

## Laser Line Modules series 5LM/5LMM

Laser line with a small fan angle and Gaussian intensity distribution

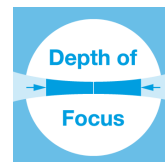
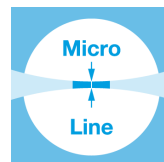


### FEATURES

Machine vision laser line with a small fan angle and Gaussian intensity distribution. This includes lasers of series 5LM/5LMM. They are available as Micro (smaller line widths) or Macro versions (extended depth of focus).

- Small fan angle
- Gaussian intensity distribution
- Laser Line Generator series [5LM](#)
- Line widths starting at 26  $\mu\text{m}$
- Wavelengths 405 - 940 nm
- Laser powers up to 108 mW
- Laser Line Generator series [5LMM](#)
- Depth of focus 7 to 35 times larger than for corresponding Micro Laser Line Generator
- Line widths starting at 144  $\mu\text{m}$
- Wavelengths 405 - 940 nm
- Laser powers up to 82 mW
- Optional Low Noise Version:
- Series [LNC-5LM](#) (Micro) and series [LNC-5LMM](#) (Macro)
- Available in a compact version
- [5LM+25CM](#) (Micro), [5LMM+25CM](#) (Macro)

- Micro Line Generator for small laser line widths and high power density in the focal plane
- Macro Line Generator for extended depth of focus



## DESCRIPTION

The laser diode beam sources series 5LM/5LMM produce laser lines with a small fan angle and Gaussian intensity distribution along the laser line.

### 5LM/5LMM

The laser diode beam source series 5LM produces laser lines with a smaller fan angle of 8° or 15°. The intensity profile is Gaussian in line direction clipped by an aperture with an edge intensity of typ. 30%. The line width is constant along the laser line. Across the laser line the intensity distribution is Gaussian for the Series 5LM and [approx. Gaussian](#) for the series 5LMM.

### Micro and Macro lasers

The lasers of series [5LM](#) are [Laser Micro Line Generators](#) designed to produce lines with small line width. They have a small depth of focus (in this case the depth of focus is the Rayleigh range). [Laser Macro Line Generators](#) like the corresponding lasers of series [5LMM](#) have common basic optical features but are designed to generate laser lines with an extended depth of focus.

### Electronics

The lasers have integrated electronics for control of the laser output power. The output power can be controlled using the modulation input ports (TTL and analog) or manually using the potentiometer. Optionally the lasers can be equipped with [RS232 serial interface](#) for laser control and data read-out. Please note that the compact version (more details below) has different electronic features.

### Adjusting the working distance

For lasers of series 5LM the working distance is fixed. A fine-adjustment of the distance between laser and target is recommended for fine-focusing in order to achieve minimal line width.

### Optional: Low Noise Version

The laser series 5LM/5LMM are also available as a Low Noise versions [LNC-5LM](#) (Micro), [LNC-5LMM](#) (Macro). These lasers are [low noise](#) (typ. < 0.1% of  $P_o$  (RMS, Bandwidth < 1 MHz)) and operate mode-hopping free. Due to the reduced coherence length the speckle contrast is lowered. However this effect is smaller for smaller lines. ( $P_o$  is the maximum specified output power.)

### Compact Version

The laser series 5LM/5LMM as well as 5LP/5LPM are also available as a compact version [5LM+25CM](#) (Micro) and [5LMM+25CM](#) (Macro). Please note that these differ in electronics type and are not available with RS232 interface or as a Low Noise LNC version.

These high quality lasers can e.g. be used for machine vision applications, laser triangulation or laser light sectioning.

## TECHNOTES

- [Micro vs. Macro](#)  
[What does Micro or Macro Laser mean?](#)
- [Laser Modules with RS232 interface](#)  
[Features of Laser Modules with RS232 interface](#)

LNC Laser Modules

Low noise Laser Modules vs. regular Laser Modules

- Electronic features (9)  
Detailed electronic features for all electronics types
  - Overview Electronics Types  
Overview over all Electronics Types
  - Electronics Type C  
Electronic features for electronics type C
  - Electronics Type P  
Electronic features for electronics type P
  - Electronics Type H  
Electronic features for electronics type H
  - Electronics Type HP  
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  - Electronics Type CS with RS232 interface  
Electronic features for electronics type CS
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Electronic features for electronics type PS
  - Electronics Type S  
Electronic features for electronics type S
  - Electronics Type B  
Electronic features for electronics type B
- Laser Line Basics (7)  
Line geometry, intensity distribution, definition of line length and working distance, definition of line width and machine vision applications.
  - Laser Line geometries  
Fan angle vs. semi-telecentric.
  - Intensity distribution  
Gaussian intensity distribution and uniform intensity distribution along the laser line
  - Laser Line length and working distance  
Line length and working distance definition
  - Laser Line Width and Depth of Focus / Rayleigh Range  
Line width definition
  - Laser Speckle  
When do they appear and how to prevent them
  - Wavelengths of diode based lasers  
What wavelengths are available for diode based laser modules?
  - Cable orientation  
Straight and angled cable exit

[Machine vision applications of Laser Lines \(1\).](#)  
[Laser triangulation, laser light sectioning, particle measurement etc.](#)

- [Laser Diffraction Measurements](#)
- [Article - Laser Sources for Metrology and Machine Vision](#)  
[Laser diode based laser sources for high precision measurement and inspection systems](#)

## RELATED PRODUCTS

### LASER MODULES SERIES 5LM

- Micro Line, **small** fan angle
- Gaussian intensity distribution

### LASER MODULES SERIES 5LMM

- Macro Line, **small** fan angle
- Gaussian intensity distribution
- Extended depth of focus

### LASER MODULES SERIES 5LP

- Micro Line, **large** fan angle
- Gaussian intensity distribution

### LASER MODULES SERIES 5LPM

- Macro Line, **large** fan angle
- Gaussian intensity distribution
- Extended depth of focus

### LASER MODULES SERIES 5LM+25CM

- **Compact** Micro Line, **small** fan angle
- Gaussian intensity distribution

### LASER MODULES SERIES 5LMM+25CM

- **Compact** Micro Line, **small** fan angle
- Gaussian intensity distribution
- Extended depth of focus

### LASER MODULES SERIES 5LP+25CM

- **Compact** Micro Line, **large** fan angle
- Gaussian intensity distribution

### LASER MODULES SERIES 5LPM+25CM

- **Compact** Macro Line, **large** fan angle
- Gaussian intensity distribution
- Extended depth of focus

### LASER MODULES SERIES LNC-5LM

- Micro Line, **small** fan angle
- Gaussian intensity distribution
- Low noise

**LASER MODULES  
SERIES LNC-5LMM**

- Macro Line, **small** fan angle
- Gaussian intensity distribution
- Extended depth of focus
- Low Noise

**LASER MODULES  
SERIES LNC-5LP**

- Micro Line, **large** fan angle
- Gaussian intensity distribution
- Low noise

**LASER MODULES  
SERIES LNC-5LPM**

- Macro Line, **large** fan angle
- Gaussian intensity distribution
- Extended depth of focus
- Low noise

This is a printout of the page [https://sukhamburg.com/products/laserm\\_modules/series/5LM-family.html](https://sukhamburg.com/products/laserm_modules/series/5LM-family.html) from 4/26/2024

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