

# APECS® 4000

APECS 4000 expands Woodward's line of programmable engine governors to address the needs of the stationary and mobile equipment industry. Enhanced input and output capability, combined with a flexible configuration, permits APECS 4000 to easily adapt to a wide variety of engine governing applications.



### Features:

- User selectable isochronous or droop governing
- Analog input suitable for many uses:
  - Pedal position sensor with idle verification switch
  - Remote speed adjustments
  - Trim potentiometer
- Two switched inputs allow user to:
  - Program up to four discrete speeds and set ramp rates between speeds, or
  - Manually increase or decrease speed at preset rates with variable speed control
- PTO enable switch to select between pedal input and speed switches in mobile applications
- User selectable engine protection switch input (high coolant temperature, low oil pressure)
- Compatible with Woodward proportional actuators
- Auxiliary output configurable in several ways:
  - Engine shutdown
  - Crank disable
  - Remote status lamp
  - Autocrank
  - PTO enabled lamp
- User-friendly calibration tool:
  - Programmable PID gains
  - Programmable speed setpoints, ramp rates
  - Easy to calibrate using APECS start-up wizard
  - Graphical or numerical real time display
- Current protection limits current to the actuator to protect from overheating
- Status lamp (LED) signals normal engine running condition and diagnostics including overspeed and underspeed
- Sealed, tamper-resistant enclosure, chemical resistant to most automotive oils and liquids

### Order Information:

#### APECS 4000

ORDER NO.	Model	Speed Signal Input	External Switch Connection
SA-4467	4100	Magnetic Pickup	Switch Activated to Battery Positive
SA-4468	4200	Spark Ignition	Switch Activated to Battery Positive
SA-4469	4300	Magneto Ignition	Switch Activated to Battery Positive
SA-4470	4400	Hall Effect Sensor	Switch Activated to Battery Positive

#### APECS Calibration Tool

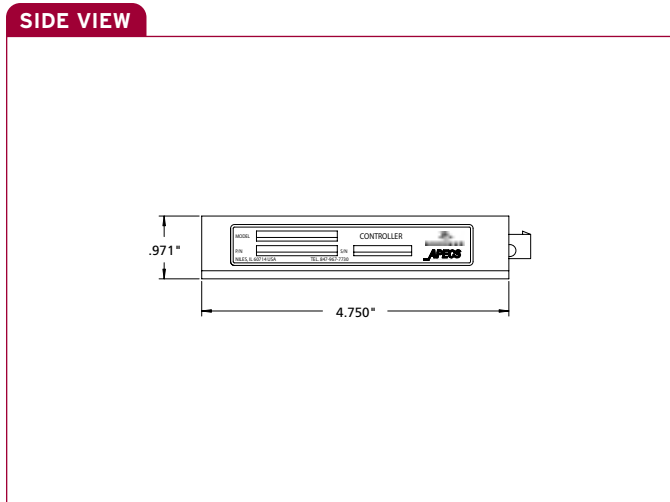
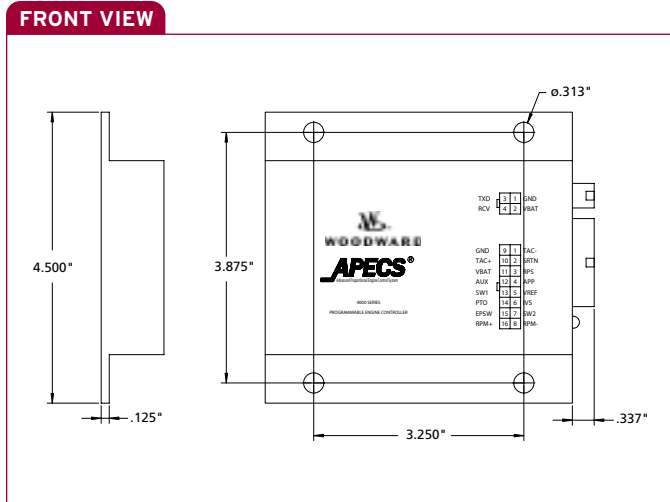
ORDER NO.	Model	Description
SA-4475	ACT Kit	For all Series 4000 controllers, includes interface module, program diskette, RS-232 cable, and User's Manual. (Computer not included)
SA-4473	Connector Kit*	For all controllers

\*Connector kit contains Molex mating connector shell and terminals.

E.E.C. Directive Compliance: All parts supplied by Woodward are classified as components, and therefore are not "CE" marked. Please contact factory direct for details on specific product compliance with 89/336/EEC and 89/392/EEC directives.

# APECS® 4000

## Dimensions:



## Typical Applications

- Power Generation
- Automotive
- Marine
- Construction
- Industrial
- Agriculture/Forestry

## Electrical Specifications:

Supply Voltage	9-30 VDC, negative ground. Reverse polarity protected
Switch Inputs	Two switch inputs, pre-programmable to select up to four speeds PTO switch Engine protection switch
Speed Sensing	Magnetic pickup input, Ignition input, Magneto input, Hall effect sensor
Shock	20 G's peak @ 45 Hz
Vibration	6 G's from 40-2000 Hz
Electromagnetic Interface (EMI)	30V/m 20-1000M Hz

## Mechanical Specifications:

Connector	Molex part no. 39-30-1160 Mates with Molex part no. 39-01-2160 (not supplied with controller) Terminals required 16 AWG part no. 39-00-0078 18-24 AWG part no. 39-00-0039
External Analog Input	Trim, set speed with pot and drive-by-wire with IVS option
Output to Actuator	Pulse width modulated 8 A maximum
Temperature	-40°F to 185°F (-40°C to 85°C)
Weight	1.18 lb (0.54 kg)
Calibration	Requires interface adapter and software for calibration setup

APECS® Controllers

Specifications are for reference only.



**WARNING:** An overspeed shutdown device, independent of the APECS system, should be provided to prevent loss of engine control that may cause personal injury or equipment damage.