

Semi-telecentric Machine Vision Laser Line with Gaussian intensity distribution

Series 5LT/5LTM

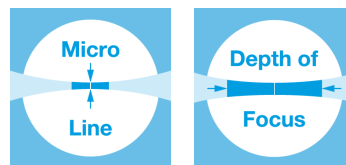


FEATURES

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
- Laser Line Generator series [5LT-2/5LTM-2](#)
- Line length ca. 2 mm
- 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)

- 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 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_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 and spots. (P_0 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](#)

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 5LT-1

- Semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**

LASER MODULES SERIES 5LTM-1

- Semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**
- Extended depth of focus

LASER MODULES SERIES 5LT-2

- Semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**

**LASER MODULES
SERIES 5LTM-2**

- Semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**
- Extended depth of focus

**LASER MODULES
SERIES 5LT-1+25CM**

- **Compact** semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**

**LASER MODULES
SERIES 5LTM-1+25CM**

- **Compact** semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**
- Extended depth of focus

**LASER MODULES
SERIES 5LT-2+25CM**

- **Compact** semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**

**LASER MODULES
SERIES 5LTM-2+25CM**

- **Compact** semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**
- Extended depth of focus

**LASER MODULES
SERIES LNC-5LT-1**

- Semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**
- Low noise

**LASER MODULES
SERIES LNC-5LTM-1**

- Semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **4.8 mm**
- Extended depth of focus
- Low noise

**LASER MODULES
SERIES LNC-5LT-2**

- Semi-telecentric Micro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**
- Low noise

**LASER MODULES
SERIES LNC-5LTM-2**

- Semi-telecentric Macro Line
- Gaussian intensity distribution
- Constant line length ca. **2 mm**
- Extended depth of focus
- Low noise

This is a printout of the page https://sukhamburg.com/products/laserm_modules/geometry/laserline/semi-telecentric_short.html from 4/26/2024

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.de

www.sukhamburg.com

LEGAL NOTICE

Copyright 2020 Schäfter+Kirchhoff GmbH. All rights reserved.

Text, image, graphic, sound, video and animation files and their arrangement on Schäfter+Kirchhoff GmbH webpages are protected by copyright and other protective laws. The content may not be copied for commercial use or reproduced, modified or used on other websites. [\[more\]](#)

