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
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

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Gaseous</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPU input</td>
<td>±0.35%</td>
<td>±0.25%</td>
<td>±0.35%</td>
</tr>
<tr>
<td>Ignition input</td>
<td>±0.50%</td>
<td>n/a</td>
<td>±0.50%</td>
</tr>
</tbody>
</table>

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**
  - 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 G²/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

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