

# STSPIN250 low voltage brush DC motor driver software expansion for STM32Cube

Application	Example for one brush DC motor
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-IHM13A1
	STM32 Nucleo development board NUCLEO-F401RE, NUCLEO-F334R8, NUCLEO-F030R8, NUCLEO-L053R8



## Features

- Driver layer for complete management of the **STSPIN250** low voltage brush DC motor driver
- Example for controlling one bidirectional brush DC motor
- Easy portability across different MCU families, thanks to **STM32Cube**
- Free user-friendly license terms

## Description

The **X-CUBE-SPN13** software expansion for **STM32Cube** allows complete management of the **STSPIN250** for control of brush DC motors. It is built on **STM32Cube** software technology for easy portability across different STM32 microcontrollers.

The software comes with a sample implementation to drive a bidirectional brush DC motor with a **NUCLEO-F401RE**, **NUCLEO-F334R8**, **NUCLEO-F030R8** or **NUCLEO-L053R8** development board connected to an **X-NUCLEO-IHM13A1** expansion board.

Product summary	
Low voltage brush DC motor driver software expansion for STM32Cube	X-CUBE-SPN13
Low voltage brush DC motor driver expansion board based on STSPIN250 for STM32 Nucleo	X-NUCLEO-IHM13A1
Low voltage brush DC motor driver	STSPIN250
STM32 Nucleo-64 development board with STM32F401RE/ STM32F334R8/ STM32F030R8/ STM32L053R8 MCUs	NUCLEO-F401RE/ NUCLEO-F334R8/ NUCLEO-F030R8/ NUCLEO-L053R8
Applications	Brushed Motor Industrial Tools

## 1 Detailed description

### 1.1 What is STM32Cube?

**STM32Cube** is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- **STM32CubeMX** configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- **STM32CubeIDE** integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- **STM32CubeProgrammer** programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- **STM32CubeMonitor** family of tools (**STM32CubeMonRF**, **STM32CubeMonUCPD**, **STM32CubeMonPwr**) to help developers customize their applications in real-time
- **STM32Cube MCU and MPU packages** specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- **STM32Cube expansion packages** for application-oriented solutions

### 1.2 How does this software complement STM32Cube?

The proposed 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 STM32 expansion board based on the **STSPIN250**.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access functions and data of the low voltage brush DC motor driver. It features:

- configuration of the **STSPIN250** (bridges input and enabling signals)
- flag interrupt handling (overcurrent and thermal alarm reporting)
- handling of one bidirectional Brush DC motor
- **STM32 Nucleo** and expansion board configuration (GPIOs, PWMs, IRQs, etc.)

The software package includes a sample application for driving a bidirectional brush DC motor via the user button on the **STM32 Nucleo** development board.

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
30-Nov-2016	1	Initial release.
18-May-2021	2	Updated cover page image and description. Added cover page product summary table.

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