LumiBright™ LE 2400B-500-W

The Model 2400B-500-W is a light engine providing high luminous flux, white LED illumination into optical fibers, bundles and light guides sized from 3.0 to 5.0 mm in diameter. The product features patented technologies that encompass non-imaging optics with chip-on-board metallic substrates to provide both optimum luminous efficacy as well as ideal thermal management.

The 2400B-500-W is ideally suited for endoscope and microscope illuminator applications. The light engine delivers up to 1500 lumens into a light guide.

Benefits:

- Intense and stable optical power
- Small footprint
- Continuous high current or pulsed operation
- RoHS compliant - Environmentally friendly

Typical Applications:

- Medical endoscopy
- Microscopes
- Machine vision
- Industrial borescopes

Features:

- Supports fiber apertures - 3.0mm - 5.0mm
- White (5300K+/-300)
- High thermal conductivity metal core PCB
- COB array technology, 7 Die
- Patented technology

Options:

- Heat sink and thermal pads
- Drivers and controllers

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DS-2400B-500-W-160607

SPECIFICATIONS

The LumiBright LE 2400B-500-W is a light engine with a seven white die array.

The data below is provided as a general guideline for a 7 die configuration.

Caution: Never connect your unit to an open circuit voltage that is more than 1 Volt above the recommended maximum voltage.

Table 1

Assembly	Maximum Number of Die	Numerical Aperture (NA)
2400B-500-W	7	0.60

	Parameter	Specifications	Comment	
	Drive current	Continuous: 12A Max	Intermittent use up to 15A possible	
	Forward voltage	Turn on: 2.5V - Limit: 4.5V	Requires constant current operation	
	Numerical aperture (NA_0)	0.60		
	Clear aperture (CA_0)	5.0 mm		
	Light guide coupling	Direct butt-coupling method	Distal end to clear aperture	
	Electrical connector	1 row, 8 pin	Surface mount, high current	
	Overall size (mm)	30 x 36 x 12	W x L x H	
	Thermal impedance	<1.0 °C/W	Typical for 1 die	
	Thermistor $B_{25/85}$	3574 to 3646	For 10 kΩ	
	Thermistor impedence	10 kΩ	At 25°C	
	Operating temperature	-40° C to 85° C	Depending on drive conditions	
	Lifetime (Hours)	–	Depends on drive conditions and temperature	

Notes:

Light Guide Coupling Efficiency

The maximum coupling efficiency for the Model 2400B-500-W requires the use of a fiberoptic or liquid light guide with equivalent specifications for both the nominal values of Numerical Aperture (NA_0) and Clear Aperture (CA_0). When the light guide design parameters of NA_f or CA_f are smaller than the nominal values of the Model 2400B-500-W, the coupling efficiency is reduced by the square of the ratios, $(NA_f/NA_0)^2$ *and/or* $(CA_f/CA_0)^2$. Other factors that contribute to coupling efficiency are the reflectance loss at the face of the fiberoptic or light guide, as well as the packing fraction when using a fiber bundle.

Thermal Management

The 2400B-500-W uses a metal core circuit board for high thermal conductivity that allows heat to dissipate in all directions. Reduced overall thermal resistance results in increased LED performance. When thermal energy generated exceeds the thermal energy dissipated, an additional means of cooling may be required to maintain LED performance. Some applications cannot efficiently dissipate enough heat from the circuit board alone and an external heat sink is recommended. The external heat sink is an efficient and inexpensive method of extending the surface area necessary to dissipate heat generated by the LED array. The 2400B-500-W circuit board features an attached thermal pad for heat sink contact, no thermal grease is needed. Adding the feature of forced air convection across the heat sink fins removes heat faster and more efficiently. This feature is often necessary when ambient airflow is limited or non-existent. Every 2400B-500-W circuit board has a built-in thermistor for temperature monitoring. Lifetime of the 2400B-500-W unit operated continuously would be compromised if the temperature of the circuit board exceeds 60°.

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CHARTS

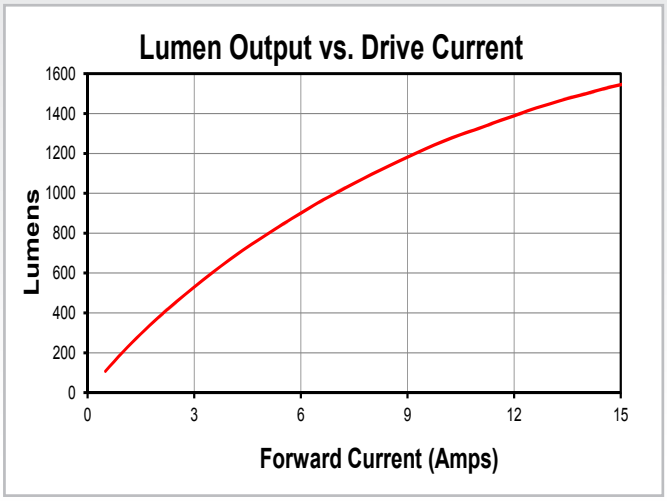


Figure 1

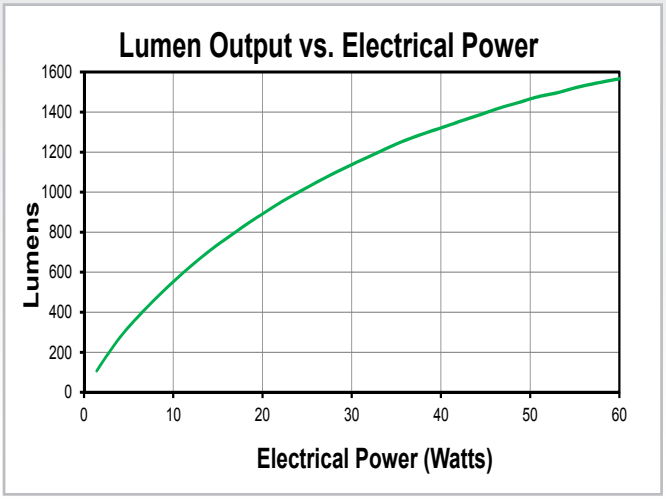
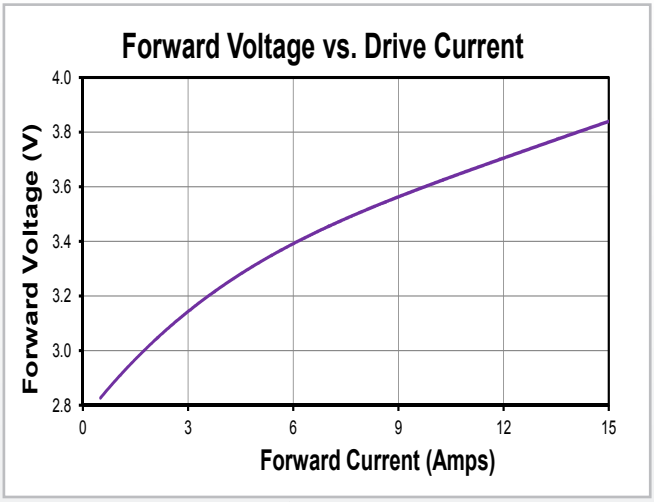


Figure 2



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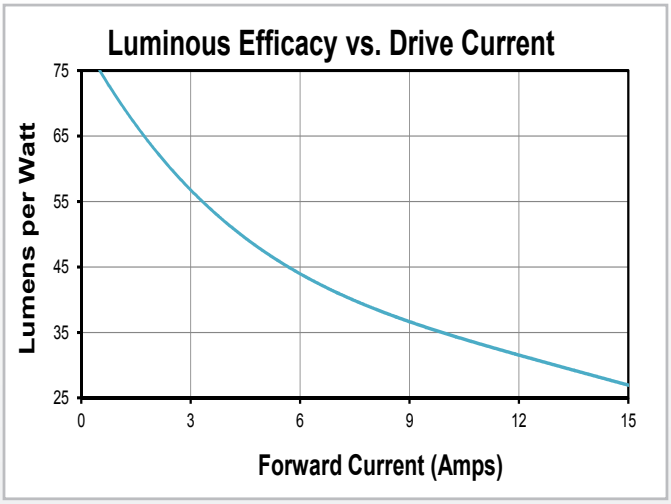

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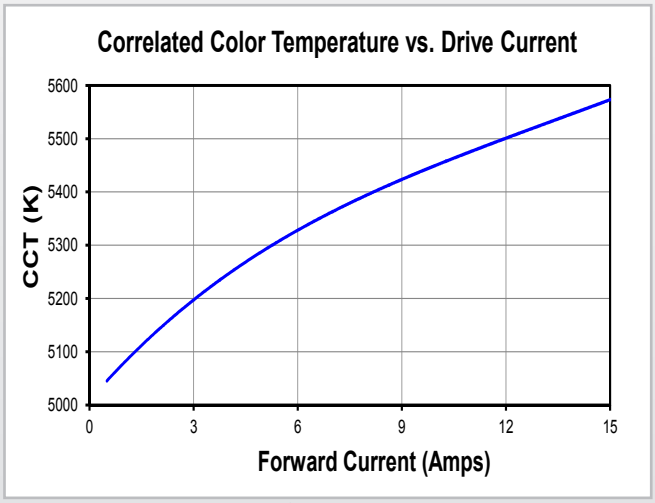

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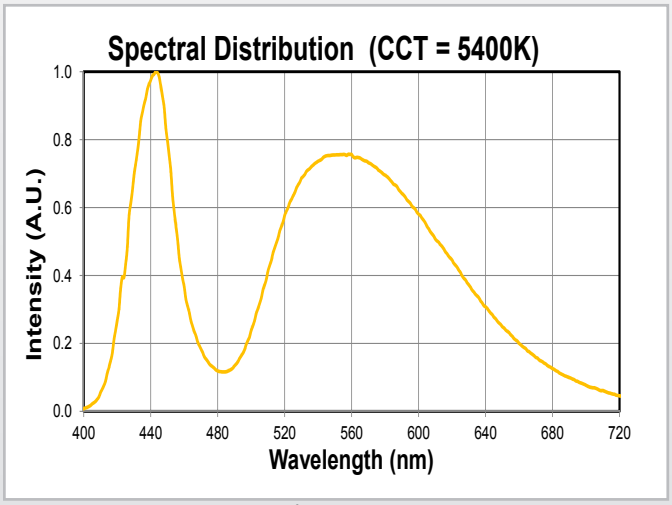

Figure 6

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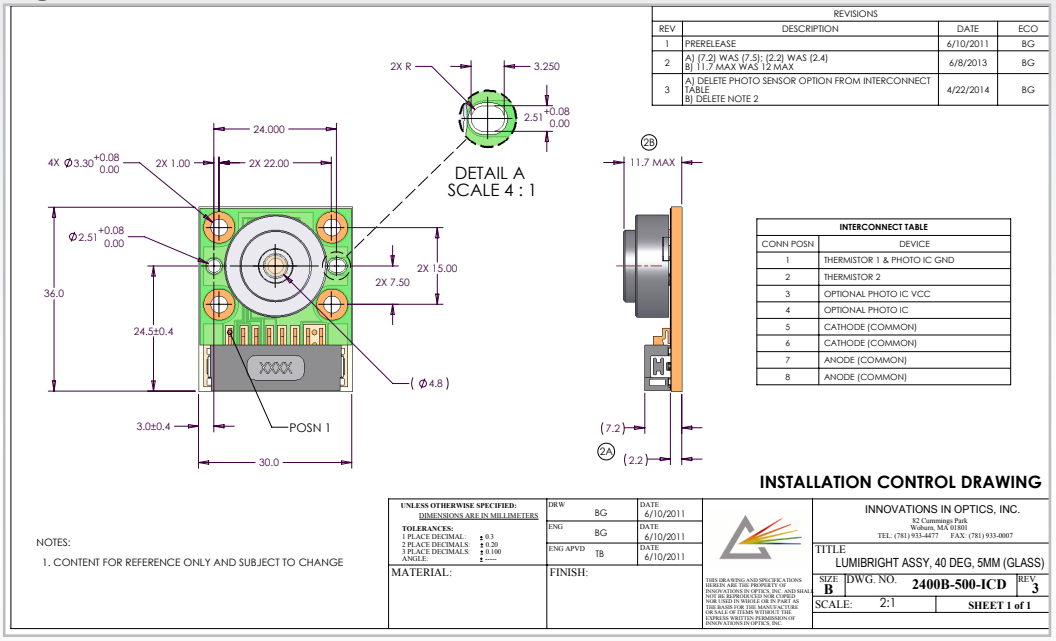
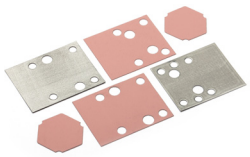
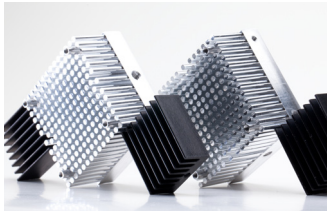
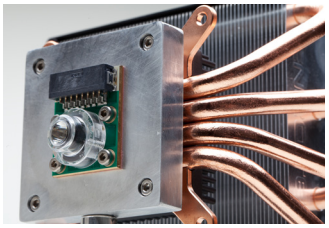
INSTALLATION CONTROL DRAWING

Figure 7



ACCESSORIES

Figure 8

		
Cooling Fans	Thermal Pads	Heat Sinks
		
LumiBright DR Driver/ Controller	Heat Pipes	Wire Harness Assemblies

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