How to customize VESC Software in VESC tool?

To customize the VESC (Vedder Electronic Speed Controller) software in the VESC Tool, you can follow these general steps:

1. Install the VESC Tool:
   * Download and install the VESC Tool software from the official VESC website ([https://vesc-project.com/vesc\_tool). ↗](https://vesc-project.com/vesc_tool).)
   * Follow the installation instructions specific to your operating system.
2. Connect your VESC:
   * Connect your VESC hardware to your computer using a USB cable or other supported connection method.
   * Ensure that the VESC is properly powered and recognized by your computer.
3. Open the VESC Tool:
   * Launch the VESC Tool software on your computer.
4. Connect to your VESC:
   * In the VESC Tool, click on the "Connect" button to establish a connection with your VESC hardware.
   * Select the appropriate communication port and baud rate for your VESC.
5. Customize VESC Parameters:
   * Once connected, you can access and customize various parameters of the VESC software.
   * Explore the different tabs and sections in the VESC Tool to modify settings such as motor configuration, battery parameters, control modes, and more.
   * Make the desired changes to the VESC software settings based on your specific requirements.
6. Apply and Save Changes:
   * After customizing the parameters, click on the "Write Configuration" or similar button in the VESC Tool to apply the changes to your VESC.
   * The VESC Tool will send the updated configuration to the VESC hardware.
7. Test and Verify:
   * Disconnect the VESC from the VESC Tool and power cycle the system.
   * Test the customized VESC software by connecting it to a motor and other relevant components.
   * Verify that the desired functionality and behavior are achieved.

How to install the VESC Tool in window?

To install the VESC Tool on Windows, you can follow these steps:

1. Visit the VESC Project website:
   * Go to the official VESC website at [https://vesc-project.com/vesc\_tool. ↗](https://vesc-project.com/vesc_tool.)
2. Download the VESC Tool for Windows:
   * On the VESC Tool download page, click on the link to download the Windows version of the software.
   * The file you download will typically have a ".exe" extension.
3. Run the Installer:
   * Locate the downloaded VESC Tool installer file and double-click on it to run the installer.
   * If prompted by User Account Control, click "Yes" to allow the installer to make changes to your device.
4. Follow the Installation Wizard:
   * The VESC Tool installation wizard will guide you through the installation process.
   * Read and review the license agreement, and if you agree, select the checkbox to accept the terms.
   * Choose the destination folder where you want to install the VESC Tool. The default location is usually recommended.
   * Click "Next" to proceed.
5. Choose Start Menu Folder and Shortcut Options:
   * Select the desired Start Menu folder where you want the VESC Tool shortcut to be created.
   * Choose whether you want to create a desktop shortcut for the VESC Tool.
   * Click "Next" to continue.
6. Select Additional Tasks:
   * If there are any additional tasks or options presented during the installation, choose the desired settings.
   * You can typically leave the default options selected.
   * Click "Next" to proceed.
7. Start the Installation:
   * Review the installation settings and click "Install" to begin the installation process.
   * The VESC Tool files will be copied to the specified destination folder.
8. Complete the Installation:
   * Once the installation is complete, you may see an option to launch the VESC Tool immediately.
   * If not, you can manually launch the VESC Tool by locating it in your Start Menu or using the desktop shortcut if you chose to create one.

Is there any alternative software that can simulate the VESC without the hardware?

Yes, there is an alternative software called "VESC Simulator" that allows you to simulate the behavior of a VESC without the actual hardware. The VESC Simulator is a software-based solution that emulates the functionality of a VESC, providing a virtual environment for testing and experimenting with different motor control settings.

Here's how you can use the VESC Simulator:

1. Install VESC Simulator:
   * Visit the VESC Simulator GitHub repository at [https://github.com/vedderb/vesc\_sim. ↗](https://github.com/vedderb/vesc_sim.)
   * Follow the instructions in the repository to download and install the VESC Simulator on your computer.
   * The installation process may vary depending on your operating system, so make sure to refer to the repository for specific instructions.
2. Configure the VESC Simulator:
   * Launch the VESC Simulator software.
   * Configure the motor and controller settings within the software.
   * Adjust parameters such as motor type, battery voltage, current limits, control modes, and other relevant settings to match your desired simulation scenario.
3. Run Simulations:
   * Once the VESC Simulator is configured, you can start running simulations.
   * Use the provided user interface or command line options to control and monitor the simulated VESC's behavior.
   * Experiment with different settings and observe the effects on motor control, performance, and other aspects.

It's important to note that the VESC Simulator is a separate software tool developed by Benjamin Vedder, the creator of the VESC. While it provides a virtual simulation environment, it may not perfectly replicate the behavior of a physical VESC with real hardware. However, it can still be a valuable tool for testing and exploring various motor control scenarios.

Make sure to refer to the VESC Simulator repository for more detailed instructions, usage examples, and any additional documentation or community support available for the software.

How to install VESCSim in window?

o install VESCSim on Windows, you can follow these steps:

1. Install OpenModelica:
   * Visit the OpenModelica website at [https://www.openmodelica.org/ ↗](https://www.openmodelica.org/) and download the OpenModelica software for Windows.
   * Run the installer and follow the on-screen instructions to complete the installation.
2. Download VESCSim:
   * Go to the VESCSim GitHub repository at [https://github.com/vedderb/VESCSim. ↗](https://github.com/vedderb/VESCSim.)
   * Click on the green "Code" button and select "Download ZIP" to download the latest version of VESCSim as a ZIP file.
   * Extract the contents of the ZIP file to a desired location on your computer.
3. Configure VESCSim:
   * Open a text editor and navigate to the folder where you extracted the VESCSim files.
   * Locate the config.ini file and open it with the text editor.
   * In the config.ini file, you can adjust the simulation parameters and settings according to your needs. For example, you can specify motor parameters, battery voltage, control gains, and other simulation parameters.
4. Run VESCSim:
   * Open the OpenModelica application.
   * In OpenModelica, go to the "File" menu and select "Load Library" or press Ctrl+L.
   * Browse to the location where you extracted the VESCSim files, and select the VESCSim.mo file.
   * Once the VESCSim library is loaded, you can access the VESCSim components and models for simulation.
5. Create and Run VESCSim Simulation:
   * Using the OpenModelica graphical interface or the Modelica scripting language, create a simulation model that includes the VESCSim components.
   * Configure the simulation parameters, such as the simulation time and step size.
   * Run the simulation and observe the behavior of the VESCSim model in the OpenModelica environment.

How to customize VESC software in VESCSim?

To customize the VESC software in VESCSim, you will need to modify the VESCSim configuration files and potentially make changes to the VESC firmware code. Here are the general steps to customize the VESC software in VESCSim:

1. Locate the VESC Firmware Code:
   * The VESC firmware code is the software that runs on the VESC hardware. It is responsible for controlling the motor and handling various motor control algorithms and features.
   * Visit the VESC GitHub repository at [https://github.com/vedderb/bldc ↗](https://github.com/vedderb/bldc) and download the latest version of the VESC firmware code.
   * Extract the contents of the downloaded ZIP file to a desired location on your computer.
2. Modify VESC Firmware Code:
   * Open a suitable integrated development environment (IDE) that supports the programming language used in the VESC firmware (typically C/C++).
   * Navigate to the location where you extracted the VESC firmware code.
   * Make the necessary modifications to the firmware code according to your customization requirements.
   * This may include changes to motor control algorithms, sensing methods, communication protocols, or other aspects of the firmware.
3. Build and Compile the Modified Firmware:
   * In the IDE, configure the build settings and compile the modified firmware code.
   * Follow the instructions provided in the VESC firmware repository to ensure the correct build process.
   * Upon successful compilation, you will obtain a firmware binary file.
4. Configure VESCSim:
   * Open a text editor and locate the config.ini file in the VESCSim installation folder.
   * Modify the config.ini file to specify the path to the custom firmware binary file you obtained in the previous step.
   * Adjust any other relevant simulation parameters or settings according to your customization needs.
5. Run VESCSim:
   * Open the OpenModelica application.
   * Load the VESCSim library as described in the previous instructions.
   * Construct a simulation model that incorporates the VESCSim components and models.
   * Configure the simulation parameters and any additional components required for your customizations.
   * Run the simulation and observe the behavior of the customized VESC software in the VESCSim environment.

By following these steps, you can customize the VESC software in VESCSim by modifying the VESC firmware code and configuring the simulation parameters in VESCSim. It's important to familiarize yourself with the VESC firmware code and consult the VESCSim documentation for more detailed instructions on making specific customizations.