

ArView User Manual



ARDICLABS

integrated sensing solutions

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1 INTRODUCTION

ArView PC Software can be used to configure ArNav devices and view navigation data. Latest version of the ArView PC Software can be downloaded from [ArView Application Web Page](#). ArView PC Software supports following features:

- Magnetic Calibration
- Data View
- Device Settings
- 3D View
- Advanced Data View
- Data Record and Log Browser
- Low Rate Message View
- Firmware Update Tool
- Map View
- TCP Server Connection

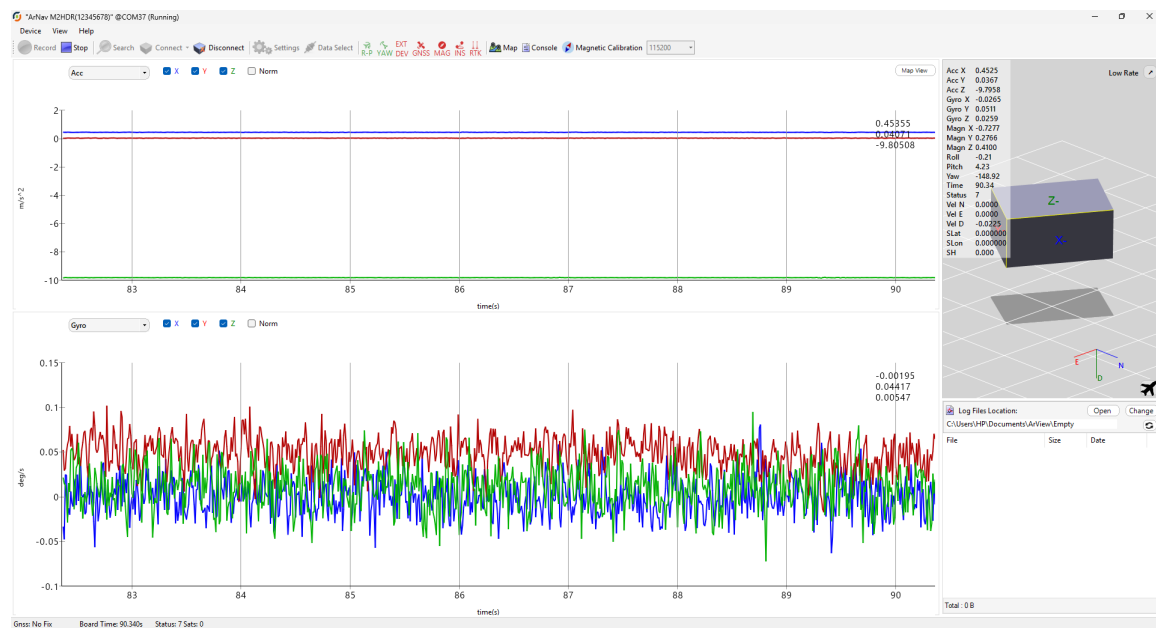


Figure 1: ArView PC Software

2 INSTALLATION

2.1 Install

After downloading the latest version of ArView, the setup executable should be run. Check your antivirus settings if you encounter problems downloading or running the setup. The following screen should appear:

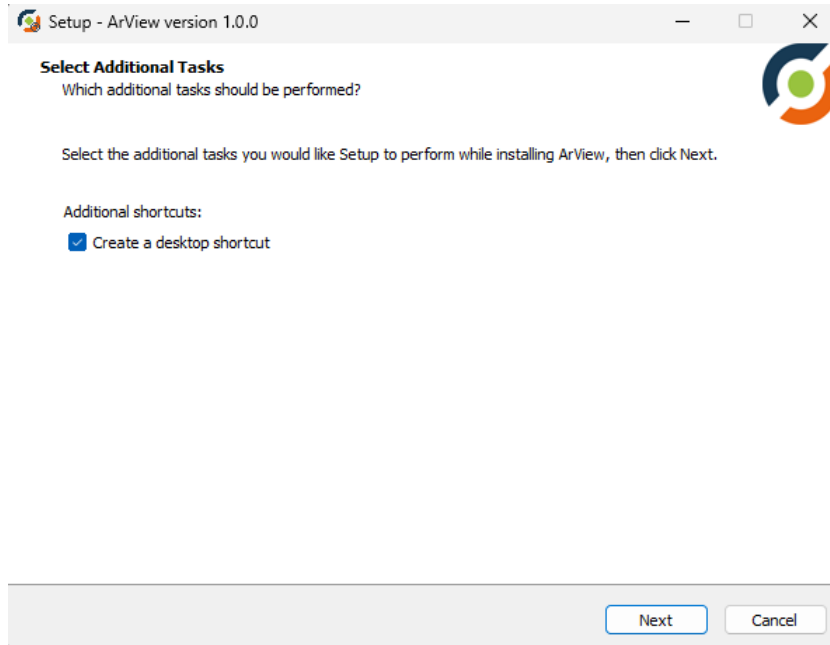


Figure 2: Setup Screen

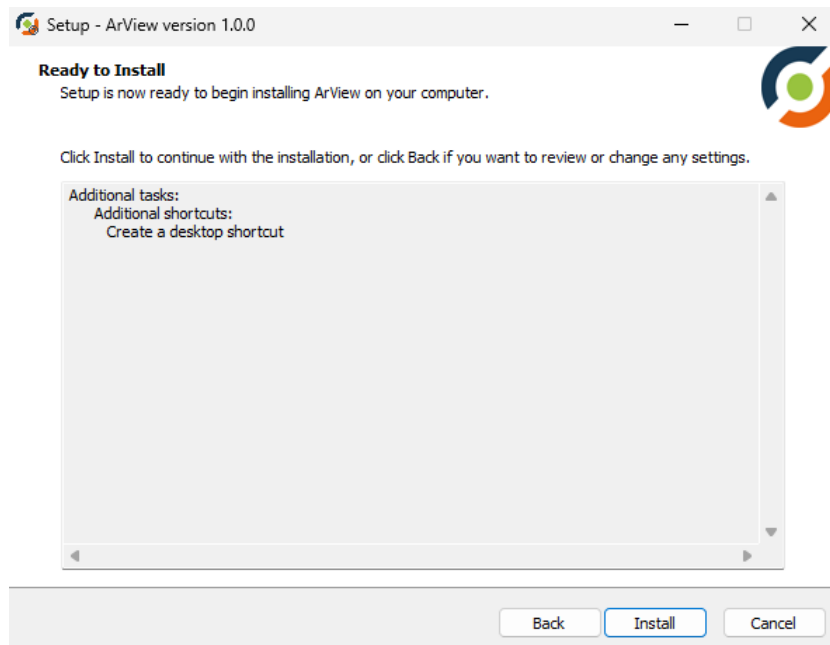


Figure 3: Press Install

If setup is successful the following screen appear. If not please check anti-virus settings.

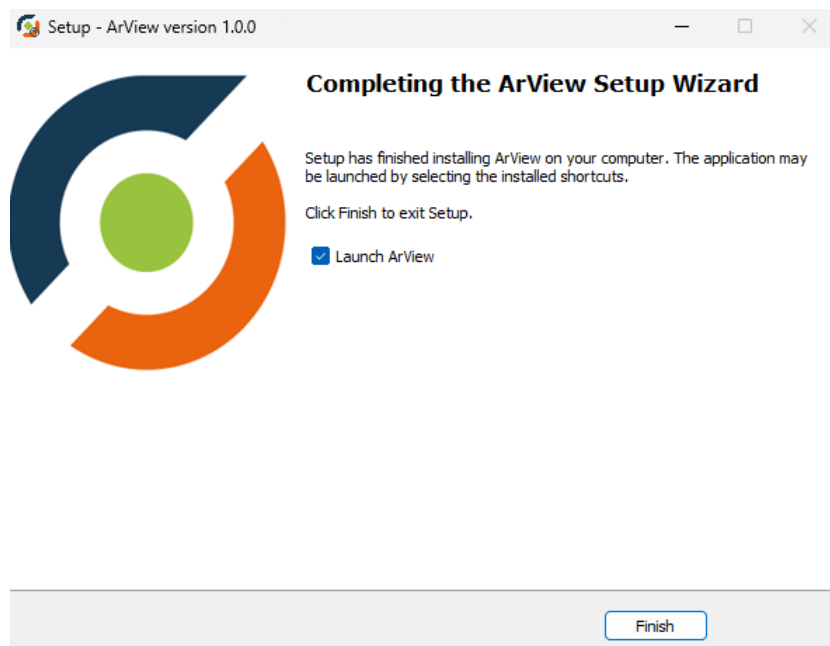


Figure 4: Setup Finished

2.2 Uninstall

ArView can be uninstalled using the Windows Uninstall feature.

3 Connecting to Device

You can search for connected devices using the toolbar, or select a known active serial port manually. Baudrate must be selected to match with device's Baudrate value. The default value is 115200 bits/s. Devices can also be connected using Transmission Control Protocol (TCP) network communication as TCP Client. By selecting TCP Server selection with appropriate TCP IP address and network port, can be connected to TCP server.

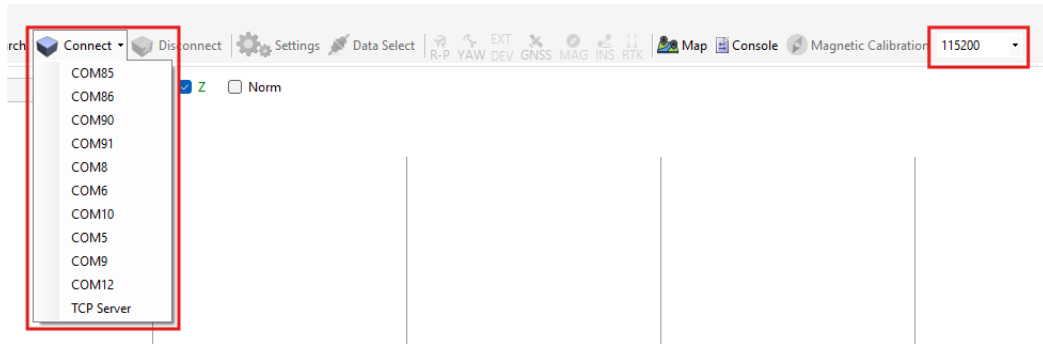


Figure 5: Connecting to Device

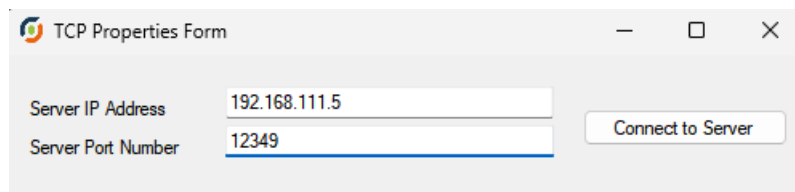


Figure 6: Example of Connecting to Device via TCP

4 Recording Data

After connecting the device navigation data from device can be viewed and recorded to file. If the 'Record' button is pressed, data will be retrieved from device and shown on screen and at the same time save to file system.

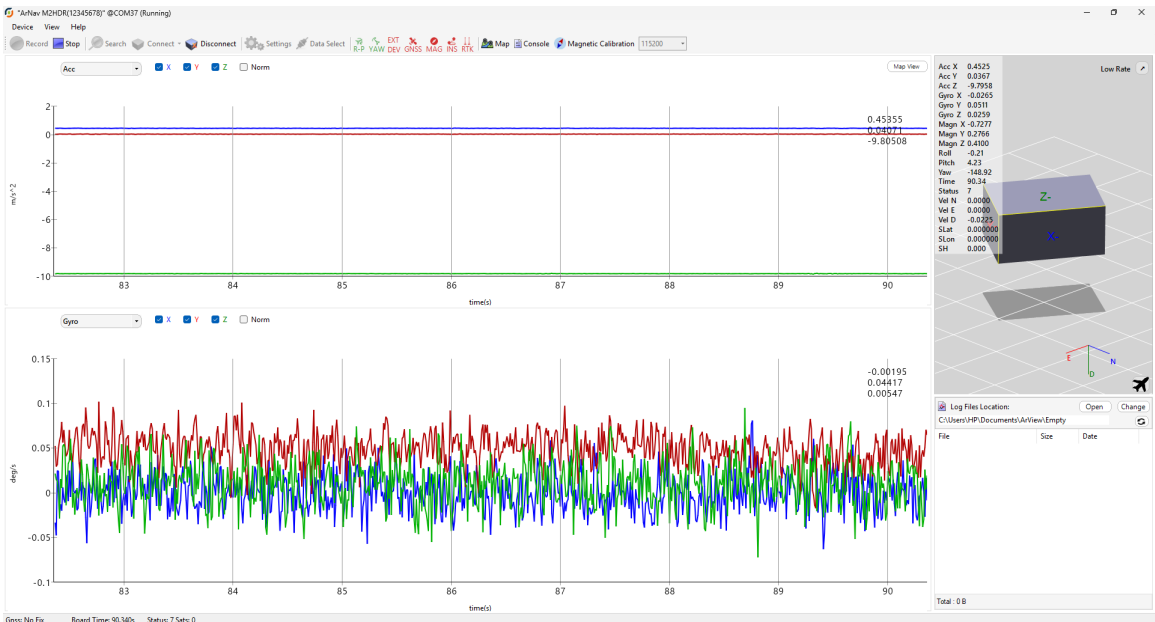


Figure 7: Connecting to Device

Device commands can be send to device by using console screen by typing the desired command string. Also in serial view window, incoming and outgoing data can be seen in raw (Hexadecimal) form.

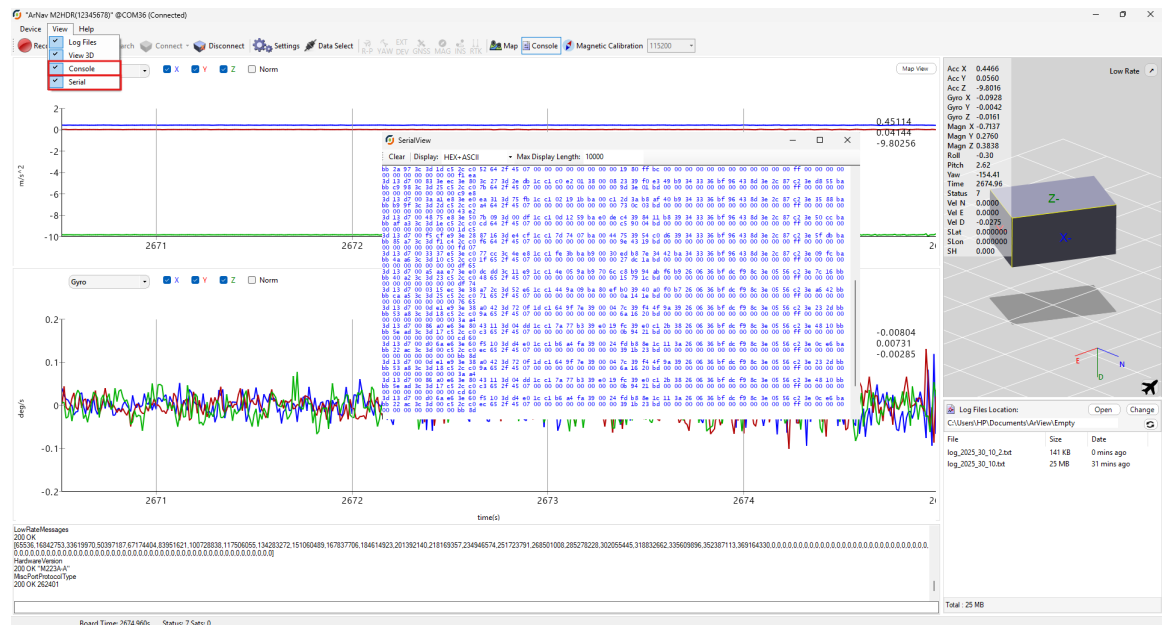
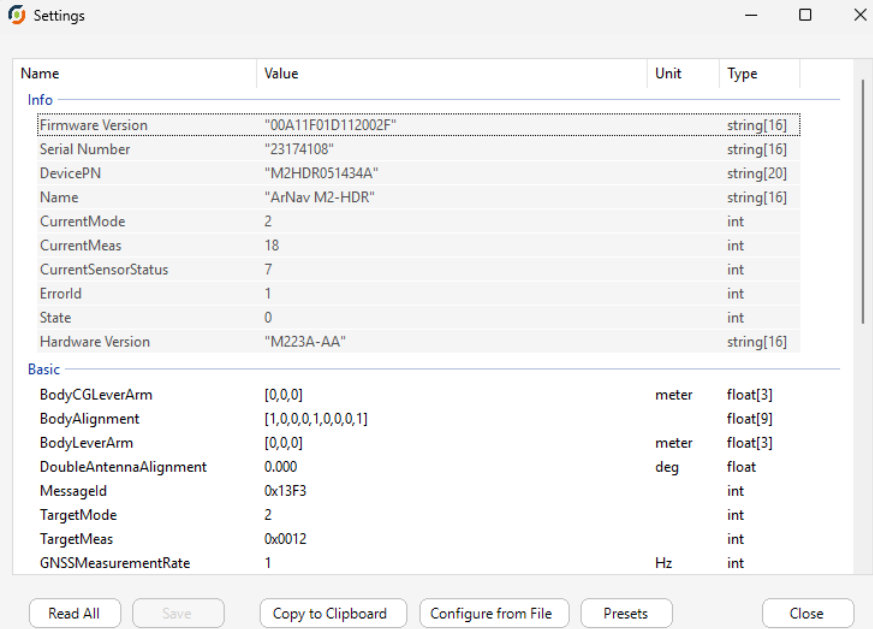


Figure 8: Console and Serial View Window

6 Device Settings

Device configuration can be performed using ArView. Device configuration can only be done when device is not actively sending data. So to enable settings press 'Stop' button. Description of device configuration is given in **ArNav User Manual**.



The screenshot shows the 'Settings' window in ArView. It contains two sections: 'Info' and 'Basic'. The 'Info' section lists various device identifiers and modes. The 'Basic' section lists physical and measurement parameters. At the bottom, there are buttons for 'Read All', 'Save', 'Copy to Clipboard', 'Configure from File', 'Presets', and 'Close'.

Name	Value	Unit	Type
Info			
Firmware Version	"00A11F01D112002F"		string[16]
Serial Number	"23174108"		string[16]
DevicePN	"M2HDR051434A"		string[20]
Name	"ArNav M2-HDR"		string[16]
CurrentMode	2		int
CurrentMeas	18		int
CurrentSensorStatus	7		int
ErrorId	1		int
State	0		int
Hardware Version	"M223A-AA"		string[16]
Basic			
BodyCGLeverArm	[0,0,0]	meter	float[3]
BodyAlignment	[1,0,0,0,1,0,0,0,1]		float[9]
BodyLeverArm	[0,0,0]	meter	float[3]
DoubleAntennaAlignment	0.000	deg	float
MessageId	0x13F3		int
TargetMode	2		int
TargetMeas	0x0012		int
GNSSMeasurementRate	1	Hz	int

Buttons: Read All, Save, Copy to Clipboard, Configure from File, Presets, Close

Figure 9: Device Settings

6.1 Data Select

Data Select window can be used to select which data to be sent over serial port. Descriptions of the data, including their formats, types, and units, are provided in the **ArNav User Manual**.

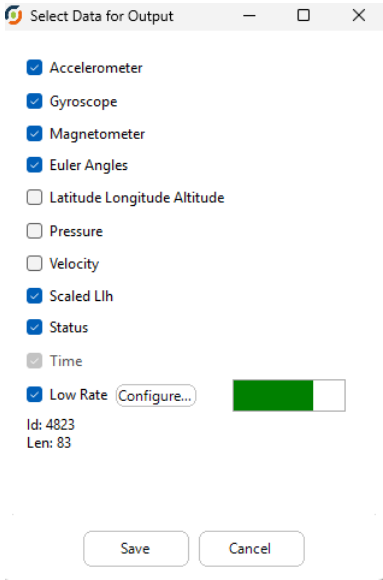


Figure 10: Data Select

6.1.1 Low Rate Configuration

Low rate messages can be configured in the window opened by clicking Configure button. Defined messages can be selected at different rates in separate slots. By clicking Defaults button, pre-selected message configurations can be load to device. Each low-rate message must be placed into the correct time slot within an imaginary 100 Hz timeline (corresponding to one second of data). A message's rate determines how many times it should appear within this 1-second window. When assigning these slots, ensure that no two different messages occupy the same time index, so that message occurrences do not overlap. Descriptions of the data, including their formats, types, and units, are provided in the **ArNav User Manual**.

The screenshot shows a window titled "LowRateConfig" with a list of seven messages, each assigned to a specific time slot (0-6), a rate (all set to 1), and an ID (0-6). Each entry includes a "REMOVE" button. Below the list is a horizontal timeline from 0 to 99, with a green bar indicating the current selection range from 0 to 19. At the bottom are buttons for "Read From Device", "Defaults", and "Save".

Message	Slot	Rate	Id	Action
GPS Diff from Pps(s) & Counter	0	1	0	REMOVE
GPS ITOW & Number of satellites	1	1	1	REMOVE
GNSS Validity & Height(m)	2	1	2	REMOVE
GNSS Latitude & Longitude(deg)	3	1	3	REMOVE
GNSS Velocity North & East(m/s)	4	1	4	REMOVE
GNSS Accuracy Horizontal & Vertical(m)	5	1	5	REMOVE
GNSS Velocity Down & Accuracy Speed(m/s)	6	1	6	REMOVE

Figure 11: Low Rate Data Select

6.2 Body Alignment Configuration

Alignment of the body to platform can be configured using the body alignment configuration window. This window provides visualization and configuration capability of the selected alignment. For compensate mis-aligned assembly surfaces, delta angles for roll, pitch and yaw can be typed by the user in between -5° and 5° . Also given lever arm and double antenna configuration can be observed on the window.

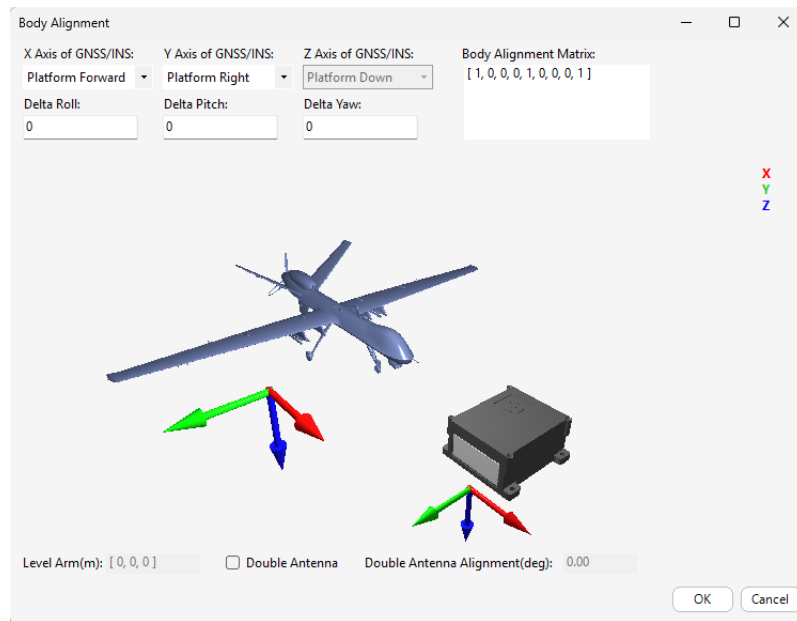


Figure 12: Body Alignment Configuration

6.3 Preset Configure/Load

By clicking Presets button placed in the main settings window, preloaded settings can be seen. By clicking Load Selected Preset button, a preset can be loaded to connected device. Also expert mode configuration can be enabled by checking the Enable Expert Mode checkbox located in the Options tab. In expert mode, two invisible buttons becomes visible which Save Current Preset and Remove Preset. By clicking Save Current Preset, current configuration of the device can be saved. Also by clicking Remove Preset, selected preset(s) can be removed.

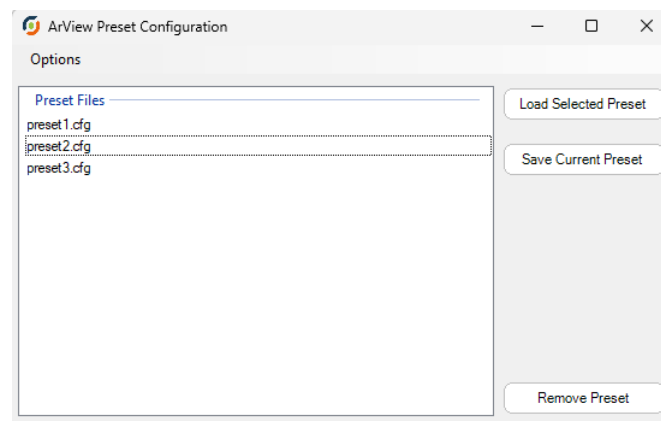


Figure 13: Preset Configuration

7 Plot Windows

Navigation data can be seen as a graph in plot windows in real time while recording. If data is vector X, Y, Z components and the norm of the data can be viewed with respect to time.

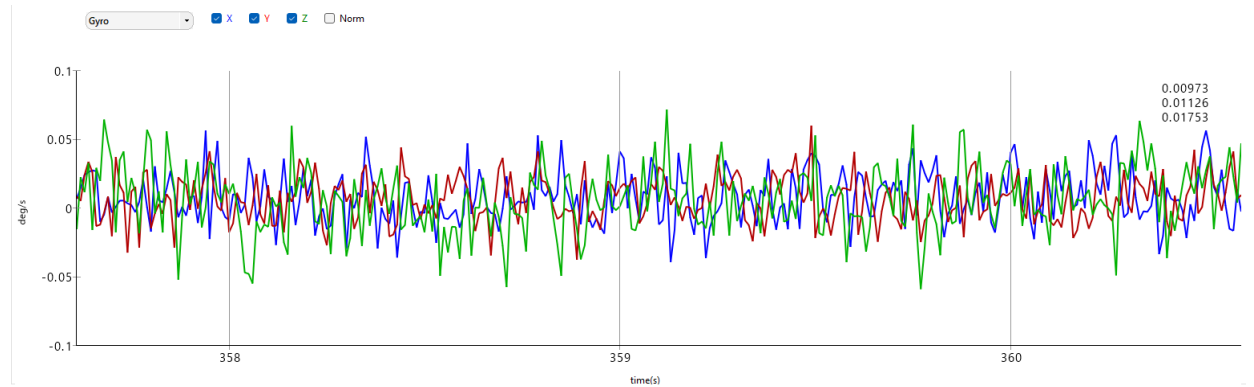


Figure 14: Plot Windows

8 3D View

If navigation data have euler angles, orientation of the device can be seen in 3D View. Clicking the Low Rate button placed top right corner of the 3D view can lead to display the low rate messages received from device. For more information about low rate messages are given in **ArNav User Manual**.

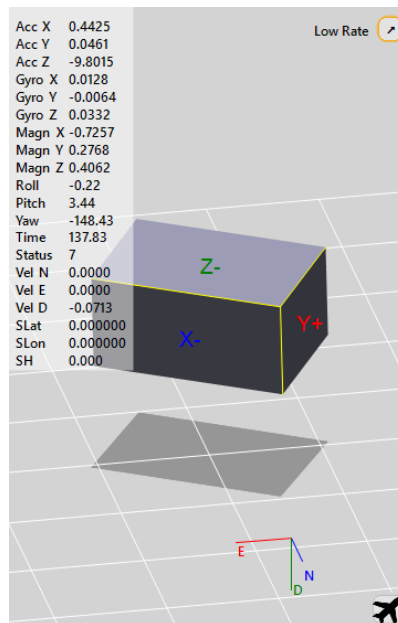


Figure 15: 3D View

Low Rate Messages				
Messages				
Name	1st value	2nd value	3rd value	Info
0 GPS Diff from Pps(s) & Counter	-1	13200	-	-
1 GPS ITOW & Number of satellites	0	0	-	-
2 GNSS Validity & Height(m)	0	0	-	-
3 GNSS Latitude & Longitude(deg)	0	0	-	-
4 GNSS Velocity North & East(m/s)	0	0	-	-
5 GNSS Accuracy Horizontal & Vertical(m)	0	0	-	-
6 GNSS Velocity Down & Accuracy Speed(m/s)	0	0	-	-
7 GNSS GDOP & PDOP	0	0	-	-
8 Nav Accuracy Latitude & Longitude(m)	5	5	-	-
9 Nav Accuracy Height(m) & VelDown(m/s)	5	0.1	-	-
10 Nav Accuracy VelNorth & VelEast(m/s)	0.1	0.1	-	-
11 Nav Accuracy Roll & Pitch(deg)	0.289466977	0.287691355	-	-
12 Nav Accuracy Yaw(deg) & Reserved	3.28302526	0	-	-
13 Nav Est. Bias AccX & AccY(m/s/s)	0	0	-	-
14 Nav Est. Bias GyroX & GyroY(deg/s)	0.09222492	0.7004618	-	-
15 Nav Est. Bias AccZ(m/s/s) & GyroZ(deg/s)	0	0.07571026	-	-
16 System Status Log	0x00030303	0x03000000	-	-
20 GNSSDouble Relative Pos NED Flag & Length(m)	0	0	-	-
21 GNSSDouble Heading & Heading Accuracy(deg)	0	0	-	-
22 GNSSDouble Relative Pos North & East(m)	0	0	-	-
40 Time Utc	Invalid	Invalid	Invalid	-
41 Local Geoidundulation & Reserved	0	0	-	-
42 Current Mode & Reserved	0x00000001	0x00000002	-	-

Figure 16: Low Rate Message Table

8.1 Advanced Data View

To display the incoming data in Electronics Flight Instrument form, Advanced Data View window can be used. By clicking plane icon placed in bottom right corner in the 3D View screen, the form can be opened. The Attitude Indicator displays Roll($^{\circ}$), Pitch($^{\circ}$) and Altitude(Feet) of the device. Roll scale indicators are placed at $\pm 10^{\circ}$, $\pm 20^{\circ}$, $\pm 30^{\circ}$, $\pm 45^{\circ}$ and $\pm 60^{\circ}$. Heading Indicator displays Yaw($^{\circ}$) and magnetic heading($^{\circ}$) of the device and Vertical Speed Indicator displays the barometric altitude change speed in feet per minute scaled by 100.

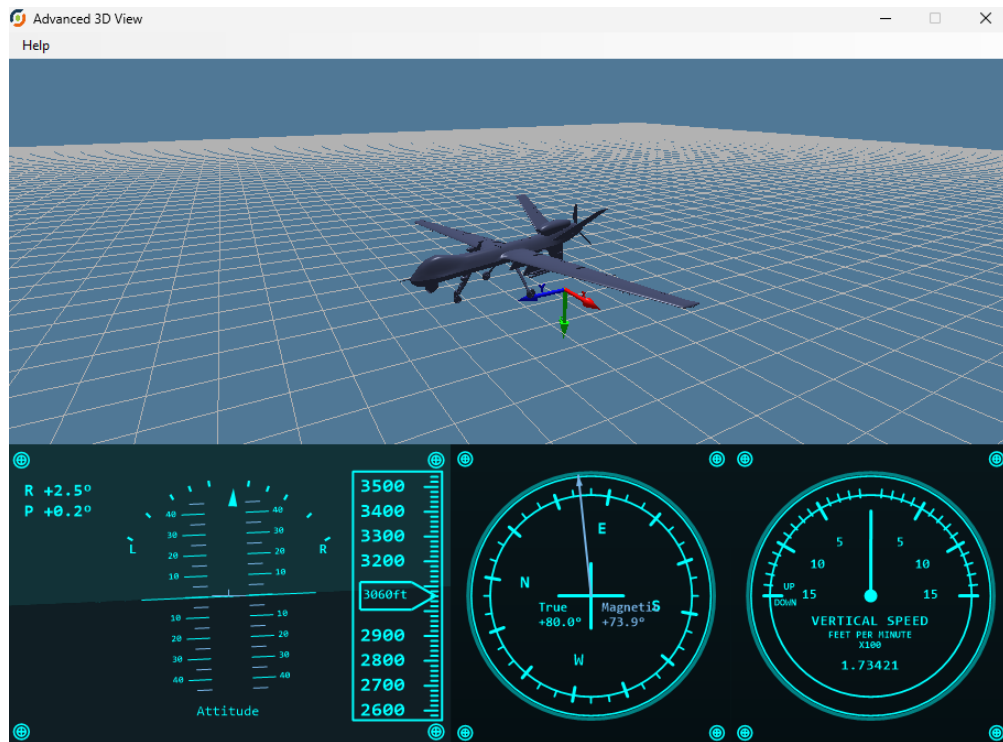


Figure 17: Advanced Data View

9 Map View

By clicking Map View buttons marked on the figure, map view form become visible. When there are valid GNSS data, device position can be seen on the map view window. User can observe both incoming GNSS data and navigation output generated by the device.

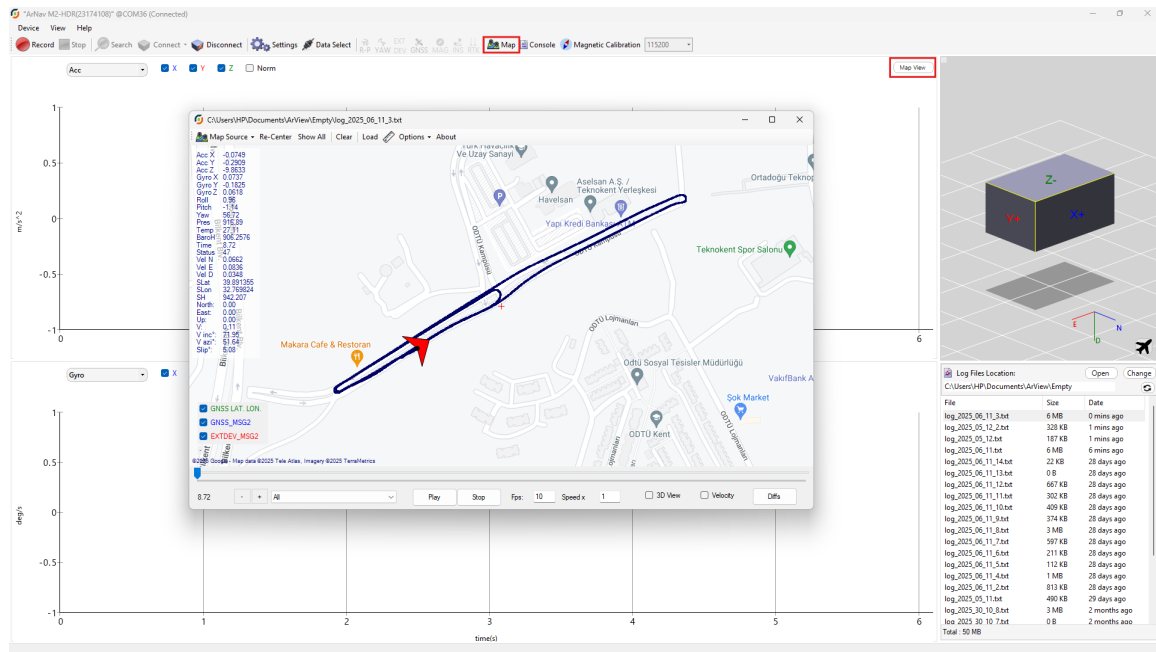


Figure 18: Map View of Pre-recorded Data

10 Log Browser

While recording data, data is written in .txt format in file system. Whenever recording started a separate file is generated. All the log files stored in file system can be seen from log browser window. By right click to a desired log file, recorded data can be displayed on both plot view and map view.

Log Files Location:			Open	Change
C:\Users\HP\Documents\ArView				
File	Size	Date		
log_2025_08_7_2.txt	82 KB	1 mins ago		
log_2025_08_7.txt	24 KB	7 mins ago		
log_2025_07_7_4.txt	433 KB	20 hours ago		
log_2025_07_7_3.txt	25 KB	21 hours ago		
log_2025_07_7_2.txt	37 KB	21 hours ago		
log_2025_07_7.txt	38 KB	21 hours ago		
log_2025_30_6.txt	294 KB	7 days ago		
log_2025_13_6.txt	59 KB	25 days ago		
log_2025_03_6_3.txt	33 MB	1 months ago		
log_2025_03_6_2.txt	5 MB	1 months ago		
log_2025_03_6.txt	4 MB	1 months ago		
log_2025_02_6_21.txt	2 MB	1 months ago		
log_2025_02_6_20.txt	29 MB	1 months ago		
Total : 12 GB				

Figure 19: Log Browser

11 Magnetic Calibration

Three types of magnetometer calibration are available in the ArView application. These are; 3D calibration, 2D calibration and Rose Compass calibration. Keep in mind that Rose Compass calibration is only supported by ArNav S3 series navigation systems. For further information about 3D and 2D calibration, **ArNav User Manual** can be referenced.

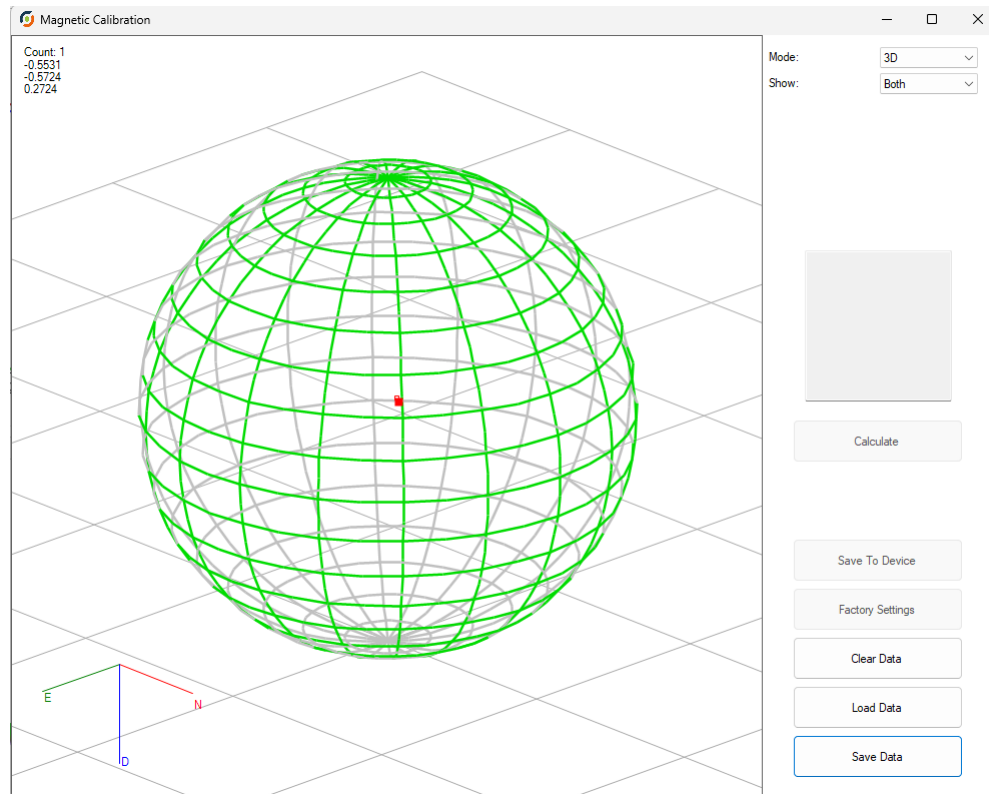


Figure 20: Magnetic Calibration

Data collection is only possible when the ArView application is connected to device, magnetometer and accelerometer is selected and record button is clicked. When Data acquisition is finished, by clicking the Calculate button, calibration matrix can be obtained. By clicking Save Data, data can be saved. By clicking Load Data button, saved data can be loaded to calibration screen. Also on the main screen, data collection must be stopped by clicking stop button, clicking calculate button than by clicking the Save To Device button, obtained calibration results can be loaded to connected device. By clicking Factory Settings button, calibration matrix set to identity matrix and loaded to device.

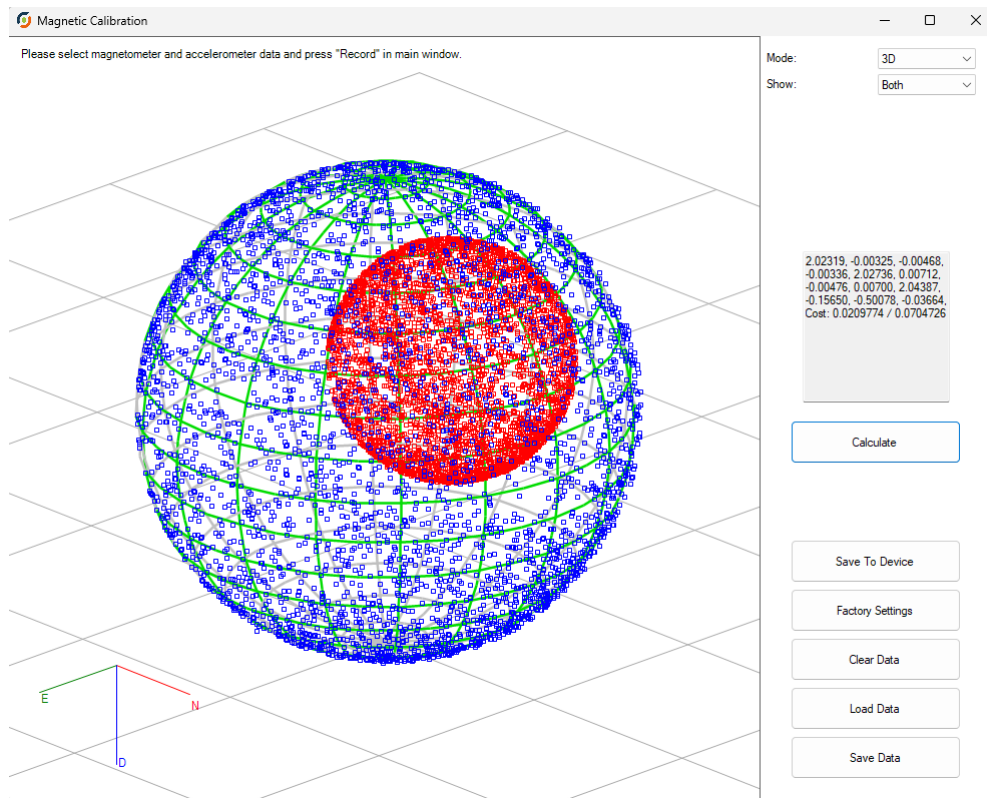


Figure 21: Magnetic Calibration Data Collection and Calculation

When Rose Compass is selected, grid north type must be selected according to the grid created by the user. If Rose Compass grid is created using geographic north reference, north type must be selected as geographic else must be selected as magnetic. When the grid is selected, the device's heading must be placed towards north at initial state and Rose Compass calibration procedure is ready to start. When Start button is clicked, Pop-Up screens would led user by its instructions. Calibration starts from North and continues at clockwise direction. There are 8 data collection points exist in the procedure. Keep in mind that ArView application must record data to maintain Rose Compass calibration.

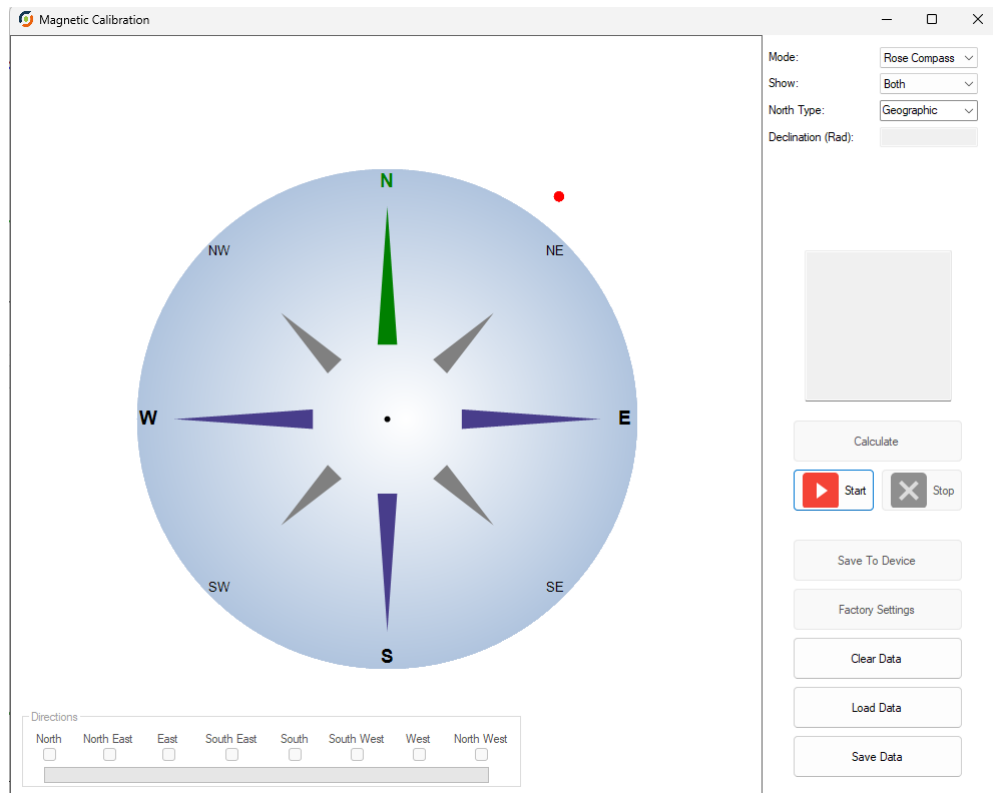


Figure 22: Rose Compass Magnetic Calibration

12 Firmware Update

Firmware update can be made by clicking device section on the main screen of ArView application and then Firmware Update item. Firmware update can be achieved by both using serial connection and TCP connection.

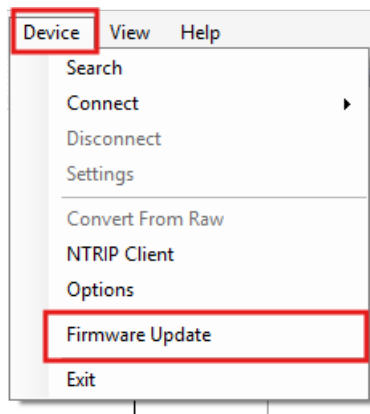


Figure 23: Firmware Update Selection

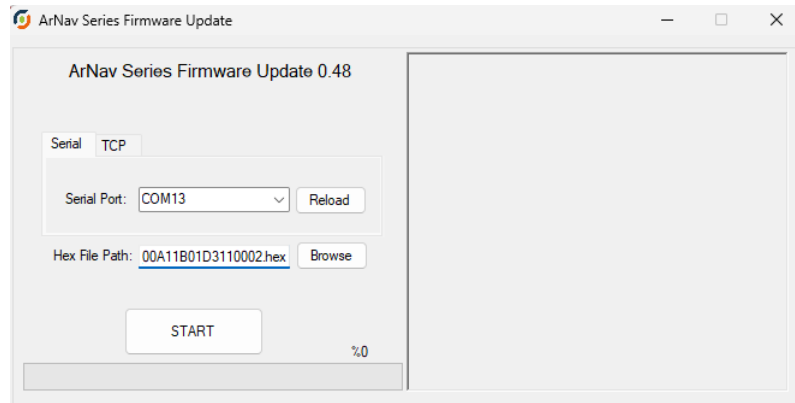


Figure 24: Firmware Update Window

If firmware update maintained by serial connection, the serial port that device is attached at RS232 port must be selected. Similarly, if TCP is chosen as connection type, appropriate IP address and port of TCP server must be selected.

As preprocessing, device properties and hex file properties are checked. If the properties do not match, the firmware update is canceled by the application. Inappropriate firmware for a device can cause fatal problems. To prevent this, the property check status is critical. This process could take up to 30 seconds if any response can not received from device.

Whenever check state is successfully completed, the pop-up screens will guide the user with instructions. Firstly device will be restarted when Restart Pop-Up is appeared. After restart, device will run at boot mode and device memory will be erased and new firmware will be written to device memory. After firmware update is completed, the device must be hard reset by powering off and on.

13 NTRIP Client

NTRIP Client tool can be opened by clicking device section on the main screen of ArView application and then NTRIP Client item. NTRIP Client can be achieved by both using serial connection and TCP connection. This tool let user to obtain correction from NTRIP caster and send it in NMEA message format to device which have RTK capability.

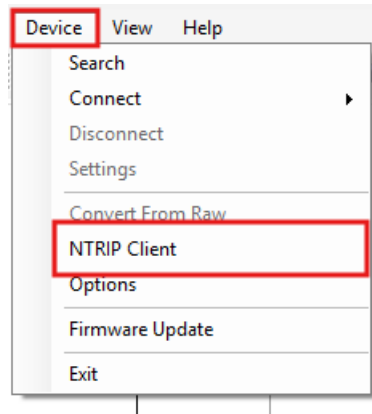


Figure 25: NTRIP Client Selection

First, the NTRIP server properties must be entered. By clicking Get Mount Point button available mount points can be listed and selected. An example for parameters is shown below. If data received from Caster desired to send by serial connection, the serial port and baudrate that device is attached must be selected. Similarly, if TCP is chosen as connection type, appropriate IP address and port of TCP server must be selected. By clicking Connect button, the data acquisition from the NTRIP caster and transmission to the device will begin.

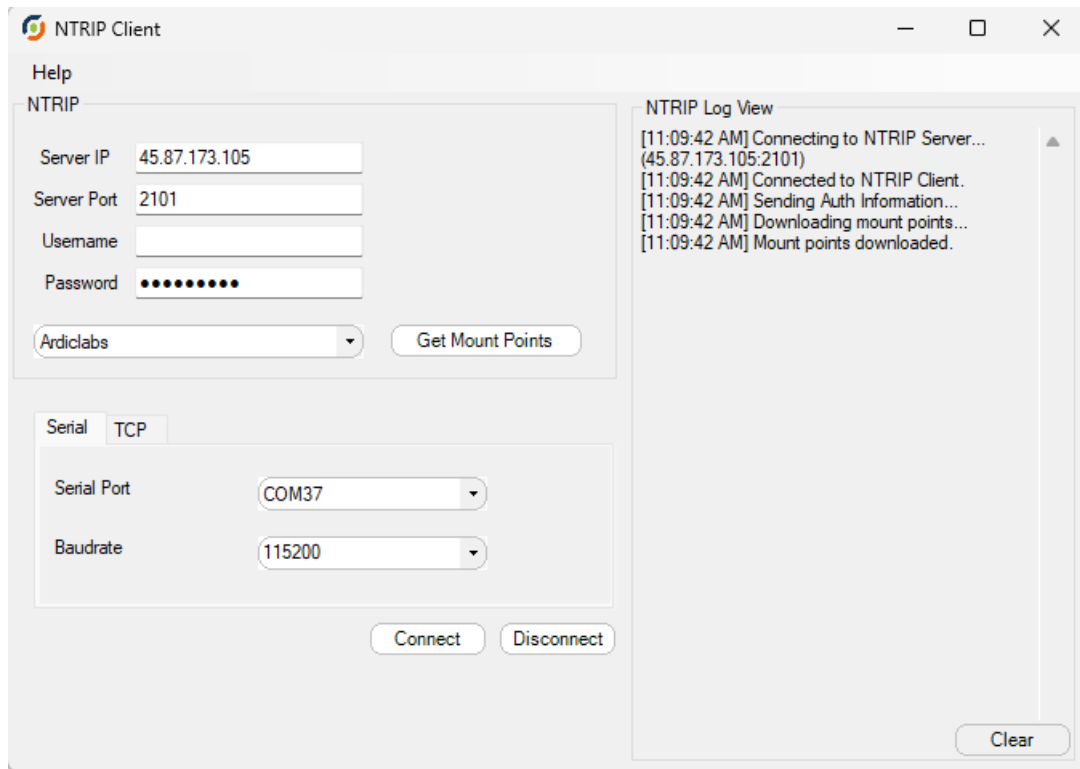


Figure 26: Example of NTRIP Client Main Page

Appendix A Release Notes

Version No	Date	Description
1.0.0	03.12.2025	Initial Release

What's New

- **0001** – TCP Server connection support is added to the application. All bidirectional communication capabilities of the serial connection can now be performed using the TCP protocol. Users can connect to the device, change settings, display data, etc. using the TCP network. NTRIP Client, Firmware Update, and Magnetometer Calibration tools are also enabled with TCP support.
- **0002** – Low rate message table updated.
- **0003** – High rate message (500 Hz) data logging and plotting feature added.
- **0004** – Delta angle selection for roll, pitch, and yaw added for body alignment calculation.
- **0005** – Rose Compass calibration method added for ArNav S3 series devices.
- **0006** – Firmware Update hex file property check feature added.
- **0007** – Low rate GNSS position messages can now be set to visible or invisible on the Map View form.
- **0008** – Advanced Data View form added.
- **0009** – Preset Configuration Wizard added.
- **0010** – Setup directory changed from user AppData to Program Files.