OpenOBS firmware guide

This guide will help you set up a newly-constructed OpenOBS and upload the latest firmware. If your OpenOBS is working and you do not wish to update the firmware, refer to the deploy guide to set the deployment settings.

1. Setup

1.1.   If you already have the Arduino IDE and know how to connect and upload code, skip ahead to the next step. Otherwise, download and install the free Arduino IDE and follow this guide to get familiar with the IDE and learn how to upload code. When the guide asks you to select the board type, select the option for "Arduino Nano".

1.2.   Libraries are chunks of code that we can import into our script and use to simplify the interactions with hardware. The Arduino IDE comes with many libraries but we need to install 3 additional libraries in order to compile and upload the OpenOBS firmware. The first two can be found and installed from the Library Manager, by searching for "Adafruit_ADS1015" (by Adafruit, Version 2.2.0) and "SdFat" (by Bill Greiman, Version 2.0.7). The final library needs to be installed manually by downloading and unzipping files from the library's github repo and placing them in the libraries folder (usually at Documents/Arduino/Libraries, but check this guide if you have problems).

1.3.   Download and unzip the entire OpenOBS github repo to get the latest code and documentation.

2. Serial number

2.1.   Open OpenOBS/set_serial_number/set_serial_number.ino in the Arduino IDE and upload it to the OpenOBS. Watch the IDE status bar for the code to be compiled and uploaded.

2.2.   Open the Serial Monitor (Tools -> Serial Monitor) and enter the serial number you want to assign. The Arduino will store that number in memory and read it back out to the Serial Monitor for you to verify.

3. Firmware

3.1.   Open OpenOBS/sensor_firmware/sensor_firmware.ino in the Arduino IDE and upload it to the OpenOBS. Watch the IDE status bar for the code to be compiled and uploaded.

3.2.   Open the Serial Monitor (Tools -> Serial Monitor) and verify that the OpenOBS is starting up and communicating. Change the baud rate to 115200 in the bottom right corner of the Serial Monitor if it is not already set.