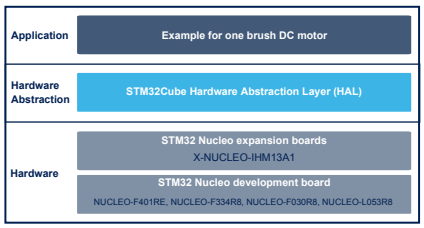
X-CUBE-SPN13

Data brief

STSPIN250 low voltage brush DC motor driver software expansion for STM32Cube



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.