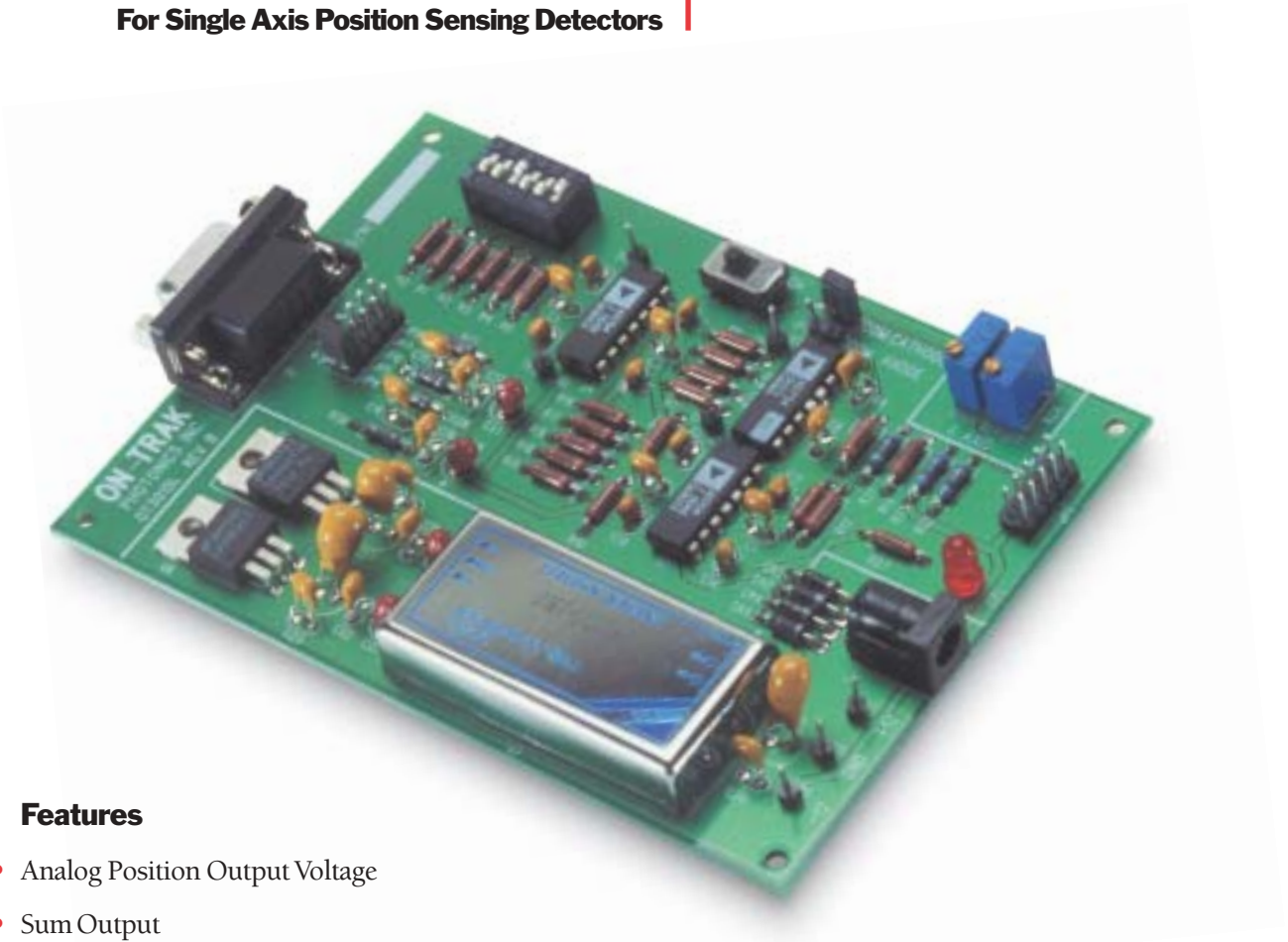


OEM Position Sensing Amplifier

For Single Axis Position Sensing Detectors



Features

- Analog Position Output Voltage
- Sum Output
- Wide Dynamic Range — Three Decades
 10^3 V/A, 10^4 V/A, 10^5 V/A
- DC to 15kHz
- Calibration Adjust
- Zero Offset Adjust
- Automatic Detector Bias
- Position Independent of Beam Intensity



The OT-301SL comes standard with the following items:

1. OT-301SL Amplifier
2. Input DB9 cable
3. Output ribbon cable
4. Power Supply
5. User's Manual

OT-301SL General Description

The OT-301SL printed circuit board amplifier is designed for direct integration into OEM instrumentation. Optimized for single-axis Position Sensing Detectors (PSDs) with selectable bias voltages and three gain ranges, the OT-301SL's circuit elements add, subtract and divide signals with exceptional accuracy.

Precision op amps and resistor networks perform addition and subtraction operations; optimized analog dividers provide the final ratio. The analog divider ensures the utmost in linearity over a very wide signal range.

The final stages provide $\pm 10\%$ reading adjustment of the position output and serve as a high performance output buffer for driving long cables. The sum signal equals the total detector signal and is proportional to the incident beam power.

The OT-301SL includes a DC-DC converter that can be removed and replaced with an external power source for reducing cost in high-volume OEM applications.

Beam position is calculated from the ratios of signals generated by the PSD's two anode connections (designated Y1 and Y2). Dual transimpedance amplifiers on the OT-301SL accurately measure the PSD's anode signal currents.

The exact relationship between PSD signal and beam position is as follows:

$$Y = \left(\frac{Y1 - Y2}{Y1 + Y2} \right) \frac{L}{2}$$

where Y is the coordinate of the centroid of the beam spot on the PSD surface (measured from the detector center); and L is the size of the detector's sensitive surface in mm (e.g.: 2.5, 5.0, 10, 20, 30 mm).

Specifications

Detector Type	Single Axis Position Sensing Detectors Anode Outputs (Common Cathode) Cathode Outputs (Common Anode) Bi-Cell (Common Anode or Cathode)
Input Sensitivity	10^{-3} A/V, 10^{-4} A/V, 10^{-5} A/V
Y Output Signal	0V to ± 10 V
Sum Output Signal	10V max
Calibration Adjust	$\pm 10\%$ of reading
Y Zero (offset)	± 1.0 V
Bias Voltage	0V, ± 5 V, or ± 12 V
Linearity	$\pm 0.1\%$
Channel to Channel Tracking	1%
Power AC Adapter	± 12 V DC @ 500mA
Size	3.5 x 5.0 inches
Input Connector	Receptacle DB9
Output/Power Connector	Dual Row 10 PIN Header