

USB Dongle Setup Guide

Introduction

This guide is for programming your USB Dongle and wirelessly pairing the dongle with a StretchSense MoCap Pro glove.



Prerequisites

1. nRF USB dongle (Hardware available from StretchSense or direct from DigiKey)
<https://www.digikey.com/product-detail/en/nordic-semiconductor-asa/NRF52840-DONGLE/1490-1073-ND/9491124>
2. nRFConnect desktop application (free download)
<https://www.nordicsemi.com/Software-and-Tools/Development-Tools/nRF-Connect-for-desktop/Download>
3. Programming files (available from StretchSense)
 - a. stretchsense_usb_dongle_vX.X.X.hex (where X.X.X is the current version number)
 - b. s140_nrf52_6.1.0_softdevice.hex

Programming the USB Dongle

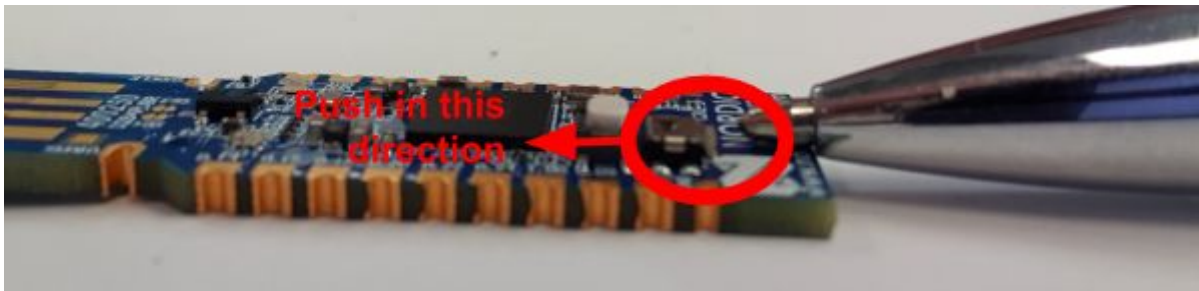
1. Install nRF Connect.
 - a. **NOTE:** During the installation process for nRF Connect you will be asked to install Segger JLink software. Segger JLink software is not required for programming the USB dongle and this part of the installation can be cancelled/skipped.
2. Open nRF Connect and install nRF Connect **Programmer** from within nRF Connect.
3. Plug in the USB dongle. This will automatically be assigned a COM port on your computer.

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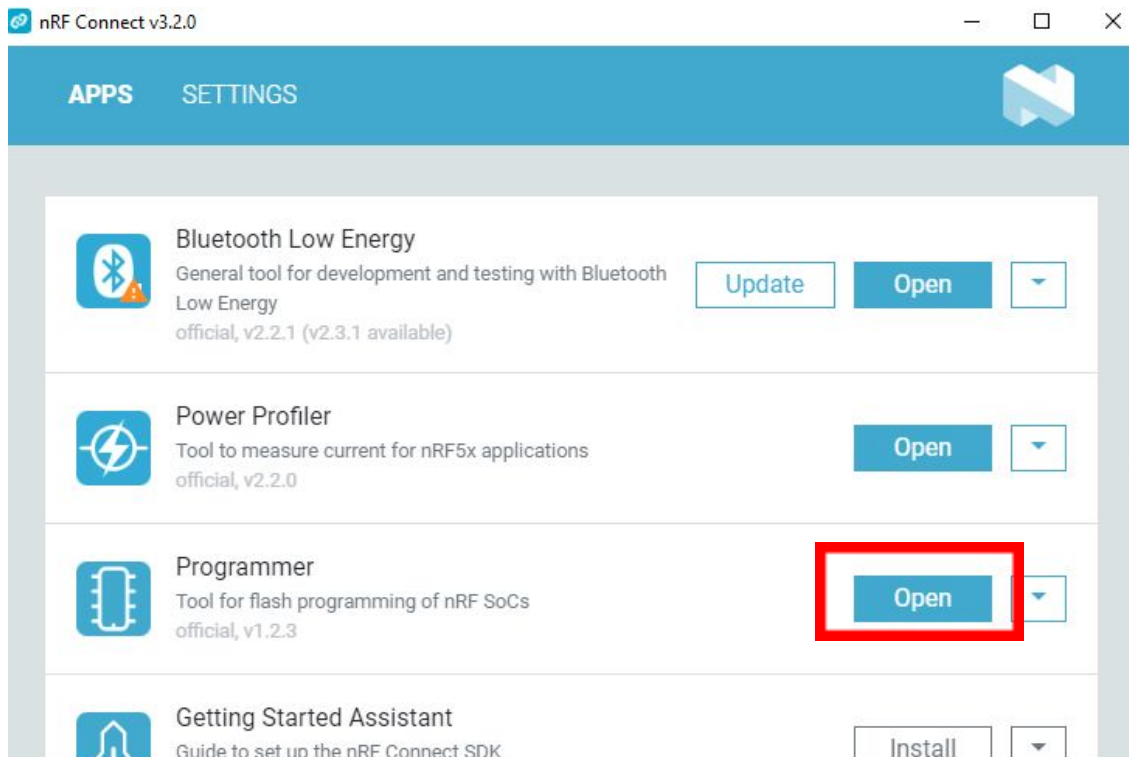
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Last Updated: 20200918
Last Updated By: TG
Authors: TG, AD
Revision: 6



4. Press the reset button on the USB dongle. A red LED will begin to pulse slowly on the USB dongle to indicate it is ready for programming.
 - a. **NOTE:** The reset button is mounted sideways and the travel is parallel to the surface of the PCB (see picture).



5. Open nRF Connect **Programmer**

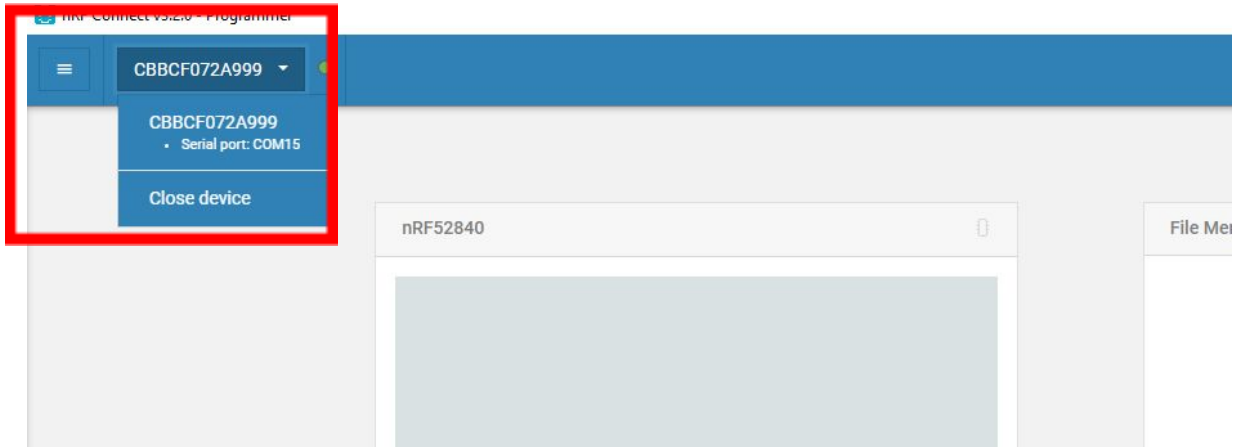


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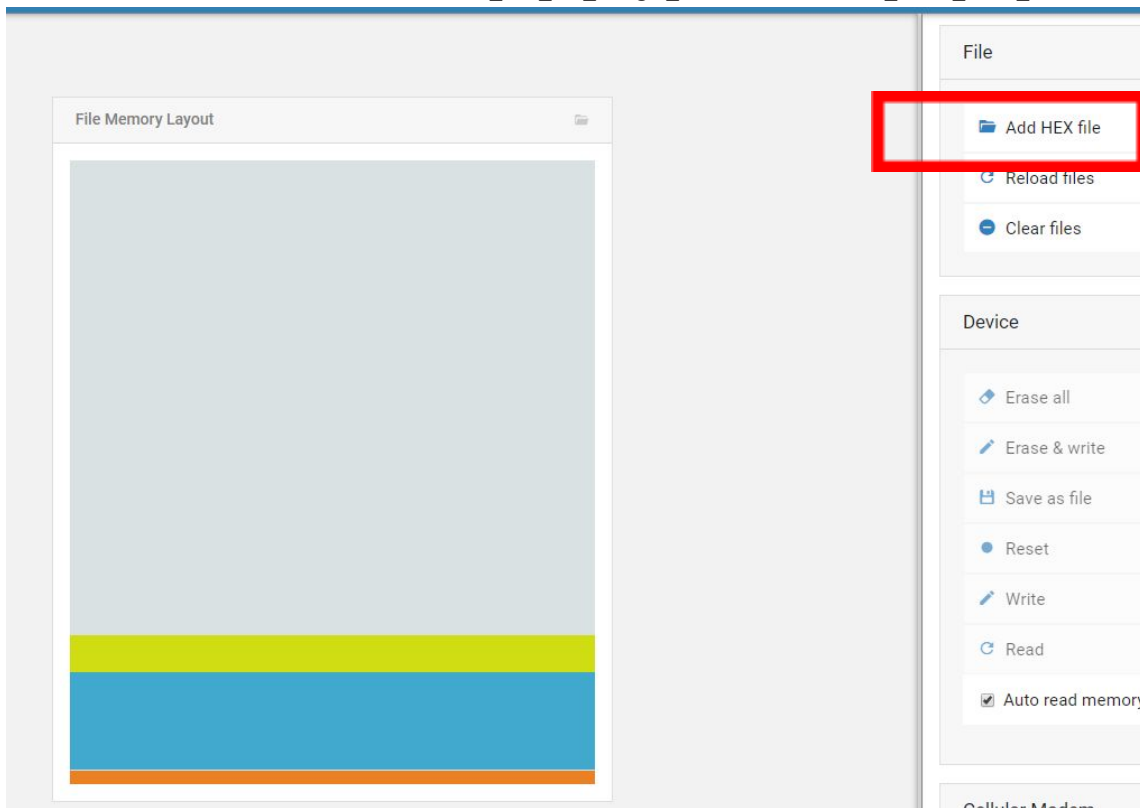
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6. Select COM port of the USB dongle under the select device tab
 - a. NOTE: the USB dongle will not appear in this drop down list if it is not in update mode as indicated by the slow pulsing red LED. If the USB dongle does not appear, unplug the dongle and plug it back in and repeat step 4



7. Use the Add HEX file to add both the stretchsense_usb_ble_dongle_vX.X.X.hex and s140_nrf52_6.1.0_softdevice.hex.

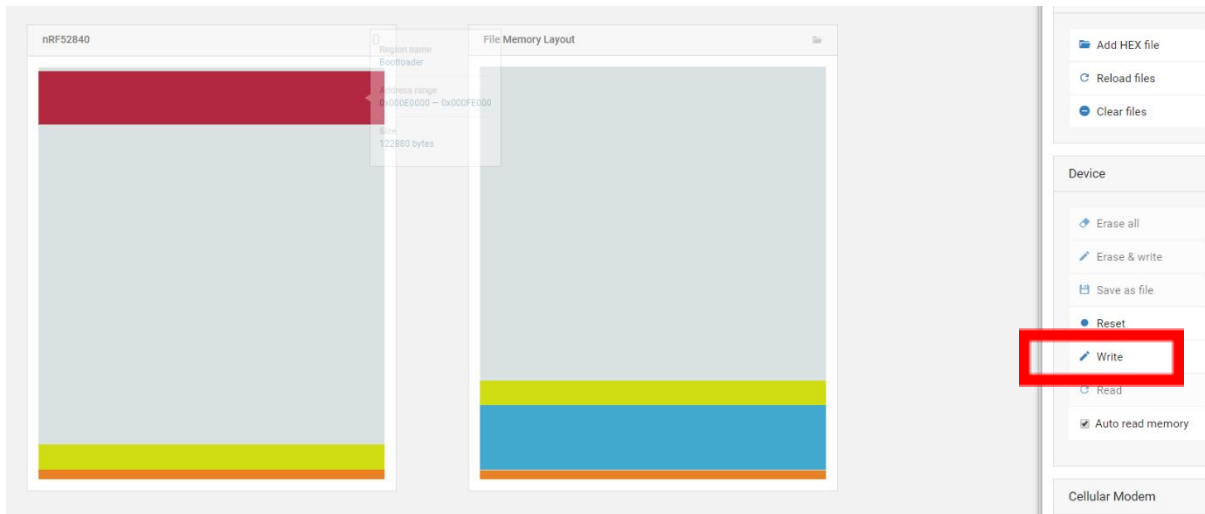


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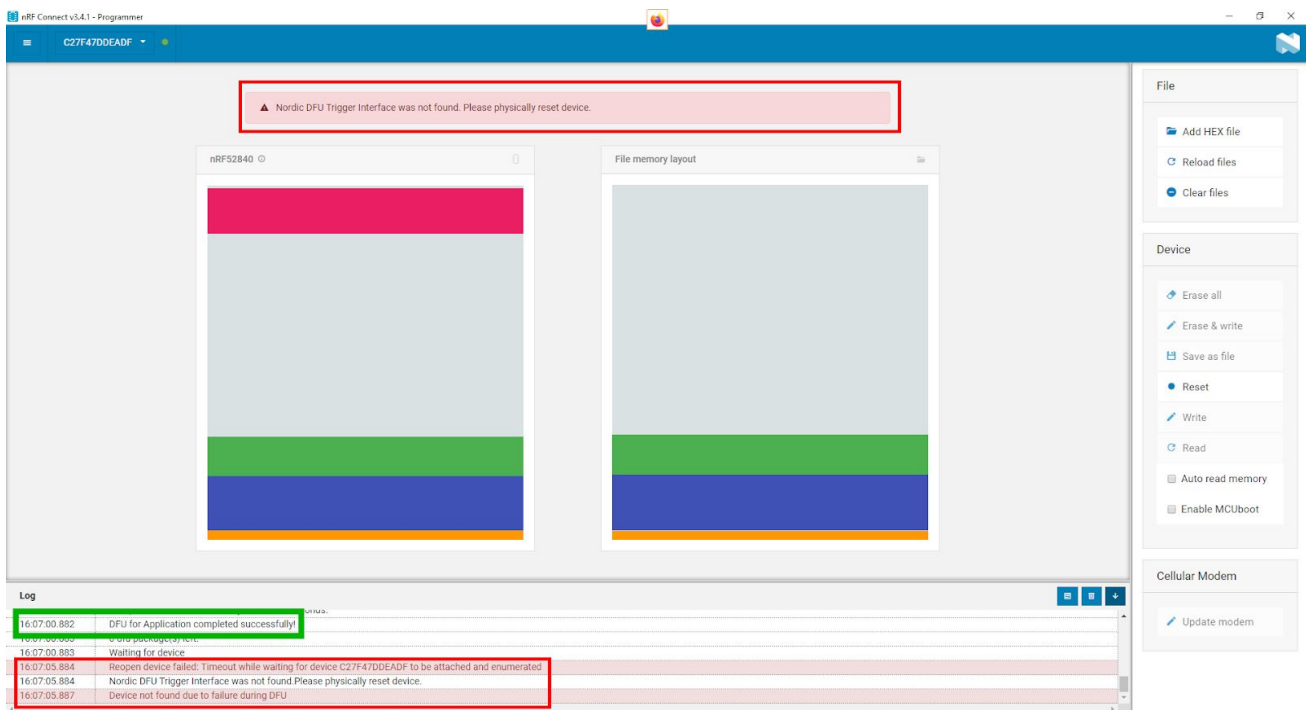
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- Press the Write button to send code to USB dongle (this will take a few seconds)



- If successful the red LED on the USB dongle will now be a solid red.
 - NOTE:** It is expected that the Programmer app will **return an error** after programming is successfully completed. This is because once the USB dongle is reprogrammed the dongle automatically reboots into the StretchSense firmware. Programmer is only able to communicate with the USB dongle if it is reset into bootloader mode as per Step 4 above.





Connecting the USB Dongle to a MoCap Pro Glove

Pairing the USB Dongle with a Glove

1. Plug the USB dongle into a spare USB port. The LED will be a solid red to indicate it is ready for pairing.
2. Power on your glove, and move the glove next to the USB dongle.
 - a. The USB will scan for and connect to StretchSense sensing circuits in close proximity to the USB dongle (<30cm distance)
3. The LED on the USB dongle will turn solid Green when it has found and paired with a glove.
4. After a few seconds the LED will turn solid Blue which means the connection is established and data is streaming from the glove to the USB dongle.
 - a. NOTE: The next time you power on the USB it will scan for and connect to the paired glove if it is within range. There is no need to bring the glove within 30cm of the USB dongle if it has already been paired.

Unpairing the USB Dongle and Re-pairing with a New Glove

If a glove is already paired with the USB dongle, the USB dongle will not establish a new connection until the previous pairing is removed.

1. Plug USB dongle into a spare USB port. The LED should be solid green or blue. If the LED is solid red, the USB dongle has already been unpaired and you can re-pair by following the instructions in the previous section.
2. Press and hold the white button on the top of the USB dongle for 10 seconds.
3. The LED on the USB dongle will turn back to solid red and is ready to pair with a new glove.

Using USB data

Once connected and paired the USB dongle will appear as a COM port and data will be streamed to this port.

See StretchSense USB Communications Guide for USB data format and available commands.

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Revision Summary

Revision	Date	Notes
6	2020-09-18	Updated, broken hyperlink, annotated bootloader button screenshot
5	2020-07-21	Added screen shot showing successful programming
4	2020-05-29	Fixed broken link to nRF Connect Desktop app
3	2020.05.28	Corrected formatting, removed TOC
2	2020.05.22	Updated filename references
1	2019.09.26	Initial version