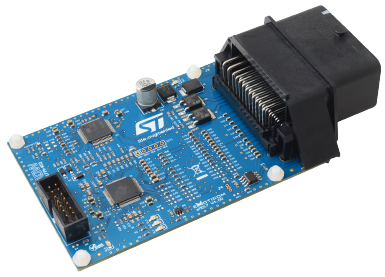
SPC5-L9177A-K02

Data brief

Small Engine EFI (Electronic Fuel Injection) Reference Design



Product status link
SPC5-L9177A-K02

Features

- **SPC572L64F2** 32-bit Power Architecture MCU for Automotive Powertrain Applications with high performance programmable timer GTM v101
- **L9177A** Automotive peripheral on chip for Small Engine control
- **Small Engine Application SW**: Basic fuel injection control for mono cylinder engine 4-stroke 250cc displacement with one injector and inductive coil 18-1 toothed wheel with air temperature, water temperature, barometric pressure compensation and basic calibration integrated
- JTAG Port
- 2 injectors / 2 coils drivers
- 3 relay outputs
- O2 Sensor Heater driver
- 1 High Side output
- Tachometer output signal
- Variable Reluctance Sensor conditioning circuit
- MIL output
- +5V ref for external sensors
- Stepper motor driver
- Inputs for HEGO, IAT, ECT, IPS and TPS sensors
- CAN and K-Line interface
- KEY switch function for power-off control
- 4 reserved digital inputs
- 4 reserved analog inputs
- STWD100 watchdog timer
- 3 general purpose LEDs
- 16 MHz crystal
- Board size 100 x 70 mm

Description

The SPC5-L9177A-K02 provides a reference design to evaluate a complete solution to control one or two-cylinders internal combustion engine for Small Engine Application (e.g. small motorcycle, portable generator, agriculture, nautical engines).

The solution enables to drive all the relevant loads used in one/two cylinders small engine applications (such as injectors, relay, stepper motor, tachometer), to interface with Variable Reluctance Sensors, in order to monitor diagnostic functionalities and interact with the main networks present in powertrain environment (K-Line).

This reference design is matching the most relevant emission control norms such as EURO4, EURO5, Bharat Stage VI, China V and China VI.

The board is provided with an automotive 48-pole connector and all channels are protected against short circuit and over-temperature condition.

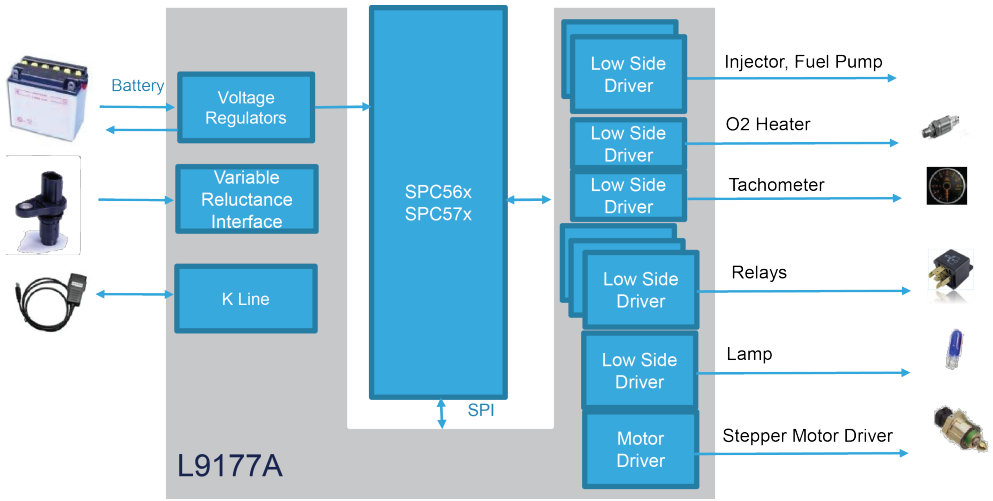
Free ready-to-run reference design examples are available inside SPC5Studio (www.st.com/spc5studio) to support quick evaluation and development for basic mono-cylinder engine.

SPC5Studio includes a “visual configuration code generation engine”, board support package (BSP), start-up routines, interrupt services and a full set of low-level drivers.

SPC5Studio is available for free download.

1 Block diagram

Figure 1. Block diagram



2 System requirements, HW and SW resources

2.1 System requirements

- Windows PC (Windows 7, Windows 10)
- +12V power supply from external battery for vehicles or Power Supply Unit.

2.2 Development toolchain

- SPC5Studio

2.3 Demonstration software

- Software can be configurated easily for your application with SPC5Studio.

3 Board distribution

The board is distributed through Arrow Electronics (https://www.arrow.com/en/products/spc5-l9177a-k02/arrow-development-tools).

Revision history

Table 1. **Document revision history**

Date	Version	Changes
04-Jul-2019	1	Initial release.
17-Sep-2019	2	Minor text changes.

Contents