

## Evaluation kit for education on motor control and control systems



### Features

- Rotary inverted pendulum kit for education
- Included stepper motor and quadrature rotary encoder
- Low cost and easy to assemble interlocking acrylic frame
- Included power supply (100-240 V): 12 V, 1 A
- Based on the [NUCLEO-F401RE](#) development board
- [X-NUCLEO-IHM01A1](#) expansion board with [L6474PD](#) microstepping motor driver
- Open source educational material available

### Description

The [STEVAL-EDUKIT01](#) is designed to represent a complex, non-linear and unstable oscillator for university-level robotics projects. It consists of a transparent structure holding a free-swinging pendulum, whose movement has to be stabilized by a stepper motor with feedback from a high performance rotary encoder reading the pendulum angle.

The [STSW-EDUKIT01](#) firmware includes critical, high-speed algorithms that interpret encoder data and allow the stepper motor to counter the movement of the pendulum so that it remains vertical.

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	
Evaluation kit for education on motor control and control systems	<a href="#">STEVAL-EDUKIT01</a>
Firmware for STEVAL-EDUKIT01	<a href="#">STSW-EDUKIT01</a>
Stepper motor driver expansion board based on L6474 for STM32 Nucleo	<a href="#">X-NUCLEO-IHM01A1</a>
STM32 Nucleo-64 development board with STM32F401RE MCU	<a href="#">NUCLEO-F401RE</a>
Applications	<a href="#">Factory Automation</a> <a href="#">Industrial Motor Control</a>

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
04-Mar-2020	1	Initial release.

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