Small Engine Control Module

SECM70

Applications

The SECM70 is part of the engine management system for mobile industrial (forklift) and stationary (genset) applications. This could include 4- & 6-cylinder, 4-stroke LPG/gasoline forklift applications, and 4- & 6-cylinder, 4-stroke genset applications.

The module is capable of full authority digital engine control consisting of fuel, spark, and air delivery to the engine. Additional inputs and outputs are available to control other system functions, as defined by software.

Description

The SECM70 is part of the MotoHawk® Control Solutions family of products. These products enable rapid development of control systems. The combination of off-the-shelf hardware and MotoHawk software allows developers to focus on the operational specifics of the application without worrying about the design details of the hardware. The result is that the same hardware used in development and prototyping efforts can be used for ongoing production.

This unit provides 70 connector pins with inputs, outputs, and communications interfaces that support a wide variety of applications.

Each controller is available in 'F' (Flash) or 'C' (Calibratible) versions. Flash modules are typically used for production purposes. Calibratible modules are typically for prototyping/development only; they can be calibrated in real time using MotoTune® or ToolKit.

Physical Dimensions

Approximate dimensions: 190 mm x 150 mm x 47 mm

Environmental Capabilities

The following is a summary list of the environmental limits used for design validation.

Operating Voltage	8–32 Vdc
Operating Temperature	–40 to +105 °C / –40 to +221 °F
Storage Temperature	–40 to +105 °C / –40 to +221 °F
Mechanical Vibration	RV3 (22.1 Grms)
Mechanical Shock	50 g, 11 ms, half-sine wave, 4 shocks in each direction (24 total shocks)
EMI/RFI Specification	SAE J1113-41 (Radiated and Conducted Emissions) SAE J1113-13 (ESD) SAE J1113-21 (Radiated RF Immunity) SAE J1113-11 (Transient Testing)

To assure that the SECM70 will perform as required, Woodward needs to review and approve the actual production environmental conditions to which it will be exposed.

Reference Product Manuals: 26776 (SECM70 Hardware User Manual)
26784 (SECM70 Installation)

- 70 pin platform
- Microprocessor: ST SPC563M64, 80 MHz
- Memory: 1.5 M flash, 94 K RAM, 16 K serial EEPROM
- Calibratible Memory: additional 32 K serial EEPROM
- Operating Voltage: 8–32 Vdc, 36 V (jump start), 5.5 V (crank)
- Operating Temperature: –40 to +105 °C

Inputs:

- VR or digital crank position sensor
- Digital cam position sensor
- Up to 14 analog
- Up to 5 digital (4 switch, 1 speed)
- Up to 2 switch-type oxygen sensors
- Optional wide-range oxygen sensor
- Up to 2 knock sensors

Outputs:

- 6 high-impedance injector drivers (up to 4 low-impedance injector drivers)
- Up to 8 electronic spark-triggers for smart ignition coils
- 9 low-side drivers, 3 lamp drivers
- 1 main power relay driver to power engine electrical components
- Up to 2 H-bridge drivers for electric throttle and actuators
- Optional 3-phase brushless DC motor driver
- 1 sensor supply (5 V) output

Communications:

- 2 CAN 2.0b channels

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Woodward has company-owned plants, subsidiaries, and branches, as well as authorized distributors and other authorized service and sales facilities throughout the world. Complete address / phone / fax / email information for all locations is available on our website.

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