

MIDG II Magnetic Declination Calibration Instructions



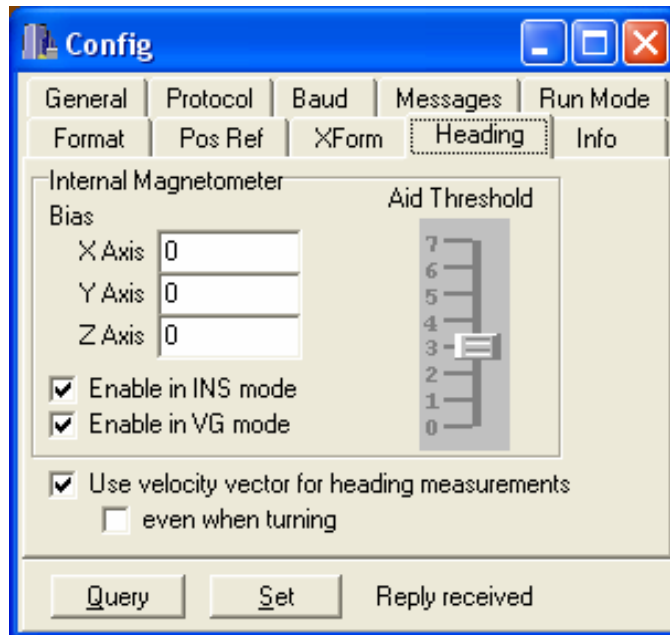
The purpose of this manual is to assist the user of the MIDG II to set the magnetic calibration of their device for a specific geographical area. *Note: magnetic variations are unpredictable in certain areas, especially where large quantities of Iron or Steel are present.*

Required Tools: Portable PC running the latest MIDG Display utility 2.0.16 or higher with the plotting and magnetic calibration utility, Power supply for the MIDG, MIDGII, and a Vehicle capable of turning about a 50 foot radius, GPS antenna (not required if the lat & long are known), and a flat, wide turning area such as a parking lot or cul-de-sac.

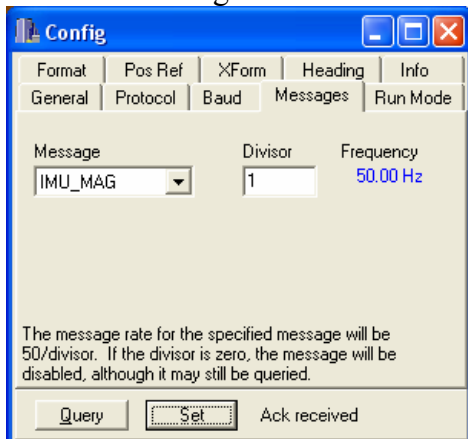
INSTRUCTIONS

1. In the ground vehicle, mount the MIDGII INS with tape to a stable point such as a console or dash and power it up; the orientation is not important.
2. On the PC, start the MIDG Display Utility software
3. Click the MIDG Options menu and click the MIDG Configuration drop-down and select the Heading Tab. Verify that there are all zeros in the X, Y and Z Axis.

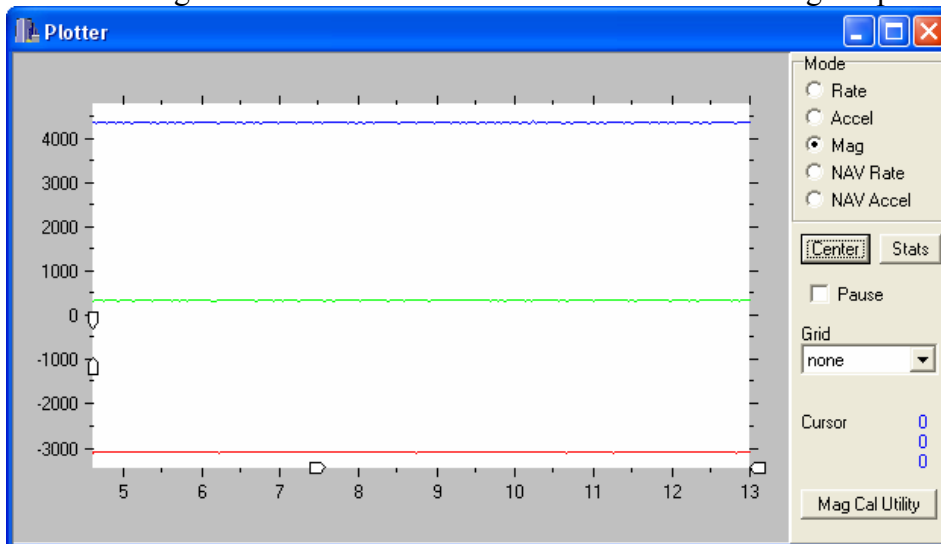
Click the Set button and then re-query to be certain the changes are stored in temporary memory. Do not power-down the MIDG until the calibration is completed.



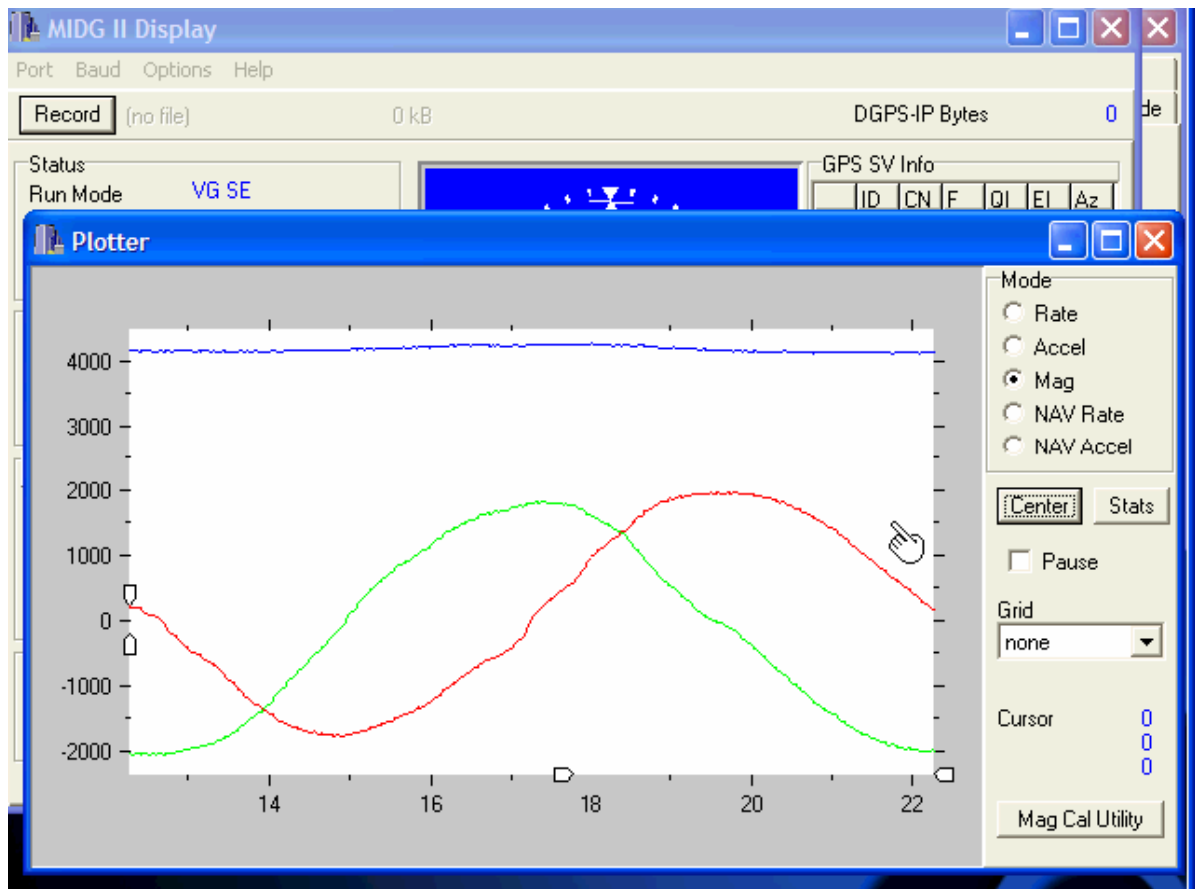
- Click the Messages Tab and enable the IMU_MAG option by setting it to 1.



- Close the Config menu box and open the Plotter by clicking Options and choosing the Plot drop-down option. The Plotting Window will open.
- Click the Mag radio button and click the Center Button to bring the plotting lines into view

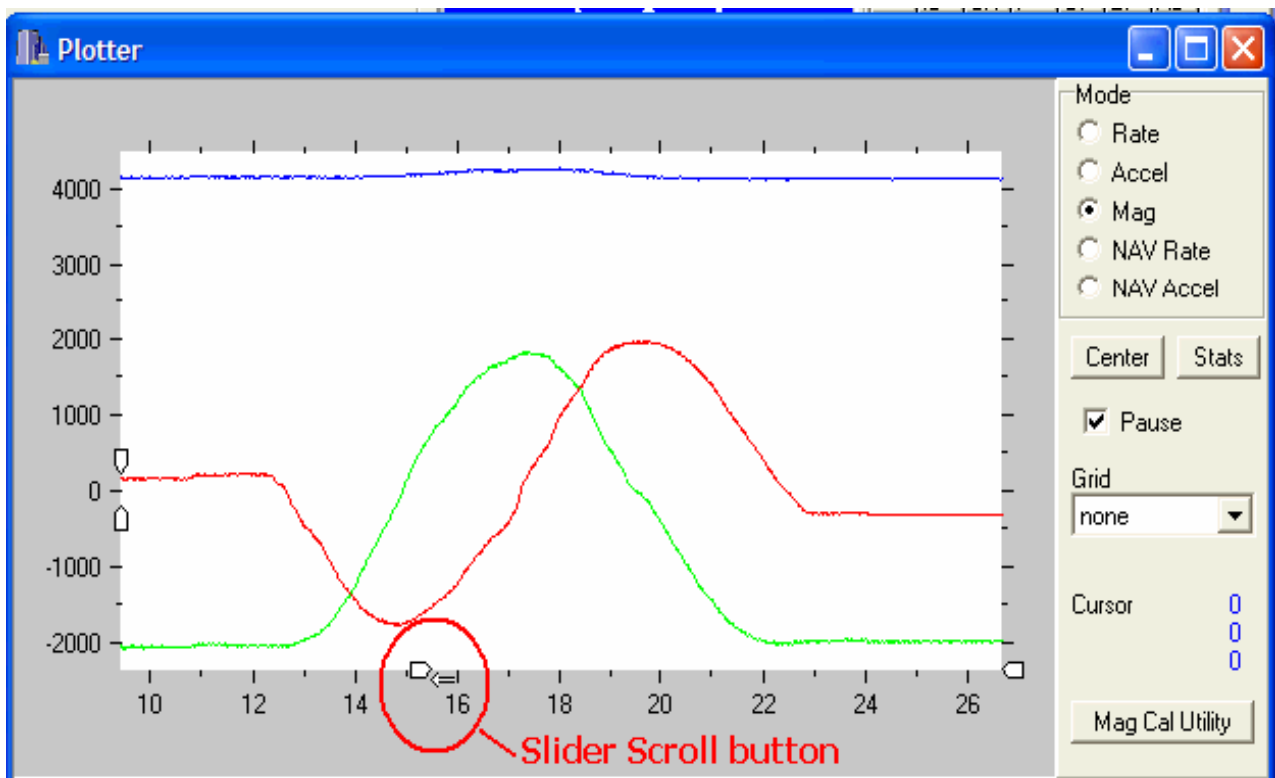


7. You should now be on your course to begin to drive. Start forward and begin a full circular turn. The Mag Plotter should look similar to this picture

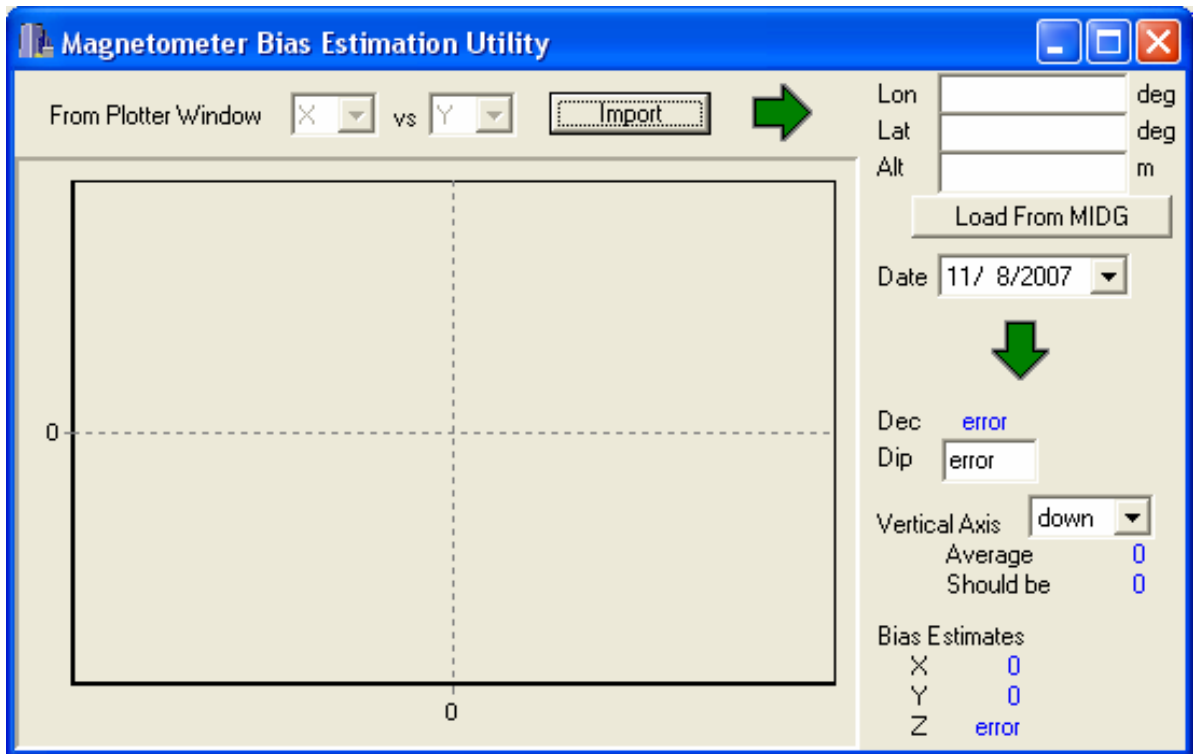


8. After the turn of 360 degrees, click the Pause checkbox to freeze the plotter


9. At the bottom of the plotter screen, there are slider tabs, L-click and hold the mouse while dragging the slider toward the left side of the pane to bring the full turn graph on to the plotter screen. *Note: The plotter software only considers the viewable area when calculating the diagram of the Magnetic route trace.* The screen should look similar to the picture below.



- Click the Mag Cal Utility button at the bottom right of the screen which will display the Magnetometer Bias Est. Util. screen to the foreground.




Magnetometer Bias Estimation Utility

From Plotter Window vs 

Lon deg
Lat deg
Alt m

Date



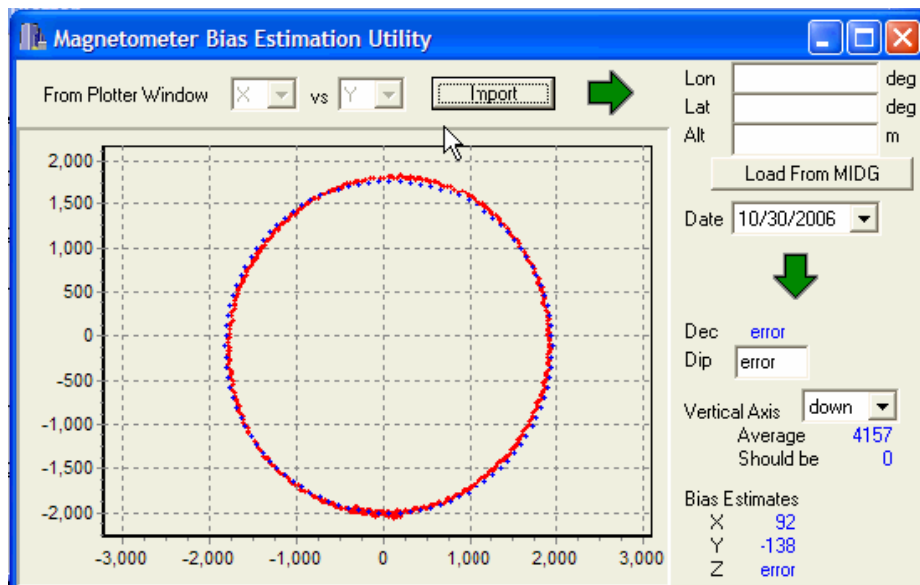
Dec
Dip

Vertical Axis

Average
Should be

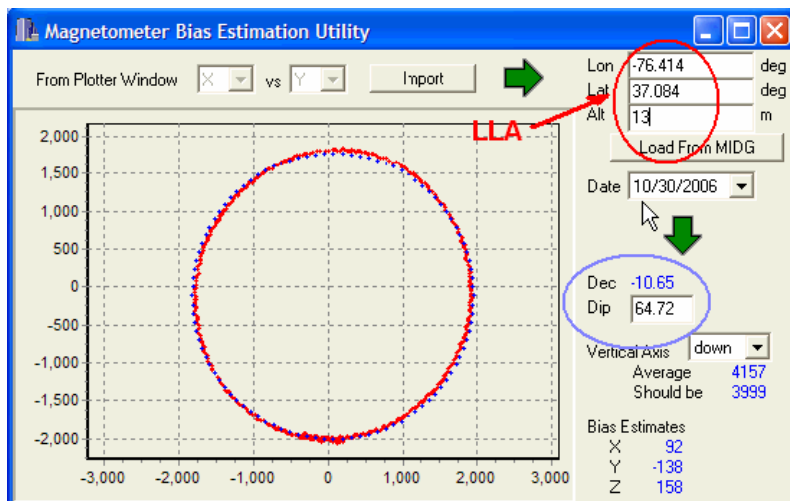
Bias Estimates
X
Y
Z

11. Click the Import button to import the plotter screen data.



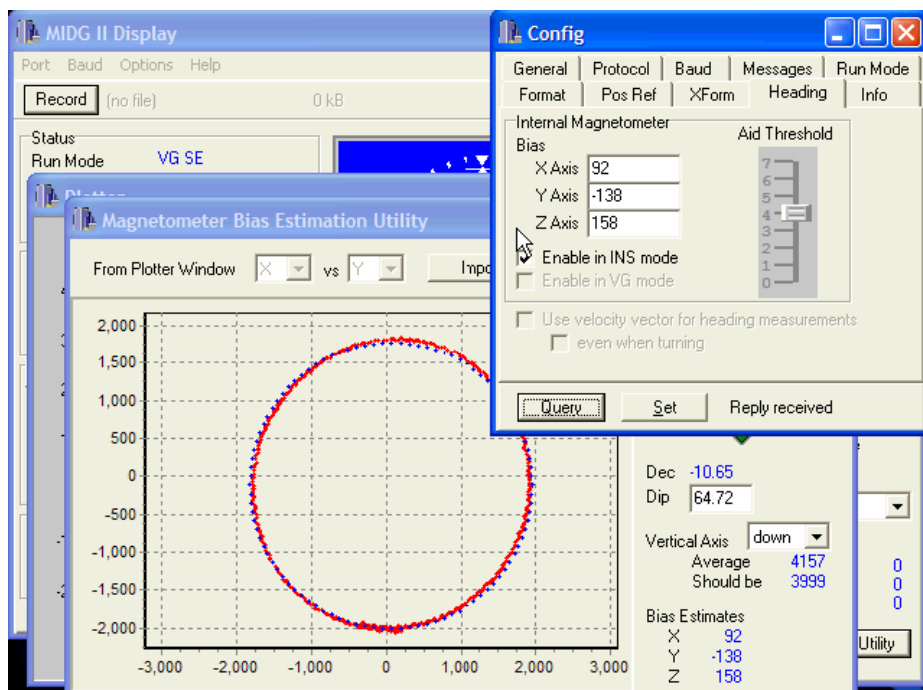
The imported data should look similar to this. The Red represents the actual plot, the blue dots represent the estimated magnetic planar curve, but does not consider the Z axis, this will be done in the next few steps. Note in this case, the software calculates the X and Y axis bias estimates (look at the bottom right of the picture of the plotter screen above) but there is an error on the Z axis.

12. Enter your latitude, longitude and altitude in the provided boxes at the top right of the Bias Estimation Utility screen or click the “Load from MIDG” button (must have GPS connectivity with 3D fix). Ours here are entered for an example.

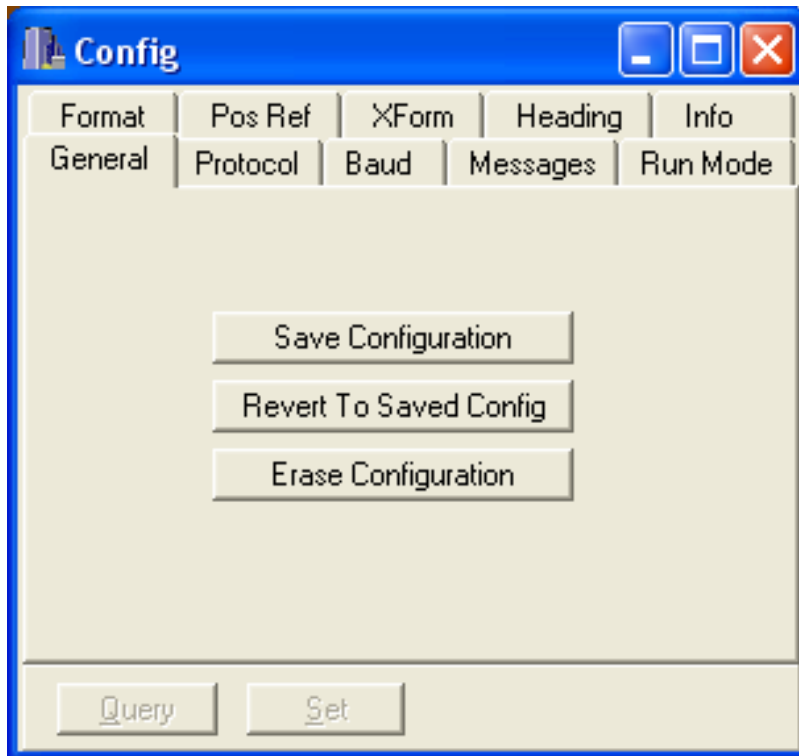


13. After entering the altitude, the software calculates the magnetic data from software tables. The data must now be entered into the MIDG Configuration.

- Now click the Options menu and select the MIDG Config drop-down and select the Heading tab and enter the X-Y-Z data from the Utility.



15. Save the data into non-volatile ram. Click the General Tab and click Save Configuration button.



Task complete the MIDG is properly calibrated for Magnetic variation.