OCC
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OCC myRIO GPS User Manual

OCC Parts Covered: OCC-myRIO-GPS

The OCC myRIO GPS is a PCB designed specifically for the National Instruments myRIO product. It plugs into one of the MXP connectors of the myRIO and provides a fully integrated GPS that the myRIO can communicate with via a serial port. Example software is available from OCC for acquiring the GPS data and parsing it into latitude, longitude, and UTC time.

The OCC myRIO GPS module is shown below. The GPS has an integrated antenna, and hence no external connections are needed. The GPS modules uses power, ground, and the Tx and Rx serial port pins from the myRIO, hence much of the additional functionality of the MXP port is unused. The unused pins are brought through to the opposite end of the board, where a male connector can be placed, to allow another board with different functionality to use other pins of the MPX connector. In addition, prototyping space is provided on the otherwise empty region of the board, allowing custom circuitry to be built to use additional myRIO functionality. However, as shipped by OCC, the male connector is unpopulated, and its use by the customer is at the customer's sole risk. The GPS data sheet states that a 40 mm square ground plane should be under the chip, with no active traces passing through that ground plane. The OCC design has a nearly 50 mm square ground plane. In addition, the bottom of the board has a 50 mm square power plane, but the traces for the male connector pass through that power plane. It is unlikely that using those traces will cause interference with the GPS, but that usage has not been tested and OCC maintains no guarantee for possible problems when using them. The male connector can be purchased from Digikey or other vendors. The Digikey part number is A33186-ND.

Figure 1. OCC GPS for myRIO.

Testing the OCC GPS for myRIO with LabVIEW

An example program, written in LabVIEW 2015, for the OCC GPS for myRIO is available from Original Code Consulting. Download the example and open the project. The project should look similar to that shown below.
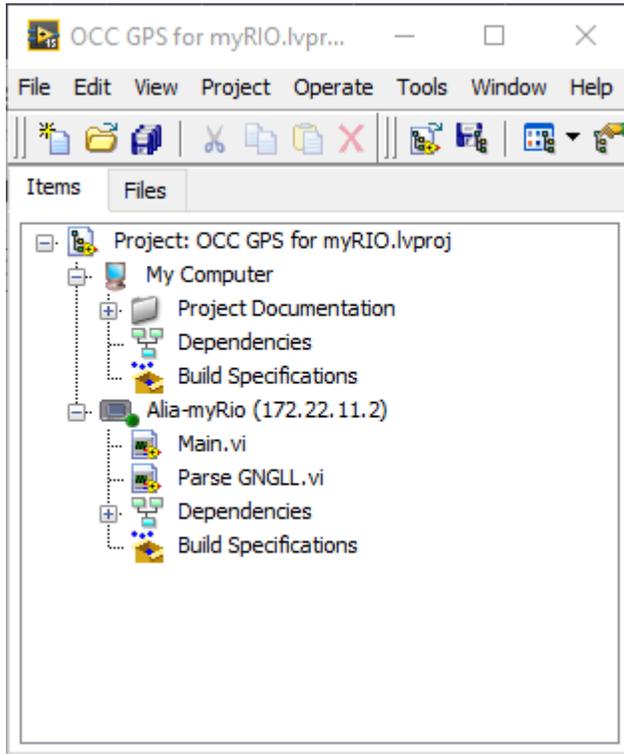

Figure 2. OCC GPS for myRIO.lvproj example code.

Connect the myRIO to your computer, and edit the project so that the IP address in the project matches that of your myRIO. Right click on the myRIO entry in the project and select "Connect" to ensure that your computer and your myRIO can communicate.

Double click on the Main.vi to open it. Select the proper Serial Port in the Serial Port control: either ASRL1 for the MXP A connector, or ASRL2 for the MXP B connector. Press the run arrow. If the GPS is able to get a lock on the satellites, it will return latitude, longitude, and time, as shown in the figure below.
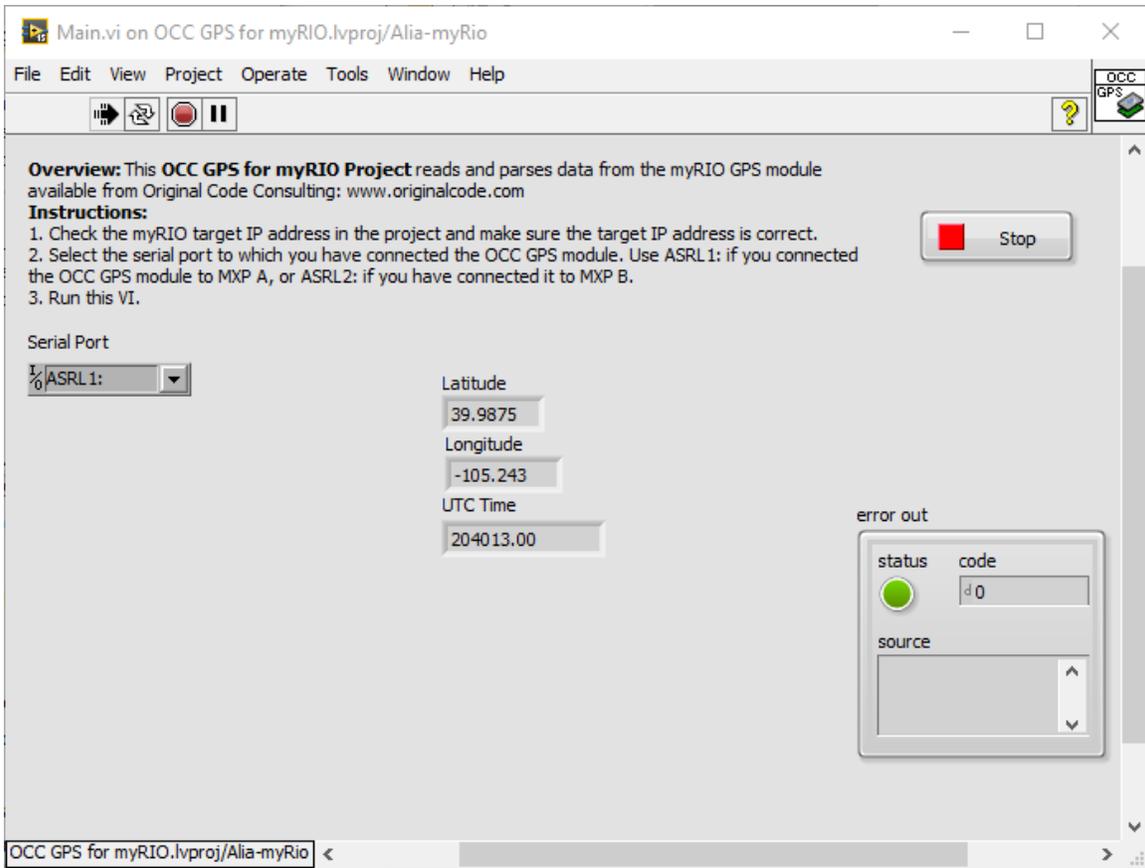
Figure 3. Main.vi example GPS program acquiring GPS data from the OCC GPS for myRIO module.