Red Machine Vision Laser Focus with an elliptical beam profile

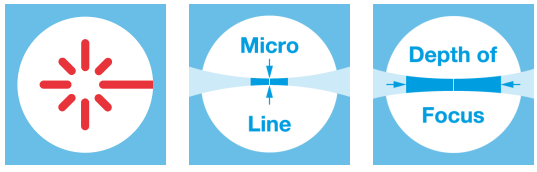
Series 13M/13MM, 5M

FEATURES

Machine vision laser focus with elliptical Gaussian beam profile. This includes lasers of series 13M/13MM and 5M. All series are available as Micro (smaller line widths) or Macro version (extended depth of focus).

- Spot with elliptical beam profile
- Laser Focus Generator series 13M/13MM
- Also available in blue or green
- Laser Focus Generator series 5M
- Compact
- Optional Low Noise Version:
- Series LNC-13M (Micro) and series LNC-13MM (Macro)

- Red 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 13M/13MM and 5M produce a elliptical laser spot.

13M/13MM vs. 5M
The laser diode beam source series 13M produces an elliptical laser spot with elliptical Gaussian intensity distribution. The laser diode beam source series 13MM produces an often circular (sometimes slightly elliptical) laser spot with extended depth of focus. The beam profile is approx. Gaussian. More precisely it has an elliptical intensity distribution clipped by a circular aperture.

The compact Laser Focus Generator series 5M produces an elliptical laser spot with elliptical Gaussian intensity distribution.

Micro and Macro lasers
The lasers of series 13M and 5M are Laser Micro Focus Generators designed to produce spots with small spot size. They have a small depth of focus (in this case the depth of focus is the Rayleigh range). Laser Macro Focus Generators like the corresponding lasers of series 13MM have common basic optical features but are designed to generate laser spots 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 5M has different electronic features and is not available with RS232 interface.

Adjusting the working distance
For lasers of series 13M/13MM, and 5M the working distance can be adjusted by adjusting the focus setting. Please note that the spot diameter increases proportionally to the working distance. A fine-adjustment of the distance between laser and target is recommended for fine-focusing in order to achieve minimal spot size.

Optional: Low Noise Version
The laser series 13M/13MM is also available as a Low Noise version LNC-13M (Micro), LNC-13MM (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. (Po is the maximum specified output power.)

These high quality lasers can e.g. be used for machine vision applications.

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

RELATED PRODUCTS

LASER MODULES SERIES 13M	▪ Micro Focus Generator ▪ Elliptical Gaussian beam profile
LASER MODULES SERIES 13MM	▪ Macro Focus Generator ▪ **Circular** beam profile ▪ Extended depth of focus
LASER MODULES SERIES 5M	▪ **Compact** Laser Micro Focus Generator ▪ Elliptical Gaussian beam profile
LASER MODULES SERIES LNC-13M	▪ Micro Focus Generator ▪ Elliptical Gaussian beam profile ▪ Low noise
LASER MODULES SERIES LNC-13MM	▪ Macro Focus Generator ▪ **Circular** beam profile ▪ Extended depth of focus ▪ Low noise

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