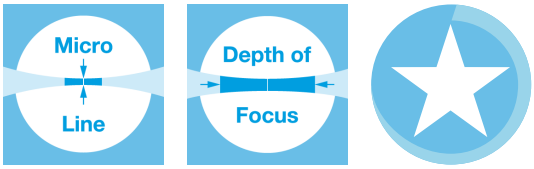
Laser Line Modules Series 5LT/5LTM

Semi-telecentric line with Gaussian intensity distribution

Machine Vision Laser Line series 5LT
Representative product images. Individual product images are found on the individual product pages.



FEATURES

Semi-telecentric machine vision laser line with Gaussian intensity distribution. This includes lasers of series 5LT/5LTM. Both series are available as Micro (smaller line widths) or Macro version (extended depth of focus).

- Semi-telecentric
- Gaussian intensity distribution

- Laser Line Generator series 5LT-1/5LTM-1

- Line length ca. 4.8 mm
- Line widths starting at 26 µm (5LT-1) / 48 µm (5LTM-1)
- Wavelengths 405 - 940 nm
- Laser powers up to 113 mW (5LT-1) / 81 mW (5LTM-1)

- Laser Line Generator series 5LT-2/5LTM-2

- Line length ca. 2 mm
- Line widths starting at 11 µm (5LT-2) / 24 µm (5LTM-2)
- Wavelengths 405 - 940 nm
- Laser powers up to 113 mW (5LT-2) / 81 mW (5LTM-2)

- Optional Low Noise Version:

- Series LNC-5LT-1 (Micro) and series LNC-5LTM-1 (Macro)
- Series LNC-5LT-2 (Micro) and series LNC-5LTM-2 (Macro)

- Available in a compact version

- 5LT-1+25CM (Micro), 5LTM-1+25CM (Macro)

- 5LT-2+25CM (Micro) and 5LTM-2+25CM (Macro)

DESCRIPTION

The laser diode beam sources series 5LT-1/5LTM-1 and 5LT-2/5LTM-2 produce semi-telecentric laser lines with a Gaussian intensity distribution along the laser line. They differ in their line length and line width.

5LT-1 vs. 5LT-2
The laser diode beam sources series 5LT-1 produce a semi-telecentric laser line with a line length in the range of 4.8 mm. For most laser diodes the intensity profile is Gaussian in line direction clipped by an aperture at line length 4.8 mm with an edge intensity of typ. <40%. In some cases the line length is slightly smaller. In this case the line length is given on the 13.5%-level and the beam is Gaussian in line direction and truncated at 4.8 mm. The line width is constant along the laser line. Across the laser line the intensity distribution is Gaussian for series 5LT-1 and approx. Gaussian for series 5LTM-1.

The laser diode beam sources series 5LT-2 produce a semi-telecentric laser line in the range of 2 mm line length. The line length is given on the 13.5%-level. The intensity profile is Gaussian in line direction. The line width is constant along the laser line. Across the laser line the intensity distribution is Gaussian for series 5LT-2 and approx. Gaussian for series 5LTM-2.

Micro and Macro lasers
The lasers of series 5LT-1 and 5LT-2 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 5LTM-1 and 5LTM-2 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 5LT-1 and 5LT-2 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 5LT-1/5LT-2 is also available as a Low Noise version LNC-5LT-1 (Micro) and LNC-5LTM-1 (Macro) Low Noise version LNC-5LT-2 (Micro) and LNC-5LTM-2 (Macro). These lasers are low noise (typ. < 0.15% 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 and spots. (P_o is the maximum specified output power.)

Compact Version
The laser series 5LT-1/5LTM-1 as well as 5LT-2/5LTM-2 are also available as a compact version 5LT-1+25CM (Micro), 5LTM-1+25CM (Macro), 5LT-2+25CM (Micro) and 5LTM-2+25CM (Macro). Please note that these have a different 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
    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

This is a printout of the page https://sukhamburg.com/products/lasermodules/series/5LT-family.html from 9/8/2025

CONTACT

For more information please contact:
Schäfter + Kirchhoff GmbH
Kieler Str. 212
22525 Hamburg
Germany
Tel: +49 40 85 39 97-0
Fax: +49 40 85 39 97-79

info@sukhamburg.com
www.sukhamburg.com

LEGAL NOTICE