

# FLEXPOINT Laser Modules

## Laser Modules For Your Application



# FLEXPOINT Laser Modules Production



## **Development of Laser Modules**

Two laser modules are rarely alike. Our strength lies in the ability to offer custom FLEXPOINT modules. Whether for single pieces or series production, we develop and manufacture your modules in Germany: from electronics and optics to the complete laser module. Place your trust in the FLEXPOINT brand.

## **The Most Modern Technologies for Customized Developments**

Our FLEXPOINT laser modules are developed with computer assistance: Using CAD, we determine the shape of the housing. Integrated lens combinations are responsible for the beam quality of the laser modules. We simulate the beam using optics design software. To ensure that the driver of the laser diode works hassle free, it is also developed on the computer.

## **Quality Assurance**

To assure quality, our laser modules are tested at different optical measuring stations. All kinds of parameters are tested: optical power, beam profiles, the beam angle error, and electrical parameters, such as power consumption and voltage.

# FLEXPOINT Laser Modules Production

## Key Features

**Create your individual laser module by selecting from the following options:**

- / Wavelengths: Blue: 405/450/488 nm  
Green: 520 nm (laser diode) or  
532 nm (DPSS laser)  
Red/IR: 635-660/685/785/808-980 nm
- / Output power: From <1mW to 100mW  
The output power can be adjusted to meet a specific laser class requirement (e.g., laser class 1, 2)  
Output power adjustment can be conducted using an external potentiometer or a control signal.
- / Beam shapes: Uniform lines, uniform multilines, dots, various different patterns such as circles, dot matrices, crosses
- / Focus: Adjustable or preset at factory  
Includes easy focusing mechanism
- / Supply voltage: 4.5-30 VDC (depends on laser diode used)
- / Digital modulation/Trigger
- / Cable connection or M12 connector for easy integration
- / Outstanding bore sighting and pointing stability
- / Protection class up to IP67

**OEM versions are available for all types of FLEXPOINT lasers!**



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## MVmicro

### **For Stand-Alone Machine Vision Applications**

An output power of up to 100mW and a sophisticated focusing mechanism make the MVmicro a universal tool for industrial inspection and 3D triangulation. Different line optics and diverse red, green and blue wavelengths come as standard. The MVmicro includes an M12 plug for easy electrical connection. The housing size of the MVmicro is 65x19 mm.

Versions with a fixed and an adjustable focus are both available – with superior line and focusing quality. The customer can also choose between several focus options to either generate a very thin line or a line with enhanced depth of focus.



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## MVnano

### **The Workhorse**

With a housing measuring 61x11.5 mm, MVnano lasers are suitable both for use as standalone products and for integration.

The new edition of the MVnano features a totally new developed focusing mechanism to help the customer adjust the focus distance much faster and with more precision. You can choose from several optics to get the right combination of line thickness and depth of focus for the application.

The MVnano can be ordered with either adjustable focus, or fixed focus set at the factory; with separate housings for the optics and electronics, and as a version without driver electronics for use in OEM sensors.



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## MVPico

### **Small and Flexible**

The MVPico line lasers are only 50mm long and have a diameter of 10mm. The small dimensions make the MVPico perfectly suited for integration into intelligent 3D vision sensors. In spite of the tiny housing dimensions, an output power of up to 100mW is available.

The MVPico lasers can also be ordered with the new edition focusing mechanism for an easier and more precise focus adjustment. We also offer several optics options for the right combination of line thickness and depth of focus.

The MVPico series includes versions with adjustable focus, or fixed focus set at the factory; with separate housings for the optics, electronics, and a version without driver electronics.

**! Detailed datasheets of each MV laser module can be found on our website!**



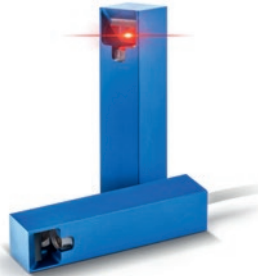
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## MVfemto

### **Smallest Machine Vision Laser on the Market**

With the MVfemto line laser LASER COMPONENTS presents the smallest machine vision laser with outstanding optical performance. With dimensions of only 40mm in length and 8mm in diameter it is the best choice for integration into 3D sensors that have very little space.

The MVfemto lasers come with a fixed focus set at the factory either in the standard housing, in a version with separate housings for the optics and electronics, or in a short housing without laser driver.



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## MVsquare

### **Prealigned Line Laser in a Square Housing**

The MVsquare line lasers come in a square housing. The orientation of the laser line is prealigned ex-factory to a given reference surface of the housing. End users can easily integrate the module to their machine vision sensor with a fastener, thus eliminating the need for further alignment.

The optical parameters are equal to the MVnano or MVPico lasers. The focus of the line is set and fixed in the factory.

The line orientation can be tilted and rotated in 3 axes. That includes a 90° deflection perpendicular to the long mechanical axis. Mounted and aligned this way, the necessary space in Z-direction is as short as 15mm.



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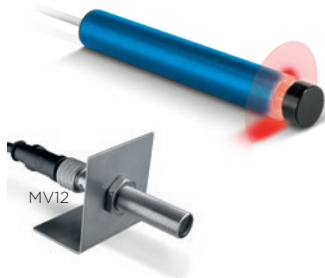
## MVpulse

### **Lots of Light Yet Eye Safe**

The award-winning FLEXPOINT MVpulse line laser combines three important criteria of Machine Vision applications, which are uniform laser line intensity, high output power and Laser Class 2 eye safety.

A microcontroller generates laser pulses with peak pulse powers that reach up to 5x the possible continuous wave peak output power. Pulse duration and the frequency of the pulses are always calculated and controlled to meet the criteria of the desired laser safety class.

Available for the wavelengths 405, 450, 640, 660, and 780nm and output powers of 10 to 100mW at pulse lengths between 15 and 0.38ms.



## Radial

### Homogeneous 360° line without rotating parts

With the FLEXPOINT Radial ring laser module, users can now get a detailed view from the inside of pipelines or tubes. The laser module generates a homogeneous 360° beam without the use of any rotating parts and allows scanners to detect irregularities down to 50 μm.

The fine, ring-shaped beam has a homogeneity of 80% and achieves an output power of 50mW at a wavelength of 660nm. The focus of the laser line is pre-adjusted in production to the needs of the customer's application.



## MVstereo

### For 3D Stereo Machine Vision

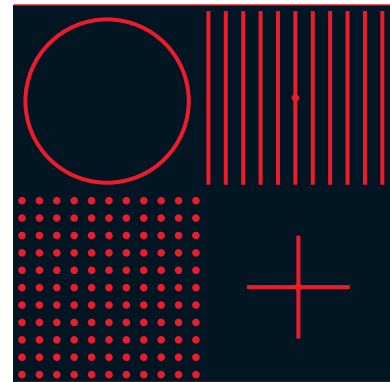
The MVstereo random pattern generator (RPG) projects a dot matrix of up to 47.708 divergent dots (several patterns available). It is available as 660 and 830nm. LASER COMPONENTS offers an eye safe version for each wavelength.

The RPG is used in applications such as gesture recognition, depth sensing, and volume measurements.

## MV18

### The Ruggedized One with M18 Thread

The new MV18 series uses the latest edition of our focusing mechanism and comes with a M18 thread for easy mounting of the module, and is equipped with a M12 connector. Output powers up to 200mW @ 450nm are available.



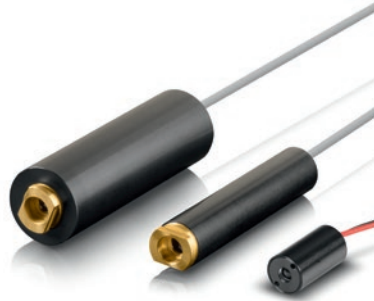
## Pattern Generators

Some applications require special laser patterns that can be produced via diffractive optical elements (DOEs). DOEs are computer generated and manufactured cheaply in mass production by copying the master optic. Such optics can be permanently integrated into a FLEXPOINT laser module or delivered in a pluggable plastic mount. Typical patterns are crosshairs, parallel multi lines, circles and dot matrix.

## MV12

### The Laser with M12 Thread

The FLEXPOINT MV12 laser was developed for easy integration into production lines. This laser is housed in a stainless steel housing with an M12 thread and connector and can easily be screwed into existing threads or holes.



## Dot Lasers

We offer dot lasers with a round or elliptical beam profile. The output power can be set according to customer specifications from a few microwatts up to 100mW. We also build laser modules that have to be assigned to a specific laser class (e.g., laser class 1, 2, or 3R).

As an option, all dot lasers can be modulated or equipped with an external power adjustment. The supply voltage is typically 4.5–6 VDC or 4.5–30 VDC. Standard housings measure 57 x 11.5 mm; however, custom housings can also be manufactured and used.

Beside the standard dot lasers, LASER COMPONENTS also offers the FP-Mini series with a small housing of only 15 x 8 mm and the T85 series with enhanced operating temperature range up to +85°C.



## Line Lasers

Line lasers can be produced with different fan angles to ensure that the correct line length is always projected at the working distance.

Upon request, the laser line can be optimized for a customer-specified working distance in order to produce optimal imaging results (e.g., line width). The output power can be set according to customer specifications from a few microwatts up to 100 mW.



## OEM Designs

We focus on custom and OEM versions of lasers and laser modules. Custom mechanical, electrical, and optical design solutions are provided, using up-to-date developing tools like CAD and optics design software. Typical production lots start at 10 pieces and go up to 10,000 pieces. Please talk to our engineers to develop a laser module that best fits your application.

**! Detailed datasheets of each FLEXPPOINT laser module can be found on our website!**



## Heavy Duty HD Series

### **Dot, Line and Crosshair Lasers**

The HD series was specifically developed for alignment tasks in harsh environments. The 19mm housing is mechanically robust and conforms to protection class IP67 (dustproof and waterproof). The lasers can be focused and thus adjusted to each working distance.

HD series laser modules are available as dot lasers, line lasers, or cross-hair lasers. The wavelength is 520nm (green) or 635nm (bright red).



## ILM12F Series

### **Dot, Line and Crosshair Lasers**

The M12x1 thread of this stainless steel industrial housing makes it quick and easy to mount and run the laser. ILM12F lasers conform to protection class IP54 and are equipped with an M12 connector. With an add-on adapter, the protection class can even be extended to IP67.

These laser modules are available as dot lasers, line lasers, or cross-hair lasers. The wavelength is 520nm (green) or 635nm (bright red).

The ILM12F laser modules come with adjustable focus.



## LR Series Long Range Lasers

LR series dot laser modules generate beam diameters from 1.5mm to 12mm at a distance from 10m to 200m. This makes these lasers perfectly suitable for aligning long production lines, aiming at long-distance targets, tunnel building, and constructing walls and fences. In addition to the dot lasers, also line lasers for long distances are available.

The modules are equipped with bright red or green laser diodes.



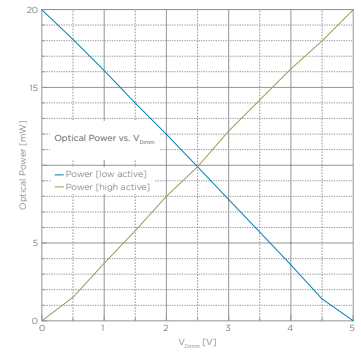
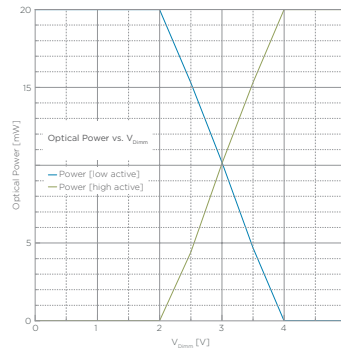


## LT-PLM Series Precision Laser Modules

LT-PLM precision laser modules feature a precise housing from which the laser beam exits aligned to the mechanical axis of the housing. This eliminates any beam angle error.

The modules are suitable for a wide variety of alignment tasks, for example to align machines to each other or to center the spindle inside a turning lathe.

There are three types of precision laser modules available: one in a squared housing, one in a standard cylindrical housing, and one with an integrated battery.



## Digital Laser Driver with Microcontroller

### RS-232 and USB Programming and Reporting Feature

LASER COMPONENTS now offers a digital laser driver with microcontroller for selected laser module series. The new digital driver allows for interfacing with the laser module using RS-232 or USB. Using the digital communication, the laser module can be monitored and controlled. Even major operational settings like output power and dimming, trigger, pulsing and modulation can be programmed by the customer.

The monitoring features include the operating time of the system, the temperature inside the module, the laser diode current and many more.

These parameters help the customer to detect aging of the laser module and consequently a pro-active maintenance to prevent down time of the production line.

The use of a microcontroller also ensures outstanding output power stability as well as exceptional linearity in analog output power adjustment versus the control voltage.

A list of all laser module series for which the new laser driver is available can be found in the datasheet of the digital laser driver. It also includes information how the housing dimensions will change when using the digital driver.



## Low-Cost OEM Laser Modules

### **The Absolut Smallest Lasers**

With a housing diameter as small as only 3.3mm, our LC-LMD series laser modules are the smallest laser modules in the world. Different housing diameters from 3.3mm to 10.5mm are available.

### **Dot, Crosshair or Line Lasers**

The OEM laser module series includes dot lasers, line lasers and crosshair lasers. A majority of the dot lasers comes with a collimated beam, whereas the -05 version has an adjustable focus.

### **Different Wavelengths**

The laser modules are available with 520nm, 635nm, 650nm, 785nm, and 850nm.

### **Common Supply Voltage and Connection Leads**

The laser modules work with a supply voltage of 3.0VDC. Together with 10-cm-long flying leads (applies to selected versions), easy integration is guaranteed.

### **Different Output Power Levels**

Standard output power levels include <1mW, 2–3mW and 2–5mW. Other power level settings are available upon request.

### **Now Available: Cross-Hair and Line Lasers, Green Laser**

In addition to dot lasers, several cross-hair and line lasers are now available as part of our low-cost OEM series. A 520nm/green laser module was also added to the portfolio. Please check out LASER COMPONENTS' website for details.

**!** Detailed datasheets of each low cost OEM laser module can be found on our website!



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## Mounts

### FP-MS Mounts

FP-MS mounts are available for standard laser modules with a diameter of 11.5 mm and 19 mm. They are the right choice for easy and long-lasting fixing of the laser module in an application.



### FP-MG Mounts

FP-MG mounts are equipped with a ball joint and therefore offer more flexibility in adjusting the laser module. They are available for laser modules with a diameter of 11.5 mm and 19 mm.



### FP-MP Precision Mounts

For applications which require high alignment accuracy, LASER COMPONENTS offers FP-MP precision mounts with a rotation of 360° along two axes and parallel movement. They are available for laser modules with a diameter of 19 mm. An adapter for laser modules with 11.5 mm is available too.



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## Accessories

### Power Supplies / Battery Packs

If the laser modules need to be connected to 110/230 VAC, simple and inexpensive power supplies are available. The battery pack is a practical accessory for stand-alone or mobile laser module applications, or if a power source is not nearby.



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