

Firmware for STEVAL-PTOOL1V1 BLDC motor control reference design board

User interfaces and utilities	Motor Control	
Applications & demonstrations	MC_6Step_Lib	
Hardware Abstraction	Hardware Abstraction	Board Support Package
Hardware	STSPIN32F0B	
	STEVAL-PTOOL1V1	

Features

- Sample application to drive a low voltage, 3-phase brushless motor using the STEVAL-PTOOL1V1 motor control board
- Timer to generate PWM phase driving signals and current reference
- Management of parameters such as minimum and maximum speed and direction
- GPIO, PWM and IRQ configuration
- Speed control through potentiometer
- Motor positioning detection through Hall sensors reading and decoding
- Motor control by trigger switch
- Free, user-friendly license terms

Description

The [STSW-PTOOL1V1](#) firmware provides low voltage three-phase brushless DC motor control with the [STEVAL-PTOOL1V1](#) reference design board based on the advanced [STSPIN32F0B](#) BLDC controller with STM32 MCU.

The package includes a sample implementation to drive a BLDC motor with Hall sensors position feedback. It is preconfigured for a trapezoidal driving technique and speed loop with constant PWM duty cycle, known as voltage mode. External potentiometer support allows run-time variation of the target speed.

This software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. Motor parameters, speed loop controller parameters and Hall sensors decoding table values are easily accessed and edited in the user configuration file.

The package can be easily downloaded onto the STSPIN32F0B controller via SWD connection.

Product summary	
Reference design based on STSPIN32F0B for power tools driven by LV BLDC motors	STEVAL-PTOOL1V1
Reference firmware for low voltage three-phase brushless DC motors with STEVAL-PTOOL1V1	STSW-PTOOL1V1
Advanced single shunt BLDC controller with embedded STM32 MCU	STSPIN32F0B
Applications	Power Tools

Revision history

Table 1. Document revision history

Date	Version	Changes
28-Sep-2020	1	Initial release.

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