



iGx FAQ:

Configure Base using Network Position

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Date: 5 January 5, 2021

Thesis

We are setting a UHF Base up on a random location. The location has cellular coverage so we can connect our Base receiver to our local network as a Network Rover to get a qualified Fixed position, then we will use this position to setup the receiver again as a UHF Base transmitting corrections for all constellations.

Setup

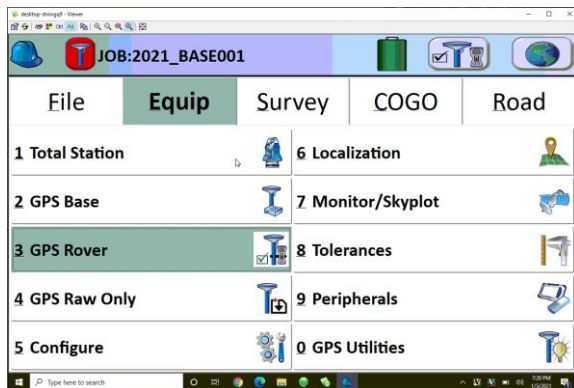
Set the receiver that will be the 'Base' on a tripod over the point that you want to use as the base point. This point can be a random location with no ground mark.

Turn on the 'Base' receiver. I recommend that you turn off the power to all other receivers so that they are not used by mistake during the base configuration.

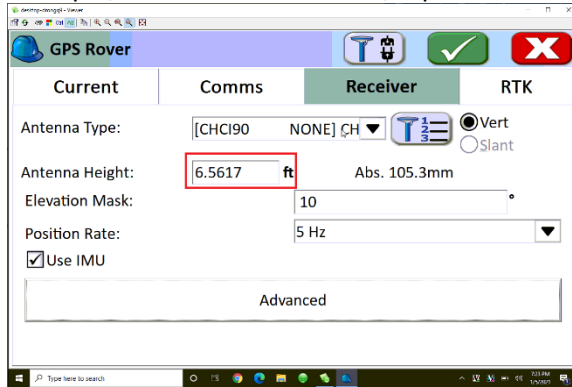
This example uses an iG9 receiver, however the procedure is exactly the same for any RTK receiver.

Set the Base Receiver as a Network Rover

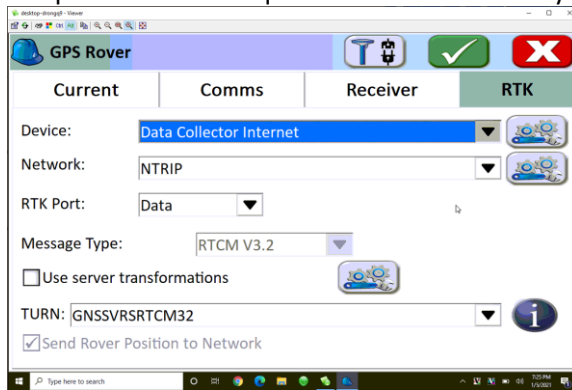
First connect to the head as a Network Rover:



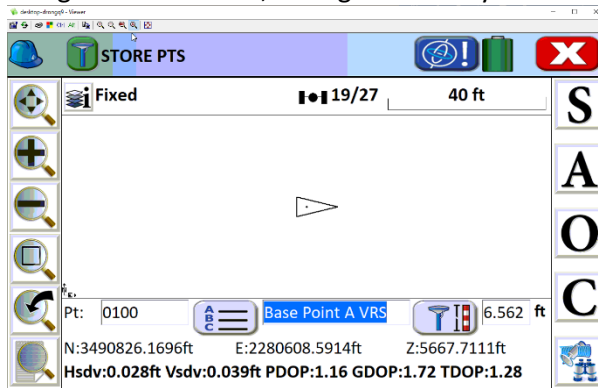
For this example, we are set over a rbar/cap with a 2-meter fixed height tripod:



Set the RTK parameters as required for connection to your local network:



Click on the green checkmark, then go to 'Survey: Store Points':

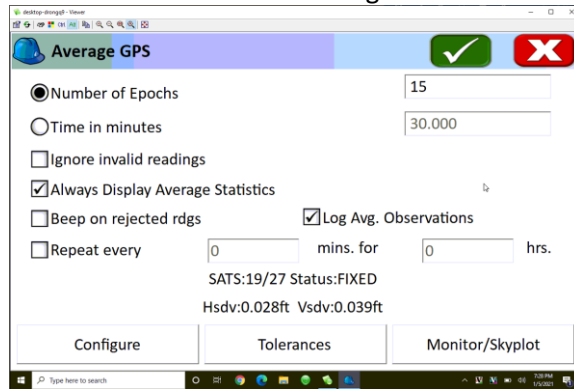


Assuming the receiver has 'FIXED', enter a reasonable point number (0100 above) and description.

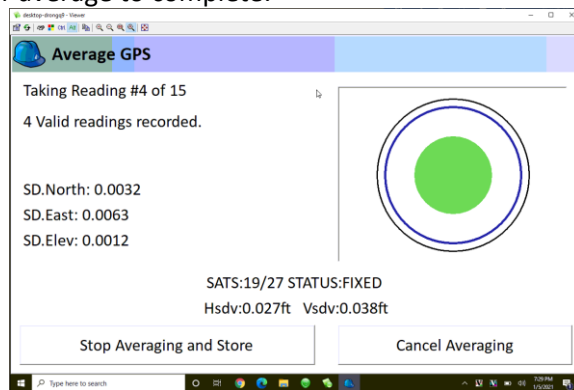
Important note: this point number is going to be used as the broadcast ID and is going to show up in the raw file in a lot of places, especially if you enable GVectors. The ID HAS TO BE LESS THAN 4095 if the broadcast message is RTCM3 or SCMRx.



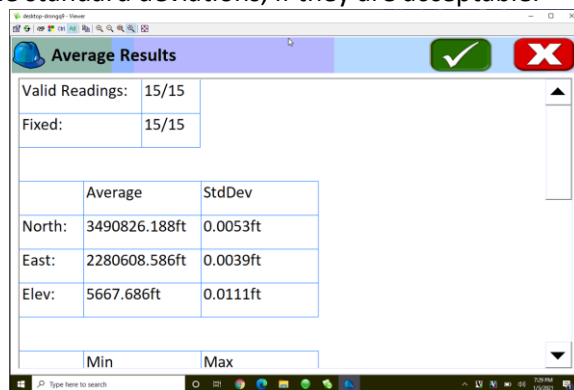
Click on 'A' to store a 15 second average.



Wait for average to complete:



Note the standard deviations, if they are acceptable:



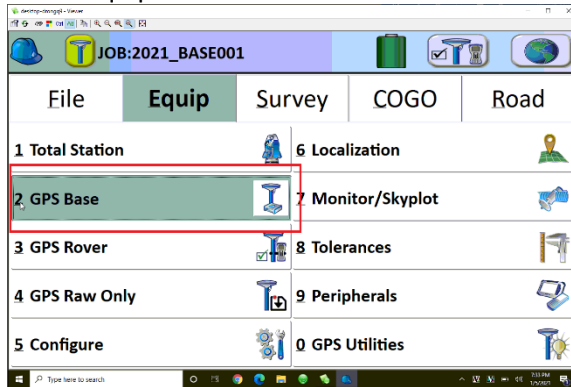
Click on the green checkmark to store the point.

We have now stored the position of the ground mark under the receiver.

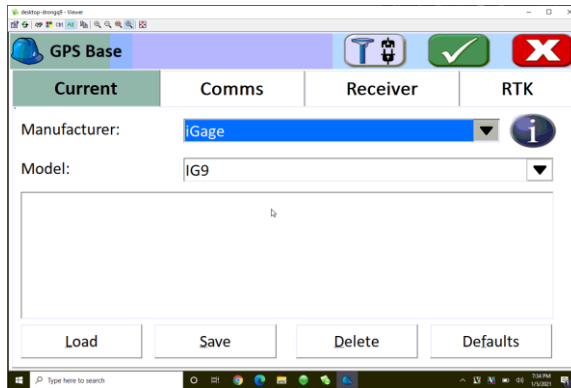


Configure the Receiver as a Base

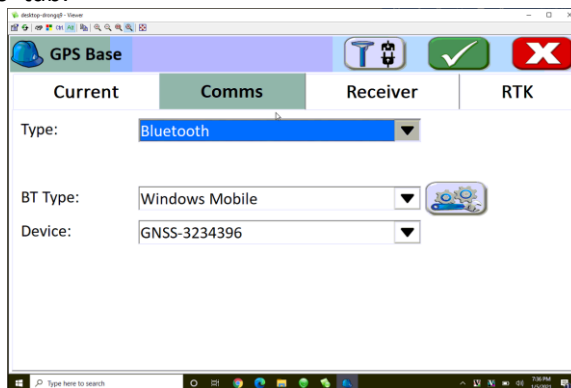
Return to the 'Equipment' menu:



Click on GPS Base:

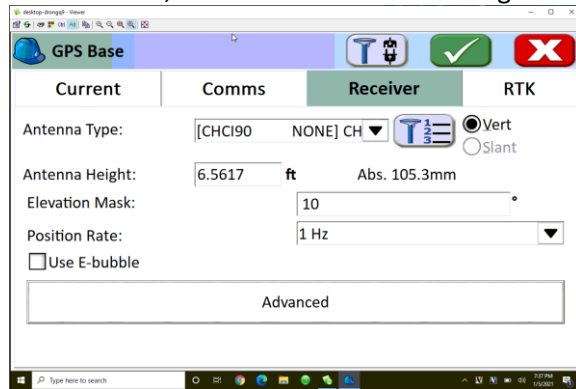


Select the same receiver that you just setup as a rover. Double check the serial number on the 'Comms' tab:

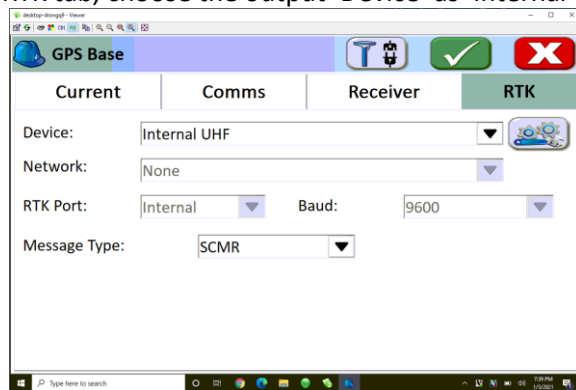




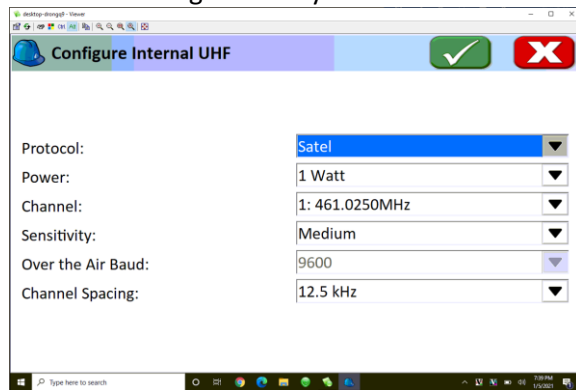
On the 'Receiver' tab, make sure the antenna height is the same as the rover setup:



On the RTK tab, choose the output 'Device' as 'Internal UHF' and set an appropriate 'Message Type':

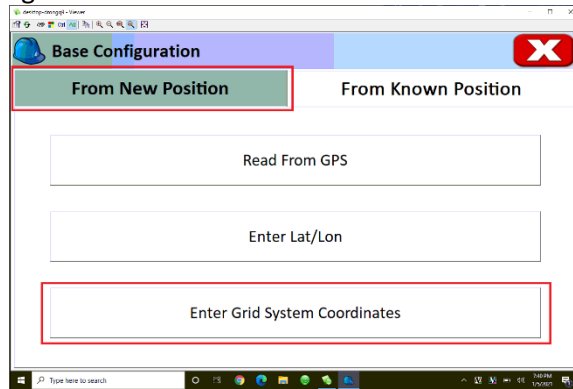


Check your radio settings so that you can match them on the real rovers:



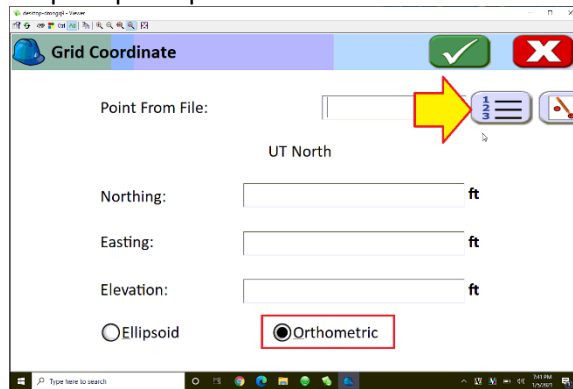


Click the green checkmark to continue:

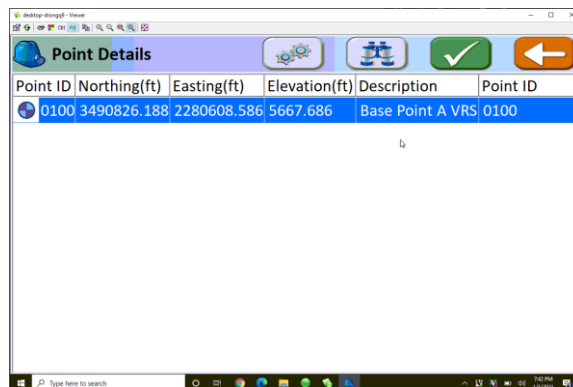


You have the exact Grid Coordinates in your existing job. So, choose 'From New Position', then click on 'Enter Grid System Coordinates'.

SurcPC will prompt for position of the Ground Mark under the receiver:

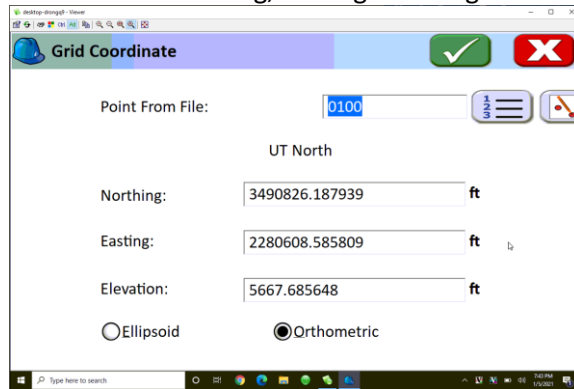


Select 'Orthometric' (because we have a GEOID loaded and the point we stored earlier is orthometric) and then click the '123' button to the right of the 'Point From File' entry:

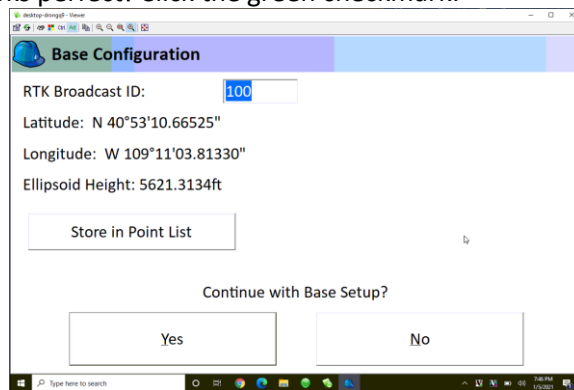


Highlight the base point that we just stored using the VRS connection, then click the green checkmark.

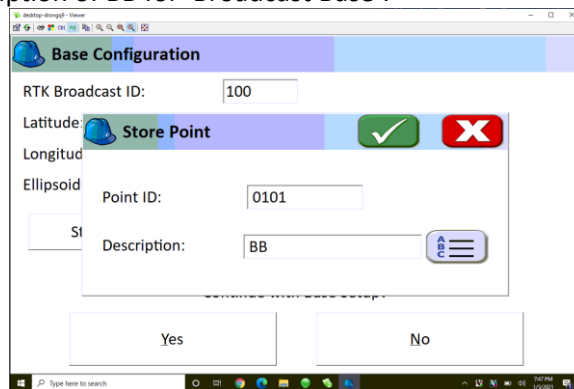
SurvPC will fill in the Northing, Easting and Height:



This looks perfect! Click the green checkmark:

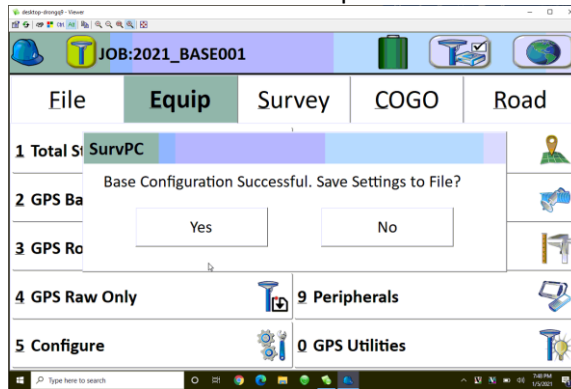


I always write the Lat/Lon/Ellipsoid Height in my field book. I always store it in the Point List too with a description of BB for 'Broadcast Base':





Finally click on 'Yes Continue with Base Setup':



Always click on 'Yes' to make a REF file. If you setup again on this point, the REF file will be the easiest way to configure the base.

Resulting Data Files

Points from Exported TXT File

```
0100,3490826.1879,2280608.5858,5667.6856,Base Point A VRS
0101,3490826.1879,2280608.5858,5667.6856,BB
```

Both point 0100 and 0100 are the Utah State Plane Coordinates of the Ground Mark (GM) under the receiver, at the tip of the pole.

REF File

VERSION2	Version of file (I have never seen V1)
40.88629590253913	Longitude
-109.18439258262275	Longitude
1713.3797434896	orthometric height of Ground Mark
	Always blank line
100	Point Number of Base

RW5

In the following notes:

- GM = Ground Mark (the point on the ground)
- ARP = bottom of antenna
- L1 = L1 offset from ARP to PC of antenna
- PC = Antenna Phase Center
- HI = Instrument Height (from GM to ARP)

It is VERY important to remember that when you see Lat and Lon, the height will be ELLIPSOID and it will be the PC (Phase Center) of the GNSS Antenna. To get the GM (Ground Mark) you must subtract the GEOID Difference (which will always be negative), then subtract the L1 offset (ARP to PC), then subtract the HI (Instrument Height).

Lat and Lon are in D.MMSSsssssss not decimal degrees!

JB,NM2021_Base001,DT01-05-2021,TM19:30:06	Job name, date time
--MO,AD0,UN2,SF1.00000000,EC0,EO0.0,AU0	Units
--SurvPC Version 6.08.12	Program version
--CRD: Alphanumeric	CRD or CRDB
--UT North NAD83	Utah North State Plane Zone

<pre>--Equipment: iGage, IG9, SN:3234396, FW:2.0.15.8 --Antenna Type: [CHCI90 NONE],RA0.0000m,SHMP0.0000m,L10.1053m,L20.1064m,--CHC i90, PN118032-000501-020105, MMI->N --Localization File: None --Geoid Separation File: C:\Carlson Projects\Data\Geoids\ContinentalUS_NGS2018.gsb N24°00'00.0" W130°00'00.0" N58°00'00.0" W060°00'00.0" --Grid Adjustment File: None --GPS Scale: 1.00000000 --Scale Point not used --RTK Method: RTCM V3.2, Device: Data Collector Internet, Network: NTRIP GNSSVRSRTCM32 BP,PNGNSSVRSRTCM32_BASE_1,LA40.531069047082,LN- 109.110387857015,EL1715.1440,AG0.0000,PA0.0807,ATAPC,SRROVER,-- --Entered Rover HR: 6.5617 ft, Vertical LS,HR6.9071 GPS,PN0100,LA40.531066524929,LN-109.110381329744,EL1715.485043,--Base Point A VRS --GS,PN0100,N 3490826.1879,E 2280608.5858,EL5667.6856,--Base Point A VRS --GT,PN0100,SW2139,ST268158000,EW2139,ET268173000 --Valid Readings: 15 of 15 --Fixed Readings: 15 of 15 --Nor Min: 3490826.1772 Max: 3490826.1964 --Eas Min: 2280608.5790 Max: 2280608.5925 --Elv Min: 5667.6589 Max: 5667.6990 --Nor Avg: 3490826.1879 SD: 0.0053 --Eas Avg: 2280608.5858 SD: 0.0039 --Elv Avg: 5667.6856 SD: 0.0111 --NRMS Avg: 0.0211 SD: 0.0003 Min: 0.0205 Max: 0.0214 --ERMS Avg: 0.0177 SD: 0.0003 Min: 0.0170 Max: 0.0180 --HSDV Avg: 0.0275 SD: 0.0004 Min: 0.0266 Max: 0.0280 --VSDV Avg: 0.0380 SD: 0.0006 Min: 0.0365 Max: 0.0387</pre>	<pre>Equipment, head SN and Firmware Antenna reduction information for receiver. L1 = 0.1053 will be needed No localization file in play GEOID file and coverage No grid adjustment file. No GPS Grid to Ground (G2G) active. If G2G was active, where scaled from. We are a Rover, connected by DCI to mount point GNSSVRSRTCM32. Our virtual base (made by server) is at location HI of rover, 2 meters, vertical. GM to PC distance = HI + L1 PN0100 PC Location in lat,lon,PC elip PN0100 Grid Coordinates, GM Ortho GT - GPS time, PN point ID, SW start week, ST Start time, EW - End week, ET - End time Number of EPOCHS attempted Number of EPOCHS fixed Stats on average: " " " " " " " " " "</pre>
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<pre>--HDOP Avg: 0.6409 Min: 0.6409 Max: 0.6410 --VDOP Avg: 0.9609 Min: 0.9604 Max: 0.9614 --PDOP Avg: 1.1551 Min: 1.1546 Max: 1.1555 --AGE Avg: 1.4000 Min: 1.0000 Max: 2.0000 --Number of Satellites Avg: 19 Min: 19 Max: 19 --DT01-05-2021 --TM19:30:07 --Calculated GPS Scale: 0.99970810 --DT01-05-2021 --TM19:48:13 --Entered Base HR: 6.5617 ft, Vertical LS,HR6.9072 GPS,PN0101,LA40.531066524914,LN-109.110381329744,EL1715.485054,--BB --GS,PN0101,N 3490826.1879,E 2280608.5858,EL5667.6856,--BB --Base Configuration by Entering Grid Coordinates --DT01-05-2021 --TM19:49:34 --SP North: 3490826.187939, SP East: 2280608.585809, Elv: 5667.68565 --Entered Base HR: 6.5617 ft, Vertical --Antenna Type: [CHCI90 NONE],RA0.0000m,SHMP0.0000m,L10.1053m,L20.1064m,--CHC i90, PN118032-000501-020105, MMI->N BP,PN100_BASE_2,LA40.531066524914,LN-109.110381329744,EL1715.4851,AG2.0000, PA0.1053,ATAPC,SRBASE,-- --GS,PN100_BASE_2,N 3490826.1879,E 2280608.5858,EL5667.6856,--Base --GT,PN100_BASE_2,SW-522,ST-259182000,EW-522,ET-259182000</pre>	<pre>" " " Age of correction from network to rover Number of SV's in solution Date Time GPS Scale (but not used, just display) Start BASE Configuration HI entered by User HI + L1 We stored the position during setup as PN0101, Lat,Lon,PC Ellip; N,E,GM Ortho Method Grid Coordinates Date Time Entered Coordinates (recalled from point) HI of Base setup Antenna information, L1=0.1053 Device name, PN, ManMachineInterface 2 N Entered coordinates transform to Lat,Lon,PC Ellip Height Grid Coordinates of GM (again) GT - GPS time, PN point ID, SW start week, ST Start time, EW - End week, ET - End time</pre>
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