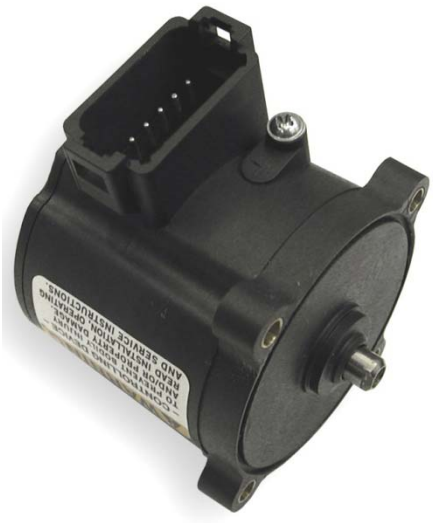
L-Series

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	Programmable with Windows GUI software (9927-1222) and harness (8923-1061)
I/O	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^2/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.

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WOODWARD

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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.

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