SPC5-MCTK-01

SPC5 Motor Control Tool Kit for SPC560P and L9907

Data brief

Features

- Motor Control Toolkit
  - Complete Automotive Hardware and Software Bundle
  - Single motor vector control (field-oriented Control - FOC)
  - Speed and Torque control
  - Current reading topologies:
    - 1-shunt
    - 2 shunt current sensing (on motor phases and inverter legs).
  - Speed/position sensors (Encoder, Hall) and sensor-less operation (State observer)
  - Motor control algorithms implement
    - Max Torque Per Ampere, Flux Weakening and Feed Forward
- Hardware
  - SPC560P 32-bit Automotive Microcontroller
  - L9907 FET driver support
  - 24V, 4800RPM, 65W motor included (Nanotec DF45)
- Firmware
  - Based on SPC5-MCTK-LIB library for automotive motor control
  - ANSI C with MISRA check compliancy with Compliancy with FreeGCC, Hightec and Green Hills compilers
  - SPC5 Motor Control Live Monitor (LM) to Realtime live monitoring the SPC5 Library Control Variables
  - SPC5Studio integration of SPC5-MCTK-LIB with graphic configuration

Table 1. Device summary

Order code	Reference
SPC5-MCTK-01	Evaluation Kit integrating SPC560P-DISP EVAL-L9907 SPC5-MCTK-LIB
SPC5-MCTK-LIB	Motor Control Software Library

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1 Description

The SPC5-MCTK-01 Automotive Motor Controller Toolkit bundles combines both SPC560P automotive microcontroller the L9907 driver and is now available for purchase on the st.com website, together with the Field Oriented Control library (SPC5-MCTK-LIB) and monitoring tools. The kit includes a 24V, 64 Watt motor to simplify the set-up time.

The hardware is made of SPC560P-DISP MCU platform and EVAL-L9907 evaluation boards and inverter.

Software is a key component of the platform and the library is designed for flexibility and ease of integration into multiple SPC5 automotive microcontroller platform. Today both automotive microcontrollers SPC560P and SPC56EL are supported.

The software package includes:

The motor control library, capable to drive single or dual Field Oriented Control (FOC) 3-phase Permanent Magnet motors for single and 2-shunt 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 SPC5Studio Open Development Environment that helps and guide user to find the best setting in terms of control efficiency and performances based on the target platform and application.

SPC5 Motor Control Live Monitor to visually check and control the motor, change on-fly control algorithm parameters (such as: amplification gain, reference speed) for a fine tune configuration

Demo Application examples are available for SPC560P, L9907, STGAP1AS and L99ASC03G.

Embedded software library and plug-in configurator can easily be installed as additional component on a new or pre-installed SPC5Studio environment. Together with the Live Monitor it allows to reduce the design effort in motor control application set up. Demo application examples, and a full documentation package, complete the offer.

2 Revision history

Table 2. Document revision history

Date	Revision	Changes
27-Nov-2017	1	Initial release.
14-Sep-2018	2	Updated cover page.

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