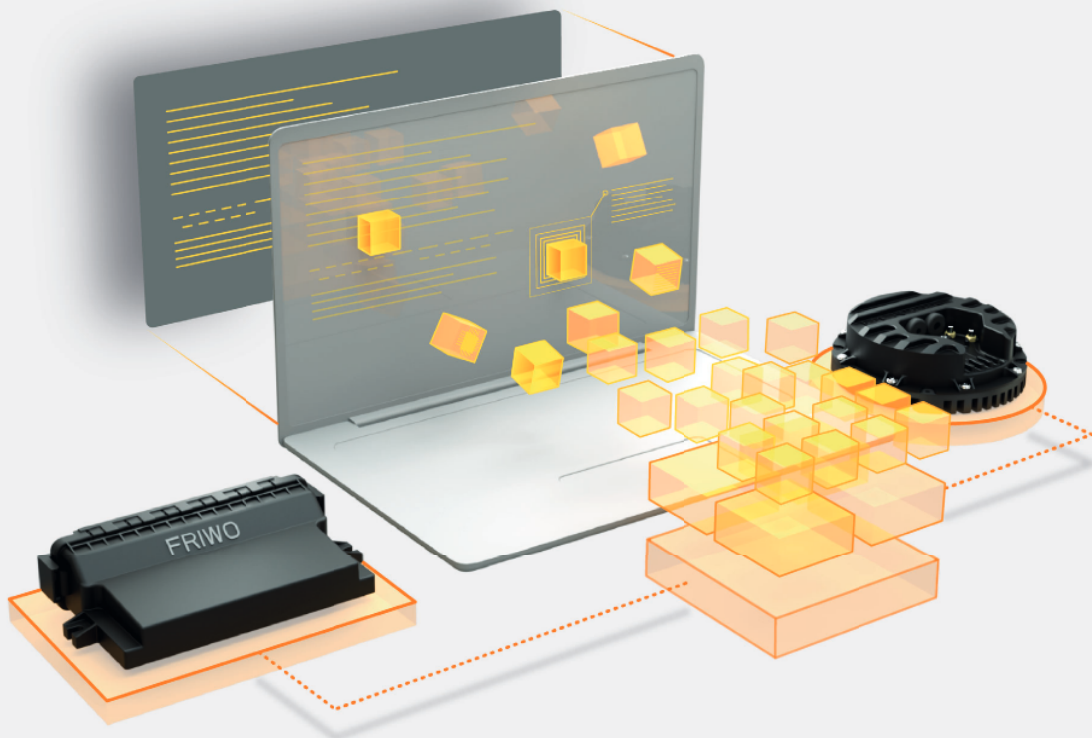## SOFTWARE DEVELOPMENT KIT

End-to-end Development Environment Setup Solution

QUICKSTART GUIDE

ABOUT

FRIWO SDK is an all-in-one tool that bundles developer software and provides an **end-to-end** development environment setup solution for FRIWO E-Mobility Products. It enables you to focus on your specific application and provides all the **bullet-proof** basic software.

BENEFITS – WHY TO USE THE FRIWO SDK

Be innovative
We've covered the basics so that you can focus on innovations.

Reduce costs
Simple ANSI-C programming, combined with Enable Tool means less resources and less licenses.

Best-in-class Quality
By building on our architecture, you will have a tested & proven product right from the beginning.

Safety Net
No mid-project issues as we have already taken care of 90% of your needs.

Prepared way to market share
Benefit from FRIWO's strong track record to attract new customers.

Shorten development time
Build new functions based on the industry leading FRIWO ecosystem in 3-6 months.

Monitor & Control
Monitor and modify your own variables inside the **FRIWO Enable Tool.**
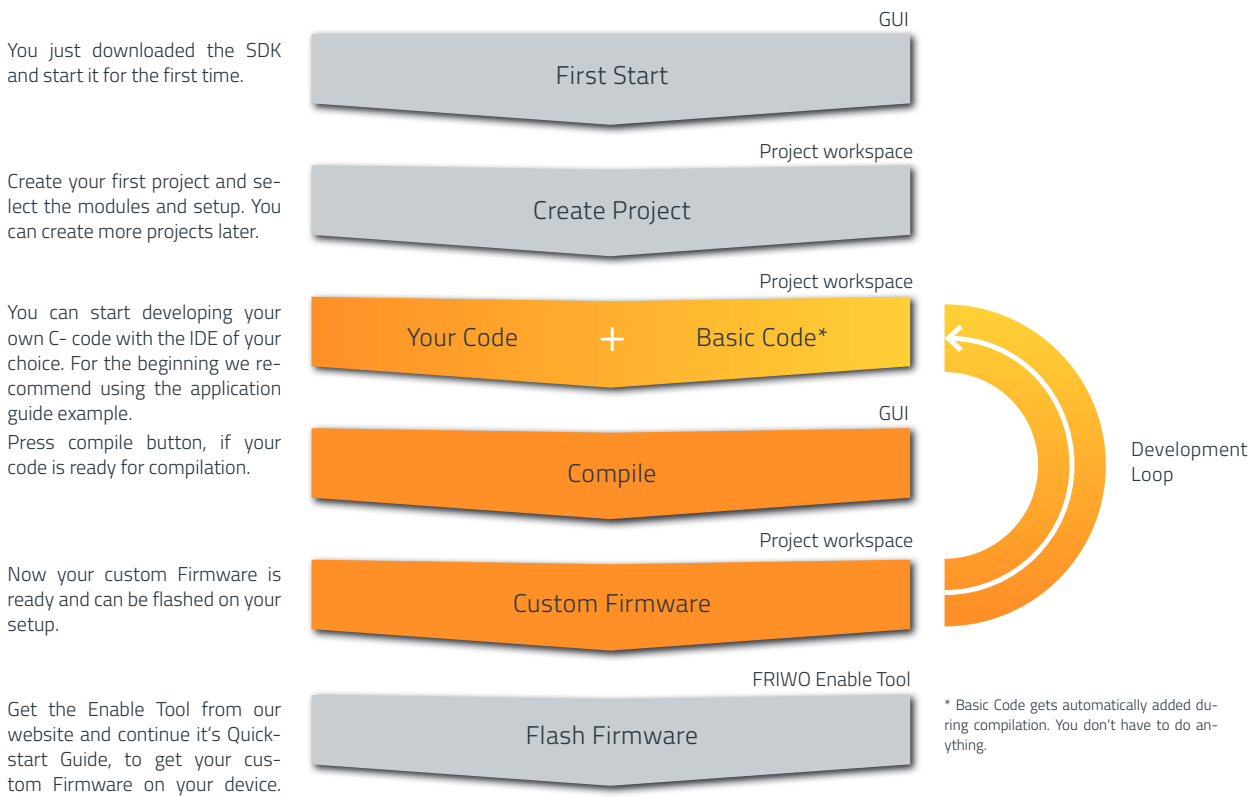https://friwo.link/qs/enable-tool

OVERVIEW

Using the FRIWO SDK, developers can easily customize the FRIWO Firmware within FRIWO products. In this Quickstart Guide, we will go through the basic workflow, the installation & setup process and finally create your first custom firmware, using the FRIWO standard template.

THE BASIC WORKFLOW OF THE FRIWO SDK

You just downloaded the SDK and start it for the first time.

GUI
First Start

Create your first project and select the modules and setup. You can create more projects later.

Project workspace
Create Project

You can start developing your own C- code with the IDE of your choice. For the beginning we recommend using the application guide example.

Project workspace
Your Code + Basic Code*

Press compile button, if your code is ready for compilation.

GUI
Compile

Now your custom Firmware is ready and can be flashed on your setup.

Project workspace
Custom Firmware

Development Loop

Get the Enable Tool from our website and continue it's Quickstart Guide, to get your custom Firmware on your device.
Download the Enable Tool
https://friwo.link/qs/enable-tool

FRIWO Enable Tool
Flash Firmware

* Basic Code gets automatically added during compilation. You don't have to do anything.

The FRIWO SDK GUI consists of 3 main parts

1. **Project**
   Here, you can select the Device and Firmware version that you are working on, besides your project details. Currently, we only provide the FRIWO Motor Controller (MCU 6000) with FRIWO Standard Firmware.

2. **Module**
   You select the functional unit, which you want to develop by yourself. The standard FRIWO Firmware will be replaced by your personal code regarding this module. Please have a closer look at the module in our **Module Description** to see how it is working.
   https://friwo.link/qs/module-description

3. **Compile**
   You can start the compilation process of your custom FRIWO Firmware. You will receive a custom Firmware file which you can flash using the **FRIWO Enable Tool**.
   https://friwo.link/qs/enable-tool

   } Please have a look at our application guide, to get further information about the different modules.

   https://friwo.link/qs/application-guide

Up to SDK Version v1.2.0

- **Activated Setups:** MCU 6000
- **Activated Modules:** Desired Torque, CAN Communication

LIMITATIONS

In order to protect you and your devices from damage, we limit your workingspace and the output variables inside the SDK. The warning and error handlers inside our FRIWO Firmware will always monitor the whole system.

Due to security reasons the following ANSI C commands or structures are not allowed:

- External Variables
- External Functions
- Any code that tries to access Registers

Please be aware, that we cannot guarantee full protection when using custom code.

SYSTEM REQUIREMENTS

The SDK requires an x86-based PC with the following minimum requirements:
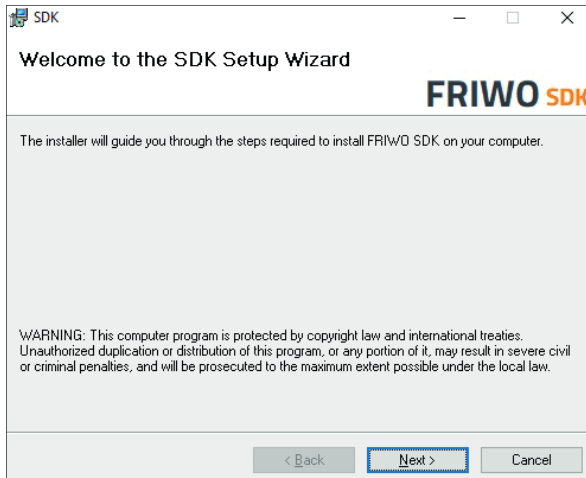
- Screen resolution: at least 1024 x 720 pixels.
- CPU: 1.8 GHz Intel Core Duo or better.
- Working memory: min. 2GB
- Hard disk capacity: Approx. 250MB
- Windows Operating Systems: Windows 10 - You need local Administrator access!

To start the compilation process, you need a Keil Compiler. It has to be installed on your computer.

- Please only use Keil MDK v4.7
- Ask Keil Support for a downgrade
  https://friwo.link/qs/keil

INSTALLATION

Follow the step by step instruction to install the Enable Tool software on your Windows PC.
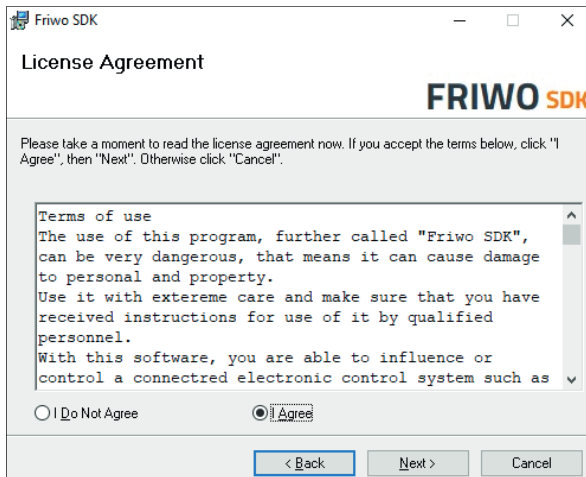
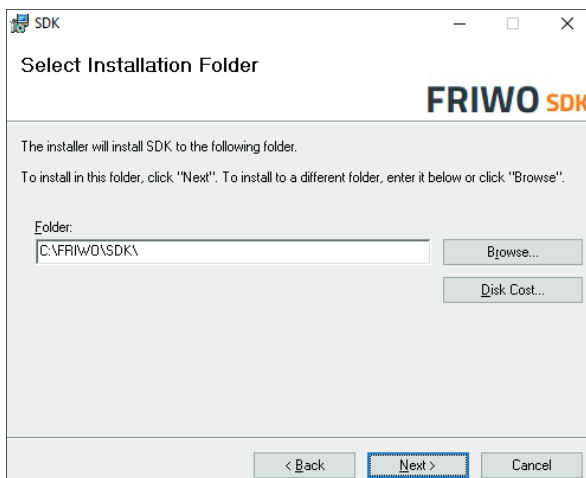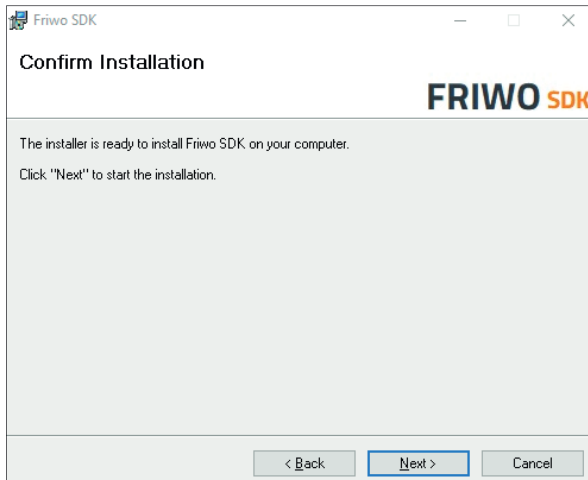- **Download the SDK** on our website
  https://friwo.link/qs/sdk

- Unzip the Folder that you downloaded & execute the „Setup-SDK.exe". The FRIWO SDK Setup Wizard will start now.
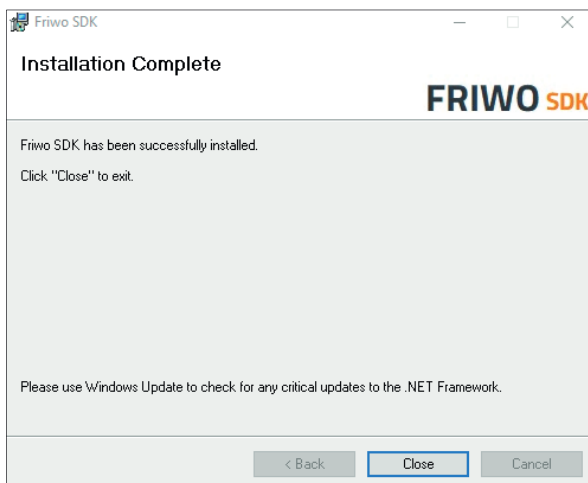
- Click on „Next"

- Click on „I Agree" and then „Next"

- Select with the Button „Browse…" the folder in which you want to save the FRIWO SDK. We recommend the default folder under C:\ Click „Next"

- Now we are ready to install. Confirm the installation with „Next". A progress bar shows you the progress of your installation.
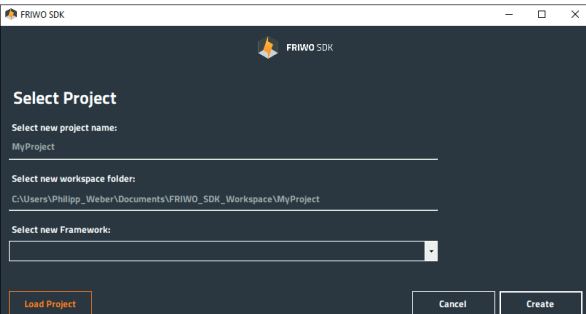

- Now, your installation was successfull. You can close the Installtion Wizard with „Close".

LICENSING

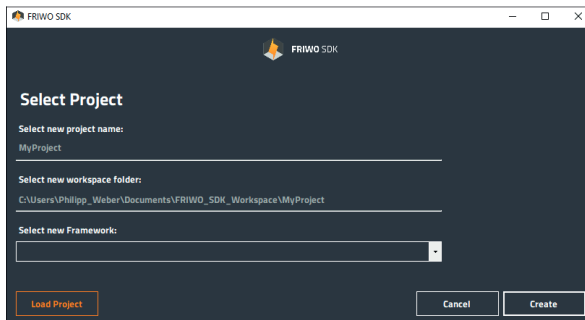**Follow the step by step instruction to unlock your copy of the FRIWO SDK.**

- At the first start you will be asked to fill in the license request form. Enter your user data carefully you need a valid project code for registration.

- After you have entered all data, you must first confirm your eMail address. We will send you an activation code by eMail, which you have to enter finally. This way we make sure that we can contact you - don't worry, we don't send newsletters or SPAM-mails to this address.

- Your request will be processed within 48h.

- If you don't receive an eMail or if you want to correct your registration data, you can restart the FRIWO SDK and resubmit the license request form after revising it.

- Once your license request has been processed, you will receive an eMail informing you that your activation was successful. If your registration data is incomplete, please correct it.

- As soon as your license request has been approved, you can start the FRIWO SDK for the first time. At the first start FRIWO SDK loads additional data, therefore an online connection is required!
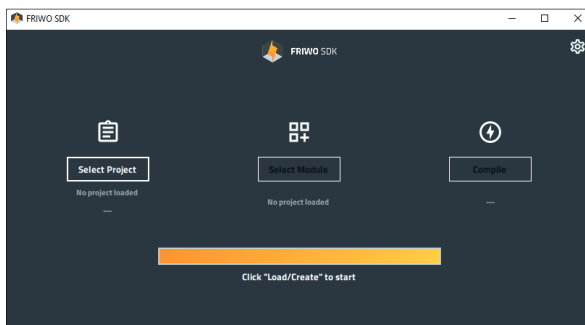

- After the successful registration of your FRIWO SDK, you will see the project creation view. In the next chapter, we will explain how to build your first own firmware.
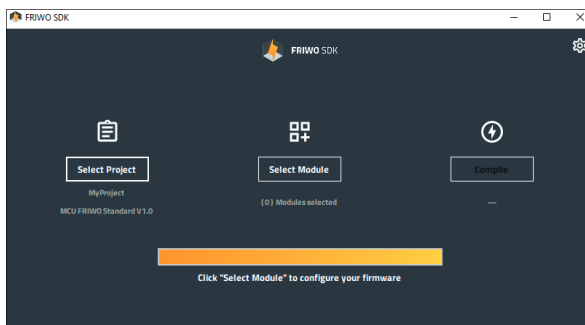
BUILD YOUR FIRST FIRMWARE

If you start the FRIWO SDK for the first time, there is no project selected. In projects we save all information about your **selected Device, Framework version and where your workspace is located**. With a double-click on the project file (.sdkproj), you launch your project directly inside FRIWO SDK.

- At the first start, the FRIWO SDK will automatically open the project selection view, so that you can easily create your project. Type in the name of your new project (default: MyProject)

- Select the workspace folder (Default selection recommended)

- Select new Framework e.g. MCU FRIWO Standard V1.0

- Click "Create" – Now a new project is created for you, using the select Framework and stored inside the selected workspace

- Additional information: If you have no project selected, the FRIWO SDK won't work. You always have to work inside projects. After a restart, your last project is automatically selected.
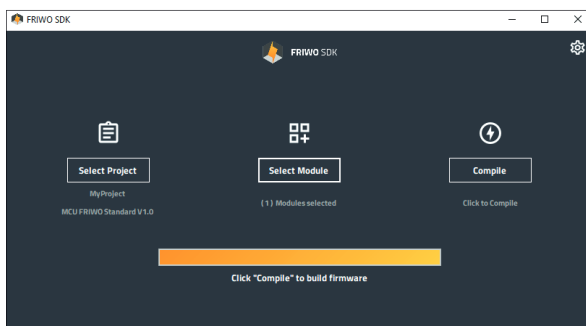

- After the successful creation of your project, you will be redirected to the main view. You can always create new projects, by clicking on "Select Project".
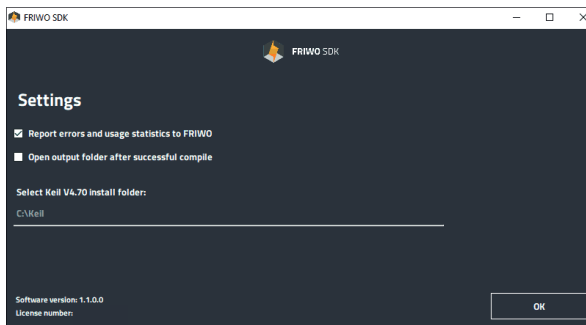

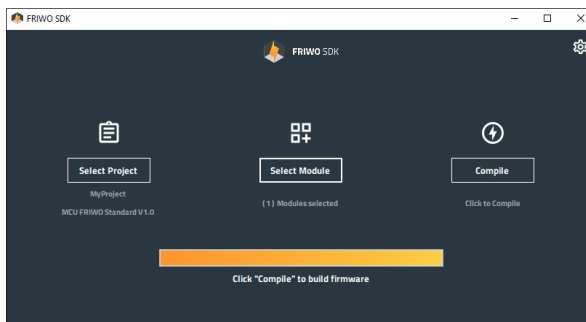- Now click "Select Module", in order to select the modules that you want to customize.

- Select the little checkbox on the left, to select that you want to customize the TRQ_DES or CAN Module and confirm the pop-up. Click "OK" to continue.
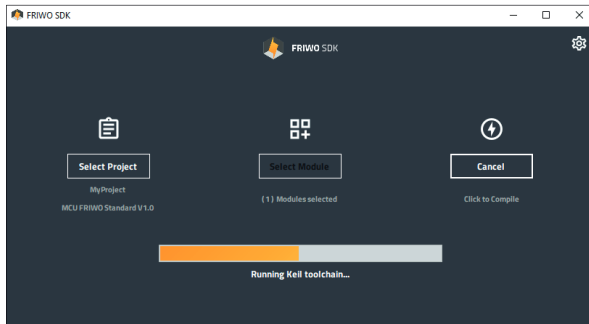

- Click on the top right corner on the settings button, to go to the settings.
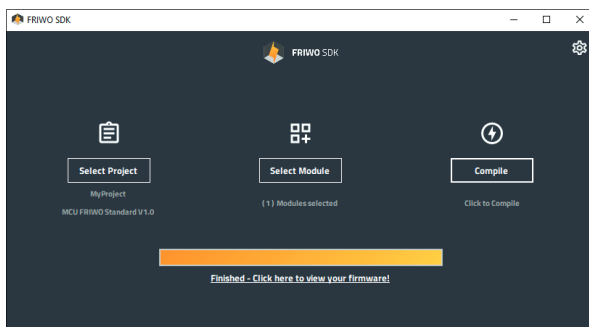

- Now you have to select your Keil Compiler path. Normally Keil is located under C:\Keil. Press "OK" to go back to the main view.

- Click "Compile" to start the compilation process of your first project.

- The compilation process will take up to 1 minute. Please be patient. You can aboard the compilation process at any time, with the Button „Cancel".

- **CONGRATULATION – You just built your own Software!**

  By clicking on the underlined text below the progress bar, you can see where your compiled Firmware is stored. In the settings, you can automatically open the folder, after the successful built.

- The next step would be, to flash your customized Firmware onto your device. To learn how to do that, **please visit our Website.**

  https://friwo.link/qs/enable-tool

Now you can start developing by your own! Enjoy it!

As next step, we recommend to go through our step by step **Application Guide**, which shows you how to implement your own hill assist software for eScooters.

https://friwo.link/qs/application-guide

Feedback

We are working very hard to improve our products and therefore **feedback** is indispensable! Please send us your valuable feedback as contact form or via Mail to feedback@friwo.com

https://friwo.link/qs/feedback