



## Ultra-thin Lines – MVmicroline Series

### Machine Vision Laser with Line Width of 5 $\mu\text{m}$



LASER COMPONENTS is expanding its market leadership with the new FLEXPOINT® MVmicroline laser series in the area of laser-based Machine Vision illumination.

The line lasers developed and manufactured in Germany produce, depending on the working distance, line widths down to 5  $\mu\text{m}$ . Thus, these FLEXPOINT® modules are particularly well suited for the high-end 3D measurement of very small objects.

#### Properties

- Available wavelengths include 405 nm, 445 nm, 635 – 640 nm, 650 – 660 nm.
- The output power depends on the chosen wavelength and can range from <1 mW to 150 mW.
- Typical fan angles are 5° and 10°.

To produce the best line quality and thinnest line width possible, the lasers are set to the desired working distance at the production facility. To trigger the laser with the camera, digital modulation may also be integrated.

Additional options include setting the power using a control wire. The lasers are 80 mm long; the diameter is 19 mm. They are operated at 4.5 – 30 VDC.

One of LASER COMPONENTS' key strengths is the ability and willingness to manufacture customer-specific solutions – even for small quantities. So talk to us, even if in the past you could not find the exact laser you are looking for – we can help!

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## 30 Year Anniversary!

Please join us in congratulating LASER COMPONENTS GmbH for their now 30 years of conducting successful business in the photonics community.

What began in the Paul family home 30 years ago is now an international corporation with over 130 employees. From the humble beginnings in Germany, LASER COMPONENTS has expanded to reach all "Four Corners of the World".

LASER COMPONENTS products even now orbit our planet Earth in outer space.

- LASER COMPONENTS GmbH, 1982
- LASER COMPONENTS UK, 1992
- LASER COMPONENTS S.A.S (France), 1996
- LASER COMPONENTS USA, Inc., 2000
- LASER COMPONENTS Canada, Inc., 2003
- LASER COMPONENTS DG, Inc. (Arizona), 2004

Representing both products produced by LASER COMPONENTS "In House" and many other related optoelectronic components from our esteemed suppliers; we are able to offer our photonics community a multitude of enabling solutions. We are "At Home in the World".

Congratulations LASER COMPONENTS GmbH!

A handwritten signature in black ink that reads 'Gary B. Hayes'.

Gary B. Hayes  
CEO / General Manager



## For Applications in Telecommunications, Measurement Technology, and Sensor Technology

# Fiber-optical Switches for Efficient Switching

Optical switches are used for the quick read out and efficient switching of measurement light sources.

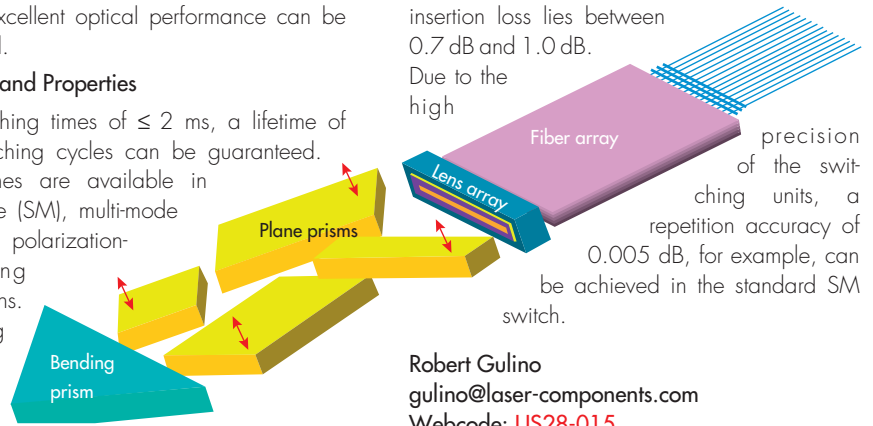
### Assembly

Input and output fibers are exactly arranged in a precision array. The light emerging from the input fiber is bundled into a parallel beam by a collimator lens of a micro-optical lens array. Using a reflecting prism, the light is fed through the corresponding element of the lens array back to the output fiber. Switching occurs when fine optical precision elements are introduced into the beam. Due to the combination of micro-mechanical and micro-optical solutions, flexibility, long-term stability,

and excellent optical performance can be guaranteed.

### Variations and Properties

With switching times of  $\leq 2$  ms, a lifetime of  $>10^8$  switching cycles can be guaranteed. The switches are available in single-mode (SM), multi-mode (MM), and polarization-maintaining (PM) versions. Depending on the version, the



insertion loss lies between 0.7 dB and 1.0 dB. Due to the high

precision of the switching units, a repetition accuracy of 0.005 dB, for example, can be achieved in the standard SM switch.

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## Suitable for the Most Demanding Applications

# IBS Coatings with the Highest Damage Thresholds



The power densities in laser systems are increasing. In continuous-wave operation it is possible to achieve an output power of more

than 10 kW. A similar increase can be observed in pulsed systems. Thus, it is no wonder that laser users are looking for optics that are designed for a high power output.

LASER COMPONENTS has manufactured high power laser optics for over 25 years. The demand for quality is high, which is why we continually optimize and improve the damage thresholds of our coatings. We not only consider damage threshold measurements from independent institutes according to ISO 11254 a reliable qualification, but the results obtained by our customers as well.

A comparative measurement of all methods available at LASER COMPONENTS has shown that the modern ion beam sputtering (IBS) process is the leading technology in damage threshold tests. Particularly with special coatings, such as for example, thin-film polarizers, a significant improvement was made.

It has been shown once again that in demanding high power applications IBS coatings are the ultimate benchmark.

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## Available at Least until 2017

# 660 nm Laser Diodes at 50 mW

The red ADL-66505TL laser diode from Arima Lasers meets all the expectations of technologically superior products at unbeatable prices.

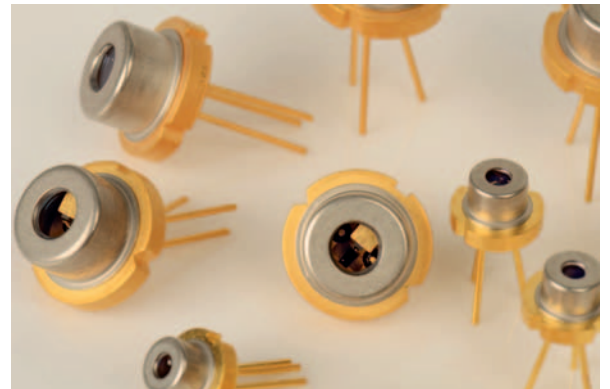
At 660 nm and an output power of 50 mW, this diode features a high operating temperature, minimal power consumption, and a very high life expectancy of about 30,000 hours!

The divergence of only  $9^\circ \times 17^\circ$  makes it significantly easier to achieve a high-quality beam pro-

file in analytical and life science applications!

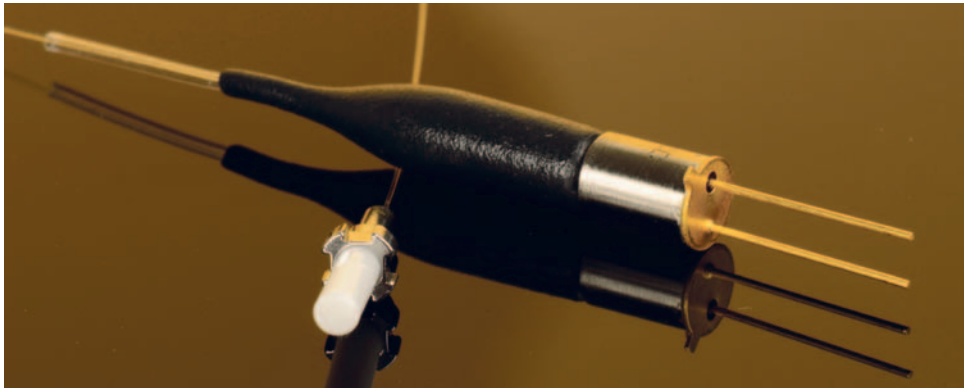
Due to its high power, this laser diode is also suited for use in laser scanners and line lasers.

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Coupling Efficiency > 85% – Peak Power > 100 W

## Pulsed Laser Diodes with Fiber Pigtails



**LASER COMPONENTS** Canada, Inc. assembles micro-optics, fast axis collimation (FAC) lenses, directly in front of the pulsed laser diode chip. Housed in a TO-46 housing, the beam performance of the laser diode is significantly increased. Based on this technology, pulsed laser diodes with fiber pigtails are manufactured.

With a semi-automatic mounting setup, fibers can be precisely assembled to within just a few  $\mu\text{m}$ . This allows coupling efficiencies of > 85% to be achieved. Depending on the laser diode chip and fiber core diameter, peak power levels of > 100 W out of the fiber can be reached.

The reasons for fiber coupling are manifold. In medical or illumination technology, power is required directly at the desired position without any loss caused by additional optics. In laser scanners or in measurement technology, better beam performance is achieved by mixing modes in the fiber. In industry, however, fiber optic technology is used to transmit data across very long distances.

Due to their very robust design, these diodes can be used in military applications at temperatures between  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$ .

**Products.** The new pigtailed pulsed laser diodes are available on a standard basis at wavelengths of 905 nm and 1550 nm. The following versions are available:

### 905 nm pulsed laser diodes

- 13 W from a 105  $\mu\text{m}$  fiber
- 100 W from a 400  $\mu\text{m}$  fiber

### 1550 nm pulsed laser diodes

- 7 W from a 105/125  $\mu\text{m}$  fiber (NA 0.16)

We not only offer standard versions, but customer-specific versions as well. In fact, our ability to develop inexpensive customer-specific solutions is one of our strengths. Contact us today!

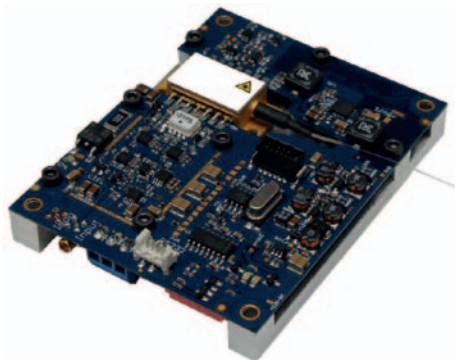
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## New Product from PicoLAS: BFS-VRM 03

### Seed Laser Diode Driver for Butterfly Package

This new driver offers analog modulation up to 400 MHz for a waveform defined by customer. Pulse duration can be set in a range of 1 ns to CW with an output current of up to 2.5 A. There is integrated TEC controller and laser fire monitor. All set-points are controlled via RS232 and do not require potentiometer adjustments.

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## Now without Speckle Effects – DOE Homogenizer

With resounding success, our partner Holo/OR designed an innovative homogenizer. In the past, customers have frequently criticized speckle effects in the homogenizers previously available on the market. The integration of two individual elements has brought an improvement.

The new high homogeneity (HH) model is a DOE with a diffractive structure on each side. Due to the precise position of both structures to one another, these elements perform much better than two separate elements in a row would.

Similar to standard homogenizers, these new diffractive optical elements produce a square, round, or hexagonal beam profile depending on the design. Upon request, other beam profiles can also be designed.

Holo/OR's DOEs can be used for high-power lasers. It is possible to produce designs for the wavelength range between 193 nm and 10.6  $\mu\text{m}$ .

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## Laser Module Patterns – 37 Shapes – One Beam

Now that multiple laser lines, dot matrices, etc. play an even larger role in computer-supported measurement technology, we have expanded our range of DOE products.

These diffractive optical elements are plastic components aimed at low laser power levels to generate patterns. The DOEs can be integrated into the laser module or supplied in a mount which can be attached to our FLEXPPOINT® lasers. This also allows other DOEs that are more suited for new measurement applications to be attached to the existing laser modules after the fact.

In our datasheet you will find all available optics. Also, view finders are now available!

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# PHOTONICS NEWS

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## Avalanche Photodiodes for the Ultraviolet Spectral Range

### Si APDs – Optimized for DUV/UV

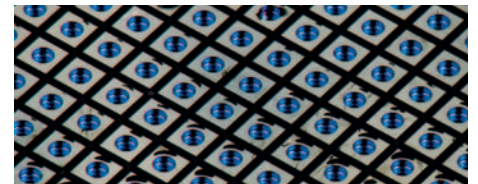
Due to their very high sensitivity and extremely low noise, SUR-series avalanche photodiodes (APDs) are suited for measurements in photometry or in analytical systems as well as for fluorescence measurements.

In addition to the optimized blue and UV spectral range, the APD can be used for measurements in the entire wavelength range between 200 nm and 1000 nm.

**SUR500.** At 400 nm the SUR500 has a noise equivalent power (NEP) of typically only  $9 \text{ W}/\sqrt{\text{Hz}}$  at a sensitivity of about  $28 \text{ A}/\text{W}$ .

Such values can only be achieved with a special reach-through structure developed by LASER COMPONENTS of just a few nm in thickness.

The SUR series is currently available with an active diameter of  $500 \mu\text{m}$ . Other low-noise versions at 1.5 mm and 3 mm will be available soon.



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## Designed for Rigorous Industrial Applications

### Machine Vision Laser with an M12 Stainless Steel Thread

Stainless steel housing with an M12 thread and an M12 connector: These standards and the demand for high quality make the FLEXPPOINT® MV12 the perfect choice for sensor applications in industrial environments.

The MV12 series has excellent line characteristics that are tailored to meet the demands of image processing. For easy application the operating



rating voltage range of the line lasers is between 4.5 and 30 VDC.

The optical and electrical characteristics are identical to those of the MVpico and MVmicro series.

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