

ILLUMINATION

# Lasiris™ Magnum II Laser

## FEATURES

- Uniform, non-Gaussian intensity distribution along the line
- Very high intensity
- Wide range of powers and fan angles
- Focusable
- High pointing stability
- Increased capability for customization
- Protected against over-voltage, reverse polarity of power supply, overheating and ESD
- Rugged industrial-grade design



## HIGH POWER LASER DIODE LINE GENERATOR

StockerYale's Lasiris™ Magnum II structured light laser is a high-power line generator developed for the most demanding industrial applications. It is available with a wide selection of output powers and fan angles and generates a uniform intensity distribution using patented line generating optics. In addition, the laser has high beam pointing and focusing stabilities.

The Magnum II has fully protected electronics as well as a bipolar thermoelectric cooler used to keep the laser diode at a constant temperature. The laser beam can be modulated by an external signal and all models can operate in either CW or external modulation mode.

The standard unit provides voltage outputs proportional to the beam power, laser diode current and laser diode temperature, for external monitoring. Optionally, the LCD located on the back panel can monitor these parameters. All units have a built-in time-lapse counter that enables the user to monitor the laser diode lifetime.

## APPLICATIONS

- High-speed road and rail inspection
- 3D profiling and mapping
- Web Inspection
- Hot steel-plate
- Flow visualization
- Machine vision
- Fluorescence-induced inspection

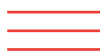
## AVAILABLE PATTERNS

### Standard Patterns

Single Line



Multiple Parallel Lines

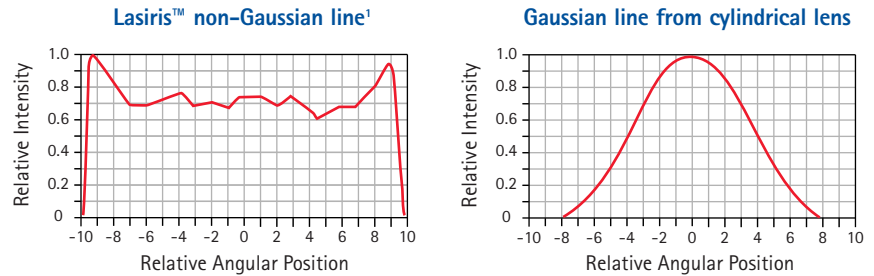


Please call us for other available patterns.

## 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 with sharp ends.

### LINE INTENSITY PROFILE ALONG LINE LENGTH



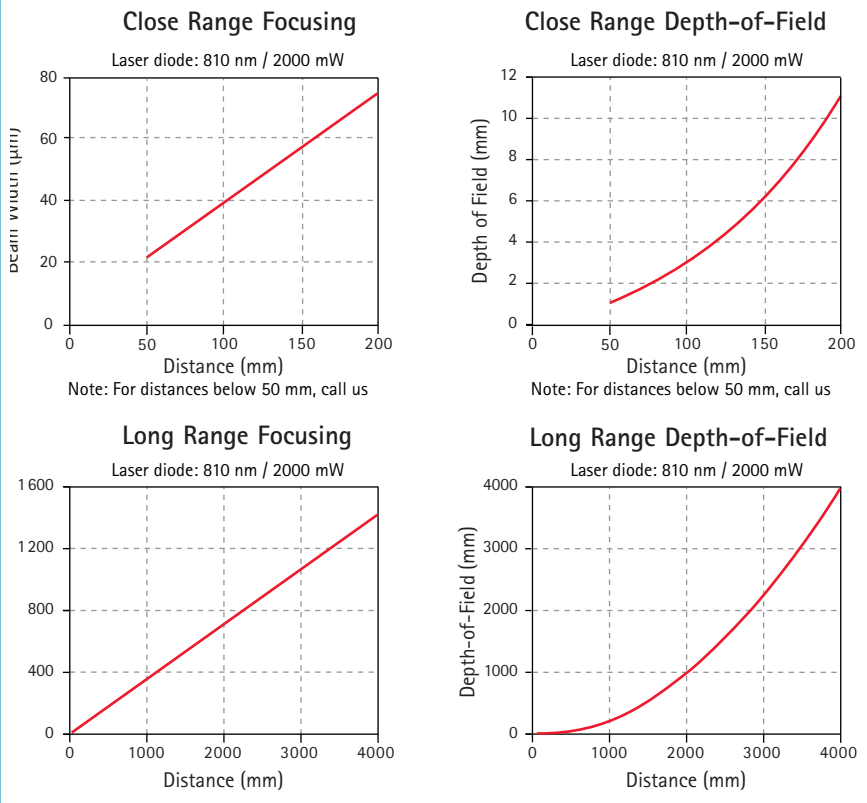
Relative intensity vs. angular position along line length

1) Typical profile

## FOCUSING PERFORMANCE

The following figures show the typical focusing and depth-of-field (at  $1/e^2$ ) performance. Lasiris™ Magnum II 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



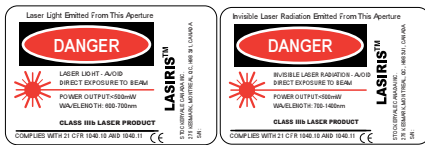
These charts are useful for establishing the smallest achievable line thickness and depth-of-field for your application.

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 Magnum II line generators 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.

Please refer to the **Application Note** and **Laser Safety Checklist** available on our website for more details.

### SPECIFICATIONS

#### OPTICAL & ENVIRONMENTAL SPECIFICATIONS

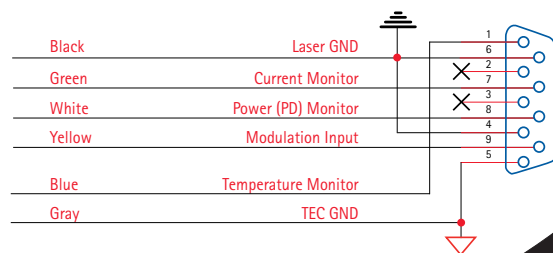
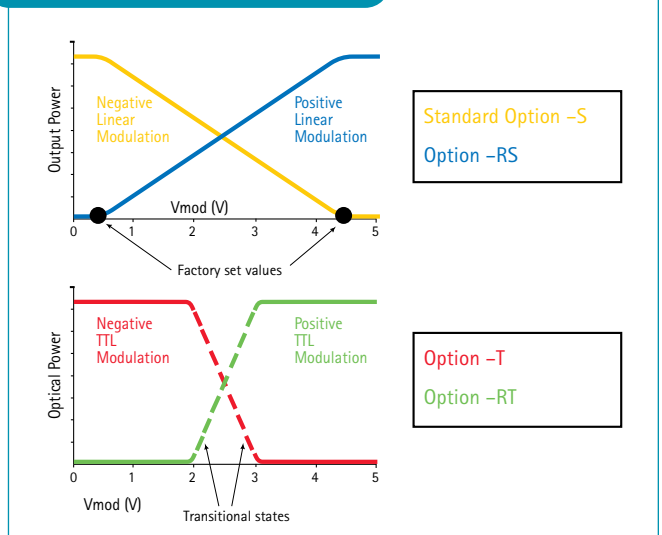
Power	250 mW to 4 W
Wavelength	680 nm, 810 nm, custom
Intensity distribution	Uniform (non-Gaussian) lengthwise, Gaussian widthwise
Standard Fan angles	10°, 15°, 20°, 30°, 40°, 45°, 55°, 60°, 75° (10° and 15° not available on 4 W models)
Line thickness (focus)	User adjustable
Bore sighting	<3 mrad (collimated)
Wavelength drift	Maximum $\pm 1$ nm over entire operating temperature range
Operating temperature	-35°C to +45°C for most models
Storage temperature	-40°C to +60°C

### ELECTRICAL SPECIFICATIONS

Power supply voltage	12 VDC $\pm 1$ VDC; An adapter is available to supply the unit from 110/240 V AC line
Power supply current	3 A to 6 A depending on laser power
Built-in protections	Entire product: ESD, over-voltage up to 35V, reverse polarity of power supply Laser diode: over-heating, over-current
Laser diode operating temperature	25° C $\pm$ 0.1° 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
Linear modulation Option S	Signal: DC to 10 kHz pulsed signal, linear for amplitude 0.8 V to 4.5 V. Option: modulation slope adjusted in factory (see Modulation Graphs).
High speed	100 kHz frequency (code "100K")

TTL modulation Option T	TTL voltage compatible signals; rise / fall times < 10 $\mu$ s; 10 kHz maximum frequency
High Speed	Same as option T, but with 100 kHz frequency (code "100K")

### MODULATION GRAPHS



## ORDERING INFORMATION

Magnum II 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: MAG2 – Wavelength – Pulsing Option (S, RS, T, RT) – Diode Power – Fan Angle. Add –100K after the Pulsing Option code for high-speed frequency (100 KHz). See Modulation Graphs for definitions. Add –SD to product code for the separate driver option (e.g., MAG2 – 680T – 100K – 500 – 20° – SD). Note that the projected fan angle may be less than the lens fan angle.

## STANDARD MODELS

Magnum lasers are available in a wide range of powers and wavelengths.

MODEL	WAVELENGTH ± 10 NM	LASER DIODE POWER	OUTPUT BEAM POWER	REQUIRED ELECTRICAL POWER
Magnum 500	680, 810 nm	500 mW	375 mW	12 V DC, 3 A
Magnum 1000	680, 810 nm	1000 mW	825 mW	12 V DC, 3 A
Magnum 2000	810 nm	2000 mW	1.75 W	12 V DC, 6 A
Magnum 4000	810 nm	4000 mW	3.6 W	12 V DC, 6 A
Custom				

Please visit our website or call us for an updated list and details about our custom models.

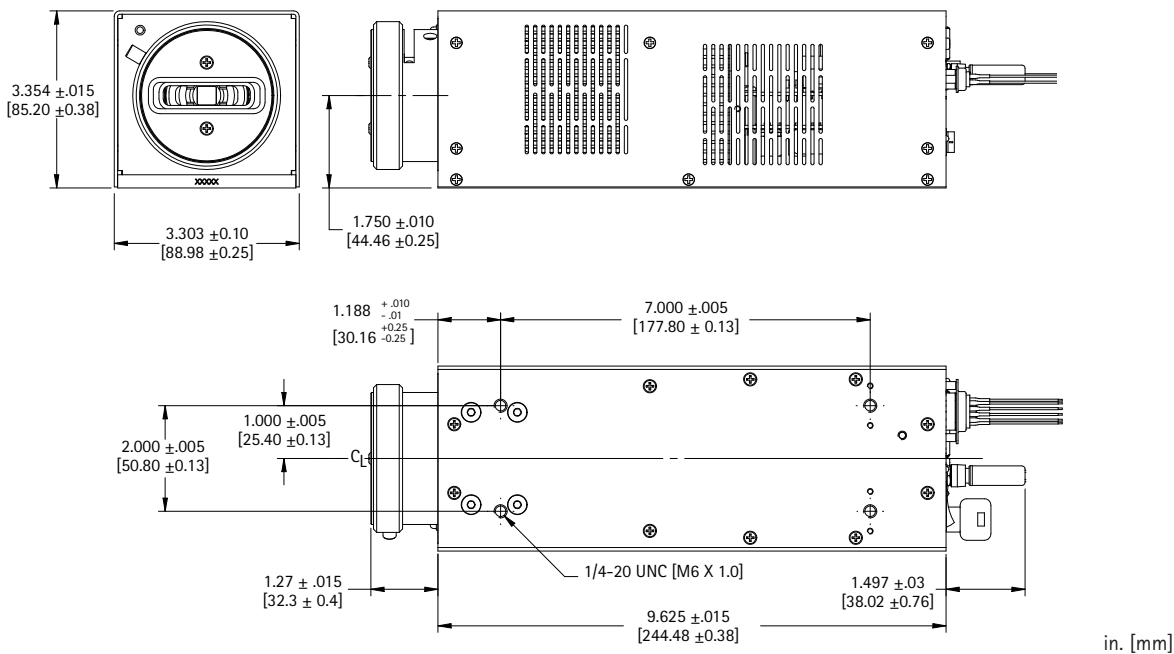
Other wavelengths and diode powers are available. Please call us for more details.

## LENS FAN ANGLE

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

\*Not available on 4 W models.

## DIMENSIONAL DIAGRAM (WEIGHT: 1.95 KG)



Please visit our website for dimensions of the Magnum II with separate electronics option

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

