

Low voltage stepper motor driver software expansion for STM32Cube

Application	Example for 1 stepper motor
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-IHM06A1
	STM32 Nucleo development board NUCLEO-F401RE, NUCLEO-F334R8, NUCLEO-F030R8, NUCLEO-L053R8



Features

- Driver layer for complete management of the **STSPIN220** low voltage stepper motor driver integrated in the **X-NUCLEO-IHM06A1** expansion board
- Speed profile and step resolution management
- Fault interrupt handling
- Application example for a single stepper motor driving
- Easy portability across different MCU families, thanks to **STM32Cube**
- Free, user-friendly license terms

Description

The **X-CUBE-SPN6** expansion package for **STM32Cube** gives you full control of the **STSPIN220** stepper motor driver.

It is built on top of **STM32Cube** software technology for easy portability across different STM32 microcontrollers.

When combined with one or more **X-NUCLEO-IHM06A1** expansion boards, this software allows a compatible **STM32 Nucleo** development board to control one or more stepper motors.

The software comes with a sample implementation for one low voltage stepper motor. It is compatible with **NUCLEO-F401RE**, **NUCLEO-F334R8**, **NUCLEO-F030R8** or **NUCLEO-L053R8** development boards with an **X-NUCLEO-IHM06A1** expansion board mounted on top.

Product summary	
Low voltage stepper motor driver software expansion for STM32Cube	X-CUBE-SPN6
Low voltage stepper motor driver expansion board based on STSPIN220 for STM32 Nucleo	X-NUCLEO-IHM06A1
Low voltage stepper motor driver	STSPIN220
STM32 Nucleo-64 development board with STM32F401RE/ STM32F334R8/ STM32F030R8/ STM32L053R8 MCUs	NUCLEO-F401RE/ NUCLEO-F334R8/ NUCLEO-F030R8/ NUCLEO-L053R8
Applications	Stepper 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?

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 STM32 expansion board based on the [STSPIN220](#).

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access low voltage stepper motor driver functions and data.

It features:

- read and write of device parameters
- GPIO, PWM and IRQ configuration
- micro-stepping, direction position, speed, acceleration, deceleration and torque controls
- automatic full-step switch management
- high impedance or hold stop mode selection
- enable and standby management
- fault interrupt handling

The software package includes an application example to help you to get started.

Revision history

Table 1. Document revision history

Date	Version	Changes
01-Jul-2016	1	Initial release.
18-May-2021	2	Updated all content to reflect new software release.

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