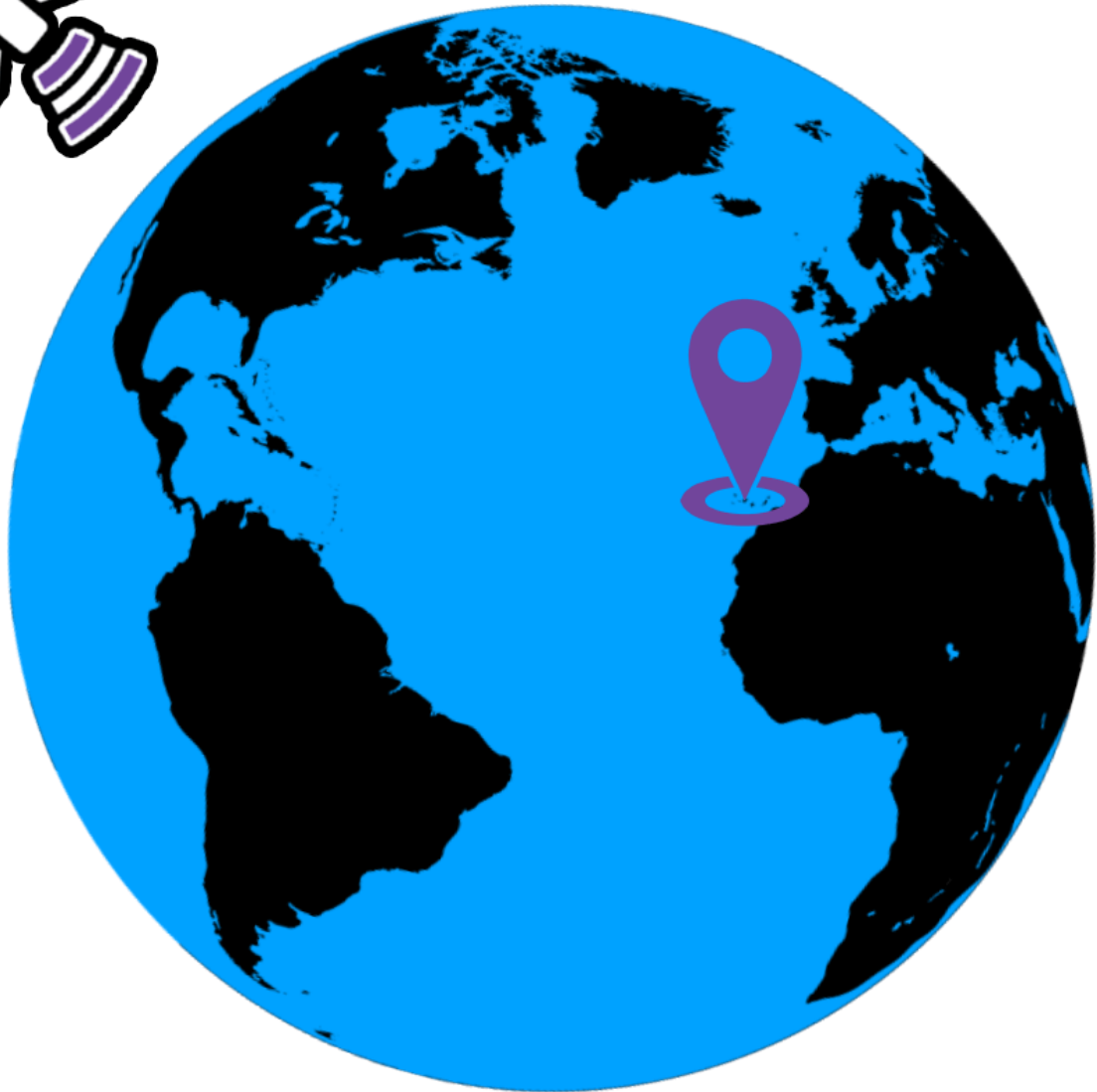


GEOTAGGING

User Guide



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GEOTAGGING

GENERAL

Please note that image filename generated in the LOG files starts from 1 onwards, therefore you might need to batch rename all the photos that have been captured in order to recognize for the geotagging software. Useful tool to re-name photos in batches is Adobe Lightroom.

X2 / LLA LOG

1. DOWNLOAD GEOTAG TOOL. – [DOWNLOAD LINK](#)
2. EXTRACT FILES TO WINDOWS FOLDER.
3. MOVE X2.CSV / LLA.CSV LOG FILE TO LOCATION WHERE PHOTOS ARE LOCATED.
4. OPEN COMMAND PROMPT AND CHANGE DIRECTORY TO WHERE LOG FILE AND PHOTOS ARE LOCATED.
5. EXECUTE THE FOLLOWING IN COMMAND PROMPT:

Command line without IMU data:

```
exiftool -csv=X2.csv -gpslatituderef=N -gpslongituderef=W -gpsaltituderef=above -gpstrackref=T .
```

Command line with IMU data:

```
exiftool -csv=X2.csv -gpslatituderef=N -gpslongituderef=W -gpsaltituderef=above -gpsimgdirectionref=M -gpstrackref=T .
```

After the photos have been geotagged you can review the EXIF data to ensure that all the tags have been written by executing the following command in the command prompt:

```
exiftool example.jpg
```

To change directories in command prompt, do the following command:

```
cd C:\ImageFolder
```

Special note: In the geotagging command line you may need to change the references for LAT/LONG depending on your current geolocation `-gpslatituderef=N -gpslongituderef=W`

N – Positive Latitude **S** – Negative Latitude **E** – Positive Longitude **W** – Negative Longitude

ADJUSTING X2 LOG FOR PIX4D

Simply delete the first ROW of the X2.CSV and move all data points to start from ROW1 – then you may input file into Pix4D with your images, and you are good to go! If you have purchased and enabled **Seagull #IMU** then the LOG file will contain extra data such as ROLL, PITCH, YAW, HORIZONTAL ACCURACY and VERTICAL ACCURACY.

PPK PROCESSING

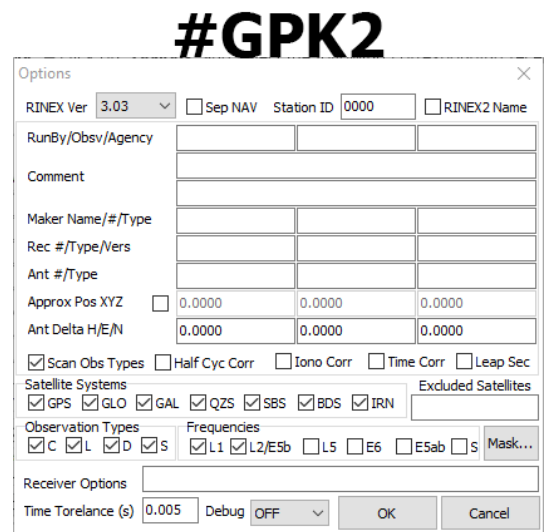
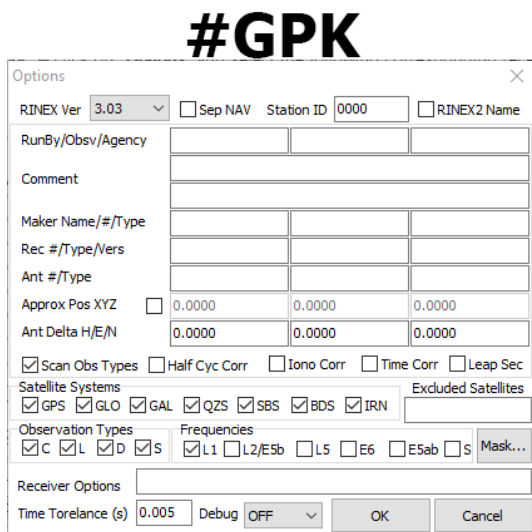
This tutorial is meant to cover basics on how to convert raw data files and steps required for post processing.

Before proceeding download the latest RTKLIB version via link below.

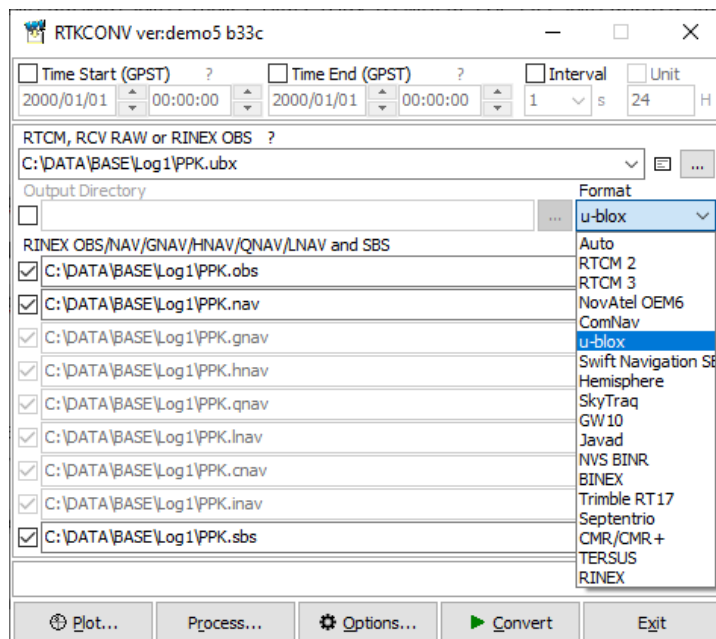
*** Download RTKLIB_v2.4.3_B33.zip from [HERE](#) ***

CONVERTING RAW LOG TO RINEX FORMAT

STEP 1: Open "RTKLIB CONV" – click on "Options" and select the following corresponding receiver used.



STEP 2: Add "PPK " RAW file and choose format "u-blox".



STEP 3: Click "Convert" – after the process is finished you should have .obs and .nav (*BASE) files generated.

POST PROCESSING

STEP 1: Open "RTKPOST" – click on "Options" and select the following for corresponding receiver used.

"OPTIONS" SETTING 1 TAB

Note: You may adjust Elevation Mask / SNR Mask values in to filter out satellites with low signal strength.

#GPK

Options dialog box for #GPK receiver, Setting 1 tab. The Positioning Mode is Kinematic, Frequencies is L1, Filter Type is Forward, Elevation Mask is 20, Rec Dynamics is ON, Iono/Tropo Correction is Broadcast, and Satellite Ephemeris/Clock is Broadcast. All satellite systems (GPS, GLO, Galileo, QZSS, SBAS, BeiDou, IRNSS) are checked.

#GPK2

Options dialog box for #GPK2 receiver, Setting 1 tab. The Positioning Mode is Kinematic, Frequencies is L1+L2, Filter Type is Forward, Elevation Mask is 20, Rec Dynamics is ON, Iono/Tropo Correction is Broadcast, and Satellite Ephemeris/Clock is Broadcast. All satellite systems (GPS, GLO, Galileo, QZSS, SBAS, BeiDou, IRNSS) are checked.

"OPTIONS" SETTING 2 TAB

Options dialog box for #GPK receiver, Setting 2 tab. Integer Ambiguity Res is Fix and, Min Ratio to Fix Ambiguity is 3, Min Lock/Elevation to Fix Amb is 0, Min Fix/Elevation to Hold Amb is 100, Outage to Reset Amb/Slip Thres is 100, Max Age of Diff is 60.0, Reject Threshold of GDOP/Innov is 30.0, Max # of AR Iter is 1, and Baseline Length Constraint is 0.000.

"OPTIONS" OUTPUT TAB

Options dialog box for #GPK receiver, Output tab. Solution Format is Lat/Lon/Height, Output Header is ON, Time Format is hh:mm:ss GPST with 3 decimals, Latitude Longitude Format is ddd.ddddddd, Datum is WGS84, Geoid Model is Internal, and Solution for Static Mode is All.

“OPTIONS” STATISTICS TAB

Options

Setting1 Setting2 Output Statistics Positions Files Misc

Measurement Errors (1-sigma)

Code/Carrier-Phase Error Ratio L1/L2	300.0	100.0
Carrier-Phase Error a+b/sinE (m)	0.003	0.003
Carrier-Phase Error/Baseline (m/10km)	0.000	
Doppler Frequency (Hz)	1.000	

Process Noises (1-sigma/sqrt(s))

Receiver Accel Horiz/Vertical (m/s ²)	3.00E+00	1.00E+00
Carrier-Phase Bias (cycle)	1.00E-04	
Vertical Ionospheric Delay (m/10km)	1.00E-03	
Zenith Tropospheric Delay (m)	1.00E-04	
Satellite Clock Stability (s/s)	5.00E-12	

Load... Save... OK Cancel

“OPTIONS” POSITIONS TAB

Options

Setting1 Setting2 Output Statistics Positions Files Misc

Rover

Lat/Lon/Height (deg/m) ...

90.000000000 0.000000000 -6335367.6285

Antenna Type (*: Auto) Delta-E/N/U (m)

0.0000 0.0000 0.0000

Base Station

RINEX Header Position ...

90.000000000 0.000000000 -6335367.6285

Antenna Type (*: Auto) Delta-E/N/U (m)

0.0000 0.0000 0.0000

Station Position File

Load... Save... OK Cancel

STEP 2: Input “ROVER” .obs / “BASE” .obs / “ROVER” or “BASE” .nav – files into their corresponding fields.

Note: You may use BASE.nav or ROVER.nav files in the 3rd selection field.

RTKPOST ver.demo5 b33c

Time Start (GPST) ? Time End (GPST) ? Interval Unit

2000/01/01 00:00:00 2000/01/01 00:00:00 0 s 24 H

RINEX OBS: Rover ?

C:\DATA\ROVER\Log1\PPK.obs

RINEX OBS: Base Station

C:\DATA\BASE\Log1\PPK.obs

RINEX NAV/CLK, SP3, FCB, IONEX, SBS/EMS or RTCM

C:\DATA\BASE\Log1\PPK.nav

Solution Dir

C:\DATA\ROVER\Log1\PPK.pos

processing : 2020/06/14 13:32:09 Q=1

Plot... View... KML/GPX... Options... Abort Exit

STEP 6: Click “EXECUTE” and wait until process is complete – which is indicated by green bar as well as text status “done”.

Note: Once you have pressed “EXECUTE” – do not cancel the program as it may take a while for the process to read and start processing depending on the size of the files.