

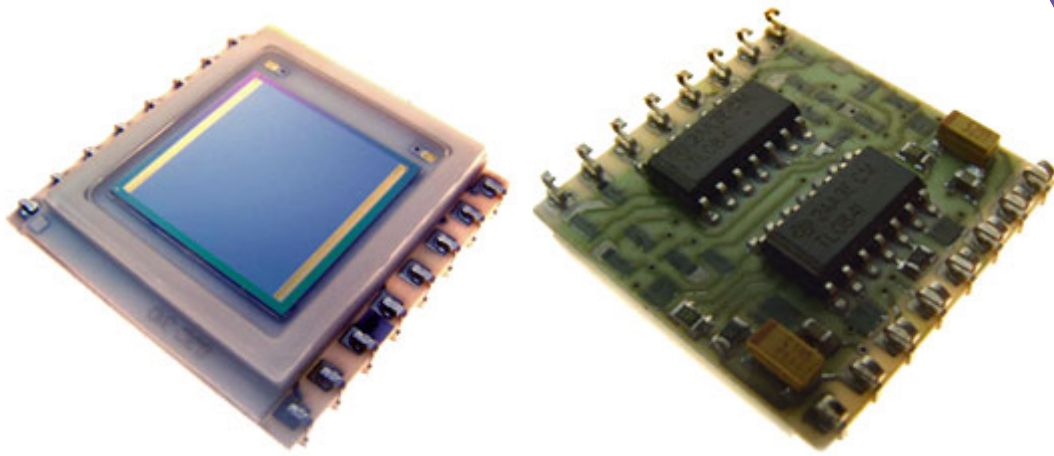
PHOTODETECTORS



Table of contents

Position Sensitive Detectors (PSDs)	3
On-Trak	3
OT-7000 Laser Alignment System	5
OT-4040 Alignment Laser System	7
OT-5000 RLT	9
CPS-180 Collimated Laser Diode Module	11
SPC PSM High Speed Position Sensing Module	12
PSM Series Position Sensing Modules	13
OT-301DL – Position Sensing Amplifier For Duolateral PSDs	15
OT-301SL – Position Sensing Amplifier For Single Axis PSD	16
OT-302D Display Module – On-Trak	17
OT-301 Position Sensing Amplifier – On-Trak	18
OT-100 High Speed Position Sensing Amplifier – On-Trak	20
SiTek	20
SPC-PSD (Signal Processing Circuit) – SiTek	22
PSD array (Position Sensing Detector) – SiTek	24
Two-dimensional PSD (Position Sensing Detector) – SiTek	25
One-dimensional PSD (Position Sensing Detector) – SiTek	26
SEEPOS Measurement System	28
SiTek	28
SEEPOS PSD signal processing tool – SiTek	30
On-Trak	31
OT-7000 Laser Alignment System	33
OT-4040 Alignment Laser System	35
OT-5000 RLT	37
OT-2020 Rotating Laser Target System	39
Electron & Ion Sensors	41
SiTek	41
Backscatter Detector	43

POSITION SENSITIVE DETECTORS (PSDs)





On-Trak Photonics is a U.S.-based leader in precision alignment and optical measurement technologies, specializing in Position Sensing Detector (PSD) systems for the photonics industry. Their solutions are designed for real-time, high-resolution position feedback across a wide range of optical and laser-based applications.

Product offering

OT-7000 Laser Alignment System



OT-4040 Alignment Laser System



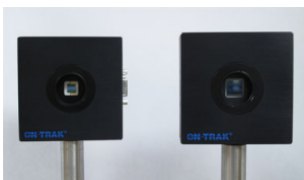
OT-5000 RLT



CPS-180 Collimated Laser Diode Module



SPC PSM High Speed Position Sensing Module



PSM Series Position Sensing Modules



OT-301DL - Position Sensing Amplifier For Duolateral PSDs



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



OT-302D Display Module - On-Trak



OT-301 Position Sensing Amplifier - On-Trak



OT-100 High Speed Position Sensing Amplifier - On-Trak



OT-7000 Laser Alignment System



Now, the most powerful way to measure alignment at distances up to 300 feet is more convenient and flexible than ever. On-Trak Photonics' OT-7000 Laser Alignment System provides an autocentering and wireless solution for performing real-time measurement of multiple targets along a single reference laser line.

Dynamically monitor work as it progresses. The OT-7000 displays X-Y deviation of each measurement target simultaneously-over your Windows based computer, at the RF controller module, or via LED displays located on each target's dedicated CPU.

Used by leading aircraft manufacturers, shipbuilders and the automotive industry, On-Trak Laser Alignment technology is proven to streamline efficiency and significantly reduce man hours. The OT-7000, with its auto-align and wireless capability, will only boost this productivity further.

Auto-Alignment Capability.

Loading stress and thermal changes during the manufacturing process can cause conventional alignment systems to move out of center on the reference target. The OT-7000 compensates for this with an automatic feedback loop that constantly monitors and re-centers the laser via internal motion controllers. User-programmable settings enable you to adjust centering sensitivity levels and feedback sampling rates. Store these values into memory for future recall.

Multi-Target, Wireless Communication.

No more cabling hassles-tangling, storage, damage, routing headaches, etc. The OT-7000's wireless design makes it easy to instantly add or remove measurement targets anywhere along the laser line. RF spread-spectrum technology (902-928 MHz) provides rock-solid wireless communications between key components.

Advanced Computer Control.

Collect and process measurement data with your Windows-based computer. Beam-Trak 7000 software displays X-Y deviation of all targets, enabling you to dynamically monitor work in progress. 0.001-Inch Resolution At 300 Feet. Optimize precision and gain a greater measure of confidence. The OT-7000 provides 0.001-inch resolution at distances up to 300



feet. A third generation fiber-coupled laser diode delivery system ensures exceptional beam quality over long distances.

OT-4040 Alignment Laser System



Introducing an easy, powerful way to perform accurate alignment measurements on the go. The OT-4040 Alignment Laser System enables instant measurement of X-Y deviation, in real-time, at any point on a visible laser reference line – a line extending up to 300 feet long. Dynamically monitor your project as it unfolds. Simply drop a “transparent” measurement target into any standard NAS tooling sphere along the reference line, and take your reading with the attached central processing unit. The OT-4040 Alignment Laser System is extensively proven by aircraft manufacturers, shipbuilders, and the automotive industry. It has significantly streamlined efficiency and reduced man hours in a varied range of challenging alignment applications.

Silicon Position Sensing Detector

A typical system consists of a single Model OT-4040 LL Alignment Laser, OT-4040 TTS4 Transparent Target, OT-4040 TS4 Reference Target, and two OT-4040 Central Processing Units (one CPU for each target). Numerous options are also available.

0.001-Inch Resolution At 300 Feet.

Optimize precision and gain a greater measure of confidence. The OT-4040 provides conservatively specified 0.001-inch resolution at distances up to 300 feet. A third generation fiber-coupled laser diode delivery system ensures exceptional beam coherence over long distances – even in demanding outdoor environments.

Anyone Can Operate It.

Concentrate on your work, not your alignment system. The OT-4040 couldn't be easier to operate. In fact, even first-time operators can be up-and-running in less than five minutes with hardly a glance at the instruction manual. The system is that simple and intuitive.

- **Cost Effective.** Outperforms laser tracking systems in this specific application, at a fraction of the price.
- **Ultra Precise.** Eliminates margin of error associated with subjective manual approaches.
- **Real-Time Feedback.** Enables user to make on-the-spot alignment adjustments.
- **Faster Measurement.** Reduces man hours and facilitates project efficiency.
- **Maximizes Range.** Perform measurements at distances up



to 300 feet.

- **Simultaneous Measurement.** Enables simultaneous measurement from multiple targets.
- **Data Analysis.** Position data can be monitored, stored and analyzed by a computer.

Industrial Strength.

Extreme industrial environments? No problem. The OT-4040 CPU and OT-4040 Target are built to withstand the rigors of day-to-day, on-the floor use.

An Ideal Laser Tracking/Optical Telescope Alternative.

Many consider laser trackers “too much solution” for alignment applications alone. Conversely, optical telescopes, with their slow and subjective performance, are often considered “too little solution”. The OT-4040 provides the best of both worlds: it’s exceptionally accurate, yet simple-to-operate and cost effective. Moreover, the OT-4040 system is optimized for instant, drop-in replacement of optical telescope systems via NAS standard housings. The overriding advantage is multipoint, dynamic, objective measurement – something neither laser trackers nor optical telescopes individually offer.

OT-5000 RLT



The OT-5000 RLT Rotating Laser Target System, in tandem with a rotating laser, is the most comprehensive way to measure flatness, squareness and straightness at distances up to 100 feet.

Dynamically Monitor Your Entire Project.

The OT-5000 RLT enables you to monitor the position of up to twenty targets from the convenience of your laptop or desktop computer – simultaneously, and in real time.

Extensively proven in a wide range of applications worldwide, the OT-5000 is an ideal way to streamline efficiency and reduce man hours.

A compact carrying case (standard) houses the entire system: the OT-5000 RLT Rotating Laser Targets that detect and display the position of the rotating laser, the OT- 5000 DIM Digital Interface Module that provides power for up to twenty OT-5000 RLTs, and the cables.



Silicon Position Sensing Detector

Multiple Target Capability.

Specify as few – or as many – RLT targets required for the job. Each DIM accommodates up to twenty targets in a multidrop configuration.

Exceptional Accuracy.

Optimize precision and gain an added measure of confidence. The OT-5000 provides conservatively-specified 0.001-inch resolution and accuracy via a leading-edge silicon position sensing detector.

Computer Control.

Beam-Trak 5000 software makes it easy to dynamically monitor work in progress. This rich graphical interface displays the position information of all targets simultaneously. One glance at the screen, and you know the precise measurement profile of your entire project. Oversize fonts enable easy readability over great distances.



Moreover, Beam-Trak software enables you to address, control and customize each target from your computer. In fact, the complete range of software commands built into each target is fully controllable via computer.

Compatible With All Rotating Lasers.

The OT-5000 System is plug-and play compatible with all rotating lasers on the market. Four-level autoranging from 0.5mW to 5.0mW and compatibility with all laser tracking speeds from 1 RPM to 1,000 RPM make compatibility instantaneous. Simply plug-in the laser, adjust your targets and begin taking measurements.

CPS-180 Collimated Laser Diode Module



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.

Features

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



SPC PSM High Speed Position Sensing Module

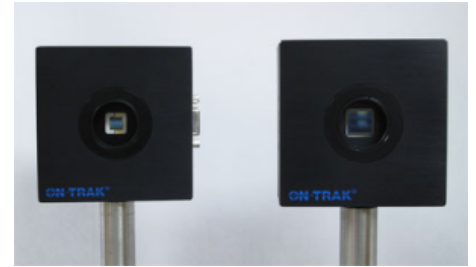


The SPC PSM High Speed Position Sensing Module is a fully packaged SiTek Electro Optics PSD with an integrated high speed signal processing circuit.

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.

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)



PSM Series Position Sensing Modules



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.

A Plug-And-Play Solution

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.

Single, Duo lateral, Quadrant

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".

Filters And Filter Holder Adapters

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.

Standard Mounting Holes

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.

Robust Aluminium Housings

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

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

OT-301DL - Position Sensing Amplifier For Duolateral PSDs



OT-301DL General Description

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.

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

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.



OT-301SL – Position Sensing Amplifier For Single Axis PSD



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

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

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: the total detector signal and is proportional to the incident beam power.



OT-302D Display Module - On-Trak



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.



OT-302D Display Module 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

OT-301 Position Sensing Amplifier - On-Trak



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.



Plug-And-Play... Out Of The Box

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... plus 100% compatibility with your future position sensing needs. The OT-301 pays for itself in no time.

Any Application... Any Detector

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 Amplifiers

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

X, Y Analog Output That's Directly Proportional To Beam Position

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.

Six Gain Settings: 0.1 μ A to 1.5 mA

Six gain settings accommodate input current ranges from 0.1 μ A to 1.5 mA with a frequency response to 15 kHz. A convenient ZERO adjust enables you to electronically move the zero to a relative position on the PSD. A CAL adjust allows calibration to absolute position.

Features

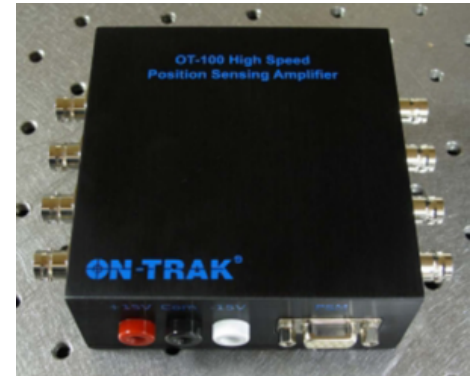
- X, Y analog position output voltages
- sum output

- wide dynamic range: 0.1 μ A 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



OT-100 High Speed Position Sensing Amplifier - On-Trak

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.



OT-100 High Speed Position Sensing Amplifier features

- DC to 400 kHz bandwidth response
- dynamic range 25 to 300 μ W (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

Specifications

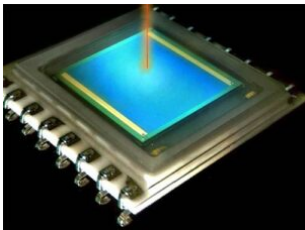
- transimpedance gain (V/A): 100.000
- input voltage (max): ± 18 V
- input voltage (nominal): ± 15 V
- input current (max): 23 mA
- output voltage (nominal): ± 12 V
- output noise: 3 mV p-p
- bandwidth: DC- 400 kHz
- slew rate: 13 V/S
- voltage input connectors: 4mm banana
- output connectors: BNC (f)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



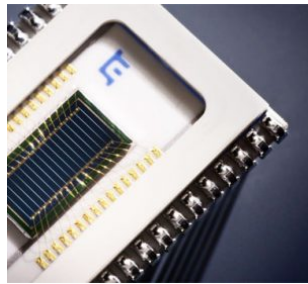
SiTek Electro Optics AB is a leading Swedish manufacturer specializing in high-precision optical and photonic solutions, with a core focus on Position Sensing Detectors (PSDs). Their advanced photonic technologies are designed for demanding applications requiring exceptional accuracy in positioning, alignment, and measurement.

Product offering

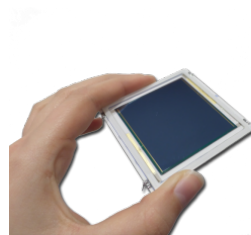
SPC-PSD (Signal Processing Circuit) - SiTek



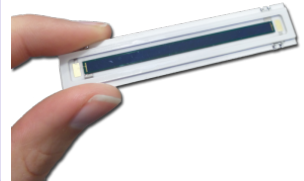
PSD array (Position Sensing Detector) - SiTek



Two-dimensional PSD (Position Sensing Detector) - SiTek



One-dimensional PSD (Position Sensing Detector) - SiTek



SPC-PSD (Signal Processing Circuit) - SiTek

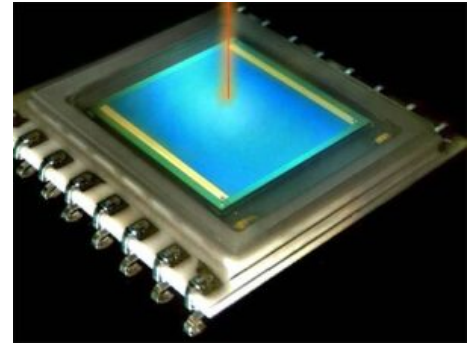


In order to facilitate the operation of SiTek PSD's, they have developed a dedicated SPC-PSD (signal processing circuit). All components necessary to obtain the sum and difference signals from a two- or one-dimensional PSD have been concentrated on a 20,5 x 20,5 mm² thick film substrate.

SPC-PSD features

- analogue voltage outputs of all sum and differential signals from one- and two-dimensional PSD's
- laser trimmed resistors
- inputs for external adjustment of offset voltages
- good thermal tracking
- small size
- allows custom designed specifications
- evaluation board available

For more information on the applications of PSDs, read this [PEO article](#).



1-dimensional SPC

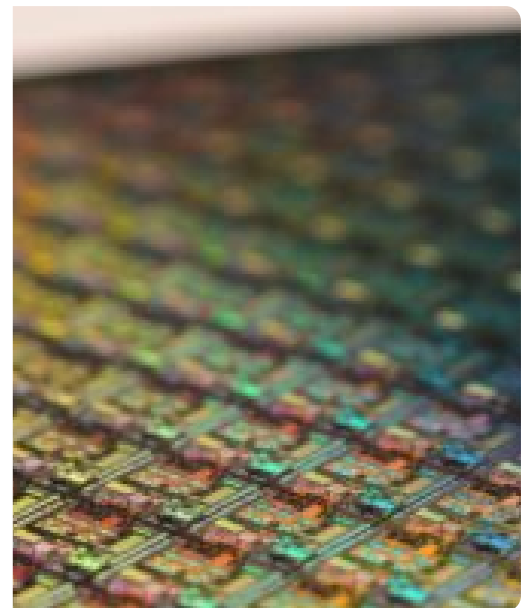
Part. NoDescriptionActive

areaS1-02571L2.5_SU74_SPC012.5x0.6S1-02711L2.5_SU74_SPC022.5x0.6S1-02311L5_SU74_SPC015x1S1-02721L5_SU74_SPC025x1S1-02221L10_SU74_SPC0110x2S1-02731L10_SU74_SPC0210x2

2-dimensional SPC

Part. NoDescriptionActive

areaS2-01782L2_SU75_SPC012x2S2-02442L2_SU75_SP022x2S2-02092L4_SU66_SPC014x4S2-02452L4_SU66_SP024x4S2-01712L10_SU65_SPC0110x10S2-02462L10_SU65_SP0210x10



SPC-PSD Evaluation Board

In order to simplify the set up of our popular signal processing circuits in an optical system SiTek now releases an SPC-PSD Evaluation Board.

The Evaluation Board can easily be mounted on an optical table by using a standard 2" filter holder or

screwed to for example an XYZ stage by using M6 screws. The board includes offset compensation electronics and a 14-pin connector that makes the inputs and outputs easily accessible.

Evaluation boards for both the J-lead and the DIL version are available and, as all of our products, they are of course RoHS compliant.

Part. NoDescription: SE-0012SPC01 Evaluation Board, SE-0013SPC02 Evaluation Board

For more information about this product, visit [our partner's website!](#)



The PSD array consists of 16 parallel one-dimensional PSD elements on the same chip. By utilizing the triangulation technique the reflection of a laser line or multiple laser spots onto the PSD array will provide information about the contour of the illuminated object. The possibility for simultaneous readout of the 16 elements together with the fast response of each element makes the PSD array suitable for applications like high speed 3D contour measurements and measurements of parallel, moving objects such as cantilevers.

To ensure high sensitivity the gap between the elements has been minimized giving a fill factor of more than 97%, still with low crosstalk and the same high linearity as SiTek's other one-dimensional PSD's.

In order to preserve the performance also under stray light conditions the PSD array has been designed with SiTek's unique built in stray light elimination feature, a patented design which eliminates the decrease in speed and linearity due to stray light. The PSD array is delivered in a 34 pin dual in line type ceramic package and has a measurement length of 2,5 mm but can be custom designed with any length and/or number of PSD elements.

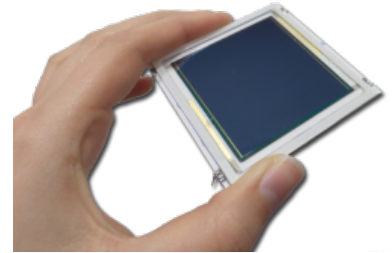
PSD-array features

- converts the position of a light or radiation spot into signal currents
- outstanding position resolution and linearity
- wide range of spectral response
- works with a wide range of light or radiation intensities
- short response time
- measures light or radiation intensity and position simultaneously
- independent of light or radiation spot focus
- high dynamic range



Two-dimensional PSD (Position Sensing Detector) - SiTek

The SiTek Two-dimensional PSD (Position Sensing Detector) has high resolution, fast response and outstanding linearity. The spectral range covers the region 400 - 1100 nm. Thanks to SiTek's proprietary AR-coating, optimized around 860 nm, a reflection loss of only 2% is achieved around the responsivity peak.



There is also an UV version available. The UV PSD is a detector optimized for use in the UV wavelength region 200-400 nm, although its spectral response reaches up to 1100 nm. The sensitivity in the UV region (200-400 nm) is extremely high. The UV-PSD has the same outstanding specifications as the standard SiTek PSD.

Two-dimensional PSD features

- converts the position of a light or radiation spot into signal currents
- wide range of spectral response
- fast response time (**1 MHz!**)
- measures light or radiation intensity and position simultaneously
- independent of light or radiation spot focus

S

PSD

Position non-linearity: +/-0.3%

Detector resistance: 10 kohm **Part No. Description Active area Package** [S2 -](#)

[00012L2_MP12x2TO-8](#) [S2 - 00322L2_CP42x24-pin ceramic](#) [S2 - 00022L4_MP14x4TO-8](#) [S2 -](#)

[00242L4_CP54x44-ceramic](#) [S2 - 01842L4_SU714x4SMD](#) [S2 - 00032L10_SU710x10substrate](#) [S2 -](#)

[00332L10_CP610x104-pin ceramic](#) [S2 - 01852L10_SU7210x10SMD](#) [S2 -](#)

[00042L20_SU920x20substrate](#) [S2 - 00232L20_CP720x204-pin ceramic](#) [S2 -](#)

[01962L45_SU2445x45substrate](#)

PSD with enhanced UV respons

Part No. Description Active area Package [S2 - 00302L2UV_MP12 x 2TO-8](#) [S2 - 00062L4UV_MP14 x 4TO-8](#) [S2 - 00162L10UV_SU710 x 10substrate](#) [S2 - 00342L20UV_SU920 x 20substrate](#)

Contact one of our product specialists or check the [PSD application areas](#).

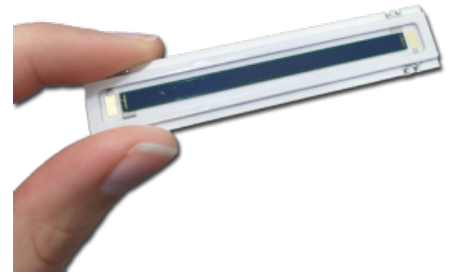
Learn about the PSD in the [PSD school](#)



One-dimensional PSD (Position Sensing Detector) - SiTek

The SiTek One-dimensional PSD (Position Sensing Detector) has high resolution, fast response and outstanding linearity. The spectral range covers the region 400 – 1100 nm. Thanks to SiTek's proprietary AR-coating, optimized around 860 nm, a reflection loss of only 2% is achieved around the responsivity peak.

There is also an UV version available. The UV PSD is a detector optimized for use in the UV wavelength region 200-400 nm, although its spectral response reaches up to 1100 nm.



One-dimensional PSD features

- converts the position of a light or radiation spot into signal currents
- outstanding position resolution and linearity
- wide range of spectral response
- works with a wide range of light or radiation intensities
- fast response time (**1 MHz!**)
- measures light or radiation intensity and position simultaneously
- independent of light or radiation spot focus
- high dynamic range

PSD

Position non-linearity: +/-0.1%

Detector resistance: 50 kohm **Part. No**

Description Active area Package [S1-0001](#) 1L2.5_CP22,5x0,6 mm 14-pin

[DIL S1-0065](#) 1L2.5_CP12,5x0,6 mm 4-pin [DIL S1-0003](#) 1L5_CP25,0x1,0 mm 14-pin

[DIL S1-0009](#) 1L5_CP15,0x1,0 mm 4-pin [DIL S1-0005](#) 1L10_CP210,0x2,0 mm 14-pin [DIL S1-0236](#) 10,0x2,0 mm 1L10_SU70 SMD [S1-0006](#)

1L20_CP320,0x3,0 mm 22-pin [DIL S1-0007](#) 1L30_SU230,0x4,0 mm substrate [S1-0247](#) 1L45_SU6945,0x3,0 mm substrate [S1-0248](#) 60,0x3,0 mm 1L60_SU34 substrate

PSD with stray-light elimination

Position non-linearity +/-0.1%

Detector resistance 200 kohm **Part. No**

Description Active area Package [S1-0090](#) 1L5NT_CP15,0x0,25 mm 4-pin

[DIL S1-006](#) 1L5NT_CP25,0x0,25 mm 14-pin [DIL S1-0067](#)

1L10NT_CP210,0x0,5 mm 14-pin [DIL](#)

PSD with Enhanced UV respons

Part. No

Description Active area Package [S1-0072](#) 1L2,5UV_CP22,5x0,6 mm 14-pin

DIL[S1-0032](#)1L5UV_CP25,0x1,0 mm14-pin *DIL*[S1-0073](#)1L10UV_CP210,0x2,0 mm14-pin
DIL[S1-0074](#)1L20UV_CP320,0x3,0 mm14-pin *DIL*[S1-0034](#)
1L30UV_SU2

30,0x4,0 mm_{substrate}

Contact one of our product specialists or check the [PSD application areas](#).

Learn about the PSD in the [PSD school](#)

SEEPOS MEASUREMENT SYSTEM

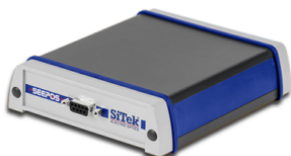




SiTek Electro Optics AB is a leading Swedish manufacturer specializing in high-precision optical and photonic solutions, with a core focus on Position Sensing Detectors (PSDs). Their advanced photonic technologies are designed for demanding applications requiring exceptional accuracy in positioning, alignment, and measurement.

Product offering

**SEEPOS PSD signal
processing tool -
SiTek**





For most position measurement applications the SiTek SEEPOS system offers a complete and easy-to-use solution. High speed PSD electronics combined with digital signal processing and high speed USB data transfer gives a powerful measurement system. With its large dynamic range it can handle light powers from nW to mW from DC light sources as well as modulated light sources. All parameters, such as PSD bias voltage, amplifier gain, the use of analog and digital filters etc., are easily controlled from the included software and light spot position is continuously displayed both in XY and X-t, Y-t graphs. Optimized plot algorithms ensure that all data is visually seen on the screen even in full speed measurements. Included tools for data analysis and visualization simplify rapid scan through large data sets in order to find specific parts of interest.



SEEPOS PSD signal processing tool features

- extremely versatile – all important parameters can be adjusted
- highest performance – 16 bit A/D conversion at 1 MHz and full speed USB data transfer
- user friendly – intuitive interface based on LabVIEW
- suitable for all users – easy set-up and advanced analyzing functions included
- PSD Holder MH01 and MH02 (optional)

PSDs in Mechanical Holder MH01

SiTek's high linearity PSDs are also available in a mechanical holder suitable for optical system setups. The mechanical holder MH01 has a size of only 52 x 52 mm² and the PSD is easily accessed via a DSUB9 connector. It is designed to fit ø1" filters as well as standard optomechanical components, such as posts and lens tubes. To minimize reflections it has a black anodized surface. The holder is available with SiTek's PSDs ranging from 2,5 – 20 mm (1D) and 2 x 2 – 20 x 20 mm² (2D). SiTek's UV-enhanced PSDs and PSDs with stray light elimination (NT) can be delivered mounted in the PSD mechanical holder upon request.

[holder MH01](#)

PSDs in Mechanical Holder MH02

SiTek's high linearity PSDs are also available in a mechanical holder suitable for optical system setups. The mechanical holder MH02 has a size of 84 x 84 mm² and the PSD is easily accessed via a DSUB9 connector. It is designed to fit square 2" filters as well as standard optomechanical components, such as posts and cages stages. To minimize reflections it has a black anodized surface. The holder is available with SiTek's PSDs ranging from 30 – 60 mm (1D) and 20 x 20 – 45 x 45 mm² (2D). SiTek's UV-enhanced PSDs can be delivered mounted in the PSD mechanical holder upon request.



On-Trak Photonics is a U.S.-based leader in precision alignment and optical measurement technologies, specializing in Position Sensing Detector (PSD) systems for the photonics industry. Their solutions are designed for real-time, high-resolution position feedback across a wide range of optical and laser-based applications.

Product offering

OT-7000 Laser Alignment System



1. Application Software
2. Receiver Plate
3. Laser
4. Receiver Target
5. Receiver Target
6. Receiver Target
7. OT Console Module

OT-4040 Alignment Laser System



1. Carrying Case
2. Receiver Plate
3. Receiver Target
4. Receiver Target
5. Receiver Target
6. Receiver Target
7. Receiver Target
8. Receiver Target
9. Receiver Target
10. Receiver Target
11. Receiver Target
12. Receiver Target
13. Receiver Target
14. Receiver Target
15. Receiver Target
16. Receiver Target
17. Receiver Target
18. Receiver Target
19. Receiver Target
20. Receiver Target
21. Receiver Target
22. Receiver Target
23. Receiver Target
24. Receiver Target
25. Receiver Target
26. Receiver Target
27. Receiver Target
28. Receiver Target
29. Receiver Target
30. Receiver Target
31. Receiver Target
32. Receiver Target
33. Receiver Target
34. Receiver Target
35. Receiver Target
36. Receiver Target
37. Receiver Target
38. Receiver Target
39. Receiver Target
40. Receiver Target
41. Receiver Target
42. Receiver Target
43. Receiver Target
44. Receiver Target
45. Receiver Target
46. Receiver Target
47. Receiver Target
48. Receiver Target
49. Receiver Target
50. Receiver Target
51. Receiver Target
52. Receiver Target
53. Receiver Target
54. Receiver Target
55. Receiver Target
56. Receiver Target
57. Receiver Target
58. Receiver Target
59. Receiver Target
60. Receiver Target
61. Receiver Target
62. Receiver Target
63. Receiver Target
64. Receiver Target
65. Receiver Target
66. Receiver Target
67. Receiver Target
68. Receiver Target
69. Receiver Target
70. Receiver Target
71. Receiver Target
72. Receiver Target
73. Receiver Target
74. Receiver Target
75. Receiver Target
76. Receiver Target
77. Receiver Target
78. Receiver Target
79. Receiver Target
80. Receiver Target
81. Receiver Target
82. Receiver Target
83. Receiver Target
84. Receiver Target
85. Receiver Target
86. Receiver Target
87. Receiver Target
88. Receiver Target
89. Receiver Target
90. Receiver Target
91. Receiver Target
92. Receiver Target
93. Receiver Target
94. Receiver Target
95. Receiver Target
96. Receiver Target
97. Receiver Target
98. Receiver Target
99. Receiver Target
100. Receiver Target

OT-5000 RLT



1. Carrying Case
2. Receiver Plate
3. Receiver Target
4. Receiver Target
5. Receiver Target
6. Receiver Target
7. Receiver Target
8. Receiver Target
9. Receiver Target
10. Receiver Target
11. Receiver Target
12. Receiver Target
13. Receiver Target
14. Receiver Target
15. Receiver Target
16. Receiver Target
17. Receiver Target
18. Receiver Target
19. Receiver Target
20. Receiver Target
21. Receiver Target
22. Receiver Target
23. Receiver Target
24. Receiver Target
25. Receiver Target
26. Receiver Target
27. Receiver Target
28. Receiver Target
29. Receiver Target
30. Receiver Target
31. Receiver Target
32. Receiver Target
33. Receiver Target
34. Receiver Target
35. Receiver Target
36. Receiver Target
37. Receiver Target
38. Receiver Target
39. Receiver Target
40. Receiver Target
41. Receiver Target
42. Receiver Target
43. Receiver Target
44. Receiver Target
45. Receiver Target
46. Receiver Target
47. Receiver Target
48. Receiver Target
49. Receiver Target
50. Receiver Target
51. Receiver Target
52. Receiver Target
53. Receiver Target
54. Receiver Target
55. Receiver Target
56. Receiver Target
57. Receiver Target
58. Receiver Target
59. Receiver Target
60. Receiver Target
61. Receiver Target
62. Receiver Target
63. Receiver Target
64. Receiver Target
65. Receiver Target
66. Receiver Target
67. Receiver Target
68. Receiver Target
69. Receiver Target
70. Receiver Target
71. Receiver Target
72. Receiver Target
73. Receiver Target
74. Receiver Target
75. Receiver Target
76. Receiver Target
77. Receiver Target
78. Receiver Target
79. Receiver Target
80. Receiver Target
81. Receiver Target
82. Receiver Target
83. Receiver Target
84. Receiver Target
85. Receiver Target
86. Receiver Target
87. Receiver Target
88. Receiver Target
89. Receiver Target
90. Receiver Target
91. Receiver Target
92. Receiver Target
93. Receiver Target
94. Receiver Target
95. Receiver Target
96. Receiver Target
97. Receiver Target
98. Receiver Target
99. Receiver Target
100. Receiver Target

OT-2020 Rotating Laser Target System



1. Carrying Case
2. Remote Data Terminal (optional)
3. Remote Sensor
4. Control Processing Unit
5. Receiver Kit (optional)

OT-7000 Laser Alignment System



Now, the most powerful way to measure alignment at distances up to 300 feet is more convenient and flexible than ever. On-Trak Photonics' OT-7000 Laser Alignment System provides an autocentering and wireless solution for performing real-time measurement of multiple targets along a single reference laser line.

Dynamically monitor work as it progresses. The OT-7000 displays X-Y deviation of each measurement target simultaneously-over your Windows based computer, at the RF controller module, or via LED displays located on each target's dedicated CPU.

Used by leading aircraft manufacturers, shipbuilders and the automotive industry, On-Trak Laser Alignment technology is proven to streamline efficiency and significantly reduce man hours. The OT-7000, with its auto-align and wireless capability, will only boost this productivity further.

Auto-Alignment Capability.

Loading stress and thermal changes during the manufacturing process can cause conventional alignment systems to move out of center on the reference target. The OT-7000 compensates for this with an automatic feedback loop that constantly monitors and re-centers the laser via internal motion controllers. User-programmable settings enable you to adjust centering sensitivity levels and feedback sampling rates. Store these values into memory for future recall.

Multi-Target, Wireless Communication.

No more cabling hassles-tangling, storage, damage, routing headaches, etc. The OT-7000's wireless design makes it easy to instantly add or remove measurement targets anywhere along the laser line. RF spread-spectrum technology (902-928 MHz) provides rock-solid wireless communications between key components.

Advanced Computer Control.

Collect and process measurement data with your Windows-based computer. Beam-Trak 7000 software displays X-Y deviation of all targets, enabling you to dynamically monitor work in progress. 0.001-Inch Resolution At 300 Feet. Optimize precision and gain a greater measure of confidence. The OT-7000 provides 0.001-inch resolution at distances up to 300



feet. A third generation fiber-coupled laser diode delivery system ensures exceptional beam quality over long distances.

OT-4040 Alignment Laser System



Introducing an easy, powerful way to perform accurate alignment measurements on the go. The OT-4040 Alignment Laser System enables instant measurement of X-Y deviation, in real-time, at any point on a visible laser reference line – a line extending up to 300 feet long. Dynamically monitor your project as it unfolds. Simply drop a “transparent” measurement target into any standard NAS tooling sphere along the reference line, and take your reading with the attached central processing unit. The OT-4040 Alignment Laser System is extensively proven by aircraft manufacturers, shipbuilders, and the automotive industry. It has significantly streamlined efficiency and reduced man hours in a varied range of challenging alignment applications.

Silicon Position Sensing Detector

A typical system consists of a single Model OT-4040 LL Alignment Laser, OT-4040 TTS4 Transparent Target, OT-4040 TS4 Reference Target, and two OT-4040 Central Processing Units (one CPU for each target). Numerous options are also available.

0.001-Inch Resolution At 300 Feet.

Optimize precision and gain a greater measure of confidence. The OT-4040 provides conservatively specified 0.001-inch resolution at distances up to 300 feet. A third generation fiber-coupled laser diode delivery system ensures exceptional beam coherence over long distances – even in demanding outdoor environments.

Anyone Can Operate It.

Concentrate on your work, not your alignment system. The OT-4040 couldn't be easier to operate. In fact, even first-time operators can be up-and-running in less than five minutes with hardly a glance at the instruction manual. The system is that simple and intuitive.

- **Cost Effective.** Outperforms laser tracking systems in this specific application, at a fraction of the price.
- **Ultra Precise.** Eliminates margin of error associated with subjective manual approaches.
- **Real-Time Feedback.** Enables user to make on-the-spot alignment adjustments.
- **Faster Measurement.** Reduces man hours and facilitates project efficiency.
- **Maximizes Range.** Perform measurements at distances up



to 300 feet.

- **Simultaneous Measurement.** Enables simultaneous measurement from multiple targets.
- **Data Analysis.** Position data can be monitored, stored and analyzed by a computer.

Industrial Strength.

Extreme industrial environments? No problem. The OT-4040 CPU and OT-4040 Target are built to withstand the rigors of day-to-day, on-the floor use.

An Ideal Laser Tracking/Optical Telescope Alternative.

Many consider laser trackers “too much solution” for alignment applications alone. Conversely, optical telescopes, with their slow and subjective performance, are often considered “too little solution”. The OT-4040 provides the best of both worlds: it’s exceptionally accurate, yet simple-to-operate and cost effective. Moreover, the OT-4040 system is optimized for instant, drop-in replacement of optical telescope systems via NAS standard housings. The overriding advantage is multipoint, dynamic, objective measurement – something neither laser trackers nor optical telescopes individually offer.

OT-5000 RLT



The OT-5000 RLT Rotating Laser Target System, in tandem with a rotating laser, is the most comprehensive way to measure flatness, squareness and straightness at distances up to 100 feet.

Dynamically Monitor Your Entire Project.

The OT-5000 RLT enables you to monitor the position of up to twenty targets from the convenience of your laptop or desktop computer – simultaneously, and in real time.

Extensively proven in a wide range of applications worldwide, the OT-5000 is an ideal way to streamline efficiency and reduce man hours.

A compact carrying case (standard) houses the entire system: the OT-5000 RLT Rotating Laser Targets that detect and display the position of the rotating laser, the OT- 5000 DIM Digital Interface Module that provides power for up to twenty OT-5000 RLTs, and the cables.



Silicon Position Sensing Detector

Multiple Target Capability.

Specify as few – or as many – RLT targets required for the job. Each DIM accommodates up to twenty targets in a multidrop configuration.

Exceptional Accuracy.

Optimize precision and gain an added measure of confidence. The OT-5000 provides conservatively-specified 0.001-inch resolution and accuracy via a leading-edge silicon position sensing detector.

Computer Control.

Beam-Trak 5000 software makes it easy to dynamically monitor work in progress. This rich graphical interface displays the position information of all targets simultaneously. One glance at the screen, and you know the precise measurement profile of your entire project. Oversize fonts enable easy readability over great distances.



Moreover, Beam-Trak software enables you to address, control and customize each target from your computer. In fact, the complete range of software commands built into each target is fully controllable via computer.

Compatible With All Rotating Lasers.

The OT-5000 System is plug-and play compatible with all rotating lasers on the market. Four-level autoranging from 0.5mW to 5.0mW and compatibility with all laser tracking speeds from 1 RPM to 1,000 RPM make compatibility instantaneous. Simply plug-in the laser, adjust your targets and begin taking measurements.

OT-2020 Rotating Laser Target System



The OT-2020 Rotating Laser Target System, in tandem with a rotating laser, provides the fastest, most accurate way to measure flatness, squareness and straightness at distances up to 100 feet.

Battery operated for maximum field portability, the OT-2020 is proven in a wealth of applications – many by Fortune 100 companies.

A compact carrying case (standard) contains the entire system: the Model OT-2020 RS1 Remote Sensor that detects the position of the rotating laser light, the Model OT-2020 CPU Central Processing Unit that provides real-time readout of the measurement value, plus several options for additional flexibility and convenience.

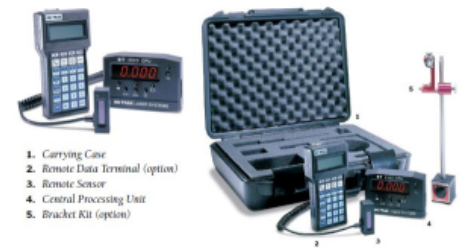
Exceptional Accuracy. Optimize precision and gain an added measure of confidence. The OT-2020 RS1 Remote Sensor provides conservatively-specified 0.001-inch resolution and accuracy via a leading-edge silicon position-sensing detector.

Fully Portable. Place the RS1 Remote Sensor into the optional OT-2020 BK Bracket Kit, and conveniently make instantaneous measurements anywhere along the laser beam path. Featuring a heavy magnetic base that activates/deactivates at the flip of a switch, the bracket can be firmly – and instantly – secured anywhere on the measurement surface or tool.

Ultra-Simple Operation. Concentrate on your work, not your rotating laser system. The OT-2020's CPU is refreshingly simple to operate. Minimized, straightforward controls enable you to be up-and-running with barely a glance at the instructions. Yet, there is no sacrifice to performance. The CPU provides all key functionality, including pulse averaging, zero offset and a serial communications port.

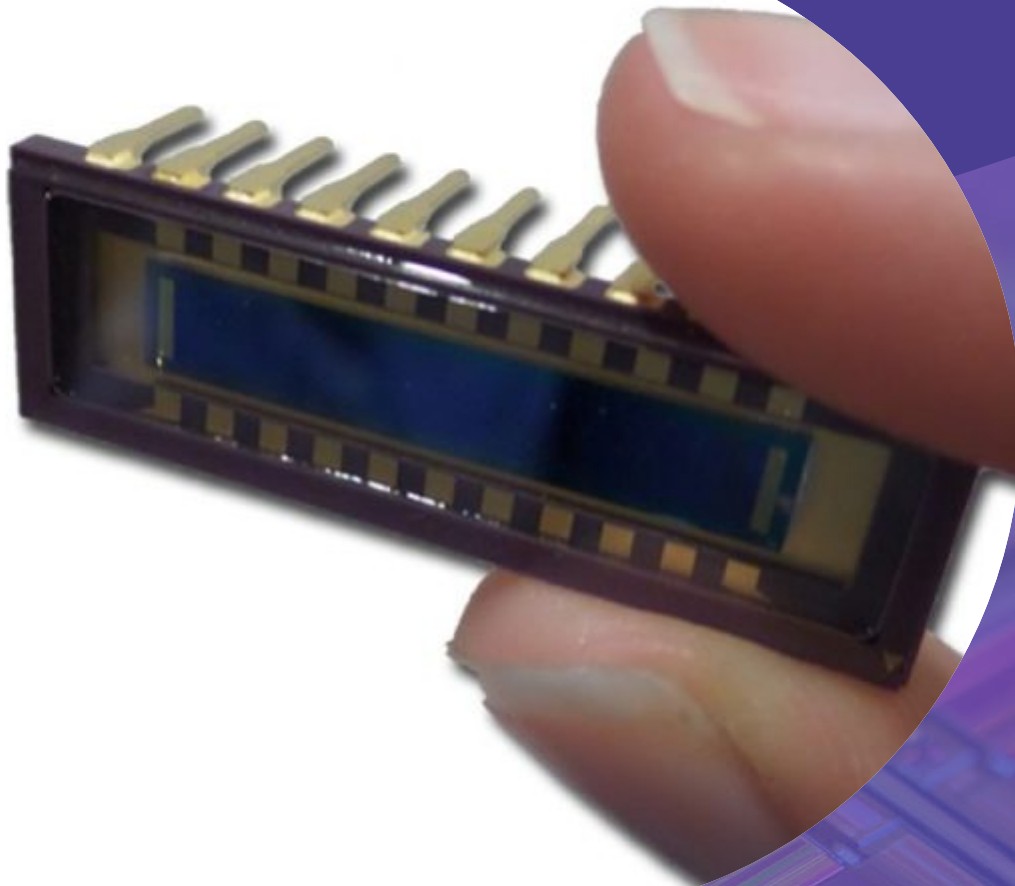
Industrial Strength. Encased in robust, custom machined aluminum housings, the OT-2020 CPU and RS1 readily withstand the rigors of extreme industrial environments. We've seen systems scratched, dented and covered in grime – yet perform flawlessly after years of continuous service.

Compatible With All Rotating Lasers. The OT-2020 System is plug-and-play compatible with all rotating lasers on the market. Four-level autoranging from 0.3mW to 3.0mW and



compatibility with all laser tracking speeds from 1 RPM to 1,000 RPM make compatibility instantaneous. Simply plug-in the laser, adjust your targets and begin taking measurements.

ELECTRON & ION SENSORS

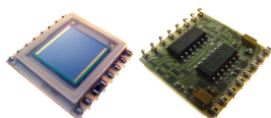




SiTek Electro Optics AB is a leading Swedish manufacturer specializing in high-precision optical and photonic solutions, with a core focus on Position Sensing Detectors (PSDs). Their advanced photonic technologies are designed for demanding applications requiring exceptional accuracy in positioning, alignment, and measurement.

Product offering

Backscatter Detector



Backscatter Detector

