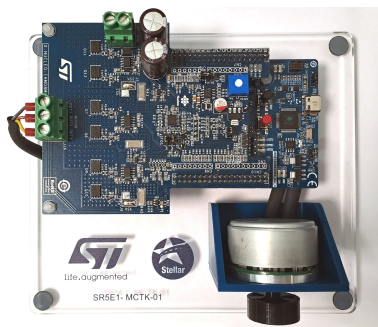


SR5E1-Motor control toolkit using FOC library for three-phase low voltage motor evaluation



Product status link

[SR5E1-MCTK-01](#)

Product summary

Order code	SR5E1-MCTK-01
Reference	Evaluation kit integrating

Features

- SR5E1-EVBE3000D board
 - Discovery board based on the SR5E1E3 automotive microcontroller based on high-performance 32-bit Arm® Cortex® M7 automotive MCU 2x cores, 2 MB flash, rich analog, high-resolution timer, HSM, ASIL-D in an eTQFP100 package
 - The board integrates a programmer/debugger that allows debugging and programming the microcontroller via USB cable.
 - In addition, it allows enabling a UART communication channel (USB virtual COM port)
 - Dedicated connectors to plug ARDUINO® UNO-compatible shields
- X-NUCLEO-IHM08M1 board
 - 3-phase driver board for BLDC/PMSM motors
 - The nominal operating voltage ranges from 10 V to 48 VDC
 - 15 ARMS output current
 - Hall/Encoder motor sensor connector and circuit
 - Potentiometer available for speed regulation
 - Based on the STL220N6F7 STripFET F7 power MOSFET
- SR5E1-MCTK-LIB
 - SR5E1 BLDC/PMSM field oriented control (FOC) library
 - Single motor vector control
 - Current reading topologies supported:
 - 2 shunt current sensing on motor legs
 - 2 ICS in inverter phase
 - Speed/position sensors (resolver, encoder, and Hall) and sensor-less operation (state observer) are supported
 - Speed and torque control.
 - The motor control library is fully integrated into the StellarStudio software development environment with graphic configuration
 - A set of demo is already available for the StellarStudio
 - Compliancy with FreeGCC, HighTech, and IAR compiler
 - Communication with motor control live monitor (LM) to real-time live monitoring of the motor control library variables

Description

The **SR5E1-MCTK-01** is a motor control kit composed of the SR5E1-EVBE3000D board and the X-NUCLEO-IHM08M1 board together with the field-oriented control library (FOC) (SR5E1-MCTK-LIB), and monitoring tool (live monitor).

This platform provides a motor-control solution for three-phase motors, particularly suitable for developing permanent magnet synchronous motors (PMSM) and brushless DC (BLDC) motors.

The kit includes a 24 V, 65 W motor to simplify the set-up time.

The software is a key component of the platform and the package includes the motor control library, capable of driving single FOC 3-phase permanent magnet motors for ICS or 2-shunt current sensing topology power stage while managing HALL, encoder, and resolver sensors as well as sensor-less algorithm configuration. A helpful plug-in configurator fully integrated into an <https://www.st.com/en/development-tools/stellarstudio.html> open development environment helps and guides the users to find the best setting in terms of control efficiency and performances based on the target platform and application.

Using a live monitor (LM), users can visualize motor speed and power, and change firmware settings at runtime, such as amplification gain or PI parameters. It is also possible to get the last diagnostic from the drivers on the power stage.

Demo applications are available to speed up the development and prototyping of new motor control applications.

Revision history

Table 1. Document revision history

Date	Revision	Changes
04-Dec-2025	1	Initial release.

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