LORD MicroStrain®
SENSING SYSTEMS
Technical Note

Using u-blox Software with 3DM-GX3®-35 and 3DM-GX3®-45

Overview

Among many other features, the LORD MicroStrain® 3DM-GX3®-35 Miniature Attitude Heading Reference System (AHRS) with GPS and the 3DM-GX3®-45 Miniature GPS-Aided Inertial Navigation System (GPS/INS) allow the user to operate the GX3 in *GPS Direct Mode*. The GX3 contains an on-board GPS receiver chip, and when in GPS Direct Mode, the GX3 can be manipulated directly with the software developed for the GPS chip by its manufacturer. This functionality allows the user to directly configure the GPS, to exploit all of its functionality, to continuously output NMEA 'sentences' containing GPS position data, etc. This technical note assumes the user has familiarity with the 3DM-GX3® and MIP Monitor software.

GPS Receiver Chip

- The GPS Receiver Chip used in the 3DM-GX3® is manufactured by u-blox www.u-blox.com and is an AMY-5M u-blox5 ROM-based GPS Module.
- The AMY-5M product summary can be found here: Summary.
- The AMY-5M product data sheet can be found here: Data Sheet.
- u-blox states: *AMY-5M is the smallest standalone GPS receiver in the industry. This ROM-based solution features the high performance u-blox 5 positioning engine. The receiver features an integrated GPS crystal, providing fast acquisition and excellent tracking performance. Advanced interference suppression mechanisms and innovative RF architecture ensure maximum performance even in hostile signal environments.*
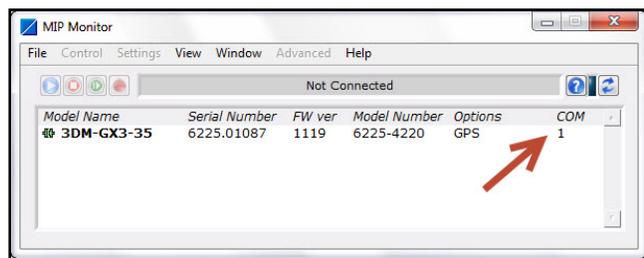
GPS Software

- u-blox states: *The u-center GPS evaluation software provides a powerful tool for evaluation, performance analysis and configuration of u-blox GPS receivers. Its unique flexibility makes the u-center GPS evaluation software an invaluable tool for evaluation, analysis and configuration of u-blox GPS receivers. u-blox GPS receivers can be configured using the u-center evaluation software.*
- The u-center software download can be found here: Download.
- The u-center product summary can be found here: Summary.
- The u-center user guide can be found here: Guide.

Go to GPS Direct Mode

In our step-by-step procedure we use the 3DM-GX3®-35 as our example; the 3DM-GX3®-45 follows the same steps:

- Connect the -35 to your host PC, either by the USB or RS-232 interface cable; we are using RS-232 in our example.
- Establish communication with the -35 using the MIP Monitor software.
- Note the COM port to which the -35 is connected; in our example the -35 is on COM 1.
- Insure that the -35 is set to 115,200 baud rate and that it is not sampling.
- Now click Advanced.
- Click Communication Mode.

- Click GPS Direct and a message box opens.
- Click OK to confirm the switch to GPS Direct Mode and the message box disappears.
- The -35 is now in GPS Direct Mode.
- Close the software.
- Keep the -35 connected and powered through the rest of these steps.
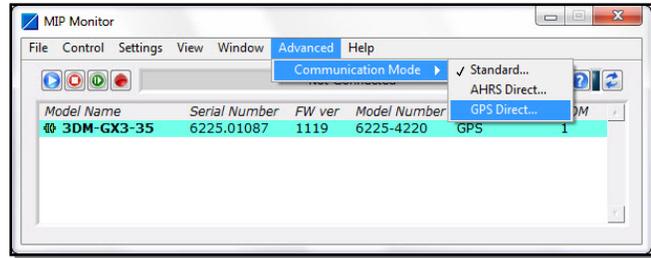
Begin Using the u-center Software
- Launch the **u-center** software and the main screen will appear.
- Click Receiver.
- Click Port.
- Click COM1.
- Click Receiver.
- Click Baudrate.
- Click 115200.
- Longitude, Latitude, etc. should begin changing several times a second in the Data View (View>Docking Windows), satellites will be appearing in the Satellite Position View, the green cursor should be located where you are on the World Position View, etc.
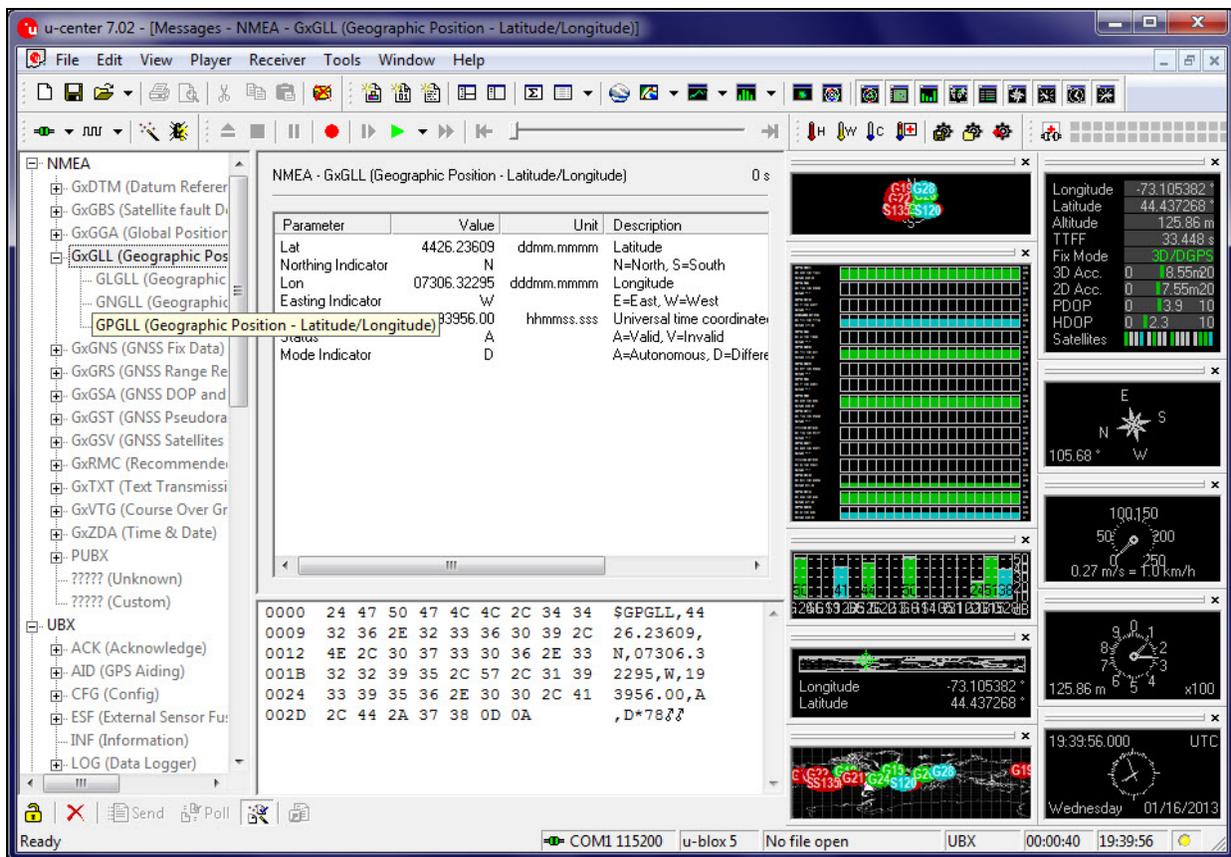
u-center Main Screen

- Click View.
- Click Message View and the Message View window will open.
- Double-click on NMEA in the tree and the NMEA 0183 window will appear.
- Click the '+' sign to the left of the NMEA in the tree and the NMEA tree opens.

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- Double-click the GxGLL(Geographic Position - latitude/longitude) line and its window appears.
- This double-click also commands the -35 to send out NMEA 0183 Lat and Long packets over the serial port to NMEA-ready hardware or software.
- Refer to the u-center User Guide for further information on using the software.

Support

LORD MicroStrain® support engineers are always available to expand on this subject and support you in any way we can.