

U-Tron announces its own LED Power Supply and High efficiency Driver for all Lucas and BatLED models.

You wanted 5 year warranty

You wanted universal power supply

You wanted >97 pfc

You wanted internal PSU

You wanted TRIAC dimmable

And you got it from U-Tron.

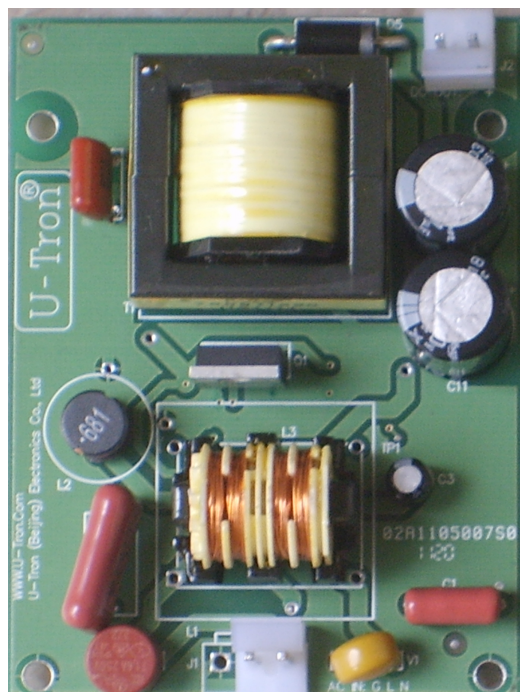


Figure 1 A U-Tron 6800-PSU

TRIAC Dimmable 50W Offline double sided LED Driver and Power Supply

U-Tron always made its own LED Driver boards but to meet the market needs outsourced the AC/DC power supplies to use with its LED driver boards. However, the power supplies available in the market have caused serious quality problems in the industries. Due to this reason U-Tron has decided to develop its own reliable power supply to match the LED qualities and warranty periods. Since our volume of Lucas Street Lights sales has exceeded above the average quantity, it's imperative to take charge of all our components. To our surprise the New U-Tron 6800-PSU Constant current Power Supply is cheaper than what we were buying in the market. More plans have been laid out for 6800 series of high PFC and high Efficiency PSU research and development in the coming months.

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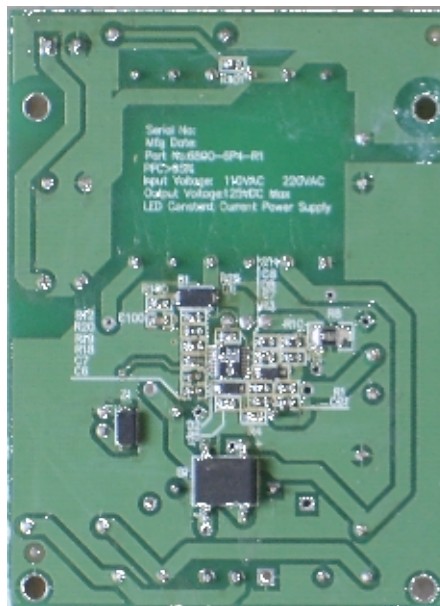


Figure 1 Back side of the New U-Tron 6800-PSU

About 6800-PSU Introduction

As environmental concerns over traditional lighting increase and the price of LEDs decreases, high power LEDs are fast becoming a popular lighting solution for offline applications. In order to meet the requirements of off line lighting—such as high power factor, high efficiency, isolation and TRIAC dimmer compatibility—prior LED drivers used many external discrete components, resulting in cumbersome solutions. The New U-Tron 6800-PSU solves complexity, space and performance problems by integrating all the required functions for offline LED lighting. The New U-Tron 6800-PSU controls an isolated fly-back converter in critical conduction (boundary) mode, suitable for LED applications requiring 4W to over 100W of LED power. Its novel current sensing scheme delivers a well-regulated output current to the secondary side without using an opto-coupler. Its unique bleeder circuit makes the LED driver compatible with TRIAC dimmers without additional components. Open- and shorted-LED protection ensures long term reliability.

Available Configurations:

The standard units are made with our Lucas street lights in mind: That's means every PSU will drive a set of 3 LED boards: Each PSU power output is around 50 Watt. The modular design will allow matching with the Lucas design. Lucas I models will need only one PSU, Lucas II models will need two PSU. And Lucas III models will need 3 PSU. The same design principal will apply to all the BatLEDs series. Thanks to the advancement in the technology the size of the PSU are exact same as the old driver boards so there is no need for any structural change in the luminaries. See Table 1 for available models and working conditions.

No-Opto Operation

Figure 1 shows a complete LED driver solution. The New U-Tron 6800-PSU senses the output current from the primary side switch current waveform. For a fly-back converter operating in

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boundary mode, the equation for the output current is:

$$I_{OUT} = 0.5 * I_{PK} * N * (1 - D)$$

I_{PK} is the peak switch current, N is the primary to secondary turns ratio and D is the duty cycle.

Typical values of 320, 350, 400 and 500mA can be achieved by jumper selection. For non standard values contact U-Tron sales department.

Ordering Part Number	# of LEDs	Total Vout	Recommended Constant Current mA	Total Watt Output
6800-PSU-030	30	96	350	33.6
6800-PSU-036	36	115.2	330	38.016
6800-PSU-040	40	128	325	41.6
6800-PSU-042	42	134.4	325	43.68

Table 1: Available models and typical working conditions

The IC regulates the output current by adjusting the peak switch current and the duty cycle through a novel feedback control. Unlike other primary side sensing methods that need to know input power and output voltage information, this new scheme provides much better output current regulation since the accuracy is barely affected by transformer winding resistance, switch $R_{DS(ON)}$, output diode forward voltage drop and LED cable voltage drop.

High Power Factor, Low Harmonics

By forcing the line current to follow the applied sine-wave voltage, the New U-Tron 6800-PSU achieves high power factor and complies with IEC61000-3-2, Class C lighting equipment Harmonics Requirement. A power factor of one is achieved if the current drawn is proportional to the input voltage. The New U-Tron 6800-PSU modulates the peak switch current with a scaled version of the input voltage. This technique provides power factors of 0.97 or greater. A low bandwidth feedback loop keeps the output current regulated without distorting the input current.

TRIAC Dimmer Compatible

When the TRIAC dimmer is in the off state, it's not completely off. There is considerable leakage current flowing through its internal filter to the LED driver. This current charge-up the input capacitor of the LED driver, causing random switching and LED flicker. Prior solutions added a bleeder circuit, including a large, expensive high voltage MOSFET. The New U-Tron 6800-PSU eliminates the need for this MOSFET or any other extra components by utilizing the transformer primary winding and the main switch as the bleeder circuit. As shown in Figure 2, the MOSFET gate signal is high and the MOSFET is on when the TRIAC is off, bleeding off the leakage current and keeping the input voltage at 0V. As soon as the TRIAC turns on, the MOSFET seamlessly changes back into a normal power delivery device.

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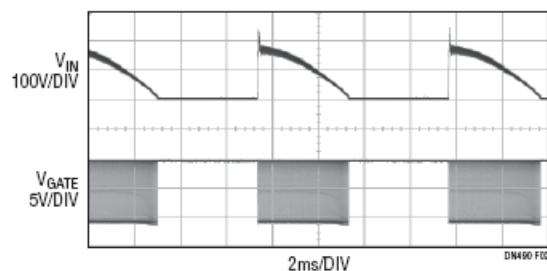


Figure 2. MOSFET Gate Signal and V_{IN}

Open- and Shorted-LED Protection

The LED voltage is constantly monitored through the transformer third winding. The third winding voltage is proportional to the output voltage when the main switch is off and the output diode is conducting current. In the event of over-voltage or open-LED, the main switch turns off and the capacitor at the CT pin discharges. The circuit enters hiccup mode as shown in Figure 3.

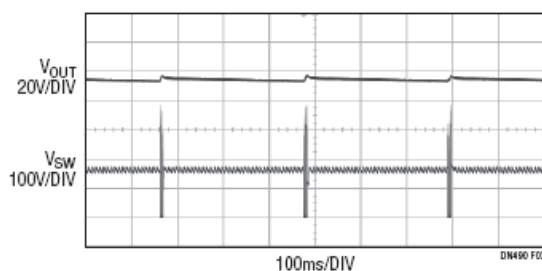


Figure 3. Output Open-Circuit Event

In a shorted LED event, the IC runs at minimum frequency before the V_{IN} pin voltage drops below the UVLO threshold as the third winding can't provide enough power to the IC. The IC then enters its start-up sequence as shown in Figure 4.

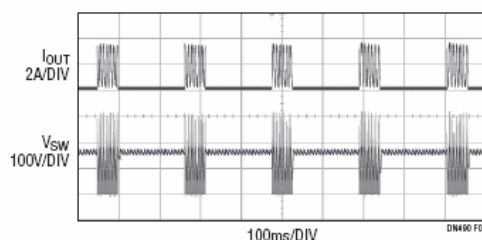


Figure 4. Output Short-Circuit Event

CTRL Pins and Analog Dimming

The New U-Tron 6800-PSU's output can be adjusted through multiple CTRL pins. For

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example, the output current would follow a DC control voltage applied to any CTRL pin for analog dimming. Over temperature protection and line brownout protection can also be easily implemented using these CTRL pins.

Conclusion

The New U-Tron 6800-PSU is a complete offline LED driver solution featuring standard TRIAC dimming, active PFC and well regulated LED current with no opto-coupler. This high performance and feature-rich PSU greatly simplifies and shrinks offline LED driver solutions.

About U-Tron:

U-Tron (Beijing) Electronics Co. Ltd., was established in 1992 as a WOFE in Beijing, China. The company was 100% funded by investments from American Companies. The main purpose was to bring U.S. developed technology products to China for manufacturing and localization.

U-Tron has an 1,800 square meter factory employing 50 + people in the Beijing Development Area (BDA) of Yi Zhuang district and a joint venture factory in Mapo Shunyi with Beijing Jile Electronics Company.

Website: www.u-tron.com

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