POSITIONING TOOLS & MODULES — ON-TRAK | LASER ALIGNMENT SOLUTIONS

peo PHOTONICS

Table of contents

On-Trak **3**

Position Sensing Amplifier For Duolateral PSDs (OT-301DL) 4
Position Sensing Amplifier For Single Axis PSD (OT-301SL) 5
Display Module (OT-302D) 6
Position Sensing Amplifier (OT-301) 7
Collimated Laser Diode Module (CPS-180) 8
Position Sensing Modules (PSM) 9
High Speed Position Sensing Module (SPC PSM) 11
High Speed Position Sensing Amplifier (OT-100) 12

Partner On-Trak

ON-TRAK Photonics, Inc.

Product offering

Position Sensing Amplifier For Duolateral PSDs (OT-301DL)

Position Sensing Amplifier For Single Axis PSD (OT-301SL)

Display Module (OT-302D)

Position Sensing Amplifier (OT-301)

Collimated Laser Diode Module (CPS-180)

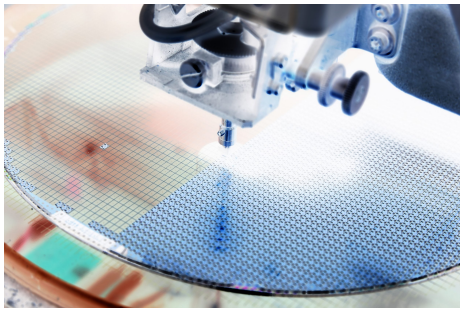
Position Sensing Modules (PSM)

High Speed Position Sensing Module (SPC PSM)

High Speed Position Sensing Amplifier (OT-100)

Position Sensing Amplifier For Duolateral PSDs (OT-301DL)

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



Precision op amps and precision resistor networks provide the final ratio. The analog dividers provide the utmost in linearity over a very wide signal range.

The final stages provide +10% reading adjustment of the X and Y outputs 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-301DL 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 ratio of signals generated by the PSD's two cathode connections (designated X1 and X2) and two anode connections (Y1 and Y2). Four transimpedance amplifiers on the OT-301DL accurately measure all cathode and anode signal currents.

Key Features:

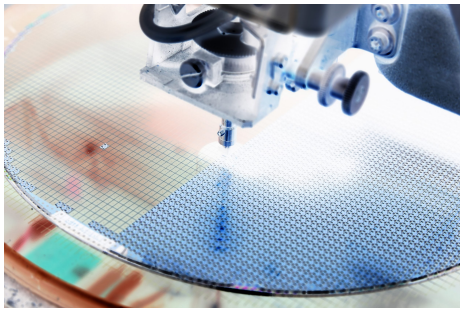
- X, Y Analog Position Output Voltage
- Sum Output
- Wide Dynamic Range — Three Decades 103V/A, 104V/A, 105V/A
- DC to 15kHz
- Calibration Adjust X, Y
- Zero Offset Adjust X, Y
- Automatic Detector Bias
- Position Independent of Beam Intensity

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

For more information, simply complete the contact form, and a member of our team will be in touch shortly.

Position Sensing Amplifier For Single Axis PSD (OT-301SL)

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 analogue divider ensures the utmost in linearity over a very wide signal range.

The final stages provide ±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: the total detector signal and is proportional to the incident beam power.

Key Features:

- Analog Position Output Voltage
- Sum Output
- Wide Dynamic Range – Three Decades 103V/A, 104V/A, 105V/A
- DC to 15kHz
- Calibration Adjust
- Zero Offset Adjust
- Automatic Detector Bias
- Position Independent of Beam Intensity

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

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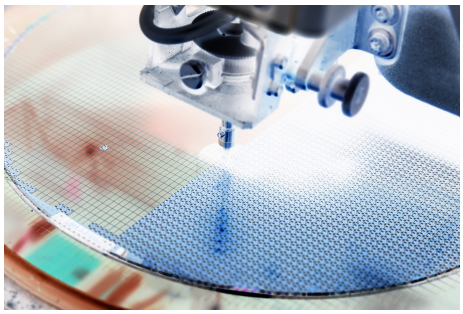
Display Module (OT-302D)

The OT-302D Display Module brings a new level of ease and sophistication to display and analysis of position sensing data collected from the OT-301 Position Sensing Amplifier. Utilize the module in three ways: as a standalone readout system, in tandem with Beamtrak data processing software (included), or with user-programmable routines via RS-232 communication.



The OT-302D is an ideal stand alone display. The simple two-button front panel allows you to quickly set-up the OT-302D for your individual measurement applications. Press both buttons simultaneously to enter the configuration mode. Select the size of your position sensing detector, measurement units, and display update speed. Press the FAST / SLOW button to exit. The OT-302D is ready to display position data.

Key Features:

- LCD Display of Absolute Position
- LCD Backlight
- X, Y Position and Sum Display
- Metric (mm) or English (in)
- RS-232 Interface
- Push Button Zero Offset
- Computer Controlled or Stand Alone
- Front Panel Push Button Control
- High Resolution 0.1 Micron (0.0001″)
- Display Update Control 0.1 To 25.5 Second Update Speed
- Calibration Features for all Size Detectors
- Fast/Slow Averaging

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

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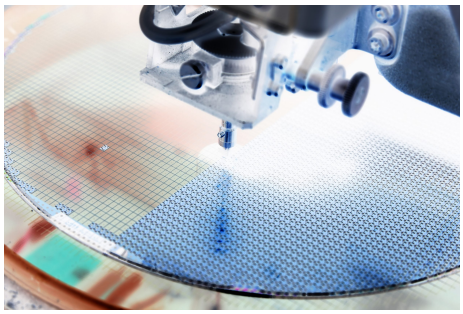
Position Sensing Amplifier (OT-301)

The OT-301 Position Sensing Amplifier is the easiest, most precise way to process the current output from any position sensing detector (PSD) on the market.



Truly plug-and-play, the OT-301 eliminates the hassle of having to design and build a custom amplification solution. Simply plug in the detector, switch on the power, and you’re ready to go.

The benefit is greater convenience, efficiency and productivity and 100% compatibility with your future position sensing needs. The OT-301 pays for itself in no time.

From laser beam alignment, to beam centering, to mirror stabilization, the OT-301 is ideal for one- and two-dimensional absolute optical positioning or precision centering and nulling requirements. Read the X-Y position output and SUM output from duolateral, tetralateral, single axis, quadrant and bi-cell PSDs.

Four transimpedance amplifier channels and precision signal processing electronics deliver the performance necessary for close-tolerance angle, surface uniformity, flatness, parallelism and straightness measurement.

The photocurrent generated from the position sensing detector is processed by the four-channel amplifier system using a position sensing algorithm. The result is X and Y analog outputs that are directly proportional to beam position-independent of changes in beam intensity.

Key Features:

- X, Y Analog Position Output Voltages
- Sum Output
- Wide Dynamic Range: 0.1 µA to 1.5 mA
- DC to 15kHz
- Compatible With All Position Sensing Detectors
- Zero Offset/Nulling
- Calibration Adjust
- Automatic Detector Bias
- Position Independent of Beam Intensity

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

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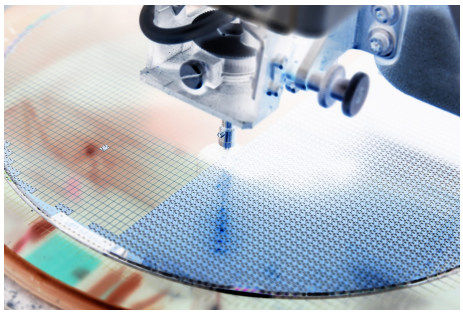
Collimated Laser Diode Module (CPS-180)

The CPS-180 is a turn-key laser kit which includes a laser, power supply, and kinematic mount providing exceptional power and beam-drift stability with very small beam-divergence.



This class 3R visible laser emits at 635 nm and can be finely adjusted for precise positioning via adjustment actuators with the supplied kinematic mount.

This 1mW laser diode setup is ideal for use with the 1L and 2L series Position Sensing Detectors or the PSM modules.

Key Specifications:

- Wavelength: 635 nm
- Power: 1 mW
- Safety Class: 3R
- Beam Diameter: 3mm
- Beam Shape: Round
- Divergence: ≤1.8 mrad

Key Features:

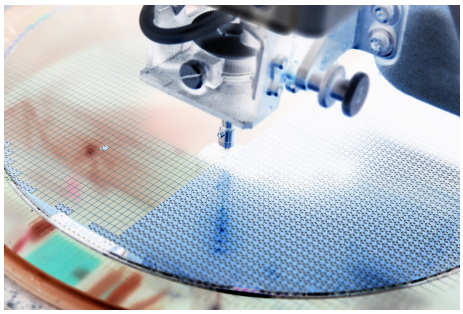
- Complete Kit Includes 635 nm Laser, Power Supply, and Mounting Mechanics.
- Kinematic Mount for Tip/Tilt Adjustment
- Adjustable post and stand

The CPS-180 collimated laser diode module is commonly used as a stable reference beam for precise alignment and position sensing with PSD-based measurement systems.

For more information, simply complete the contact form, and a member of our team will be in touch shortly.

Position Sensing Modules (PSM)

On-Trak Position Sensing Modules are fully packaged position sensing detectors that, when used with an On-Trak position sensing amplifier, provide an analogue output directly proportional to the position of a light spot on the detector active area. Yet, what truly sets them apart is their proprietary, plug-and-play design. Never has position sensing been so convenient or accurate.



No more hassling with breadboards, soldering, cutting and wiring. Instead, all On-Trak Positron Sensing Modules (PSMs) incorporate a sub miniature 9-pin connector that plugs directly into any On-Trak Position Sensing Amplifier. Just plug it in and go. It's that simple.

Select from several distinct configurations; each module contains a linear, duo lateral, tetra lateral, or quadrant position sensing detector. All modules are conveniently packaged to allow simultaneous monitoring of position and light intensity.

Position Sensing Modules come in two package sizes: Standard and Compact. The standard measures 2.8″ x 2.45″ x 1.125″. The compact measures 1.25″ x 1.25″ x 0.975″.

Harsh ambient lighting conditions? No problem. Each module readily accepts a complete range of optional filters to reduce the effect of noise caused by ambient light. Moreover, a filter holder is included with each module at no extra cost.

All PSMs feature standard mounting holes for easy mounting with your existing lab equipment. Whether your post and stands are 1/4 – 20 or 8/32, you'll be up and running in a matter of minutes.

On-Trak Position Sensing Modules are encased in rugged aluminium housings to protect your investment.

Key Features:

- Fully Packaged Position Sensing Detectors
- Silicon Linear : 400-1100 nm
  Silicon Duolateral : 400-1100 nm
  Silicon Quadrant : 400-1100 nm
  Germanium Tetra-Lateral : 800-1800 nm
- Removable Filter Holder Adapter
- Standard Mounting Holes
- Plug and Play Compatibility with all ON-TRAK Position Sensing Amplifiers

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

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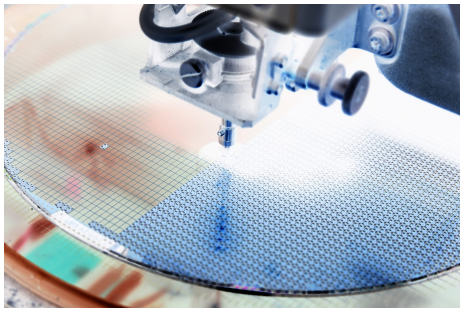
shortly.

High Speed Position Sensing Module (SPC PSM)

The SPC PSM High Speed Position Sensing Module is a fully packaged SiTek Electro Optics PSD with an integrated high speed signal processing circuit.



The PSD outputs bipolar voltages representing the position and intensity of the centroid of a light spot on the PSD at bandwidths up to 400kHz. Inputs are available for external adjustment of offset voltages. The SPC PSM is offered in a variety of one dimensional or two dimensional sizes.

Key Features:

- Integrated Electronics with 400kHz Bandwidth Response
- Silicon Linear: 400nm – 1100nm
- Silicon Duolateral: 400nm – 1100nm
- Removable Filter Holder Adapter
- Standard 1/4 – 20 Mounting Holes
- Adjustable Offsets: Diff X, Diff Y, Sum X, Sum Y
- HD15 Connector (5′ molded HD15 cable included)

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and linear measurements, along with machine leveling and research & development applications.

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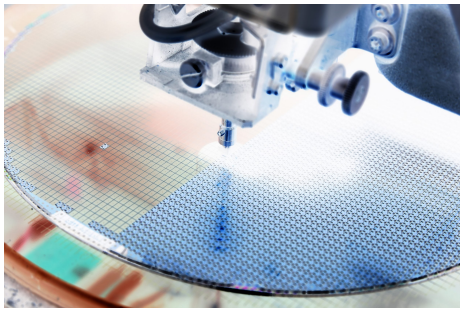
High Speed Position Sensing Amplifier (OT-100)

The OT-100 High Speed Position Sensing Module contains a fully packaged SiTek Electro Optics Signal Processing Circuit (SPC) in a convenient and durable package.



The OT-100 is designed to output bipolar voltages representing the position and intensity of a light spot on the PSD at bandwidths of up to 400 kHz. BNC outputs allow simple and fast connection to voltmeters and oscilloscopes. Banana jacks are provided for easy connection to most common power supplies. Plug and play connection to PSM modules and PSDs are made via the DB9 input and supplied DB9 cable.

Key Features:

- DC to 400 kHz bandwidth response
- dynamic range 25 to 300 µW (635 nm)
- BNC output voltages: Amplified X1, X2, Y1 and Y2
- differential X and Y
- SUM X and Y
- adjustable SUM and differential offsets
- ± 15 volt input (nominal)
- DB9 PSM input (cable included)
- compatible with silicon linear and silicon duo lateral PSDs

Key Specifications:

- transimpedance gain (V/A): 100.000
- input voltage (max): ±18 V
- input voltage (nominal): ±15 V
- input current (max): 23 mA
- output voltage (nominal): ±12V
- output noise: 3 mV p-p
- bandwidth: DC- 400 kHz
- slew rate: 13 V/S
- voltage input connectors: 4mm banana
- output connectors: BNC (f)
- PSD input connector: DB9 (f)
- weight: 24 ounces

Applications include a broad range of alignment and measurement tasks, such as shaft, accelerator, assembly line, bore, catapult, engine and engine mount, escalator, fixture, machine tool, propeller, rail, roller, spindle, surface, and turbine alignment. The system also supports precision straightness, flatness, and

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