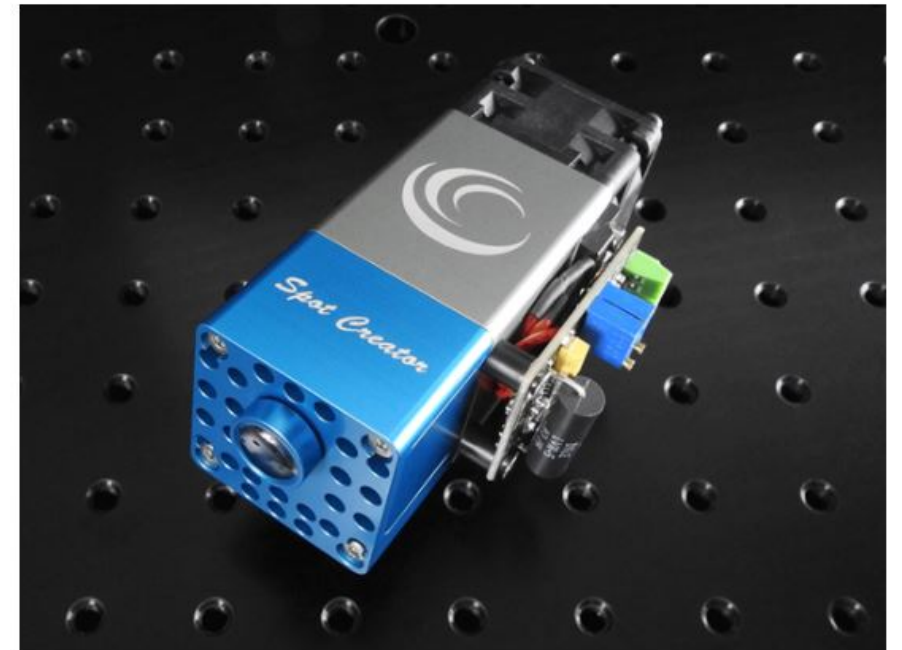


# LE-445-6000-SC 6W Blue 445 nm High Intensity Engraving, Cutting, and Marking Diode Laser

## Features

- Focal Spot Diameters Down to 50 $\mu$ m Spot Size
  - Round Symmetric Spot in XY direction
  - High Symmetric Intensity on Target
  - Adjustable Focus ( $\pm$  3 mm)
  - Fast Modulation and CW operation
  - Powerful Fan for Cooling and Fume Removal
  - Plug & Play
  - OEM Style for Ease of Integration
- Rapid Engraving, Cutting, and Marking Laser For Plastics, Metals Including Stainless Steel, Other Materials
  - Pump Ti:Sapphire Ultrafast Lasers
  - Pump Other Solid-State Lasers



# LE-450-6000 + LE-SC Spot Creator Produces Symmetric Focal Spots For High Intensity Engraving, Cutting, and Marking

Focal Length (mm)	Focal Spot Diameter ( $\mu\text{m}$ )
70	100
50	80
30	50

Model	LE-SC
Dimensions (mm <sup>3</sup> )	40 x 40 x 30
Spot Distance Adjustment (mm)	$\pm 3$
Material	Anodized Aluminum

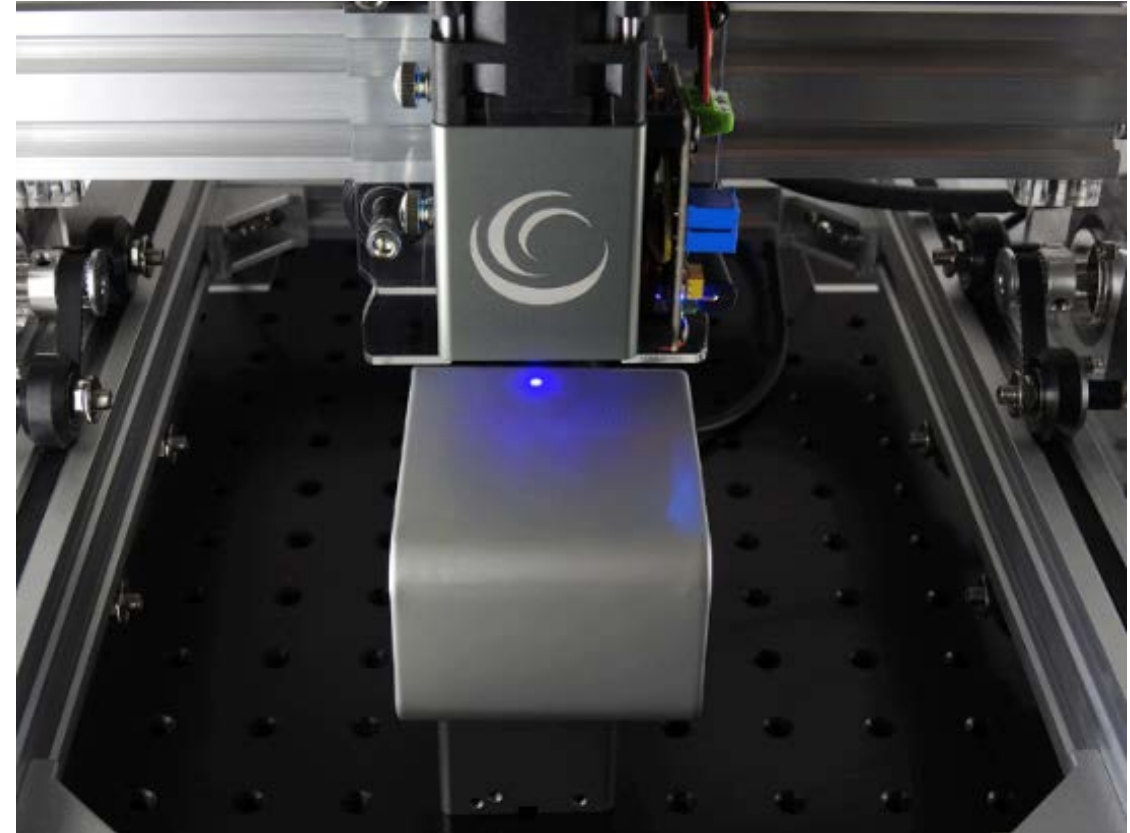
**Spot Creator** is an innovative accessory developed for enhancing the performance of blue laser diode based engraving and cutting machines. **Spot Creator** solves a major problem with using asymmetric blue laser diodes: the production of engraving features that are different in the X-Y directions, resulting in unequal or blurred lines. Using **Spot Creator**, line widths are equal in the X-Y directions, with a minimum spot of 50  $\mu\text{m}$ . The intensity on the engraved part is thus maximized.

Three focusing lenses come with **Spot Creator**, with focal lengths of 30, 50, and 70 mm. Shorter focal lengths produce smaller spot sizes and are well suited to laser engraving. Longer focal lengths are more appropriate for cutting. The Table shows the spot diameters achieved with the three lenses and 445 nm laser output:

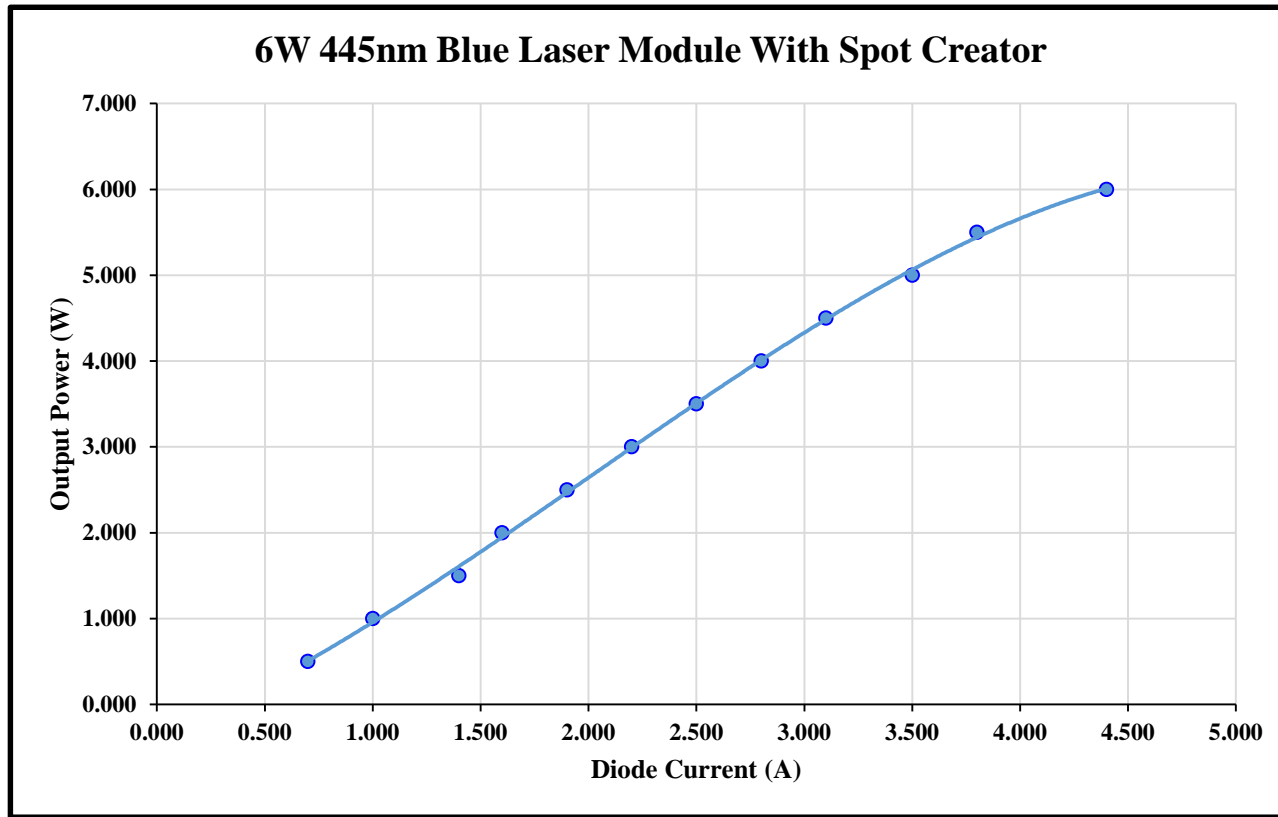
**Process wood, plastics, anodized aluminum, stone, tile, and for the first time, stainless steel. Changing the laser power output and scanning speed can create colors as well.**

# LE-450-6000-SC Specifications

Model	LE-445-6000-SC
Wavelength (mm)	445 ± 5
Output Power (mW typ.)	6000 (-10 ~ +25 ° C) > 5300 (+25 ~ +40 ° C)
Beam Mode	Low Order, Near TEM <sub>00</sub>
Spot Diameter (μm)	
FL=30mm	50
FL=50mm	80
FL=70mm	100
Transverse Mode	Multi
Power Stability After Warm-Up	<1%
Polarization Extinction Ratio	100:1
Polarization Direction	Vertical ± 2 °
Modulation frequency (kHz analog/TTL)	250
Modulation voltage	0 ≈ 5
Rise time (μs)	1.4
Power Supply (VDC / mA)	9-12VDC / 4000
Cooling Method	Fan
Laser Dimensions (mm <sup>3</sup> )	81 x 62 x 40
MTTF (Hours)	>10,000
Operating Temperature (° C)	- 10 ~ + 40
Storage Temperature (° C)	- 10 ~ + 85



# Laser Output Power as a Function of Diode Current



## About This Data

Data for the plot above was generated by applying a constant + 5 VDC signal across the Mod terminals, and a 12 VDC signal across the Vin pins with the circuit gain = 0. The output power was then varied by adjusting the gain of the small pot; the measurement of the input current was performed by using the large 0.1  $\Omega$  resistor in series with the laser diode.

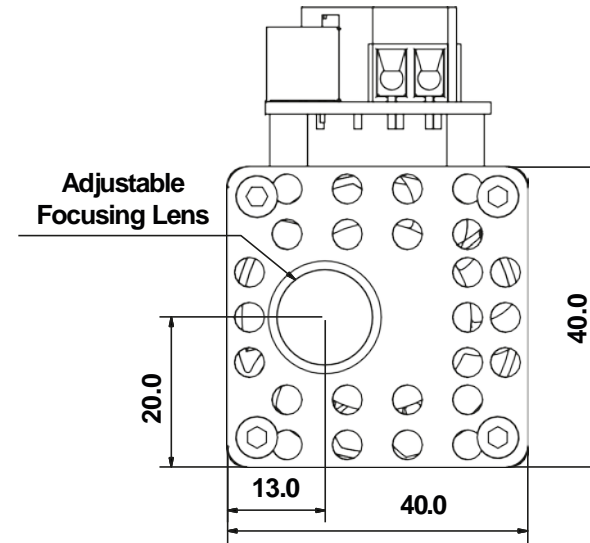
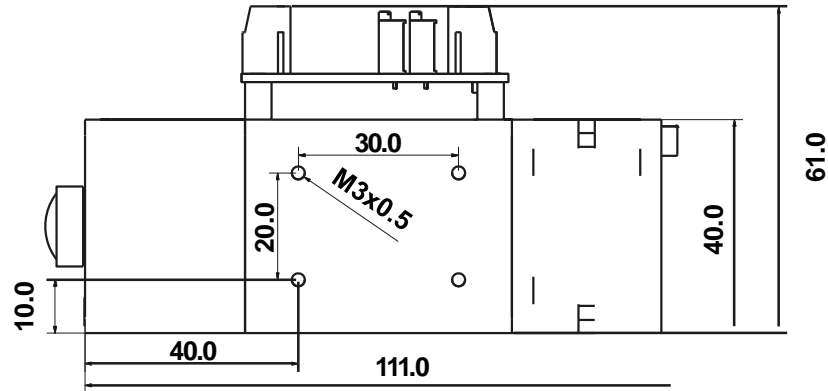
# SHS-4500 Power Supply



## Note About SHS-4500 Power Supply

While the input power supply voltage can be 3-12 VDC, we highly recommend that users employ a 12 VDC power source. The cooling fans require 12 VDC and will not provide the proper cooling at lower voltages where the fan speed is lower.

# Dimensions



## Setting the Spot Size

The lens located at the aperture sets the position of the focus. By tuning the lens back or forth the spot is moved by  $\pm 3\text{mm}$ .

## Heatsinking

Use an appropriate heatsink to attach the LW-450-600 laser to, that will efficiently remove the heat. Four M3x0.5 screws are used to accomplish this, as shown above.

