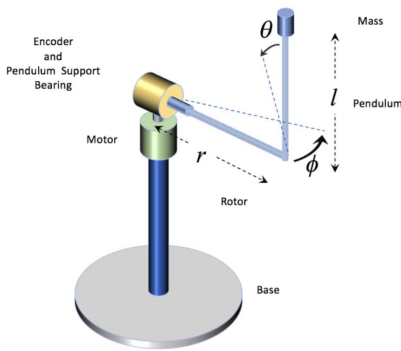


## Firmware for STEVAL-EDUKIT01 evaluation kit for education on motor control and control systems



### Features

- Digital stepper motor control:
  - Phase current limit/control
  - Adjustable motor speed
  - Fully protected power stage
- Interfaces:
  - Bidirectional UART over USB
  - Magnetic quadrature rotary encoder interface
- Framework:
  - Allows experimenting with different motor control strategies
  - Allows experimenting with advanced control algorithms

### Description

The **STSW-EDUKIT01** firmware allows testing of the **STEVAL-EDUKIT01** rotary inverted pendulum kit and embeds the software for the **X-NUCLEO-IHM01A1** stepper motor expansion board included in the kit.

The firmware allows correct configuration of the rotary encoder parameters for the stepper motor included in the **STEVAL-EDUKIT01** interface via dedicated timers.

It also performs closed loop system control through the STM32 ARM-Cortex M4 microcontroller on the **NUCLEO-F401RE** development board.

The firmware includes a bidirectional UART interface to send operating parameters to a PC and to receive commands to change system operation and configuration.

A dedicated Matlab user interface is also provided to help you modify the motor control parameters according to specific rotor response characteristics.

The educational set, with real-time Matlab viewer and interface, helps you build your understanding of ARM-based embedded architecture (**STM32CubeIDE**), stepper motor control and real-time systems based on proportional, integral, derivative (PID) control, as well as more advanced techniques such as State Space or State Space with linear quadratic regulator (LQR).

A further set of open source tutorials and training material is at your complete disposal at [www.st.com/motorcontrol-edu](http://www.st.com/motorcontrol-edu).

Product summary	
Firmware for STEVAL-EDUKIT01 evaluation kit for education on motor control and control systems	<a href="#">STSW-EDUKIT01</a>
Evaluation kit for education on motor control and control systems	<a href="#">STEVAL-EDUKIT01</a>
STM32 Nucleo-64 development board with STM32F401RE MCU	<a href="#">NUCLEO-F401RE</a>
Stepper motor driver expansion board based on L6474 for STM32 Nucleo	<a href="#">X-NUCLEO-IHM01A1</a>
Open source graduate level educational material and application examples	<a href="http://www.st.com/motorcontrol-edu">www.st.com/motorcontrol-edu</a>
Applications	<a href="#">Factory Automation</a> <a href="#">Industrial Motor Control</a>

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
15-Apr-2020	1	Initial release.

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