

Low voltage three-phase brushless DC 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-IHM17M1 (Ilove-Actuate)
	STM32 Nucleo development board



Features

- Sample application to drive a low voltage three phase brushless motor, managing an [STSPIN233](#) (single driver) and an [X-NUCLEO-IHM17M1](#)
- Sample implementation available on the [X-NUCLEO-IHM17M1](#) expansion board plugged on top of a [NUCLEO-F030R8](#), [NUCLEO-F103RB](#), [NUCLEO-F302R8](#) or [NUCLEO-F401RE](#) board
- Timer to generate step clock and voltage reference
- Management of parameters like minimum and maximum speed, direction etc.
- 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-SPN17](#) is an expansion software for STM32Cube. The software runs on the [STM32 Nucleo](#) providing management of [STSPIN233](#) to control low voltage 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 low voltage three-phase brushless DC motor, with BEMF sensing.

It is compatible with [NUCLEO-F030R8](#), [NUCLEO-F103RB](#), [NUCLEO-F302R8](#) and [NUCLEO-F401RE](#) boards when connected to one or more [X-NUCLEO-IHM17M1](#) expansion boards.

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

Summary table	
Low voltage three-phase brushless DC motor driver expansion board based on STSPIN233 for STM32 Nucleo	X-NUCLEO-IHM17M1
Low voltage three phase and three sense motor driver	STSPIN233
STM32 Nucleo development board	STM32 Nucleo

1 Detailed description



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-IHM17M1](#) expansion board based on the [STSPIN233](#).

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access functions and data associated with the low voltage 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
06-Feb-2017	1	Initial release.

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