

ILLUMINATION

Lasiris™ PowerLine Laser

FEATURES

- High power laser in a compact package
- Uniform intensity distribution for laser line generators
- Focusable
- High pointing stability
- Over-voltage, reverse polarity, over-heating, and ESD protection
- Operating temperature: -20°C to +55°C



COMPACT, HIGH POWER LASER LINE GENERATOR

StockerYale's Lasiris™ PowerLine structured light laser is a line generator developed for demanding industrial machine vision and scientific applications. Bridging the power gap between the popular SNF and Magnum series lasers, this thermoelectrically cooled device is able to emit uniform laser lines at high powers, up to 1 W at 810 nm and 500 mW at 670 nm.

With exceptional beam pointing and focusing stabilities, the PowerLine laser can be operated in extreme environments ranging from -20°C to +55°C. The laser beam can be modulated by an external signal through a DB-9 connector on the back panel and all models can operate in either CW or external modulation mode. The laser is protected against over-voltage, reverse polarity of the power supply, over-temperature, and ESD.

APPLICATIONS

- Machine vision
- High-speed industrial inspection
- 3D profiling and mapping
- Flow visualization
- Fluorescence-induced inspection
- Medical applications

AVAILABLE PATTERNS

Standard Patterns

Single Line



Multiple Parallel Lines

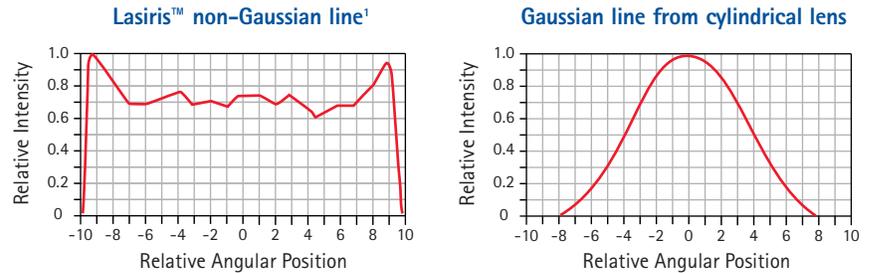


Please call us for other available patterns.

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 laser beam into an evenly illuminated line. The result is a crisp, uniform line with sharp ends.

LINE INTENSITY PROFILE ALONG LINE LENGTH



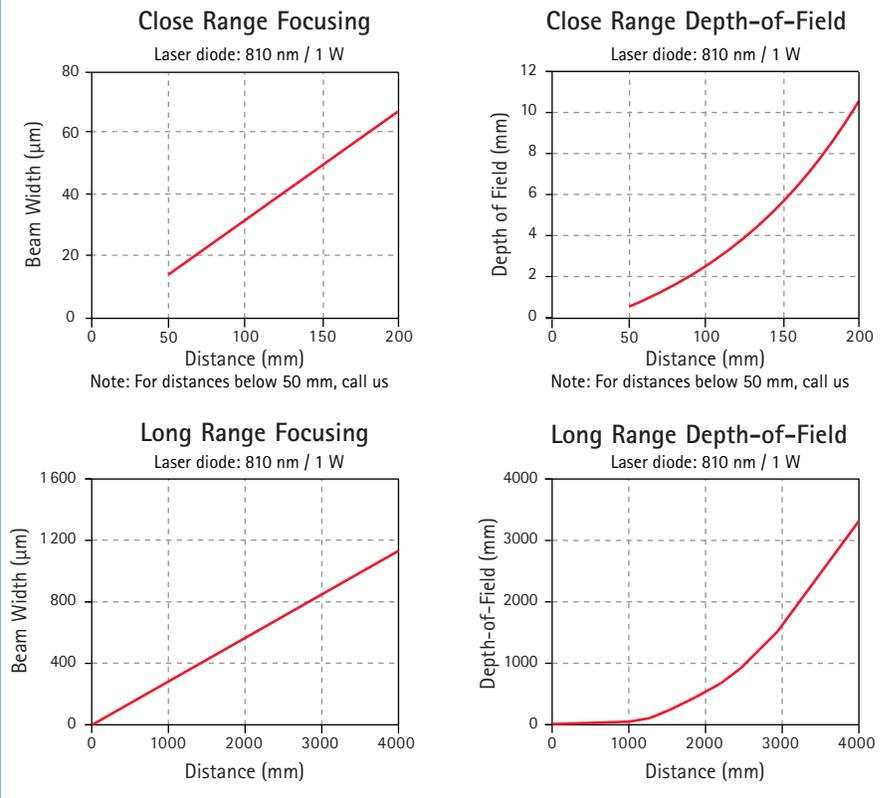
Relative intensity vs. angular position along line length

1) Typical profile

FOCUSING PERFORMANCE

The following figures show the typical focusing and depth-of-field (at $1/e^2$) performance. Lasiris™ PowerLine lasers are focusable and can be adjusted by the user to produce a focused line at any projection distance. In addition, the line can be collimated so that its thickness remains fairly constant over a long projection distance. For more details, please contact us.

FOCUSING AND DEPTH-OF-FIELD PERFORMANCE



These charts are useful for establishing the smallest achievable line thickness and depth-of-field for your application.

Most applications require that the laser optics be set to provide the best possible focus at a specified projection distance. We use state-of-the-art beam diagnostic instruments to adjust the laser to the optimal focus. The laser can also be adjusted to project a thicker line at a given projection distance, or collimated for minimum divergence. By specifying the desired line thickness and working distance, the laser can be factory set to your specific requirements.

LASER AND EYE SAFETY

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

All PowerLine lasers fall under the CDRH Class IIIB safety rating. It is extremely important to follow laser safety rules and wear appropriate protective eyewear when working around these lasers. As a general rule, avoid eye or skin exposure to direct or scattered radiation from these lasers. Call us or visit our website for further details.



CLASS IIIB: "Danger"
Infrared (IR) and high power visible lasers considered dangerous to your retina if exposed.

CAUTION: Use of controls, or adjustments or performance of procedures other than those specified, may result in hazardous radiation exposure. All laser safety warning labels are provided on the unit and comply with 21 CFR 1040.10 pursuant to the radiation control for the health and safety act of 1968.

SPECIFICATIONS

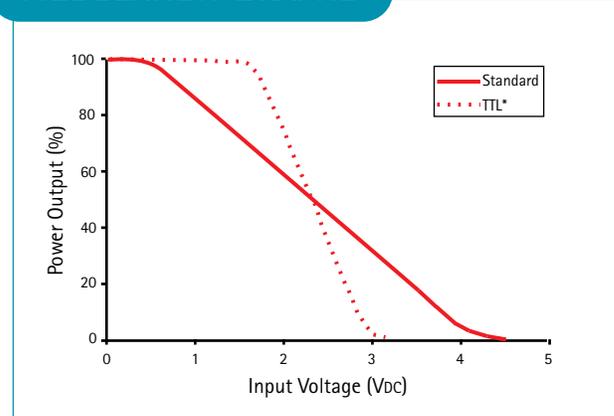
OPTICAL & ENVIRONMENTAL SPECIFICATIONS

Power	500 mW to 1 W
Wavelength ± 10 nm	670 nm, 810 nm, custom
Intensity distribution	Uniform (non-Gaussian) lengthwise, Gaussian widthwise
Line thickness (focus)	User adjustable
Bore sighting	< 3 mrad (collimated)
Wavelength drift	Maximum ± 1 nm over entire operating temperature range
Operating temperature	-20°C to +55°C for most models
Storage temperature	-40°C to +70°C
Pointing stability	5 μ rad/°C
Optional features	-No fan for lower electronic noise (up to 40°C without over-heating) -Base plate for efficient heat dissipation

ELECTRICAL SPECIFICATIONS

Power supply voltage	5 VDC \pm 0.5 VDC; An adapter is available to supply the unit from 110/240 V AC line
Power supply current	3 A at ambient temperature; 4 A maximum
Built-in protections	Entire product: ESD, over-voltage up to 12 V, reverse polarity of power supply. Laser diode: over-heating, over-current
Laser diode operating temperature	25° C \pm 0.5°C (adjusted in factory)
Max. beam power	User adjustable (trim potentiometer on the back panel)
Beam modulation	External, through a DB-9 connector on the back panel
Monitoring	Laser temperature, laser current, PD current, through the DB-9 connector
Linear modulation Option S	Signal: DC to 10 kHz pulsed signal, linear for amplitude 0.7 V to 4.0 V. Option: modulation slope adjusted in factory (see Modulation Graphs).
TTL modulation Option T	TTL voltage compatible signals; rise / fall times < 10 μ s; 10 kHz maximum frequency

MODULATION GRAPHS



DB9 Features

- Modulation input
- Diode temperature monitoring
- Diode current monitoring
- Power monitoring
- I2C port for lifetime

ORDERING INFORMATION

PowerLine Lasers are covered under a one-year warranty (parts and labor). The laser diode has a warranty of six months. To order, use the following code: PL – Pattern Et Interbeam Angle – Wavelength – Pulsing Option (S or T) – Diode Power – Fan Angle (e.g., PL – 501L – 670T – 500 – 45°). Note that the projected fan angle may be less than the lens fan angle.

STANDARD MODELS

MODEL	WAVELENGTH ± 10 nm	LASER DIODE POWER	OUTPUT BEAM POWER	REQUIRED ELECTRICAL POWER
PowerLine 500	670 nm	500 mW	375 mW	5 V DC, 2A*
PowerLine 1000	810 nm	1000 mW	825 mW	5 V DC, 3A*
Custom				

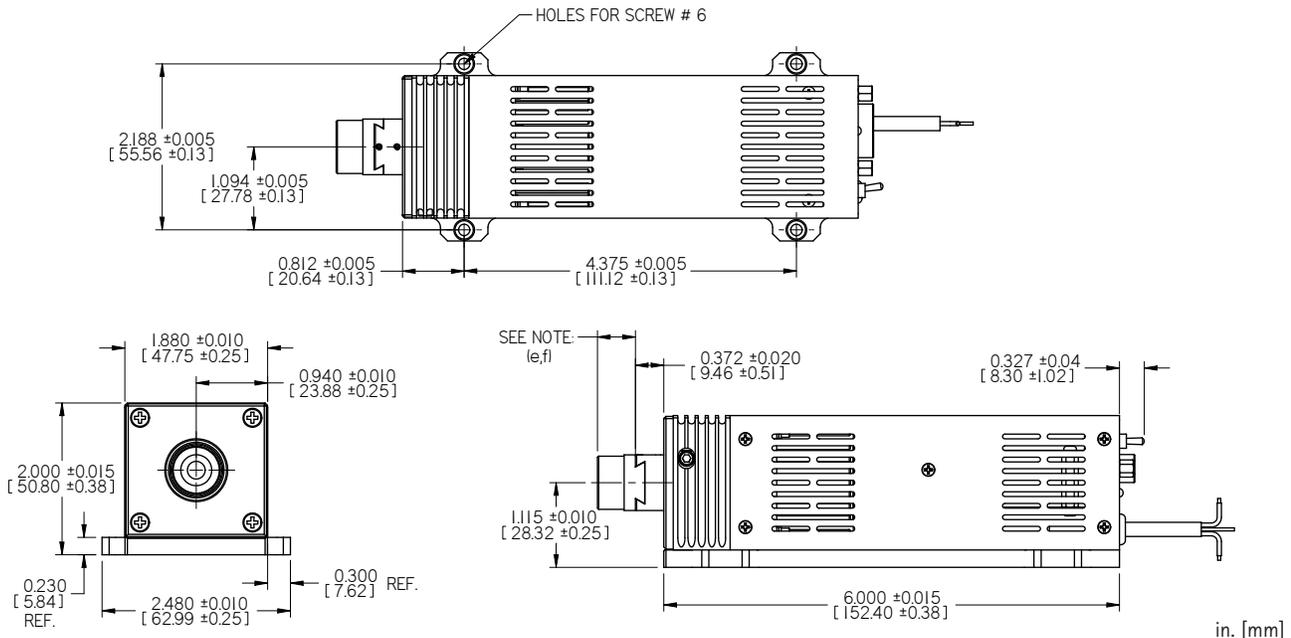
*At ambient temperature of 23°C

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

LENS FAN ANGLE

10°
15°
20°
30°
40°
45°
55°
60°
75°
Custom

DIMENSIONAL DIAGRAMS (APPROXIMATE WEIGHT: 0.6 KG)



NOTE: (e) Add 0.500 [12.7] for single line generator
(f) Add 0.900 [22.86] for other patterns

Patents: US # 4,826,299 / CAN # 1,276,827 / Other patents pending

Information and specifications contained herein are deemed to be reliable and accurate. StockerYale reserves the right to change these specifications at any time without notice. Rev. 1.0

For international distributors,
call us or visit:
www.stockeryale.com/laser_distributors



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