

HSML Series



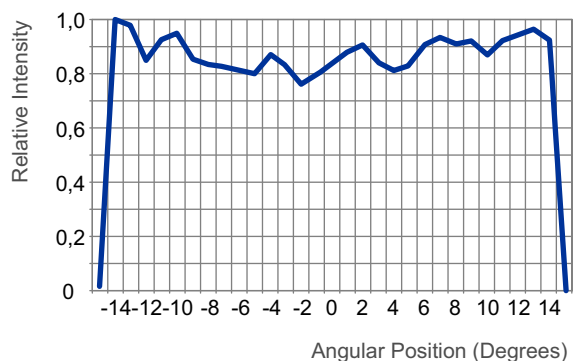
The HSML laser module can be equipped with various optics including uniform or Gaussian line, parallel lines, single dot, crosshair, single circle and other.
It is a mid size module for various applications. The focus is user adjustable.
TTL modulation up to 1MHz and analogue – up to 50kHz are an option.

Wavelength @ 25°C	635 nm – 1060 nm
Power output @ 25°C	635 nm : 5, 10, 20, 30 mW 660 nm : 5, 10, 20, 30, 50 mW 785 nm : 5, 10, 20, 30, 50 mW 830 nm : 5, 10, 20, 30, 50 mW
Beam divergence	0.5 to 1 mrad
Beam shaping optic (optional)	line, width >50 μm fan angle 10°/30°/45°/60°/75°/90° and custom parallel lines, crosshair, single dot, single circle and other
Focus	adjustable
Dimensions	Ø 12.6 mm x 55 mm

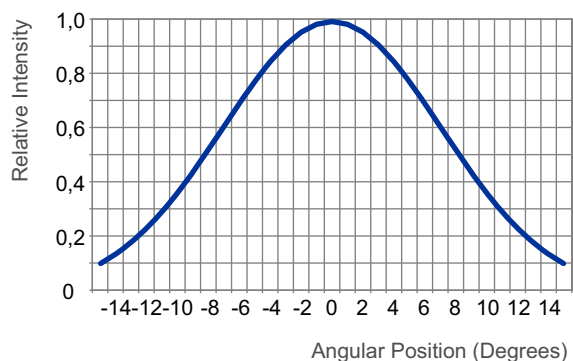
Frankfurt Laser Company offers wide variety of beam-shaping optic for different applications. We are able to deliver custom-made diffractive optic that provides beam patterns required by the application. A customer is welcome to choose different focusing and depth of field parameters to meet most demanding requirements.

Relative intensity vs. angular position along line length

Comparison of intensity distribution over the line length of uniform line generated by our line laser modules and Gaussian line formed by cylindrical lens.

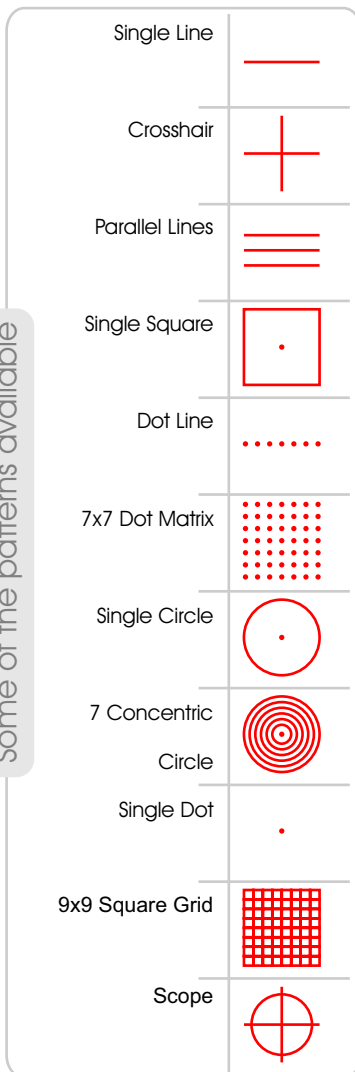


Uniform line



Gaussian line

Some of the patterns available



LASER DIODE MODULES

Machine Vision and Alignment Lasers

Machine vision and alignment lasers are easy to use plug-and-play devices suitable for wide range of applications including machine vision and robotics, alignment and positioning of materials (garments, textile, paper, timber, glass, stone, concrete and metal).

Laser modules offer wide range of projections including adjustable line, uniform or Gaussian, multiple lines, single dot and crosshair. Laser modules are supplied with red, green, blue and IR emission and different intensities in order to maximize projection visibility on surfaces with variable light reflection.

Applications:

- Machine vision
- Metrology
- Saw cutting
- Automotive
- Fabric cutting
- Laser triangulation
- Patient positioning
- Tyre manufacturing
- Graphics alignment
- Rotary press positioning
- Garment manufacturing
- Quality control and packaging
- Glass cutting and drill positioning

General Features:

- Plug & play system
- ESD Protection
- Rugged design
- TTL/analog modulation
- Uniform or Gaussian line
- Reverse polarity protection
- Electrically isolated housing
- Excellent focus & line quality
- User adjustable focus control
- 110/240 VAC & 5/24VDC powered
- No technical laser experience required
- Available with red, green, blue and IR output



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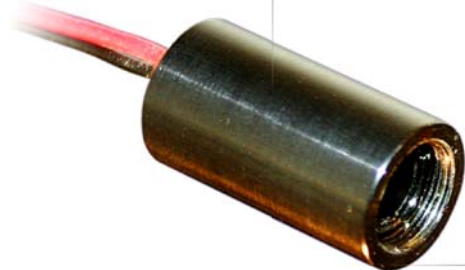
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HSML-mini

The HSML-mini series is our smallest laser module. It is made to be used in portable devices or in products where small size is important.

Wavelength @ 25°C	635 nm – 1060 nm
Power output @ 25°C	0.2 mW - 5 mW
Beam shape	elliptic (aspect ratio 1:3), round (aspect ratio 1:1.2)
Beam divergence	<1 mrad
Focus	fixed
Operating temperature	-10°C to 50°C
Dimensions	Ø 12 mm x 22 mm



HMML Series

The HMML Series provides a unique feature:

The line stays in place while adjusting the focus. There is no need to readjust the line position.

It is made for applications with varying working distances and fixed position of the line, e.g. tyre manufacturing. The HMML series line laser module provides crisp, uniform line with sharp ends.

Gaussian line is available on request. TTL modulation up to 1 MHz (532 nm up to 10 kHz) is an option.

Wavelength @ 25°C	450 nm – 1060 nm
Power output @ 25°C	450 nm : 5, 10, 20, 30, 40, 50 mW 532 nm : 1, 5, 10, 20 mW 635 nm : 5, 10, 20, 30 mW 660 nm : 5, 10, 20, 30, 50, 100, 150 mW 785 nm : 5, 10, 20, 30, 50, 100, 150 mW 830 nm : 5, 10, 20, 30, 50, 100, 150 mW
Power stability	±5 % / 2 h
Beam shape	line, width >50 µm adjustable
Fan angle	10°/15°/20°/30°/45°/60°/75°/90° and custom
Focus	adjustable, without line rotation
Operating temperature band	-10°C to 50°C
Dimensions	Ø 30 mm x 130 mm



HAML Series

The HAML series line laser module provides crisp, uniform line with sharp ends also when mounted off-axis to projection plane. They are optimized for line uniformity (up to +/-15%) and long depth-of-field or small line thickness. The HAML-E version has a separate unit for drive electronics which has the advantage of reducing the size of the optical head so the unit can be used where space is limited.

TTL modulation up to 1MHz (532 nm up to 10 kHz) or analog modulation up to 50kHz is an option.

Wavelength @ 25°C	450 nm – 1060 nm
Power output @ 25°C	450 nm : 5, 10, 20, 30, 40, 50 mW 532 nm : 1, 5, 10, 15 mW 635 nm : 5, 10, 20, 30 mW 660 nm : 5, 10, 20, 30, 50, 100 mW 785 nm : 5, 10, 20, 30, 50, 100 mW 830 nm : 5, 10, 20, 30, 50, 100 mW
Power stability	<5 % over 2 h
Beam shape	line, width >50 µm adjustable
Fan angle	10°/15°/20°/30°/45°/60°/75°/90° and custom
Focus	adjustable
Operating temperature	-10°C to 50°C
Dimensions (HAML)	Ø 18 mm x 88 mm
Dimensions (HAML-E)	Ø 20 mm x 45 mm (optical head & driver)



HNML Series

The HNML series line laser module can additionally be provided with various optics including parallel lines, single dot, crosshair, single circle and other. The focus is user adjustable.

Wavelength @ 25°C	450 nm – 1060 nm
Power output @ 25°C	450 nm : 5, 10, 20, 30, 40, 50 mW 532 nm : 1, 5, 10, 15 mW 635 nm : 5, 10, 20, 30 mW 660 nm : 5, 10, 20, 30, 50, 100 mW 785 nm : 5, 10, 20, 30, 50, 100 mW 830 nm : 5, 10, 20, 30, 50, 100 mW
Power stability	±5% / 2 h
Beam shape	line, width >50 µm adjustable
Fan angle	10°/15°/20°/30°/45°/60°/75°/90° and custom
Optional beam shaping optic	parallel lines, crosshair, single dot, single circle and other
Focus	adjustable
Operating temperature band	-10°C to 45°C
Dimensions	Ø 15 mm x 70 mm

The HNML series line laser modules provides crisp, uniform line with sharp ends. Gaussian line is available on request. TTL modulation up to 1MHz and analogue – up to 50kHz (532nm – TTL 10kHz) are an option.



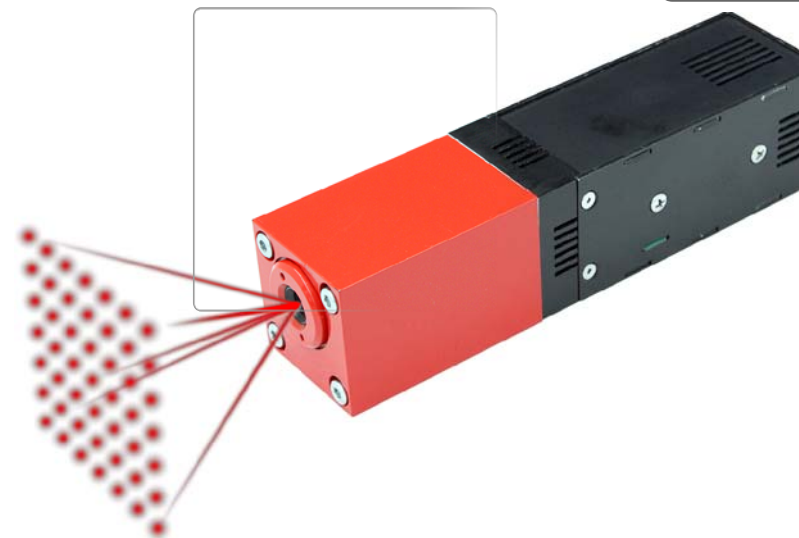
HQML2-HP Series

This powerful temperature-stabilized line generator laser diode module delivers lines at high power up to 1W at the range of wavelength from 660nm to 1064nm.

The module provides exceptional beam pointing and focusing stability, low beam divergence, ultra stable power output and operation over a wide temperature band. The HQML2-HP provides user-adjustable power and temperature to tune the wavelength as well as analog output signals for power, temperature and operation time.

TTL modulation up to 10kHz or analog modulation up to 1kHz is an option

Wavelength @ 25°C	445 nm – 1060 nm
Power output @ 25°C	250 mW – 5W
Power Stability	<2 % over 2 h
Pointing Stability (constant temperature)	<0.1 mrad
Beam Shape	line, width >50 µm adjustable
Fan Angle	10°/15°/20°/30°/45°/60°/75°/90° and custom
Focus	adjustable
Operating Temperature	0°C to 50°C
Dimensions	41 mm x 45 mm x 140 mm

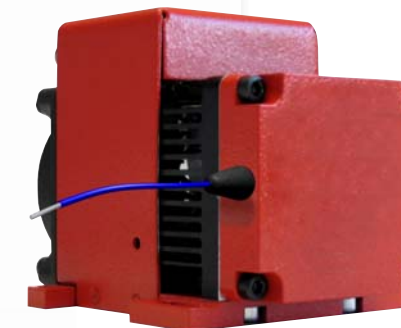


HEML-FC Series

The HEML-FC laser module provides high output power for variety of medical, biological and other applications where compact and rugged laser source combined with convenience of fiber light delivery are required.

The module is equipped with TTL modulation up to 100kHz and analog modulation up to 10kHz.

Wavelength @ 25°C	405 nm – 1060 nm
Power output from Fiber @ 25°C	405 nm : 100, 200, 300 mW 450 nm : 100, 200, 500, 700 mW 532 nm : 100 mW 660 nm : 100, 200, 500, 1000 mW 785 nm : 100, 200, 500, 1000 mW 808 nm : 100, 200, 500, 1000 mW 915 nm : 100, 200, 500, 1000 mW 940 nm : 100, 200, 500, 1000 mW 975 nm : 100, 200, 500, 1000 mW 1064 nm : 100, 200, 500, 1000 mW
Optical Fiber	105 µm
Connector	SMA
Power Stability	<1% over 2 h
Operating Temperature	0°C to 50°C
Dimensions	130 mm x 80 mm x 85 mm



HEML Series

The HEML laser module provides high output power for machine vision applications in harsh environments. It can be equipped with various optics including uniform or Gaussian line, parallel lines, single dot, crosshair, single circle and other.

TTL modulation up to 100kHz or analog modulation up to 10kHz is an option.

Wavelength @ 25°C	445 nm – 1550 nm
Power output @ 25°C	250 mW to 2 W
Power Stability	<1% over 2 h
Beam divergence	0.5 to 1 mrad
Beam shaping optic (optional)	line, width >100 µm fan angle 10°/15°/20°/30°/45°/60°/75°/90° and custom parallel lines, crosshair, single dot, single circle and other
Focus	adjustable
Operating Temperature	0°C to 50°C
Dimensions	130 mm x 80 mm x 85 mm

