

## Bionics Kit reflash instructions and troubleshooting

To reflash the Bionics programming to the Arduino-compatible microcontroller, complete the following steps. There is also a Troubleshooting section in this document with information on resolving common issues.

### Hardware needed:

Computer with internet access  
ESP32 microcontroller included in Bionics Kit  
Micro-USB cable

## Reflashing the microcontroller

1. In the Downloads tab on the Bionics4Education website, click on the "Microcontroller quick update/reflash" link in the Troubleshooting section. This should download a zip file called "bionic\_flash\_v1\_4.zip". Unzip the contents of the file to the desired path on your computer.
2. After the contents are unzipped, open the "bionic\_flash\_v1\_4" folder. Then open the "bionic\_flash\_v1\_4.bat" file. The following command prompt will open:

```
BIONIC-KIT FLASH-TOOL v0.2
.....
BIONIC-KIT Version 1.4
.....
PLEASE DISCONNECT ALL OTHER USB-TO-SERIAL DEVICES
Press any key to continue . . .
```

3. Connect the microcontroller to the PC via a micro-USB cable. The PC should be able to detect the microcontroller and assign it a COM port, and one or both of the LED lights on the microcontroller should light up to indicate that it is connected and powered.
4. When the microcontroller is connected, press any key (as indicated in the command prompt) to begin reflashing the microcontroller. If you receive an error message reading "No Bionic-Kit found", the PC is likely not recognizing the microcontroller and you may need to install an additional driver. See the Troubleshooting section in this document titled "Driver installation needed:" for further instructions.
5. The reflashing process will proceed and take a few moments to finish. When the reflash is successful, a line should read "Hard resetting via RTS pin...":

```
Hash of data verified.
Compressed 1503232 bytes to 101551...
Wrote 1503232 bytes (101551 compressed) at 0x00291000 in 5.8 seconds (effective
2073.4 kbit/s)...
Hash of data verified.
Leaving...
Hard resetting via RTS pin...
Press ENTER for continue or CLOSE the window to leave the application
Press any key to continue . . .
```

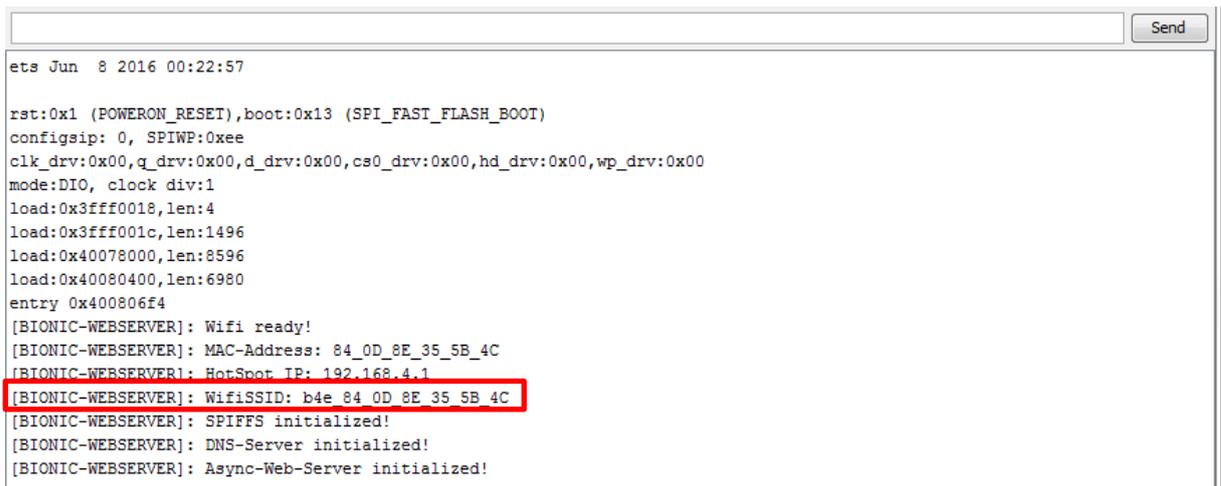
6. When the reflash is successful, you can disconnect the microcontroller from the PC and close out the command prompt. The microcontroller should now be reflashed and ready to use.

## Troubleshooting

### WiFi connection:

The WiFi network name is unique to each microcontroller. The name of the network for each individual microcontroller should be printed on the underside of the microcontroller's board. If you have difficulty identifying the network name even after checking the print on the board, you can identify the WifiSSID for a particular microcontroller by completing the following steps:

1. First, the Arduino IDE needs to be downloaded from the official Arduino site. The files and instructions are located here:  
<https://www.arduino.cc/en/Main/Software>
2. Ensure the Arduino IDE has been successfully installed before proceeding to the next step.
3. Connect the microcontroller to a PC with a micro-USB cable.
4. Open the Arduino IDE. Select the Serial Monitor by either clicking Tools --> Serial Monitor or the magnifying glass icon .
5. Reset the microcontroller by pressing down on the reset button. The output window should identify the WifiSSID:



```
ets Jun  8 2016 00:22:57

rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
config: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0018,len:4
load:0x3fff001c,len:1496
load:0x40078000,len:8596
load:0x40080400,len:6980
entry 0x400806f4
[BIONIC-WEBSEVER]: Wifi ready!
[BIONIC-WEBSEVER]: MAC-Address: 84_0D_8E_35_5B_4C
[BIONIC-WEBSEVER]: HotSpot_IP: 192.168.4.1
[BIONIC-WEBSEVER]: WifiSSID: b4e 84 0D 8E 35 5B 4C
[BIONIC-WEBSEVER]: SPIFFS initialized!
[BIONIC-WEBSEVER]: DNS-Server initialized!
[BIONIC-WEBSEVER]: Async-Web-Server initialized!
```

6. The WifiSSID should be available when searching for available WiFi networks on a PC or mobile device. You can connect to the WiFi network with the password "education"; the control interface can then be accessed by opening a web browser and navigating to [www.b4e.com](http://www.b4e.com)

### Using multiple microcontrollers:

If using multiple Bionic Kits/microcontrollers or multiple devices to control the microcontrollers, make sure any autoconnect options are turned off when connecting to a microcontroller network via PC or mobile device. Only one device can be connected to any single microcontroller WiFi network at a time, so disabling autoconnect prevents devices from automatically connecting to microcontrollers when they are first powered on, and therefore prevents any potential device conflicts.

When switching between multiple devices to connect to a microcontroller, make sure the device that is currently connected to the network is manually disconnected before trying to connect the new device.

**Driver installation needed:**

When the microcontroller is connected via PC, it may require a driver to be installed in order to communicate correctly and be properly detected. The following link has information regarding the installation of device drivers if you encounter this type of problem with the microcontroller:

<https://www.ftdichip.com/Support/Documents/InstallGuides.htm>