

Machine Vision Laser Line with a fan angle and uniform intensity distribution

Series 13LR/13LRM and 13LN/13LNM

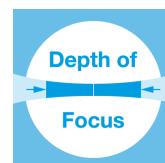
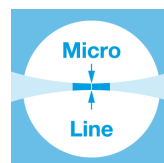


FEATURES

Machine vision laser line with a fan angle and approx. uniform intensity distribution. This includes lasers of series 13LR/13LRM and 13LN/13LNM. Both series are available as Micro (smaller line widths) or Macro version (extended depth of focus).

- Fan angle
- Approx. uniform intensity distribution
- Laser Line Generator series [13LR/13LRM](#)
- Larger fan angle for longer laser lines
- Adjustable working distance
- Laser Line Generator series [13LN/13LNM](#)
- Small fan angle
- Extra small line widths (13LN only)
- Optional Low Noise Version:
- Series [LNC-13LN](#) (Micro) and series [LNC-13LNM](#) (Macro)

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- 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 13LR/13LRM and 13LN/13LNM produce laser lines with a fan angle and approx. uniform intensity distribution along the laser line.

13LR vs. 13LN

The lasers of series 13LR produce laser lines with a fixed fan angle of 12°, 25° or 40° with a constant line width and approx. uniform intensity distribution along the laser line. The fine-structure is a [chain of equidistant dots](#) with a spacing of approx. the line width. The line width is constant along the laser line. Across the laser line the intensity distribution is Gaussian for lasers of series 13LR and [approx. Gaussian](#) for lasers of Series 13LRM.

The lasers of series 13LN/13LNM produce laser lines with a small fan angle between 0° and 16.8° and approx. uniform intensity distribution along the laser line. More precisely, it is Gaussian clipped by an aperture with an edge intensity of typ. 80%.

Across the laser line the intensity distribution is Gaussian for the series 13LN and [approx. Gaussian](#) for the series 13LNM. For series 13LN the line width is constant along 60% of the central area, outside this area the line width differs up to 30%.

Micro and Macro lasers

The lasers of series [13LR](#) and [13LN](#) 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 [13LRM](#) and [13LNM](#) 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.

Adjusting the working distance

For lasers of series 13LR/13LRM the working distance can be adjusted by adjusting the focus setting. Please note that beam parameters like line length and line width increase proportionally to the working distance. Additionally a fine-adjustment of the distance between laser and target is recommended for fine-focusing and minimal line width.

For lasers of series 13LN 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 13LN/13LNM is also available as a Low Noise version [LNC-13LN](#) (Micro) and [LNC-13LNM](#) (Macro). These lasers are [low noise](#) (typ. < 0.15% of P_0 (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_0 is the maximum specified output power.)

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](#)
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- [Laser Line Basics \(7\)](#)
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[Gaussian intensity distribution and uniform intensity distribution along the laser line](#)
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[Line length and working distance definition](#)

[Laser Line Width and Depth of Focus / Rayleigh Range](#)
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DOWNLOADS

[Article_LaserLines.pdf](#)

This downloads section only includes general downloads for the complete series.

Please access the individual product pages (using the product configurator, the product list, order options or the search button if you have a complete order code). Here you will find specific downloads including technical drawings or stepfiles.

RELATED PRODUCTS

LASER MODULES SERIES 13LR

- Micro Line Generator, fan angle
- Uniform intensity distribution

LASER MODULES SERIES 13LRM

- Macro Line Generator, fan angle
- Uniform intensity distribution
- Extended depth of focus

LASER MODULES SERIES 13LN

- Micro Line, **small** fan angle
- Uniform intensity distribution
- Thin lines

LASER MODULES SERIES 13LNM

- Micro Line Generator, **small** fan angle
- Uniform intensity distribution
- Extended depth of focus

**LASER MODULES
SERIES LNC-13LN**

- Micro Line, **small** fan angle
- Uniform intensity distribution
- Thin lines
- Low noise

**LASER MODULES
SERIES LNC-13LNM**

- Macro Line Generator, **small** fan angle
- Uniform intensity distribution
- Extended depth of focus
- Low noise

This is a printout of the page

https://sukhamburg.com/products/laserm_modules/geometry/laserline/fanangle_constant.html from 5/10/2024

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