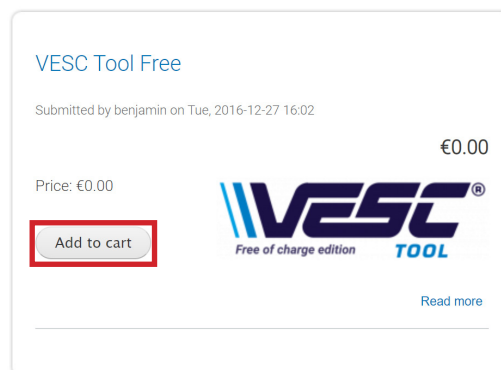Thanks to Surfdado for the original write-up and Mitch for the incredible work on the Balance App that makes these new firmware updates so amazing! These instructions are based on Surfdado's instructions with additional pictures for the visual learners out there. If you're ready to make your board even more awesome....let's gooooo!

Getting Started

If you don't already have the desktop VESC Tool app, then follow the steps below to download. All version of the VESC Tool are the same but the paid versions are a donation to the people developing the project. Please consider supporting the project.

1. Go to www.vesc-project.com
2. Click on the **VESC Tool** tab and scroll to the bottom of the page.
3. Select a version of **VESC Tool** to download
4. Click **Add to cart**
5. Select **Checkout**
6. Log in or create a new account
7. Complete the checkout
8. Wait for the email with download link then install

VESC Tool Free

Submitted by benjamin on Tue, 2016-12-27 16:02

€0.00

Price: €0.00

Add to cart
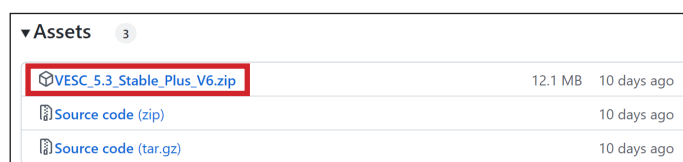
\\VESC®
Free of charge edition   TOOL

Read more

Where to get firmware

Surfdado firmware is published as github releases. This firmware is just like vesc-project standard "5.3 Stable" but includes the most important features and fixes we need for a good Onewheel experience.

NOTE: Make sure you pick the right file that matches your hardware for your VESC (ie. Little FOCer V3, Little FOCer V3.1, and future releases)
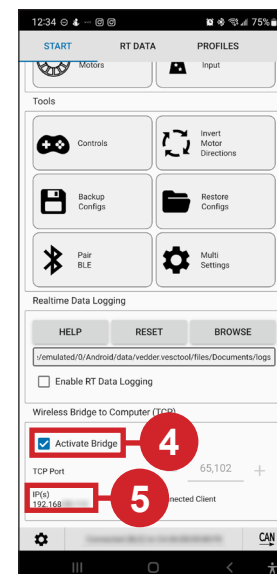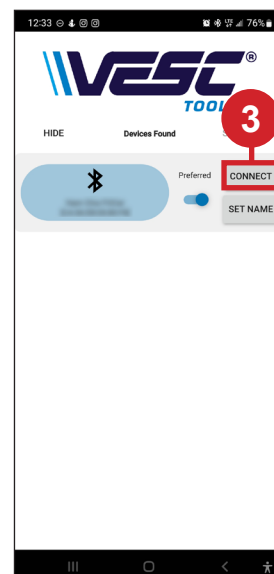
1. Go to https://github.com/surfdado/bldc/releases
2. Scroll to the **Assets** section under the latest firmware listing
3. Click on the **zip file** to download
4. Locate the download and unzip the file

▼Assets   3

VESC_5.3_Stable_Plus_V6.zip   12.1 MB   10 days ago
Source code (zip)   10 days ago
Source code (tar.gz)   10 days ago

Connecting VESC Tool to your board

For best results you can use the Linux version of the VESC Tool as it will connect directly to your board via bluetooth. Alternatively, you can connect using the Windows PC version and using an Android phone/tablet to bridge the connection by following the steps below.

1. Connect to your personal Wi-Fi network
   NOTE: Public Wi-Fi networks may not connect properly
2. Open the VESC Tool app on your Android device
   NOTE: If you don't have the app, download it from the Google Play Store
3. Turn your board on and select **CONNECT**
4. On the main menu screen, scroll down to the **Wireless Bridge to Computer (TCP)** section
5. Check the **Activate Bridge** option and note the IP address to enter in the desktop app
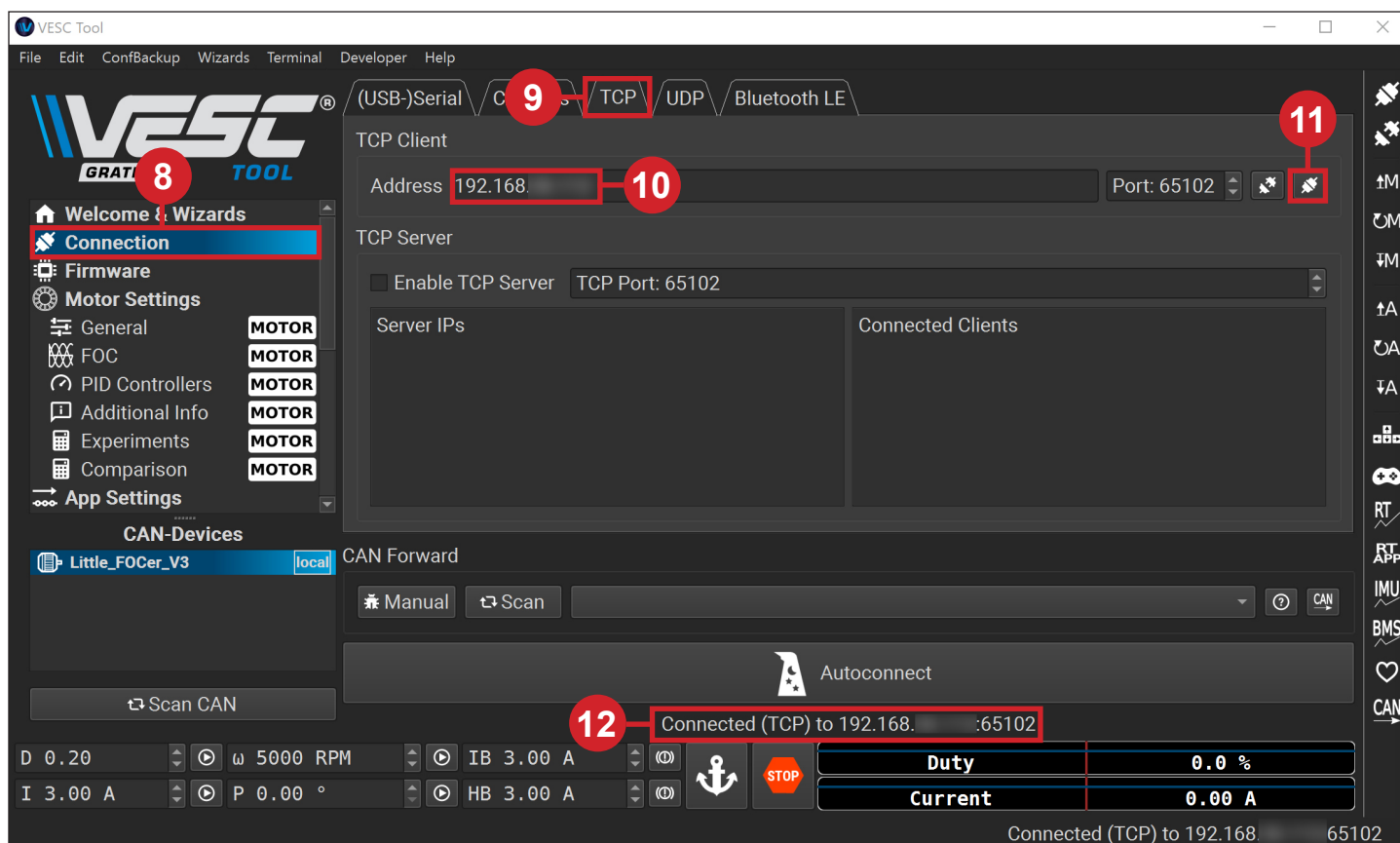
Instructions continued on next page

Connecting VESC Tool to your board continued

6. Open the VESC Tool app on your Windows PC

7. Ensure your PC's Wi-Fi is connected to the same network as your Android device

8. Select the **CONNECTION** option in the VESC Tool desktop app

9. Select the **TCP** tab

10. Enter the IP address indicated from **STEP 5**

11. Select the **CONNECT ICON**

12. Once connected, you will see **Connected (TCP) to [your IP]:65102**
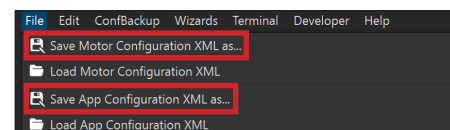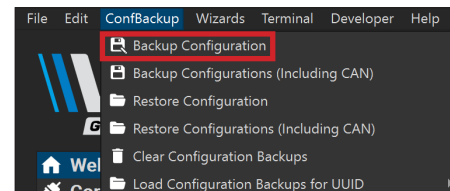

Backup your settings

IMPORTANT: Before continuing to load new firmware, ensure you back up your settings and additionally you can also save XML backups of both APP and MOTOR configurations on the desktop app.

Creating a backup

1. Select **ConfBackup** on the top menu

2. Then select **Backup Configuration**

Saving your XML files

1. Select **File** on the top menu

2. Select **Save Motor Configuration XML as...** then enter a descriptive name for the Motor Config XML and save in a folder you can refer back to if needed

3. Select **Save App Configuration XML as...** then enter a descriptive name for the App Config XML and save in a folder you can refer back to if needed
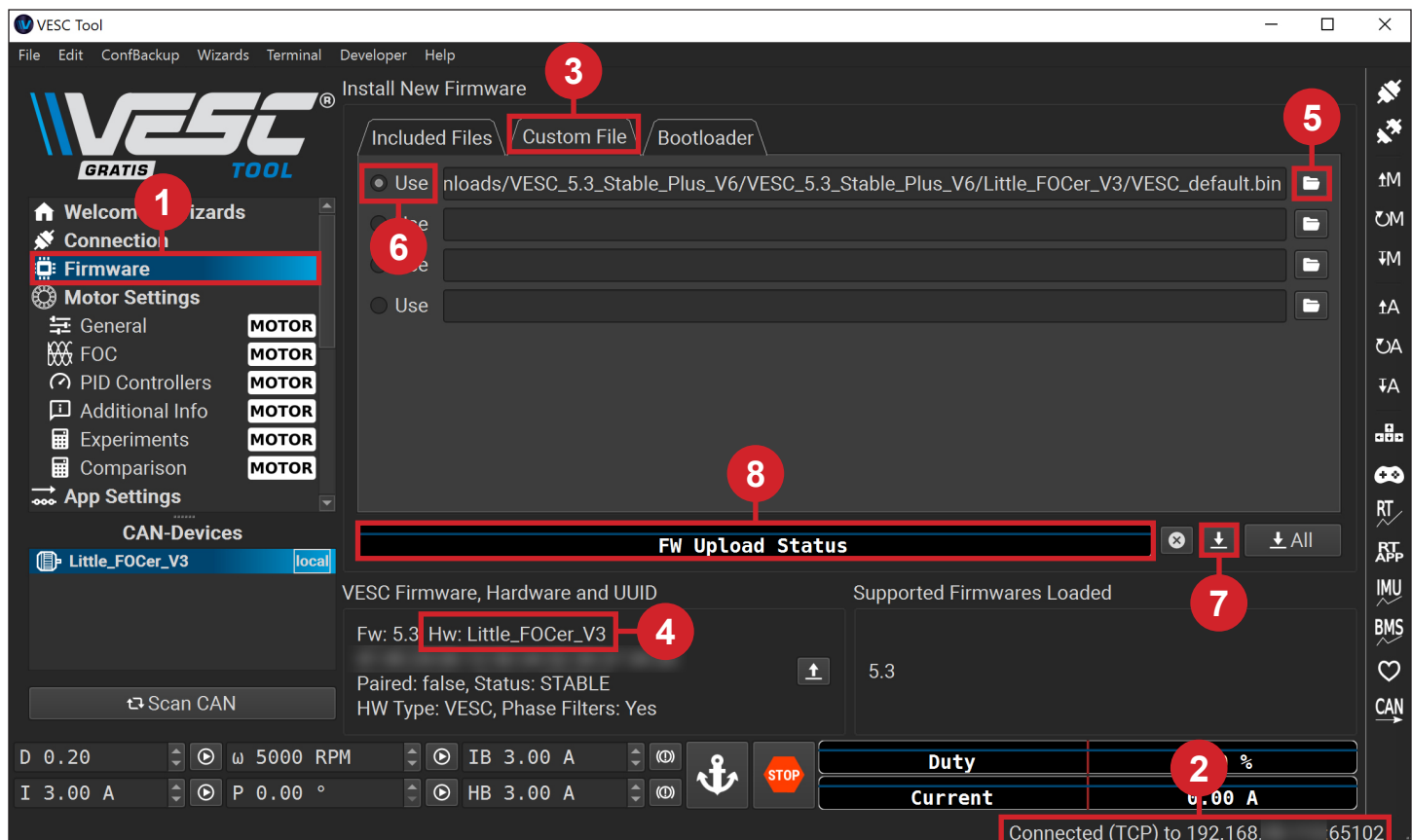
Installing new firmware

IMPORTANT: Because you pick a custom file you have to make sure you pick a file matching your exact hardware version. Little FOCer V3 hardware requires LFOCv3 firmware, Little FOCer V3.1 hardware requires LFOCv3.1, etc.

1. Select the **Firmware** option

2. Make sure you are still connected to your board. If you are not connected then go back to the previous section for connecting your board and follow those steps

3. Select the **Custom File** tab

4. Confirm which hardware version you have (ie. Hw: Little_FOCer_V3)

5. Select the **File button** and navigate to the correct folder as your hardware version and select the *VESC_default.bin* file inside the folder. **STOP** and double check you've selected the same hardware version as verified in **Step 4**

6. Ensure the **Use** option is selected for that loaded bin file

7. Once you have verified that you have the correct firmware version selected, select the **Update Firmware button** to begin

8. Pay attention to the **FW Upload Status bar** and ensure it completes the firmware update

9. **IMPORTANT:** After the firmware update completes, **WAIT 10 seconds** before riding.

Verifying if the firmware installed

If you're not sure if you have loaded the firmware successfully then open the mobile VESC app, select RT Data, scroll down to the last realtime screen before riding the board for the first time and look for the loop time value. If you see a number close to *1000 us* then you're either still running a stable version or one of the versions like V3 or earlier. What you should see instead with V4 or newer, or with ATR firmware is a revision number - ie. *6 us* for V6 or 13…20 for ATR.