X-CUBE-MCSDK
X-CUBE-MCSDK-FUL

STM32 MC SDK software expansion for STM32Cube

Features

- Single/Dual simultaneous field-oriented control (FOC)
- Motor profiler and One-touch tuning for a fast startup of unknown motors
- Simplified firmware architecture based on the STM32Cube HAL/LL libraries
- Current reading topologies supported:
    - 1 shunt resistor
    - 3 shunt resistors
    - 2 ICS (Isolated Current Sensor)
- Speed/position sensors (Encoder and Hall) as well as sensor-less operation (state observer) supported
- On-the-fly startup for fans
- Speed and torque control
- Motor control algorithms implemented for specific applications, among them MTPA (maximum torque per ampere), Flux weakening, Feed forward and Start-on-the-fly
- Full customization and real time communication through STM32 Motor Control Workbench PC software
    - New project creation starting from the board
    - Workflow supporting the STM32CubeMX GUI configurator
    - Wide range of STM32 microcontrollers supported

STM32 Motor Control SDK
Plug-and-Spin with STM32Cube

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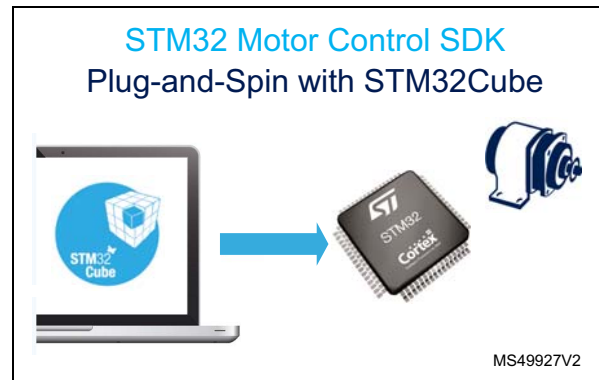
STM32 MC SDK (motor control software development kit) firmware (X-CUBE-MCSDK and X-CUBE-MCSDK-FUL) includes the Permanent-magnet synchronous motor (PMSM) firmware library (FOC control) and the STM32 Motor Control Workbench (to configure the FOC firmware library parameters), with its graphical user interface (GUI).

STM32 Motor Control Workbench is PC software that reduces the design effort and time needed for the STM32 PMSM FOC firmware configuration.

The user generates a project file through the GUI, and initializes the library according to the application needs. Some of the variables of the algorithm being used can be monitored and changed in real time.

Description

STM32 microcontrollers offer the performance of the industry-standard Arm[®] Cortex[®]-M cores running either Vector control or FOC modes, widely used in high-performance drives for air conditioning, home appliances, drones, building and industrial automation, medical and e-bike applications.

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1 Ordering information

STM32 MC SDK firmware (X-CUBE-MCSDK and X-CUBE-MCSDK-FUL) is available for free download from the *www.st.com* website.

2 License

X-CUBE-MCSDK and X-CUBE-MCSDK-FUL are delivered under the *Mix Ultimate Liberty + OSS + 3rd party V1* license.

The software components provided in this package come with different license schemes, as shown in *Table 1*. For more details, refer to the license agreement of each component.

Table 1. Software component license agreements

Software component		Owner	License
ST Motor Profiler	Utilities/PC_Software/STMotorProfiler	STMicroelectronics	Binary Image
ST MC Workbench	Utilities/PC_Software/STMCWB		Binary Image
ST MC FOC FW	Middlewares/ST/MotorControl		Ultimate Liberty (source release)

The X-CUBE-MCSDK/X-CUBE-MCSDK-FUL expansion package runs on STM32 32-bit microcontrollers, based on Arm® Cortex®-M processors.

3   Revision history

Table 2. Document revision history

Date	Revision	Changes
08-Mar-2018	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY