

Custom LED Designs for Your New Lamp

How to get to market faster than your competition... By utilizing Wattcents' design services, our lighting engineers will develop your new LED hardware to retrofit into the shape of your existing lamp or to design and build a completely new lighting concept that will rock the industry. We've designed for indoor, outdoor, consumer, and commercial applications.

We often get asked, "Why use LEDs?" The answer is flexibility. LED lights can be molded to fit almost any shape. They can be made completely flicker-free. (Even incandescent bulbs have some 60Hz flicker.)

Go ahead and touch the LED bulb. LEDs do not get hot. Unlike incandescents, we can maintain the brightness, while drawing the heat out of the LED. This lets you pair LEDs with delicate or sensitive materials, such as exotic hardwoods.

Unlike clunky fluorescent bulbs, LEDs are manufactured in as small a size as you need them. They come in all kinds of colors and are brighter per square inch than almost any other lighting source. They turn on instantly, and each robust, little bulb last for over 10,000 hours!

You can make LEDs directional or diffuse. You can dim them, and blink them fast or slow. LEDs

are environmentally green, as efficient as fluorescents, yet delivering the same lumens at a fraction of the power of incandescents.

What's not to like? LEDs are the future!

Designing lamps with LEDs can be complicated, because LEDs maximize energy efficiency when they are fed the correct type of power. You can't just plug them in, as they need to be pampered. To get your LED lamp to market, you'll need lighting modules and power supplies with the right type of power.

An LED's color (like a fluorescent's), can vary from bulb to bulb, if not selected from a reputable supplier. Have you ever seen those weak LEDs in the solar powered garden lights with a cold, blue hue? Those are the most commonly available ones. But, if you are looking for a warm, soft diffuse glow, or a directional, bright white spotlight, Wattcents can help you choose the perfect bulb.

The most efficient LED designs use active components which create Electromagnetic Interference (EMI). The FCC requires any device producing EMI to be certified. For example: computers, cell phones, and digital cameras require this FCC certification. Wattcents understands how to re-

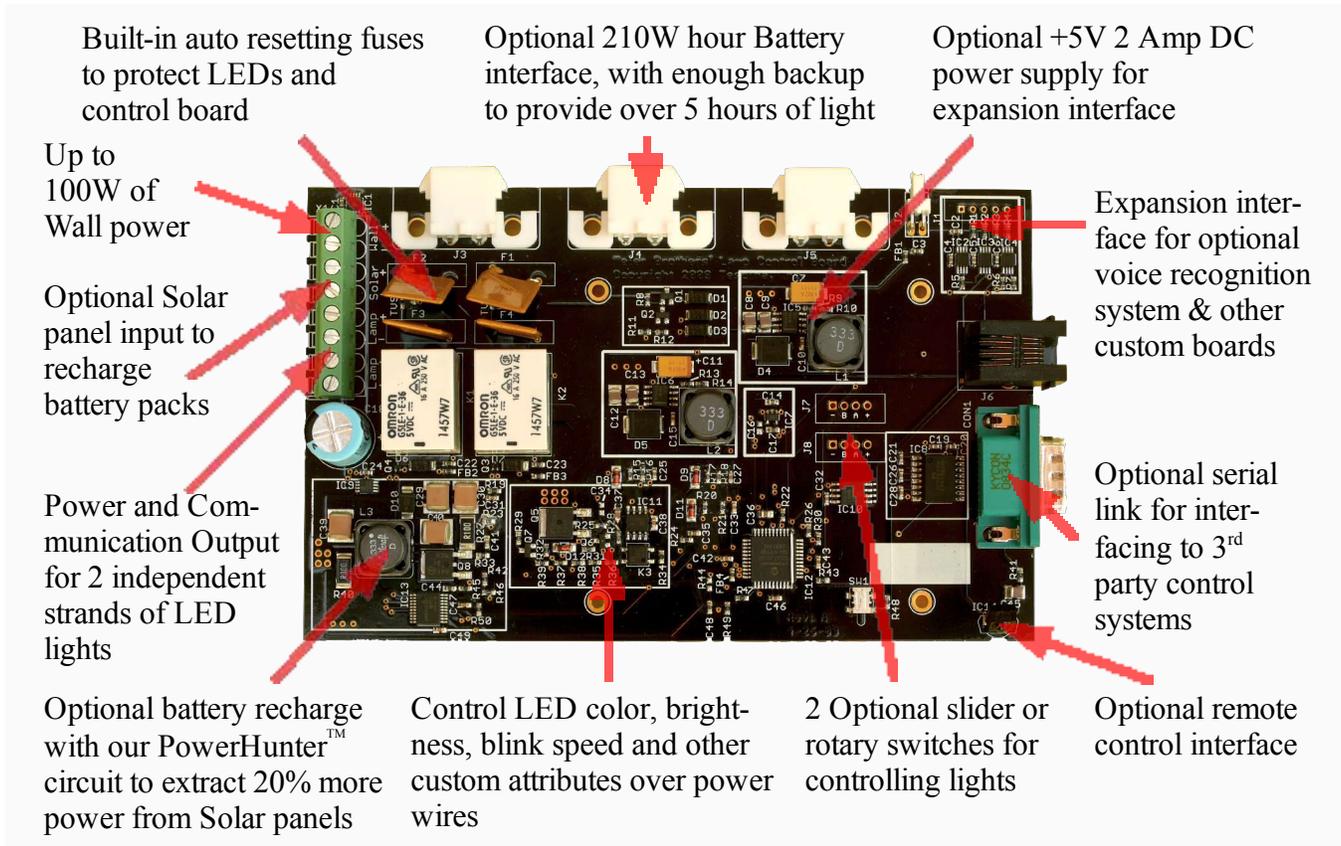
duce EMI, as well as navigate through the certification process.

Using off the shelf modules can be expensive. They reduce flexibility and can make you vulnerable to a single supplier. Designs from chip vendors show-case as many of their components as possible on their circuit board. To save you money, we choose components from hundreds of suppliers. Unlike those chip vendors, Wattcents will be there to help you through the entire design process, from start to finish.

Wattcents will sit down with you to understand what you want from your light. We will design a custom circuit board for you. We'll work with your mechanical team to get the exact fit you need.

Wattcents' LED modules offer exclusive features not found in other designs, including battery backup, remote control, and voice recognition options. Our engineers will source the right components you need, and will take care of building and testing the first samples. Once you have a working design, We'll assist you in getting through FCC and UL certifications.

Go ahead and design your new lamp. We'll take care of the electronics. Call Wattcents today for your **FREE**, no obligation consultation about your LED project.

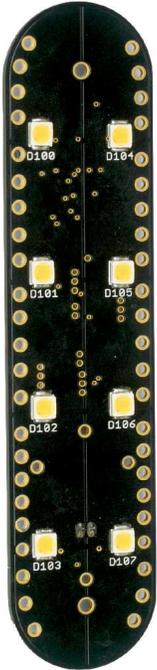


Example: LED Control Board Module

Features:	Description:
Input Power (Wall)	Up to 100W of input power. Electronic fuse protection that resets when power conditions return to normal.
Input Power (Solar)	Optional 5-20W Solar panel. Works with panels producing 6-24V.
LED Output	2 independent strands of LED lights. Each strand can support up to 40W of LED light modules. These modules can be wired in serial or parallel. Power output is less than 30V and is safe to touch. Can be used to drive track lighting or regular two wire wall lighting.
LED Controller	Uses Wattcents' inter-board communication technology. The control board can address up to 8 lighting modules independently. No additional wires are required over the two power wires. Call Wattcents for more options.
Slider Input	Up to 2 control switches for dimming and color control.
PowerHunter™ Circuit	This circuit constantly adjusts the load on a Solar panel to extract the most power. It also lets you use Solar panels under lower light conditions, when normal charging circuits would stop working. This results in 20% more usable power than conventional circuits. It auto detects 6, 12, and 24 Volt panels.
IR Remote Control	Infrared Remote Control interface for turning LED modules on/off. This uses a standard 38KHz type remote control. Can be customized to meet your requirements.
Expansion Interface	Allows optional features to be added to the lamp. Ask about Wattcents' Voice Recognition System.
Battery Backup	Up to 210W hours of battery backup. This can provide enough light for 5 hours of use without power. An optional Solar panel can be used to assist in recharging the batteries.



Example: Directional LED Module



Features:	Description:
Size	135mm x 40mm x 20mm
Max Output	646 lumens
Total Power	7.9W
Light Dispersion	+/- 80° from light
Color	(0.410,0.390) Warm white
Communication	LEDs can be dimmed by sending messages over the power wires.
Input Voltage	21.6-30V DC
Component Type	Surface mount
Layer Count	4-layer board with components on both sides.

This Wattcents module is used to replace a 60W incandescent bulb. The application is designed for a reading lamp, where the light shines down.

The LEDs are selected to give a light that blends with regular incandescent bulbs in the room. The light can be dimmed using the control board. This module can sense the dimming com-

mands coming over the power wires from the control board. The voltages on the board are kept below 30V so the lamp is safe to touch.



Example: Diffuse Outdoor Lamp Module

This outdoor lamp module from is designed for low power applications. It has low EMI, which makes shielding unnecessary.

use with a diffusing lamp shade. The color control allows the consumer to blend colors from moonlight to candle light. Each light can even be made to flicker randomly, to simulate candle light.

lamp is more than three night lights, which makes it good for fill-in or mood lighting. End consumers can string lamps together to mark a pathway. One controller board can handle dozens of lights.

This lamp was designed for The total light from each

Features:	Description:
Size	35mm diameter x 16mm
Max Output	42 lumens
Total Power	0.82W
Light Dispersion	+/- 50° from light
Color	(0.575,0.425) to (0.310, 0.320) Candle light to moonlight; 64 different colors and 64 different intensities.
Communication	LEDs can be dimmed by sending messages over the power wires.
Input Voltage	16-19V DC
Component Type	Surface mount and through hole

Layer Count	2-layer board with components on one side.
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Example: Torchiere Topper Module

This LED module from Wattcents requires careful cooling to keep the heat from building up and shutting the electronics down. In a torchiere application, this is better than a 150W incandescent bulb, as the total power draw is only 16W, yet it can deliver 1600 lumens.

Features:	Description:
Size	38mm x 38mm x 20mm
Max Output	1600 lumens
Total Power	15.8W; Can dim light to 1W
Light Dispersion	+/- 60° from light
Color	(0.344, 0.355) cool white
Communication	LEDs can be dimmed by sending messages over the power wires.
Input Voltage	21.6 - 30V DC
Component Type	Surface mount
Layer Count	4-layer board with components on both sides.

New LEDs are coming to market every week, with endless possibilities for customized LED light source applications. Getting the right blend of efficiency, lumens, color, and control is where we can help you. We don't sell you "one-size-fits-all" modules. All of our customers get a unique design, tailored to their requirements. Call us today to get started on your new lamp design. Wattcents will work with you to develop the right LED circuit board that meets your needs.

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