

The contained sample code is meant to provide a basic understanding of the implementation of FUTEK's .DLL file in Simulink. It is not intended to perform data logging functions.

REQUIREMENTS

- Microsoft® .NET Framework 4.0 or higher
- MATLAB® R2013a or higher
- MATLAB® Coder
- Simulink® R2013a or higher
- Simulink® Desktop Real-Time™ Library (this allows Simulink to move in real time)
- FUTEK USB .DLL File (included in the example folder)

RESTRICTIONS

Due to the use of the FUTEK .NET .DLL library for our instruments, the blocks must be run with Interpretative Compilation to support these extrinsic functions (<https://www.mathworks.com/help/simulink/ug/calling-matlab-functions.html>). As a result, code generation is limited and can only be used on platforms with MATLAB/Simulink installed.

HOW TO USE

Our Simulink example uses a MATLAB System Block to implement the methods in our .DLL file. This keeps all the variables self-contained as an object.

Our example has three parts, the RTC block, the FUTEK Instrument Block, and a Scope. The RTC block forces Simulink to step in real time, instead of stepping as fast as possible to get all the data for the given time interval. The FUTEK Instrument Block links to code in the USB_Sensor_Simulink_Object.m file in the example folder. The scope records the output from the sensor.

To use:

1. Open the USB_Example_Simulink.slx file.
2. Once the model loads, make sure Simulink is operating out of the folder containing the USB_Example_Simulink.slx, USB_Sensor_Simulink_Object.m, and FUTEK_USB_DLL.dll files.
3. Double click on the FUTEK Instrument Block. If the Block asks for an .m file to be linked to the block, navigate to the USB_Example_Simulink folder and select USB_Sensor_Simulink_Object.m in the window that appears.
4. Double click on the FUTEK Instrument Block.
 - a. In the window that pops up, put the serial number for your instrument into the serial number box.
 - b. Click "Apply" and then "OK".
5. Set your simulation time and click Run
6. At the end of the simulation, double click on the scope to see the recorded sensor output

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