

## Three-phase motor driver software expansion for STM32Cube

Application	MotorControl
Middleware	MC_6Step_Lib    UART_serial_com
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-IHM16M1 (Move-Actuate)
	STM32 Nucleo development board



### Features

- Sample application to drive a three-phase brushless motor, managing a single driver (STSPIN830) and an STM32 Nucleo expansion board (X-NUCLEO-IHM16M1).
- GPIO, PWM and IRQ configuration
- API function available to send any application command to the motor driver
- User interface utility based on PC terminal to control the motor
- Speed control through potentiometer
- Motor control by user button
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

### Description

The X-CUBE-SPN16 is an expansion software package for STM32Cube. The software runs on the STM32 Nucleo providing management of STSPIN830 to control three-phase brushless DC motors. The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software comes with a sample implementation driving a three-phase brushless DC motor, with BEMF sensing.

It is compatible with the NUCLEO-F030R8, NUCLEO-F302R8, NUCLEO-F303RE or NUCLEO-F401RE development boards when connected to an X-NUCLEO-IHM16M1 expansion board.

The package contains a user interface layer enabling real-time transmission of data to a PC through the terminal.

Product summary	
Three-phase brushless DC motor driver software expansion for STM32Cube	X-CUBE-SPN16
Three-phase brushless DC motor driver expansion board based on STSPIN830 for STM32 Nucleo	X-NUCLEO-IHM16M1
Three-phase brushless monolithic motor driver	STSPIN830
STM32 Nucleo development board	STM32 Nucleo

## 1 What is STM32Cube?

---

STM32Cube™ is designed by STMicroelectronics to reduce development effort, time and cost across the entire STM32 portfolio.

STM32Cube version 1.x includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.
- A comprehensive embedded software platform specific to each series (such as the STM32CubeF4 for the STM32F4 series), which includes:
  - the STM32Cube HAL embedded abstraction-layer software, ensuring maximized portability across the STM32 portfolio
  - a consistent set of middleware components such as RTOS, USB, TCP/IP and graphics
  - all embedded software utilities with a full set of examples

### How does this software complement STM32Cube?

This software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. The package extends [STM32Cube](#) by providing a board support package (BSP) for the [X-NUCLEO-IHM16M1](#) expansion board based on the [STSPIN830](#).

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access functions and data associated with the three-phase brushless DC motor driver.

The software package includes a sample application for driving a three-phase brushless motor using the user button of the [STM32 Nucleo](#) board or the user interface utility based on PC terminal.

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
18-May-2018	1	Initial release.

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2018 STMicroelectronics – All rights reserved