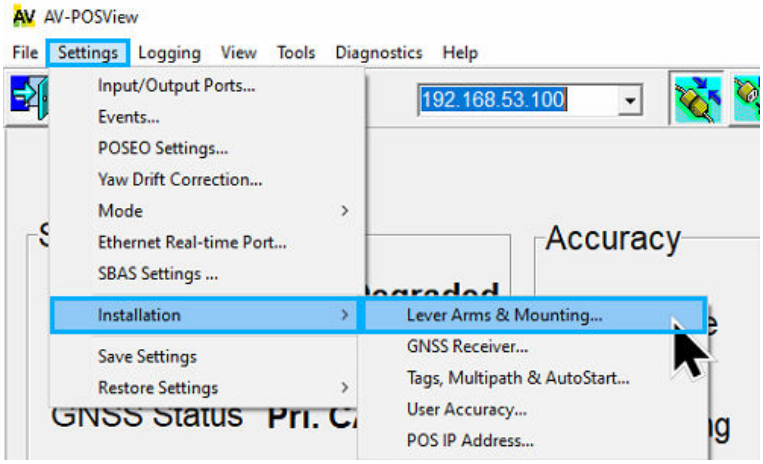



| Parameter | Setting |
|---|---|
| Control - Group 1, 222, 223 Output Rate | 20 Hz |
| Group Select – 1 Navigation Solution | Selected |
| Group Select – 3 Primary GNSS Data | Selected |
| Group Select – 5 Event 1 | Selected |
| Group Select – 200 Gimbal Encoder Data | Selected |
| Group Select – 222 Ref Frame Navigation Solution | Selected |

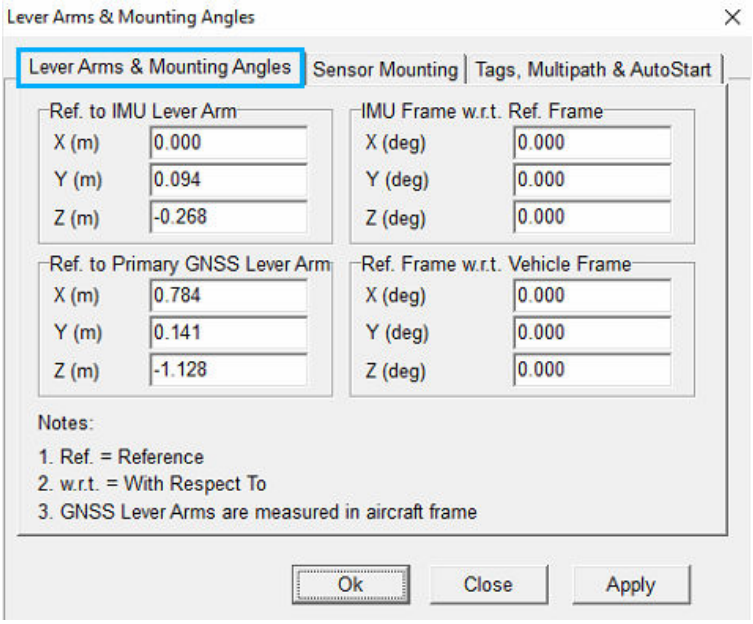
3. Tap/click **Apply** > **OK**.

## 6.5 Configuring Lever Arms and Mounting Angles

1. On the main menu, tap/click **Settings** > **Installation** > **Lever Arms & Mounting**.




2. Tap/click **Lever Arms & Mounting Angles** and configure the parameters relevant to your system:




### Ref. to IMU Lever Arm

| Parameter | Setting |
|---|---|
| X (m) | For each axis, enter the distance from the mount rotation center to the IMU measurement center. |
| Y (m) | |
| Z (m) | |

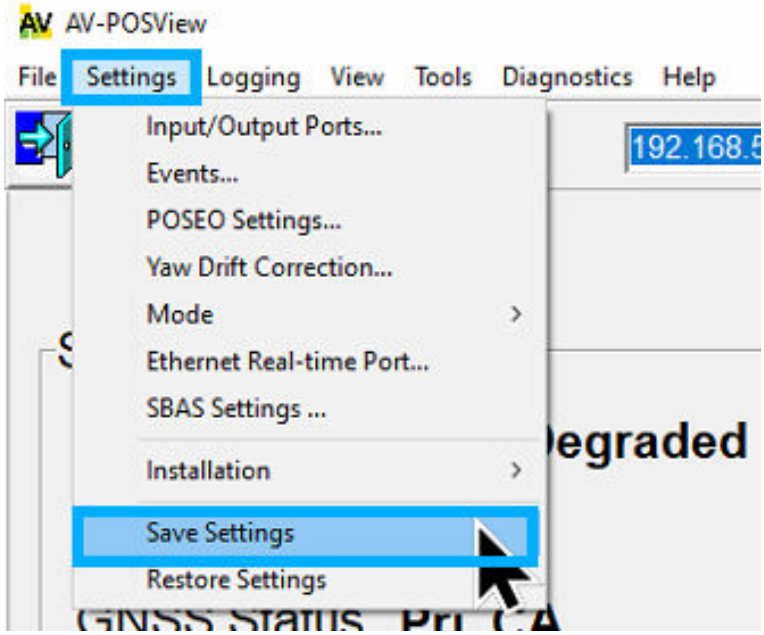
IMU Frame w.r.t. Ref Frame

| Parameter | Setting |
|---|---|
| X (deg) | In **Reference to IMU Mounting Angles**. all values are zero (equal to the aircraft axis) when:<br>• X of the IMU is towards the direction of flight<br>• Y is to the right<br>• Z is down<br>Enter the difference in angles between the IMU X, Y, and Z axis and the aircraft X, Y, and Z axis. |
| Y (deg) | |
| Z (deg) | |

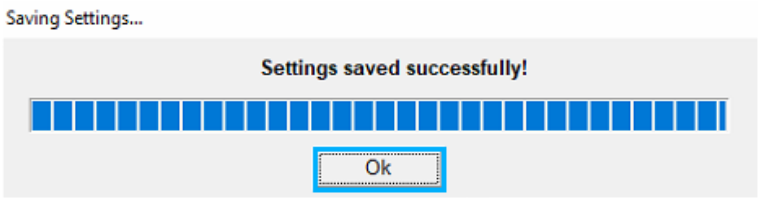
Ref. to Primary GNSS Lever Arm (Antenna)

| Parameter | Setting |
|---|---|
| X (m) | For each axis, enter the distance from the mount rotation center to the antenna reference point. |
| Y (m) | |
| Z (m) | |

3. Tap/click **Apply** > **OK**.
4. Tap/click **Settings** and then **Save Settings**.




5. Tap/click **OK**.



# 7 Configurating iX Flight Pro GNSS Settings

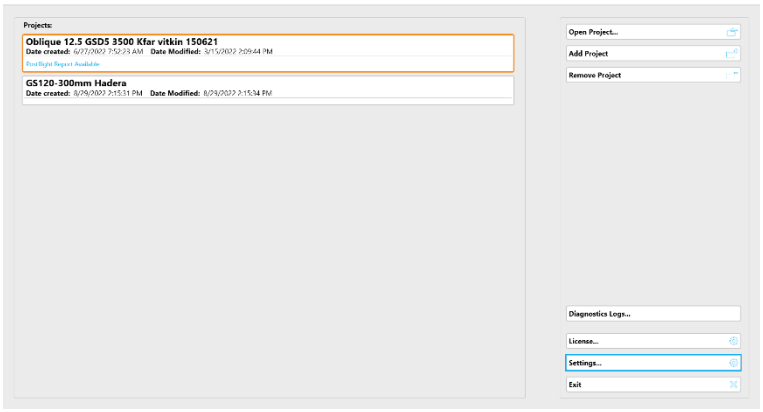
> **Note**
>
> For a detailed description of iX Flight Pro, refer to the iX Flight Pro Operation Guide for your software version.

## 7.1 AP+/POS AVX 210/POSAV V6

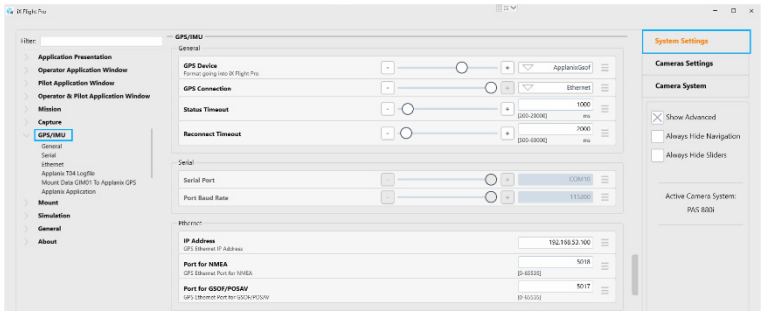
> **Note**
>
> iX Flight Pro and POSView cannot be used simultaneously since they use the same ports.

**To configure GNSS settings:**

1. in iX Flight Pro, in the Home window, tap **Settings**.




2. Tap **System Settings** and tap **GPS/IMU**.




Configure the following parameters:

| Category | Group | Parameter | Default Value | Description |
|---|---|---|---|---|
| GPS/IMU | General | GPS Device | • For AP+/POS AVX 210: ApplanixGsof<br>• For POSAV V6: ApplanixPosav | Format going into iX Flight Pro |
| | | GPS Connection | Ethernet | |
| | | Status Timeout | 1000 milliseconds | |

| Category | Group | Parameter | Default Value | Description |
|---|---|---|---|---|
| | | Reconnect Timeout | 2000 milliseconds | |
| | Serial | Serial Port | N/A | |
| | | Port Baud Rate | N/A | |
| | Ethernet | IP Address | 192.168.53.100 | GPS Ethernet IP Address |
| | | Port for NMEA | • For AP+/POS AVX 210: 5018<br>• For POSAV V6: 5600 | GPS Ethernet Port for NMEA |
| | | Port for GSOF/POSAV | • For AP+/POS AVX 210: 5017<br>• For POSAV V6: 5606 | GPS Ethernet Port for GSOF/POSAV |
| | Applanix T04 Logfile* | Disable Capturing if T04 Logging is Not Running | Off | |
| | | Applanix T04 Logfile | On | |
| | | Port for Applanix T04 | 5019 | |
| | | Applanix T04 Max Storage Size | 1024 MB | |
| | | Applanix T04 Status Timeout | 10000 ms | Applanix T04 Logging Status Timeout |
| | Mount Data GIM01 To Applanix GPS | Applanix GIM01 | Off | Provide mount information from mount to GPS through iX Flight Pro |
| | | Serial Port | COM10 (or port allocated by Windows). | Applanix G\|M01 Serial Port |
| | | Baud Rate | 115200 | Applanix GIM01 Serial Port Baud Rate |
| | Applanix Application | Applanix IP Address | 192.168.53.100 | Should be the same as GPS Ethernet address |
| | | Applanix Application | Open App | Opens the Applanix application. |

* T04 logging for POSAV is not yet implemented. Activate this logging using POSVIEW.

3. Tap **Camera Settings** and scroll down to **Left Terminal**.


4. Tap Close.