

STM32 PMSM FOC Software Development Kit

Data brief

Features

- Single/Dual simultaneous vector control (FOC).
- Motor Profiler and one Touch Tuning for a fast startup of unknown motors.
- Current reading topologies supported:
 - 1 shunt resistor;
 - 3 shunt resistors;
 - 2 ICS (isolated current sensor).
- Speed/position sensors (Encoder and Hall) as well as sensorless operation (State observer, High frequency Injection HFI, On-the-Fly startup for fans) are supported.
- Speed and torque control.
- Wide range of STM32 microcontrollers supported, the full list is detailed in RN0085, available on www.st.com.
- Full customization and real time communication through PC software ST MC Workbench:
 - New project creation starting from the board.
- Motor control algorithms implemented for specific applications like Maximum Torque Per Ampere (MTPA), Flux Weakening and more.
- Firmware ANSI C, MISRA compliant.

Description

ST's STM32 offers the performance of the industry-standard Cortex[®]-M core at the service of vector (or field-oriented) control (FOC) algorithms, widely used in high-performance drives.

The STM32 PMSM FOC SDK (STSW-STM32100), which includes the PMSM FOC FW library and ST MC Workbench, allows the user to evaluate the STM32 performance in applications driving single or dual Field Oriented



Control of 3-phase Permanent Magnet motors (PMSM, BLDC).

STM32 PMSM FOC SDK is part of ST's motor control ecosystem which offers a wide range of hardware and software solutions for motor control applications.

ST MC Workbench is a PC software which reduces the design effort and time in the STM32 PMSM FOC firmware library configuration. The user, through a graphical user interface (GUI), generates all parameter header files which configure the library according to the application needs and can in real time monitor and change some variables of the algorithm.

1 Ordering information

The STM32 PMSM FOC SDK is available for free, it can be downloaded from STMicroelectronics website www.st.com.

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
14-Feb-2014	1	Initial release.
22-May-2014	2	STM32 PMSM FOC SDK becomes a software package and includes the PMSM FOC FW library and ST MC Workbench.
15-May-2015	3	Updated <i>Features</i> and Disclaimer.
03-Sep-2015	4	Updated <i>Features</i> .

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2015 STMicroelectronics – All rights reserved

