Lasiris™ Mini Laser

Features

- Two year warranty
- Uniform intensity distribution with line generators
- Wide range of wavelengths, fan angles and patterns
- Focusable
- Compact and lightweight
- ESD, over-temperature, and reverse-polarity protection
- Rugged, shock and vibration resistant design

Compact structured light projector

StockerYale's Lasiris™ Mini laser has the smallest dimensions available on the market for a diode laser producing uniform intensity lines. It is designed for years of reliable operation in systems where size and weight are a limitation. The Lasiris™ patented line-generating optics have been integrated into the Mini laser to yield the same non-gaussian lines as our well-known SNF lasers.

Despite its small diameter (10 mm - less than 0.4"), the Mini is packed with features. It is ESD-protected, reverse-polarity protected, over-temperature protected, and offers a range of laser patterns thanks to its interchangeable head design.

StockerYale

Applications

- Machine vision
- 3D contour mapping
- Alignment
- Industrial inspection
- Patient positioning

Options and custom units

The laser is available with options allowing you to strobe or control its output electronically and with a wide selection of accessories. Visit us online or contact our application engineers for further details concerning specific requests, since custom units can be built for specialized applications.

Some available patterns

Single Line

Crosshair*

Parallel Lines

Single Square

Dot Line

7x7 Dot Matrix

Single Dot

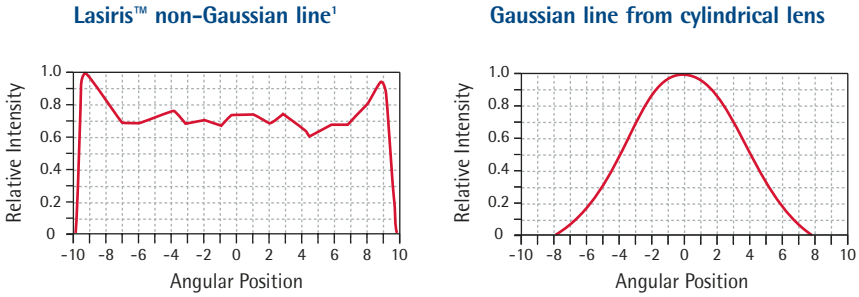
See ordering information section for more patterns or call us.

* Lasiris™ crosshair projectors have a single optical component, unlike conventional crosshairs that are formed either by using two lasers or by splitting and recombining one beam to form a cross.

Uniform intensity

Laser line patterns are often generated by cylindrical optics that produce a gaussian line profile with a bright center and fading ends. Lasiris™ patented optics spread the light into an evenly illuminated line. The result is a crisp, uniform line with sharp ends.

Line intensity profile along line length



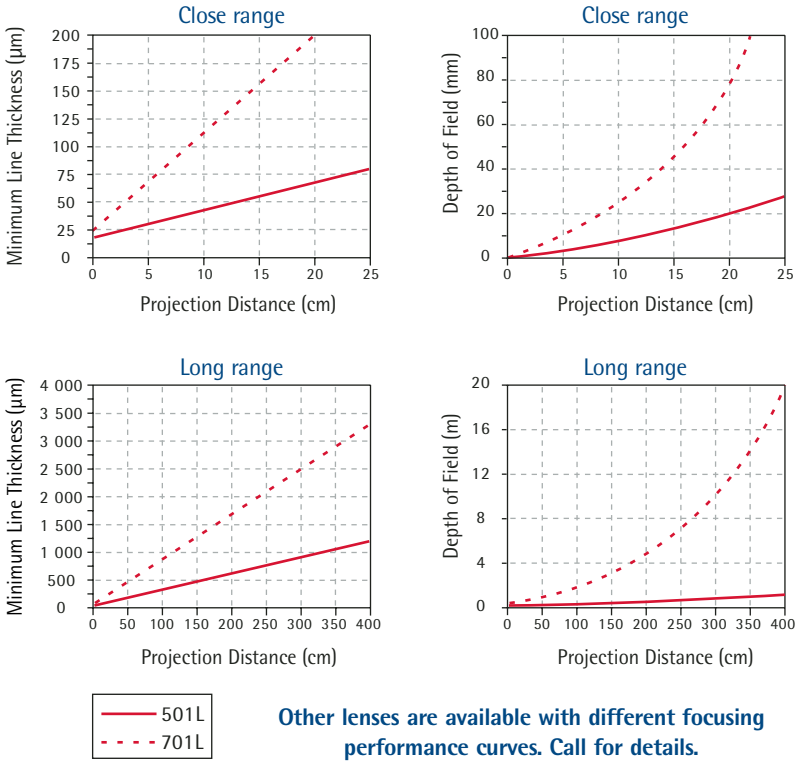
Relative intensity vs. angular position along line length

1) Typical profile

Focusing performance

The following figures show the typical focusing and depth-of-field performance of the Mini laser projector. The focus charts indicate the minimum line thickness (at $1/e^2$) achievable for a specific projection distance. The depth-of-field is defined as twice the distance over which the thickness of the line has increased by a factor of $\sqrt{2}$.

Focusing and depth-of-field performance



Other lenses are available with different focusing performance curves. Call for details.

These focus charts are useful for establishing the smallest achievable line thickness for your application. The 501L will produce the smallest line thickness. The 701L produces a thicker line but maintains the line thickness over a longer distance.

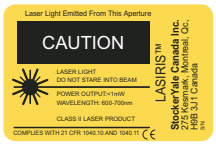
The laser can be collimated for minimum divergence. Also, by specifying a desired line thickness and working distance, the laser can be preset to your precise requirements.

Lasers and Eye Safety

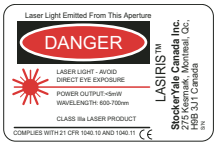
Mini lasers can comply with CDRH and IEC certification. Lasers fall in different safety classes depending on output power, wavelength and fan angle.

According to CDRH 21CFR1040.10 regulations, they can be classified Class II, IIIa, or IIIb.

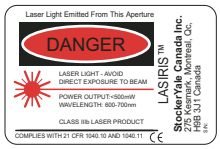
Class II



Class IIIa



Class IIIb



According to IEC 60825-1 regulations, they can be classified Class 1, 1M, 2, 2M, 3R, or 3B. For Class 1M and 2M lasers, viewing the laser output with certain optical instruments (magnifiers, binoculars, etc.) may pose an eye hazard.

Call us, or visit our website for further details.

CAUTION: It is important to follow laser safety rules and wear appropriate protective eyewear when working around lasers. Use of controls, adjustments or performance of procedures other than those specified in the instruction manual may result in hazardous radiation exposure.

Specifications

Mechanical specifications

Weight	12 g
Dimensions	See dimensional diagrams
Housing material	Black anodized aluminum

Optical specifications

Diode power	1 to 40 mW, varies with model
Wavelength	635 to 830 nm, varies with model
Intensity distribution	Uniform (non-gaussian) lengthwise, Gaussian widthwise
Fan angles	1° to 120°, varies with model
Line thickness	Varies with model
Bore sighting	<3 mrad

Environmental specifications

Operating temperature	-10°C to +48°C with bracket
Wavelength drift	0.25 nm/°C typical
Over-temperature protection to 48°C	

Electrical Specifications: Power supply

Voltage	5 ± 5% VDC 6 VDC with optional separate driver Optional 115/220 VAC
Connector type or custom	Male phono-jack 3.5 mm ø,
Slow start time delay	60 msec
Reverse-polarity protection	

Standard Options

Power options

Power Adjustment Potentiometer

Available only with Separate Electronics Option. The laser power can be easily changed by adjusting an optional built-in potentiometer with a small screwdriver. Code "P".

Pulsing & Power Adjustment

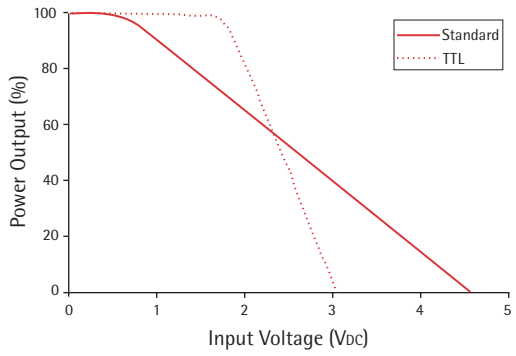
The power can be modulated or pulsed using an external signal. Input voltage of 0 VDC: "on", 5 VDC: "off" (or can be reversed). See figure below.

Coding:

- Standard S: 10 kHz *Available only with Separate Electronics.*
- TTL T*: 10 kHz *Available up to 100kHz. Ask for details.*

Impedance	>1 kΩ
Rise/Fall time	10 µsec for 10 kHz

Power adjustment curves



*Not available on all models.

The standard slope can be modified.

Separate electronics option

The electronics of the laser can be separated from the main unit. See diagram 'Mini laser with separate electronics option' on the next page for details. Code "SD".

Ordering information

Mini lasers are covered under a 2-year warranty (parts & labor). To order, select from the specifications below. CODE: MINI - Pattern (substitute "L" for "D" for dot patterns) & Interbeam Angle - Wavelength & Power Option (if applicable) - Diode Power - Fan Angle (for lines) - Separate Electronics option (if applicable; it is a standard for certain wavelength and diode power combinations).
E.g., MINI-503L(1.5°)-635S-1- 20°- SD. Call us or visit our website for updates and other specifications.

Pattern[a]		Interbeam angle[b]
501L or 701L	1 line	–
503L or 703L	3 lines	1.5°, 5.0°, 11.7°
505L or 705L	5 lines	0.23°, 1.55°
509L or 709L	9 lines	0.11°, 0.07°
511L or 711L	11 lines	1.5°
515L or 715L	15 lines	2.3°
519L or 719L	19 lines	0.77°
533L or 733L	33 lines	0.09°, 0.38°
599L or 799L	99 lines	0.149°
501S	1 square	2.9°
504G	4x4 grid	2.44°
501H	crosshair	–
507X	7x7 dot matrix	1.9°
519X	19x19 dot matrix	0.77°
Custom		

Standard Wavelengths	Diode powers
635 nm	1, 5, 10 mW
660 nm	1, 5, 10, 20, 35, 100[d] mW
690 nm	20, 35 mW
785 nm	20, 35 mW
830 nm	30 mW
Custom	

Please visit our website or call us for an updated list.

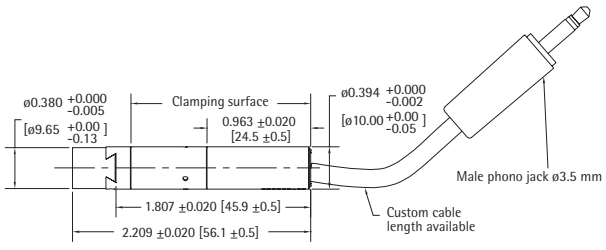
(a) Line patterns are also available as dots -- add "D" instead of "L" in the order code.
(b) At 670 nm
(c) Not standard for crosshair projector.
(d) Call us for more details.

Fan angle
1°[c]
5°
10°
15°
20°
30°
45°
60°
75°
90°[c]
120°[c]
Custom

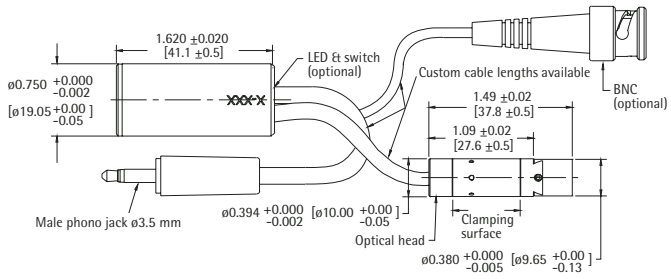
Other wavelengths and diode powers are available. Please call us for more details.

Dimensional diagrams

Mini projector



Mini laser with separate electronics option



A smaller electronics unit is available for certain models.
Some combinations of specifications may result in different dimensions.
Patents: US #4,826,299 / CAN #1,276,827 / US #5,523,889 / Other patents pending

in. [mm]

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