

## L-Series Position Controller

### Applications

The L-Series Position Controller provides a building block approach to total engine management. The microprocessor-based bi-directional actuator design easily attaches to fuel pumps, mixers, or throttle bodies.

### Description

The L-Series Position Controller accepts a position command and drives the 0–60 degree output shaft to the commanded position based on an internal shaft position sensor. The 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).

The L-Series Position Controller accepts either a PWM, 0–5 V, or CAN command for output positioning. The command signals are issued by the appropriate supervisory engine management system, and the L-Series must be set up properly in software to expect the correct signal for the application.

For status purposes, a relay driver output is available on the L-Series control which changes state whenever a fault or error condition is experienced by the controller.

The L-Series provides a direct position output signal in the form of a dc voltage if required by the system. The throttle position (TPS) output represents full counterclockwise-to-clockwise rotation of the actuator shaft, and thus gives the operator an external position indication.

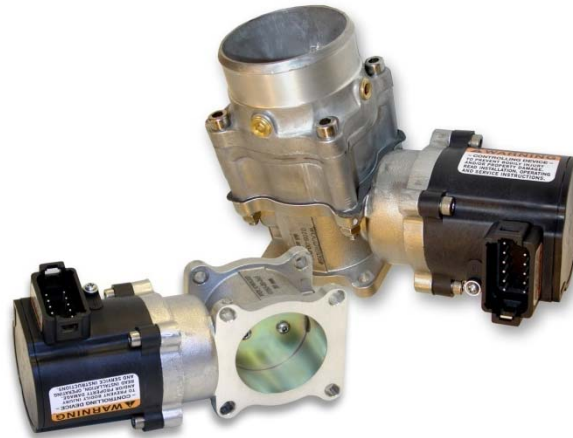
Besides the traditional bracket mount using external linkage, the L-Series control is available in a variety of mechanical configurations, including integration with diesel fuel pumps, throttle bodies, and mixers (product spec 03222). The shaft rotation can be configured for clockwise or counterclockwise rotation for increasing fuel. For information on Woodward throttle body applications, refer to manual 26249 (ITB and LC-50).

Woodward offers optional mounting kits for Stanadyne DB-series or Delphi fuel injection pumps, providing an integrated control solution.

Woodward also offers L-Series actuator versions for Speed Control (manual 26250) and Process Control (manual 26251), like Air/Fuel Ratio control, applications.

To learn more about the new L-Series actuators, contact Woodward today.

**Technical Manual** 26237 (standard) or 26289 (w/ CAN)



- Low cost, small package actuator
- Extremely fast, bi-directional, electronically positioned in both directions
- All-electric actuator requires no drive or hydraulic supply
- 60° (±2°) rotary output
- Single or redundant position command signals
- Advanced diagnostics
- Tamper-resistant
- Configurable parameters to tailor to varied applications
- Easy setup and tuning using PC-based Service Tool
- Optional CANopen and J1939 CAN communications

# Specifications

Power Supply	12/24 V systems (10–32 Vdc) reverse polarity protection
Power Consumption	32 W maximum
Envelope	2.618" x 2.618" x 2.540" (66.50 x 66.50 x 64.52 mm)
Travel	60 ±2 degrees
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)
Mass/Weight	425 g (15 oz)
Command Input	PWM (5–32 V, 300–1500 Hz), CAN, or Analog (0–5 V)
Position Feedback Output	0.75 V (full ccw) to 4.25 V (full cw)
Discrete Input	Optional Run Enable
Discrete Output	Low side output driver; software configurable
Programming Port	Programmable with Windows® GUI software (9927-1222) and harness (8923-1061)

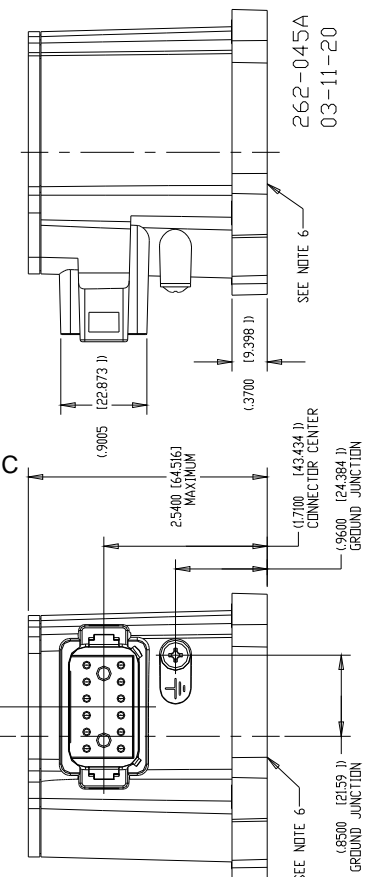
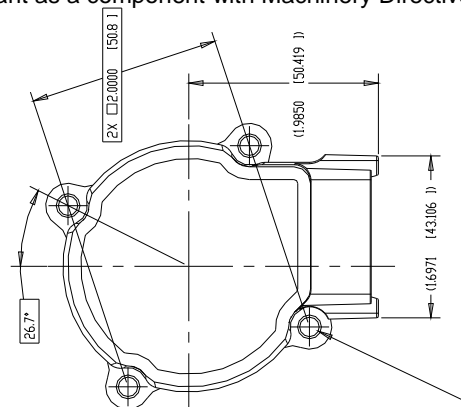
## Performance

Positioning Accuracy	±2% at 25 °C
Slew Time 10%–90%	±4% (analog), ±3.6% (PWM), ±3% (CAN)—over temp. range
Roll-off	33 ms, 1% overshoot, 10 ms settling time 32 Hz (–6 dB at ±0.5% Input), 8 Hz (–3 dB at ±2% input)

## 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 11ms 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

CSA	Class I, Division 2, Groups A, B, C, D T3C
CE	Compliant with EMC Directive 89/336/EEC
Other	Compliant as a component with Machinery Directive 98/37/EC



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