

## L-Series

### Integrated Engine Speed Control

#### Description

The Woodward L-Series Integrated Engine Control System is the first engine speed control to deliver so much in a package this compact.

It can also deliver a big savings in production and field support. Since the L-Series Control System is microprocessor-based, it can easily be programmed to match the operating parameters of every engine you produce. The L-Series offers speed control with software-selectable speed setpoints, dynamics, fuel limiting, and start/stop behavior. All it takes is a PC and a simple, plug-in download on your production line.

With many built-in functions, this microprocessor-based speed control allows a high-volume OEM or packager to stock one part number, but implement a wide variety of engine control strategies by configuring the four auxiliary inputs at their factory.

Besides the traditional bracket mount using external linkage, the L-Series Control System is available in a variety of mechanical configurations, including one integrated into a rotary diesel fuel pump and one integrated with a throttle body or a throttle body and mixer (product spec 03222). The externally mounted systems can be configured for clockwise or counter-clockwise (standard) shaft rotation for increasing fuel.

The L-Series control's high-efficiency torque motor delivers 0.34 N·m (0.25 lb-ft) nominally over 60° travel range to operate fuel or air control devices (see specifications for torque performance over the full product temperature range).

Other L-Series control features:

- state-of-the-art speed sensing and control algorithms
- comprehensive diagnostics for easy troubleshooting
- end-of-line programmability simplifies inventory
- optional transient smoke limiter for turbocharged diesel engines
- customer configurable auxiliary inputs available on board to match your specific application
- optional mounting kits for Stanadyne DB-series or Delphi DP200 & DP210 fuel injection pumps provides integrated control solution
- speed setpoint adjustment using Idle/Rated1/Rated2, Raise/Lower, and external analog settings
- dual sets of speed dynamics can be set by engine speed, discrete input, or even an external signal



- Low cost engine control
- Fully integrated actuator and speed control
- Small package—greater design flexibility
- Suitable for gasoline, gaseous, and diesel fueled engines
- Microprocessor-based
- Tamper-resistant
- Easy setup and tuning using PC-based Service Tool
- Discrete output driver for fault indication
- Voltage output for throttle position indication
- Configurable I/O

Flexible design. More intelligent engine control. Streamlines production process.

### Specifications

Power Supply	12/24 volt system, 10 to 32 Vdc
Power Consumption	Reverse polarity protection, 32 W max
Torque	Nominal: 0.34 N·m (0.25 lb-ft) at 25 °C Maximum Transient (at 105 °C): 0.20 N·m (0.15 lb-ft) Minimum Continuous (at 105 °C): 0.14 N·m (0.10 lb-ft)
Dimensions (WxHxL)	75.7 x 88.4 x 111.3 mm (2.98 x 3.48 x 4.38 in.)
Weight	425 g (15 oz)
Connector	12-pin Deutsch connector (DT06-12SA-P012)

### Control Characteristics

Speed Input and Range	Magnetic pickup or ignition coil MPU input: 1–12 000 Hz, 1–720 teeth, 1 Vrms min. IGN input: 1–480 Hz, 1–20 cylinders with rated speed up to 4000 rpm Target speed: programmable Speed range: programmable
-----------------------	--

Steady State Speed Regulation

Fuel Type	Gasoline	Diesel	Gaseous
MPU input	±0.35%	±0.25%	±0.35%
Ignition input	±0.50%	n/a	±0.50%

### Functions/Auxiliary Inputs

Function Options	Isochronous Speed (50 or 60 Hz); Two or Three Speed; Droop; Start Fuel Limiter; Load Sharing; Dual Dynamics; Adjustable Max Fuel Stop; Manifold Air Pressure Biased Fuel Limiter; Cold Start Timer
Programming Port I/O	Programmable with Windows GUI software (9927-1222) and harness (8923-1061) 0–5 V throttle position indication Discrete out for fault indication 4 aux inputs, configurable functions

### Environment

Operating Temperature	–40 to +105 °C (–40 to +221 °F)
Storage Temperature	–40 to +125 °C (–40 to +257 °F)
EMC	EN61000-6-2: Immunity for Industrial Environments EN61000-6-4: Emissions for Industrial Environments SAE J1113-21: Radiated Immunity (100 V/m) SAE J1113-11: Conducted Transient Immunity – Pulse 5b, Suppressed Load Dump (45 V)
Humidity	US MIL-STD 810E, Method 507.3, Procedure III
Shock	MS1-40G 11 ms sawtooth
Vibration	Random: 0.3 G <sup>2</sup> /Hz, 10–2000 Hz (22.1 Grms) 3 h/axis Sine: 5 G 2.5 mm peak-to-peak, 5–2000 Hz, 3 h/axis, 90 min dwells, 1 octave/min
Thermal Shock	SAE J1455, Paragraph 4.1.3.2
Fluid Resistance	IP56 per EN60529

### Compliance

CE	Compliant with EMC Directive 89/336/EEC
Other	Compliant as a component with Machinery Directive 98/37/EC
CSA	Class I, Division 2, Groups A, B, C, D T3C These listings are limited only to those units bearing the CSA agency identification.

Technical Manual 26250



PO Box 1519, Fort Collins CO, USA 80522-1519  
1000 East Drake Road, Fort Collins CO 80525  
Tel.: +1 (970) 482-5811 • Fax: +1 (970) 498-3058  
[www.woodward.com](http://www.woodward.com)

#### Distributors & Service

Woodward has an international network of distributors and service facilities. For your nearest representative, call the Fort Collins plant or see the Worldwide Directory on our website.

This document is distributed for informational purposes only. It is not to be construed as creating or becoming part of any Woodward contractual or warranty obligation unless expressly stated in a written sales contract.

Copyright © Woodward 2000–2009, All Rights Reserved

For more information contact: