Helio-STELLA Heliophysics Instrument Build Instructions

Step	Do this:	Done
1	Copy the provided Helio-STELLA software .ZIP file to your computer. Uncompress it.	☐
2	Download and install the Mu editor (available at http://codewith.mu)	☐
3	Select the microcontroller (red) and the USB C cable. Use the cable to connect the microcontroller to a computer.	☐
4	While holding the **Boot button**, press and release the **Reset button**, then release the **Boot button**. A drive named **RP1-RP2** should appear in your computer's drive list.	☐
5	From the software package, copy the file in the **UF2_file** folder to the **RP1-RP2** drive. The drive will self-eject, and will reappear as **CIRCUITPY**	☐
6	In the software package, open the **code-and-libraries** folder. Copy the whole **lib** folder to the **CIRCUITPY** drive, replacing the existing **lib** folder	☐
7	Select the clock module and the coin cell battery. Insert the battery in the clock module, placing the flat side of the battery (+) away from the board.	☐
8	Select a qwiic cable from the kit. Connect the clock to the microcontroller.	☐
9	Open the Mu editor. It will find the microcontroller and display this message "Detected new circuitpython device."	☐
10	In the Mu editor, click on the Serial button on the top menu bar. A serial dialogue box will open at the bottom of the window.	☐
11	In the software package, open the **test_codes** folder, then open the **00. clock_set** folder. From that folder, copy the **code.py** file to the **CIRCUITPY** drive.	☐
12	Follow the prompts in the serial window to set the hardware clock time. Use UTC to avoid confusion about time zones. (available at http://time.is/UTC)	☐
13	Now open the **code-and-libraries** folder again**,** and select the **code.py** file, and copy it to the **CIRCUITPY** drive. This file is the instrument operating code.	☐
14	Unplug the usb cable from the microcontroller.	☐
15	Use a small sharp knife to cut the LED trace on the back of the AS7341 spectrometer module to disable the green LED on the front.	☐
16	*Make sure the power to the microcontroller is off any time you connect or disconnect modules.* Connect the sensors and button and display to the microcontroller using the four wire cables. The cables are built so they only connect in one orientation. Don't force the connections. The sensors can go in any order in the chain, with the microcontroller at one end of the chain and the display at the other end of the chain, because those two modules only have one connector on them.	☐
17	Slide the micro SD card into the slot on the back of the microcontroller.	☐
18	Connect the battery to the power switch, and then connect the switch to the microcontroller.	☐
19	Click the button on the power switch to turn the Helio-STELLA instrument on. If it's already on, it's helpful to turn it off, wait a second, and turn it on again.	☐
20	The instrument should start up, showing the display screens in the boot cycle, and then begin taking data.	☐
21	You can advance through the display screens by pressing the button. See the operating instructions.	☐
22	Place the instrument in direct sunlight to measure the solar spectrum.	☐