MATLAB R2017a FRDM-K64F Simulink Guide

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1 Installing NXP FRDM-K64F Board Simulink Support Package

To use the FRDM-K64F board with Simulink you have to install the support package. You can do that by going into MATLAB then ***{Add-Ons -> Get Hardware Support Packages}***, then search for **Simulink Coder Support Package for NXP FRDM-K64F Board**. After that it's easy to follow through the installation process.

NOTE: Make sure you install ***Kinetis SDK 1.2.0 mainline release*** and not the newer ***KSDK 1.3.0*** to avoid any issues that may occur. Also make sure to pick the ***Segger's J-Link OpenSDA V2 firmware*** and then install the necessary software to support it.

2 Segger's J-Link OpenSDA V2 firmware

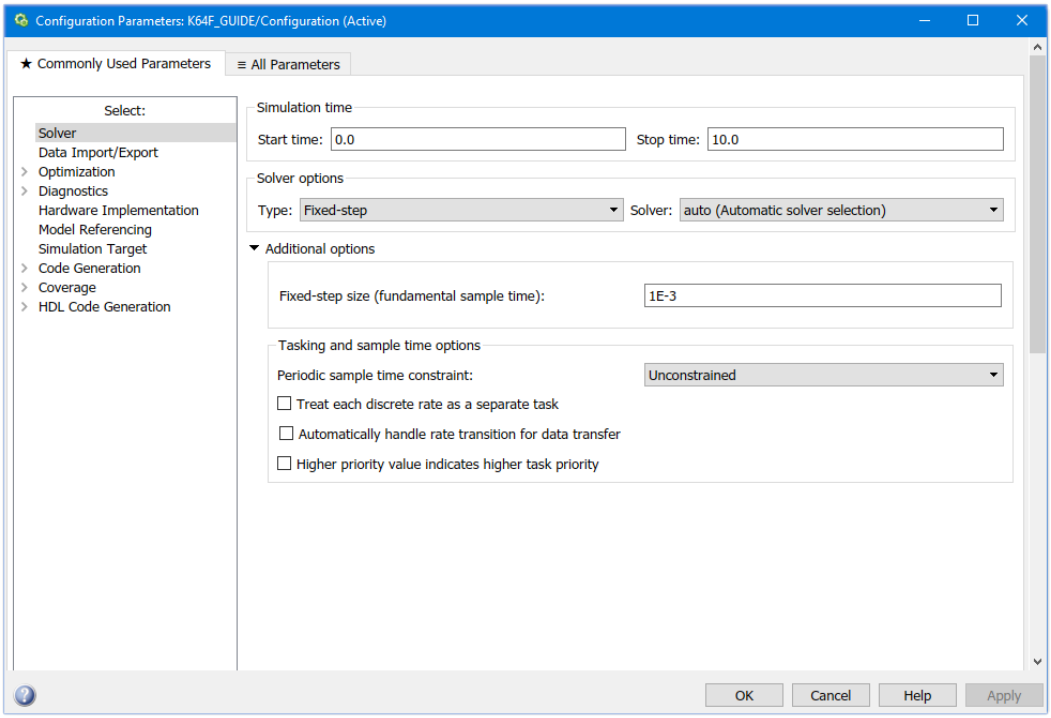
To download Segger's J-Link OpenSDA V2 firmware for NXP FRDM-K64F Board follow the link `https://www.segger.com/downloads/jlink/OpenSDA_FRDM-K64F` and save the firmware binary file *"02_OpenSDA_FRDM-K64F.bin"* anywhere on your computer. To install the firmware hold the reset button on the K64F Board and then plug in the USB cable to your computer. A drive called **BOOTLOADER** should pop-up. Navigate to the **BOOTLOADER** drive and drag and drop the firmware binary file *"02_OpenSDA_FRDM-K64F.bin"* onto the **BOOTLOADER** drive. After the file finishes copying unplug the board and then plug it back in.

3 Simulink Model Basic Configuration

Simulink Embedded Coder generates C and C++ code from Simulink Models for use on Embedded Processors. And before we get started with using the code generator, everytime we create a new Simulink model we have to configure our Simulink model to generate code for the FRDM-K64F board. In order to do that, we have to first go to the **"Model Configuration Parameters"** window either by opening it up from ***{Simulation -> Model Configuration parameters}*** or by using the keyboard shortcut *CTRL+E* on Windows. Another way to get there is to click on the blue text in the bottom right of the simulink model and then clicking on the gear icon that shows up on the small box. Once open, use the following configurations:

3.1 Solver

In **Solver options**, for **type** choose ***Fixed-step*** and leave **Solver** on auto.



3.2 Fixed-step Size

Fixed-step size (Fundamental Sample Time) is a parameter used to specify the resolution of timing in the simulation typically less than or equal to the lowest tolerance in the model. For example, if you wanted to deliver a pulse every 1000 milliseconds with a tolerance of +- 1 milliseconds you have to choose a fixed-step size <= 1ms. You can change that by going to Solver options, expanding Additional options then changing the Fixed-step size to the desired step size in seconds.

3.3 Hardware Implementation

For Hardware Board choose NXP FRDM-K64F and leave the other options in default for now.