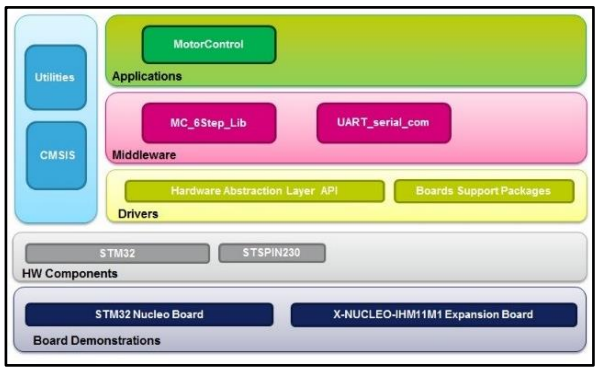
X-CUBE-SPN11

Low voltage three-phase brushless DC motor driver software expansion for STM32Cube

Data brief



Features

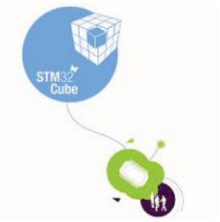
- Sample application to drive a low voltage three phase brushless motor, managing an X-NUCLEO-IHM11M1 board on top of a NUCLEO-F401RE board
- Timer to generate step clock and voltage reference
- Management of parameters like minimum and maximum speed, direction etc.
- GPIO, PWM and IRQ configuration
- 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-SPN11 is an expansion software for STM32Cube. The software runs on the STM32 Nucleo providing management of STSPIN230 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 preconfigured for a NUCLEO-F401RE board connected to an X-NUCLEO-IHM11M1 expansion board, but can be easily ported across different MCU families, thanks to STM32CUBE.

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



What is STM32Cube?

STMCube™ 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-IHM11M1 expansion board based on the STSPIN230.

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
25-Aug-2016	1	Initial release.
21-Apr-2017	2	Updated cover page description.

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