

AE483 Lab Manual: Appendix B

How to Change the Network Configuration

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1 Setup and test data transmission at a given rate

It is helpful to send data from on-board (the drone) to off-board (the ground station, running on your PC), where it can be saved to a file for later analysis. These data will be sent at a fixed rate, called the “transmission rate.” This rate has to be specified using an application called the “ACI Tool”. This application is also a useful way to test that data transmission is working. Do the following things:

- Make sure the ground station is not running.
- Power off the drone.
- Disconnect the USB cable from the PC.
- Put the drone in “run mode” (i.e., flip the two switches on top of the drone to **Run** and not **Prog**).
- Power on the drone.
- Connect a USB cable from the PC to an XBee wireless module.
- Go to the lab website

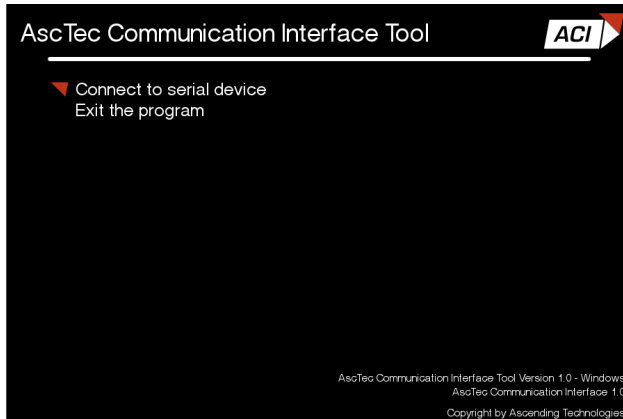
<http://coecsl.ece.illinois.edu/AE483/>

and download the ACI tool

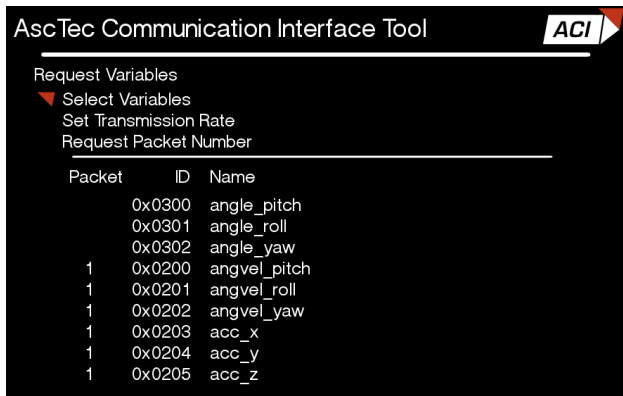
`aci-tool-windows.zip`

and unzip it (e.g., to your U: drive).

- Open and run the ACI Tool by clicking on the executable file in the `aci-tool-windows` folder. You should see this:



- Select “Connect to serial device” (by pressing return) and enter the device number as “0”.
- Select “Set variables to request”. You should see something like this:



- Select “Select Variables”. Type “1” next to all the variables.
- Select “Set Transmission Rate”. If you want data to be sent at 50 Hz, type the number “20” (1000 / 50). If you want data to be sent at 10 Hz, type the number “100” (1000 / 10). And so forth. It is *very important* that the transmission rate you set here be the same as the transmission rate you set in the ground station code (see Appendix C). Repeat this number for every packet.
- Select “Request Packet Number”. Type “1”.
- Type the escape key to return to the main menu.
- Select “Show requested variables”. If everything is working, you should see the values of each variable being transmitted, updated at the transmission rate that you specified.
- Type the escape key to return to the main menu.
- **Close the ACI Tool.** You **must** close this application before you proceed to run the ground station code (or do anything else, really).

It should only be necessary to use the ACI Tool (1) before flying a drone for the first time and (2) every time want to change the transmission rate. It should not be necessary to use this application when you change the variables that are being transmitted / received in the on-board / off-board code (although it can be useful as a test if anything is going wrong).