

AP – Firmware Uploader – SS4

Tools Needed:

- Hex key – 3/32"
- USB Cord - A to Micro-B (common for cellular phones)
- Laptop with Windows (Win7 or 8 would be nice)

Software (provided by AirPhoton):

- Uploader application
- Firmware: firmware.bin
- CPU's USB Driver (windows specific)

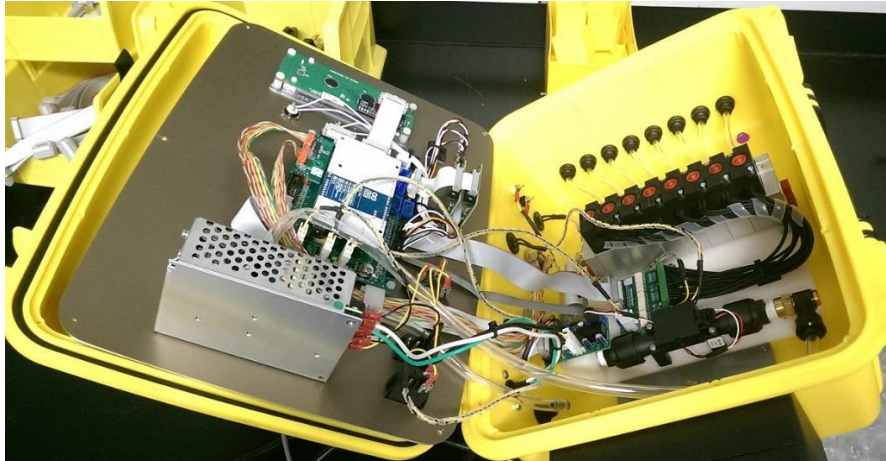
Procedure:

1. Preparation:
 - a. Ensure the system is properly turned off.
 - b. Remove any power source/connections including, the 12V OUT cable, AC POWER, and BATTERY cables. Leave enough time for energy to dissipate (for AC POWER, at least 30 seconds).
 - c. Lay box on its back.
2. Disassembly:
 - a. Remove perimeter screws from front panel using 3/32" hex key.

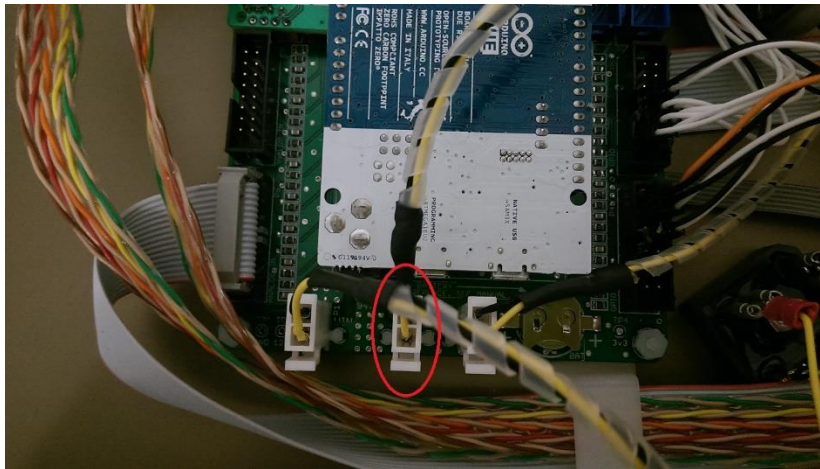


- b. Slowly, swing open the front panel. It will swing like the yellow door of the instrument. Make sure to do this part slowly in order to not pull wires or tubing loose.

- c. Lay system in such a way the panel and box lay open.

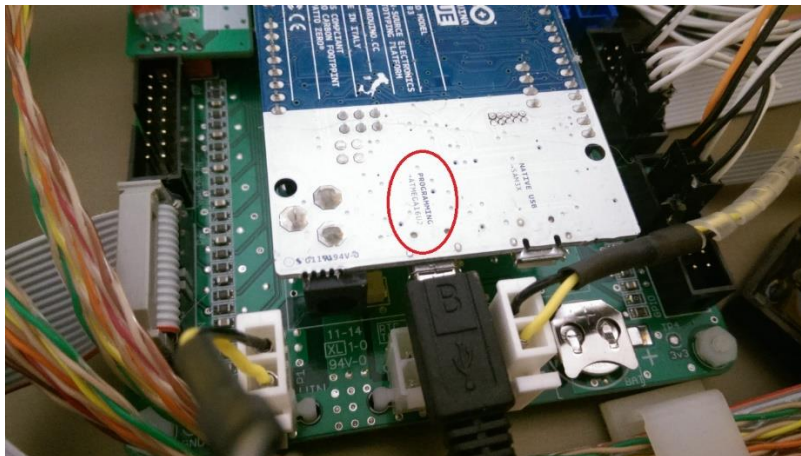


- d. Remove second power plug from main board.



3. Re-Programming:

- a. Insert the USB micro-b plug into the CPU's USB Port labeled "PROGRAMMING"



- b. Insert the USB A plug into a Windows computer or laptop.
c. Likely, the computer will need a driver. (See notes below)
d. Once the hardware is setup (driver installed), run "uploader.bat"
e. If no errors are presented, you can proceed to checking operation.

4. Checking Operation:
 - a. Safely, tilt up the front panel to see if the system (LEDs, LCD, etc) are operating correctly. This is the first step to ensuring the upgrade went smoothly.
 - b. If the system is non-responsive, try a hard reboot (hold all three buttons down on the first two screens). To cycle power while on USB, unplug and replug the USB-A plug into the laptop or computer.
 - c. If appears to working fine, lay the front panel down and unplug the USB-A cord. It is time to re-assembly the system. If not, retry the Re-Programming steps or see below.
5. Re-Assembly:
 - a. Plug in the second power plug to the main board.
 - b. Check the clear tube that is leaving the yellow box near the pump, it can sometimes come loose during this process. Its gray fitting should be seated firmly in the black outlet.
 - c. Lay the front panel back into its original position while making sure wires are not pinched. The repositioning of the front panel should not require force or bulge out irregularly.
 - d. Re-insert the screws that hold the front panel. If using a power driver with 3/32" bit instead of the recommended hex key, please, pay extra attention to not strip out the screws in the soft plastic box. Ideally, do this process by hand.
6. Post Checkup
 - a. Reconnect the power, AC POWER or BATTERY.
 - b. Boot-up the system.
 - c. Proceed to the menus to start checking the following functionalities.
 - i. Go to Menu -> Next -> Functional Tests
 - ii. Go to Valve Tests
 1. Click Next to cycle through the valves. An audible clickly should be heard as each valve opens and closes.
 2. While on any valve watch the screen:
 - a. Does flow say near 0.00 lpm?
 - b. Does vac say near 0.00 kPa
 3. Turn on the pump by clicking "Vac"
 - a. Does the pump turn on?
 - b. Does vacuum change accordingly?
 - c. Does flow change accordingly?
 4. Hit exit and wait.
 5. Hit exit again.
 - iii. Go to Sensor Tests
 1. Do each ADC input read 0.00? (this will only be the case if no analog input are attached).
 - iv. Click Next to Temperature. Wait
 1. Does the outputted temperature seems realistic?
 - d. Return to the main menu (click Back twice).
 - e. Likely, by this point the system is good, but let's run a sample cycle.
 - i. Click Start -> Man -> Yes.

1. Does the pump turn on?
 2. Does the screen show Manual-D with a tube number?
 3. Does vacuum seem reasonable?
 4. Does flow seem reasonable?
 5. Can you pause and unpause?
 6. Finally, can you stop?
- f. Proceed on for more testing such as Auto Sampling.

Other Notes:

1. Installing a Driver for the instrument. Windows 7 or 8
 - a. Open Device Manager on Windows (open Windows Run type "devmgmt.msc")
 - b. Check to see if there undefined hardware
 - c. Right-Click and select Update Driver.
 - d. Select "Browse my computer for driver software"
 - e. Point towards the driver directory supplied by AirPhoton.
 - f. The hardware should not be installed.
2. What if the uploader doesn't work or after running uploader my instrument doesn't work?
 - a. Generally, try re-uploading the firmware again, sometimes there are issue with USB or the USB cable (make sure it is fairly short) that cause the firmware verification to fail.
 - b. If the uploader reports all went well, but the system is non-responsive or operates with errors, it could be the wrong firmware has been supplied for your hardware.