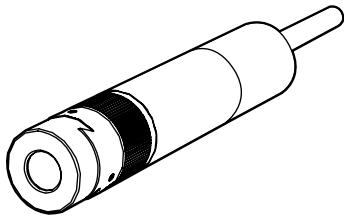


# Laser Line Generator



LLG 660 P10 A60 II = 660 nm, 10mW, 60 degree fan angle, Class II CDRH, 0.5 m cable with flying leads



- Laser line uniformity up to 95% on 100% of the line
- External user focus mechanism
- Photo feedback for optimal power stability up to 500kHz
- Dynamic line balancing for repeatable performance
- Robust thermal management, providing better stability and longer lifetime
- Remote laser monitoring and control via RS232 communication
- Precision refractive optics

## Specifications

### Wavelength

660 nm Center wavelength at 25 °C

### Output Power

10 mW max.

### Operating Voltage

5 to 24V dc

### Operating Current

185 mA max. at 25 °C

### Power Consumption

3 W max.

### Long-Term Power Stability (8 hrs ± 3°C)

< 5 %

### ESD Protection

Level 4

### Straightness (%) > 25 mm Line

0.1%

### Ambient Temperature

#### Operating Conditions:

-10 °C to +50 °C (+14 °F to +122 °F)

#### Non-Operating Conditions:

-20 °C to +60 °C (-4 °F to +140 °F)

### Shock Tolerance (g) (6ms)

30

### Wavelength tolerance

+7 nm/-10 nm

### Input Impedance

1.5 kΩ

### Beam Angle

< 3 mrad

### Fan Angles

60° at 80% clip

### Pointing Stability Over Temperature

< 10 μrad/°C

### RMS Noise (20 Hz to 20 MHz)

< 0.5 %

### Peak to Peak Noise (20 Hz to 20 MHz)

< 1%

### Warm-Up Time

< 5 minutes from cold start

### Mechanical Specifications

**Weight:** < 70 g

**Length:** 95 mm standard configuration; 98 mm accessory configuration

**Diameter:** 19.05 mm

**Material :** Black anodized AL 606<sub>1</sub>T<sub>1</sub>

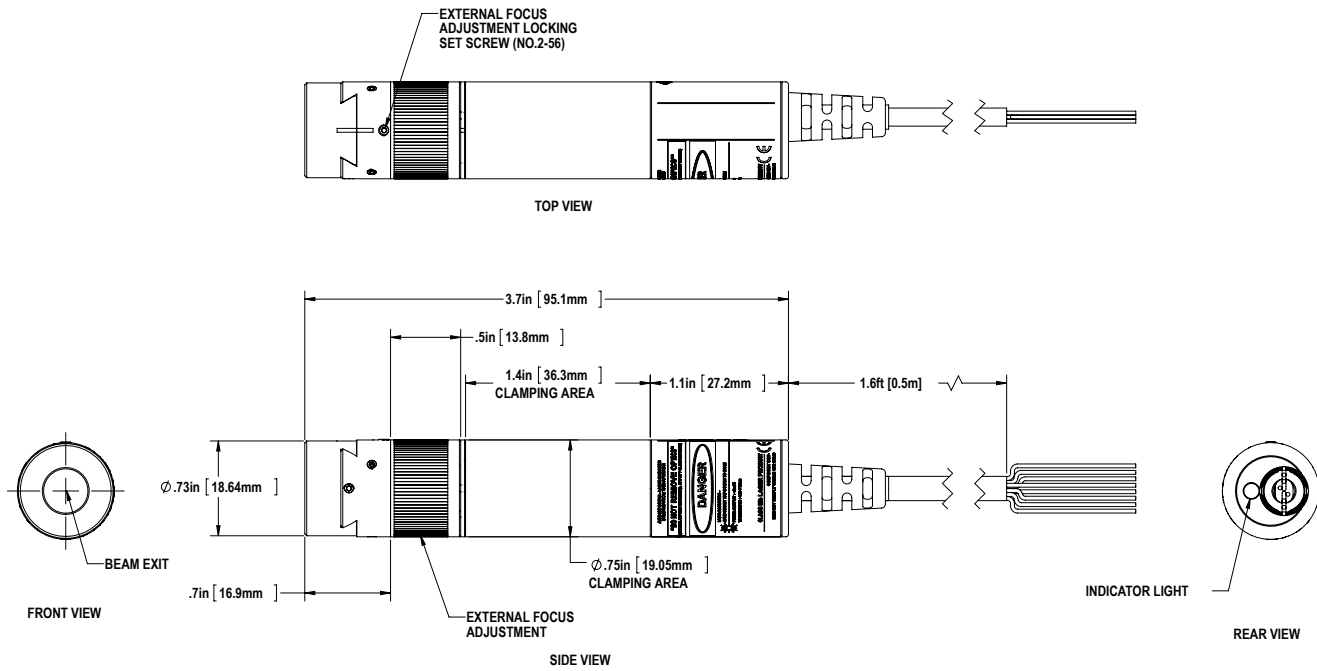
### Connection

0.5 m (1.6 ft) cable with flying leads

### Certification

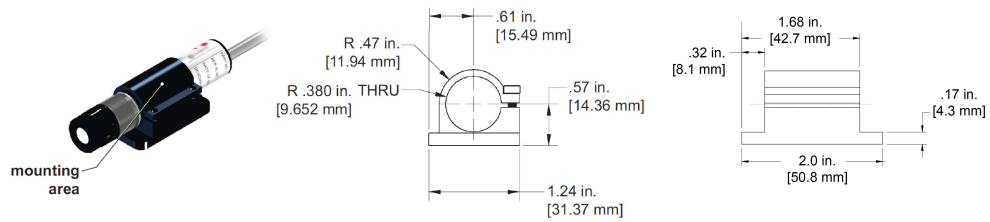


## Dimensions

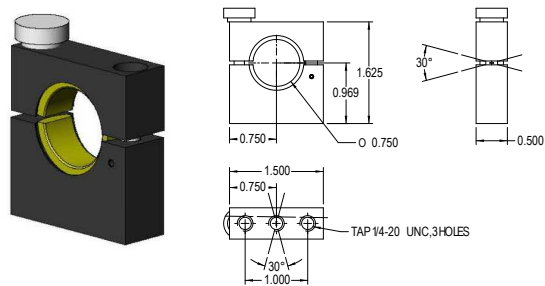


## Bracket Dimensions

### 57516 LLG Mounting Bracket with Heat Sink

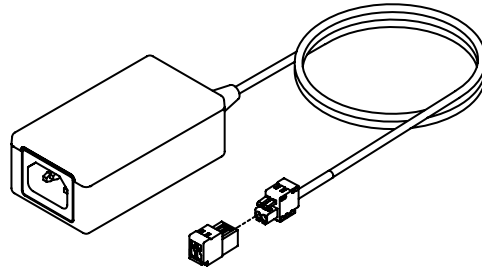


### 57517 LLG Swivel Mounting Bracket

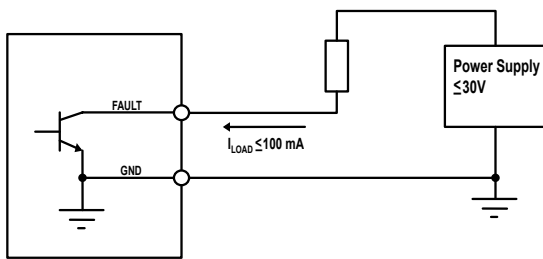


## Power Supply

### 57515 LLG 12V Terminal Block Power Supply



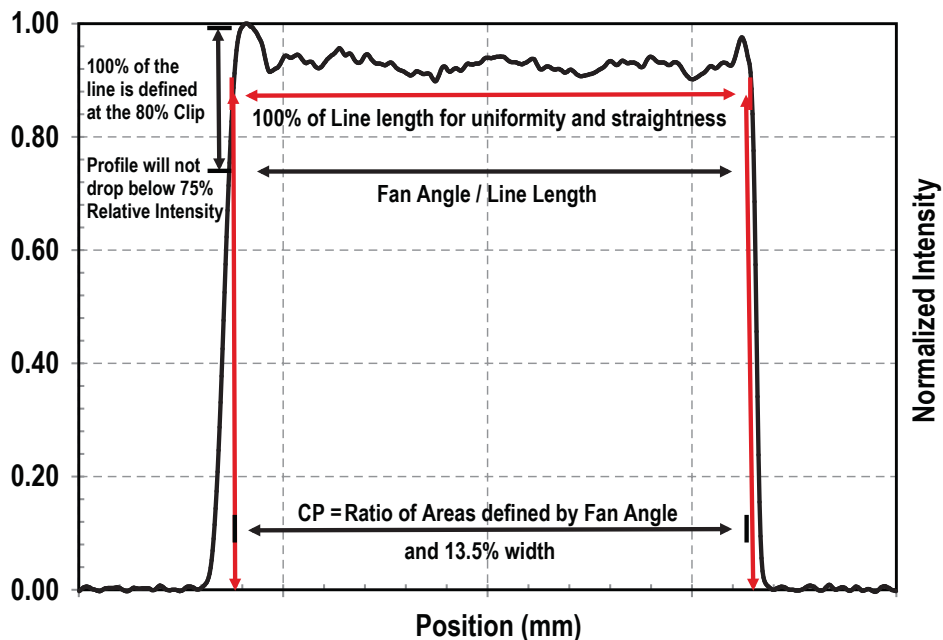
## Hookup



Fault output is an open collector of the transistor that allows wire junction OR functionality with fault signals from other devices. The output can tolerate voltage up to 30V and can drain the current up to 100 mA. The circuit is protected from over current by recoverable fuse.

Wire Color	Assignment
Black	V ground
Blue	V mod
Red/Black	V mod ground
White	RS 232 Recv
White/Black	RS 232 ground
Orange	RS 232 Trans
Red	V in
Green	Fault

## Flat-Top Intensity Profile



## Definitions

<b>Uniformity</b>	Max relative intensity variation over 100% of the time $U = (I_{max} - I_{min}) \div (I_{max} + I_{min})$
<b>Contained Power</b>	Power contained in the 100% line at the 80% Clip versus the power contained in the 13.5% Clip $CP = 80\%P \div 13.5\%P$
<b>Line Length / Fan Angle</b>	Fan angle is the angle of the projection taken at the 80% Clip Line length is the physical length at a given working distance taken at the 80% Clip
<b>Relative Illumination Floor</b>	This is the minimum relative intensity at any point on the define line length Measured as a % of the normalized intensity
<b>Straightness</b>	Deviation from best fit line $\Delta = \Delta_1 + \Delta_2$ $S = (\Delta/L)*100$

## Cautions and Warnings



**Danger:**

Do not point the laser toward an eye. Wear appropriate laser safety goggles at all times when the laser is operational.



**Danger:**

The laser light emitted by this laser may be in the infrared area of the electromagnetic spectrum and may not be visible to the human eye. Use extreme caution at all times when using the laser.



**Danger:**

The output power of this laser is high enough to cause permanent damage to the human eye. Wear appropriate laser safety goggles at all times when the laser is operational.



**WARNING: Not To Be Used for Personnel Protection**

**Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death.** This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

**WARNING:**

These structured light devices meet CDRH Class II and IIIa only as complete assemblies. Removal of the optical head (image generating optics) for cleaning could expose personnel to hazardous laser radiation (sometimes equivalent to a Class IIIb/3B laser) and will void the product safety classification. Turn the laser off whenever the optical head is removed, unless alignment is being performed. Use extreme caution when performing these servicing operations and wear appropriate eyewear at all times. Servicing operations must be performed by personnel trained to manipulate Class III/3B lasers. Never look directly at a raw laser beam. Banner will not be held liable for any injuries caused by product misuse.

**WARNING:**

Do not place any flammable objects directly in front of the free, non-extended beam (without the line generating optics), especially with higher power beams.

**WARNING:**

Use caution around all laser products. Lasers are highly concentrated light sources, some invisible to the eye. Never point a laser beam into your—or any other person's—eyes; permanent damage to the retina can occur!

**WARNING:**

Use extreme caution at all times when the laser is in use.

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