

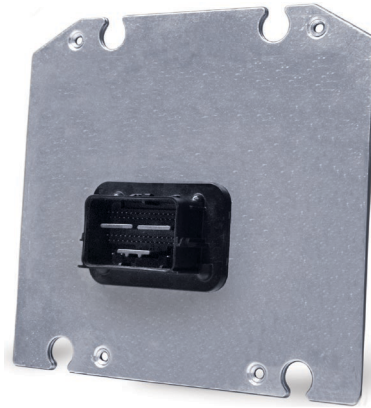
# Small Engine Control Module

## SECM70

### Applications

The SECM70 is part of the engine management system for mobile industrial (forklift) and stationary (genset) applications. This could include 4- and 6-cylinder, 4-stroke LPG/gasoline forklift applications, and 4- and 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' (Calibratable) versions. Starting with MY17 hardware, the Calibratable hardware is offered for production purposes. The Flash modules are inactivated over preference for the Calibratable version.

### Physical Dimensions

Approximate dimensions: 190 mm x 150 mm x 47 mm

### Environmental Capabilities

The environmental limits used for design validation are summarized below.

Operating Voltage	8–32 Vdc
Operating Temperature	-40 °C to +105 °C (-40 °F to +221 °F)
Storage Temperature	-40 °C to +105 °C (-40 °F 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	CISPR 25 (Radiated & Conducted Emissions) ISO 7637-2 (Conducted Transient Testing) ISO 10605 (ESD) ISO 11452-4 (Conducted Immunity) ISO 11452-2 (Radiated Immunity) ISO 7637-3 (Transient Immunity)
ROHS	2011/65/EU

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: 35088 (SECM70 Hardware User Manual)  
26784 (SECM70 Installation)

- 70-pin platform
- Microprocessor:  
ST SPC5642A, 120 MHz  
ST SPC5634M, 80 MHz
- 5642A Memory: 2.0 M flash,  
128K RAM, 16K serial  
EEPROM
- 5634M Memory: 1.5 M  
flash, 94 K RAM, 16 K serial  
EEPROM
- Calibratable memory:  
34K FLASH
- Operating voltage:  
8–32 Vdc, 36 V (jump start),  
5.5 V (crank)
- Operating temperature:  
-40 °C to +105 °C

#### Inputs:

- VR or digital crank position sensor
- Digital cam position sensor
- Up to 16 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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