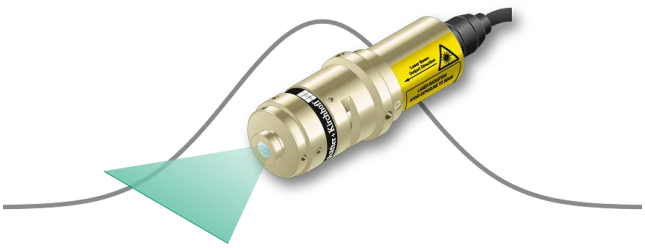
Green Machine Vision Laser Line with a fan angle and Gaussian intensity distribution

Series 5LM/5LMM and 5LP/5LPM

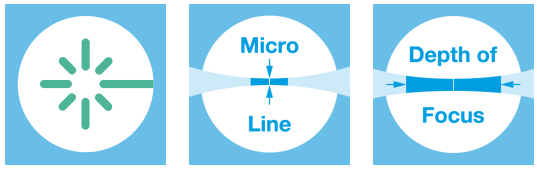


FEATURES

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

- Fan angle
- Gaussian intensity distribution
- Laser Line Generator series 5LM/5LMM
- Small fan angle
- Laser Line Generator series 5LP/5LPM
- Larger fan angle for longer laser lines
- Optional Low Noise Version:
- Series LNC-5LM (Micro) and series LNC-5LMM (Macro)
- Series LNC-5LP (Micro) and series LNC-5LPM (Macro)

- Green Machine Vision Laser
- 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 and 5LP/5LPM produce laser lines with a fan angle and Gaussian intensity distribution along the laser line.

5LM vs. 5LP
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.

The laser diode beam source series 5LP produces laser lines with a large fan angle of about 40°, 62°, or 84°. 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 5LP and approx. Gaussian for the series 5LPM.

Micro and Macro lasers
The lasers of series 5LM and 5LP 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 and 5LPM 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 and 5LP 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 as well as 5LP/5LPM are also available as a Low Noise versions LNC-5LM (Micro), LNC-5LMM (Macro), LNC-5LP (Micro) and LNC-5LPM (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
  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
    Electronic features for electronics type HP
  - Electronics Type CS with RS232 interface
    Electronic features for electronics type CS
  - Electronics Type PS with RS232 interface
    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

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 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 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

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https://sukhamburg.com/products/lasermodules/wavelength/green/laserline/fanangle_gaussian.html from 4/23/2024

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