

PROGRAMMABLE CONTROLLER FOR LED ARRAYS

The Opportunity

Carpenter Decorating Co., Inc. has developed a system for LED lighting control where thousands of light emitting diodes (LEDs) can be intelligently controlled using an industry standard controller bus (I²C). The system uses a unique patented color tunable LED illumination device containing at least three LEDs of different colors and an integrated circuit driver allowing each LED to be individually addressed for on or off, control color mixing, brightness, blink rate, etc.. The LEDs and the integrated circuit driver can be packaged into individual bulb housings which can have a standard screw-type bulb base connector.

The system can be used for:

- decorative commercial or municipal displays
- large outdoor information displays.
- color-changing LED indicators on electronics.

Technology

This technology represents a fundamentally new and different LED lighting control method. Rather than using old technologies such as DMX to dim multicolor LED fixtures using PWM, Carpenter has developed an integrated circuit (IC) controller for numerically addressing lighting networks using low-level, high-drive I²C network constructs. The IC chip uses a new 1 MHz Fast Mode+ I²C logic bus.



Compared with basic I²C buses, the new standard enables much greater distances and greater capacitive loads.

The ICs are numerically addressable and can either directly drive RGB and RGBA LEDs or interface easily to external drivers to control much larger solid-state lighting arrays. The chips allow for



individual control of each LED connected to each output bit and can be controlled globally or broken up into subgroups.

The master/slave FM+ I²C solid-state lighting network topologies open up a number of new avenues for the LED luminaire dimming and color mixing control community. These include bus bi-directionality for the addition of lumen maintenance and color temperature sensors, and a broad host of other advantages.

Intellectual Property

Carpenter's system is protected by patents in the US and certain foreign countries.

- US Patent 7,015,825 "Decorative lighting system and decorative illumination device"
- US Patent 7,327,337 "Decorative Illumination Device"
- US Patent Application 2008/0030149 "Controller for a Decorative Lighting System"
- US Patent Application 2008/030441 "Driver for Color Tunable Light Emitting Diodes"

For More Information

The Company is seeking qualified licensees to bring its innovative new technology into commercial use in targeted application areas. For more information, contact:

Dr. Stephen P. Weeks, President

First Principals, Inc.
1768 East 25th Street
Cleveland, OH 44114

Tel: 216-881-8521 Fax: 216-881-8522

email: spweeks@firstprincipals.com

Website: <http://www.firstprincipals.com>