



Light System Manager Gen5

Product Guide

Light System Manager

Author, configure, and control intricate LED light shows in multiple zones

Optimized for medium and large-scale LED lighting installations, Light System Manager is an integrated solution comprising Light System Engine controller hardware and Light System Composer software. With support for intricately designed installations containing thousands of LED nodes, Light System Manager offers the versatility to manage wide-ranging architectural, entertainment, and retail lighting environments.

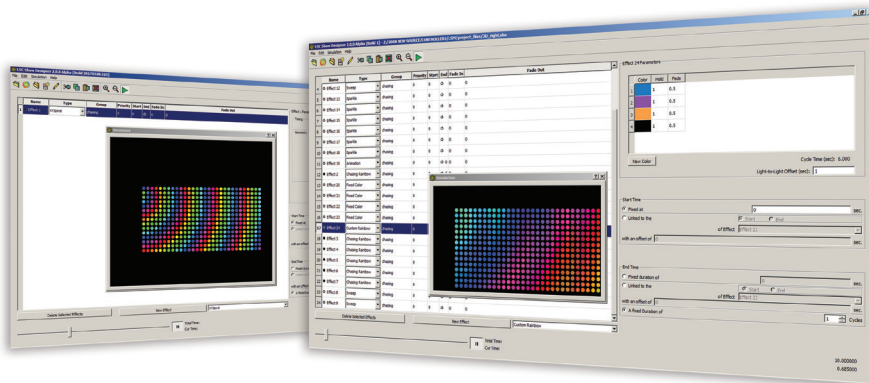
- Easy to use—Featuring Ethernet-based control and automatic lighting system discovery, Light System Manager dramatically simplifies installation.
- Hardware support for medium and large environments—Light System Engine hardware processes simultaneous light output data for up to 15,000 individually controllable LED nodes, depending on configuration.
- Native control of multi-channel luminaires—Light System Manager supports luminaires with up to 12 LED channels in either 8-bit mode or 16-bit mode. That means you have greater control of the full gamut of lights from Color Kinetics, including IntelliHue and Intelligent White luminaires, right out of the box.
- Improved reliability—Solid-state drives reduce the number of moving parts to enhance the reliability of the Light System Engine.
- Slim profile and flexible mounting options—Integrated mounting tabs allow installation overhead, on vertical surfaces, or on moving architectural or entertainment features.
- Automate show playback—Set calendar events to automatically trigger show playback based on a specific date or an astronomical event, such as sunrise or sunset.
- Web interface access—Set event triggering, create show schedules, and easily select point-and-click static color scenes using an online web interface. The web interface supports multiple online users with activity logging for each user account.
- Versatile zone usage—Configure and control multiple playback zones, each with unique light show assignments. Light System Manager allows zone control of both indoor and outdoor luminaires within a single installation.
- Dual configurable network ports—Two network ports support integration into existing network environments, while maintaining connectivity to a separate dedicated lighting network.
- ActiveSite integration—ActiveSite is the first ever cloud-hosted connected lighting system for architectural LED lighting installations. ActiveSite allows you to remotely monitor, manage, and maintain an installation site from anywhere in the world, using a secure web connection.

Design and Manage Multi-Layered Light Shows

The Show Designer module in Light System Composer provides the flexibility to design shows based on your creative vision.

Show Designer allows you to incorporate graphics and images for eye-catching visual presentations.

Each light show effect is fully customizable. For sophisticated results, modify effect variables, such as color palettes and transitions.



Transform Cityscapes with Energy-Efficient Light



CN Tower
Toronto, Canada



Photography Jerrold Litwinenko

Transforming the CN Tower

For nearly a decade, the 553 m (1,815 ft) CN Tower was minimally lit in an effort to conserve energy while awaiting a better long-term lighting solution. Following extensive evaluation, a Color Kinetics lighting system was chosen to visually transform the Tower's appearance while also reducing energy consumption and maintenance requirements. According to the CN Tower's calculation, the entire LED installation consumes 60% less energy than the fully illuminated Tower of the 1990s, and 10% less energy than the previous system.

Lighting Control and Configuration

With its scalable design, Light System Manager offers the ideal controller solution for the CN Tower project. Installed with standard Ethernet cabling and network hardware, Light System Manager manages the 1,300 high-performance lighting luminaires mounted within the Tower's elevator shafts and antenna tower.

What's in a Light System Manager Light Show?

A light show is a set of digital instructions orchestrating how and when your lighting installation displays effects. The CN Tower lighting design team created mood, interest, and visual impact by customizing the appearance and behavior of standard Light System Composer effects with unique color palettes, sequences, and playback zones. Additionally, via the show scheduling feature, specifically themed light shows display automatically to coincide with national events and holidays.



✳ For full details on using the software modules to design your lighting installation, refer to the *Light System Manager user guide* available at www.colorkinetics.com/ls/controllers/lsm/

Light System Manager Environments

Multi-zone Installation

Headquartered in Burlington, Massachusetts, Color Kinetics is a global LED lighting innovation and product design center for Color Kinetics. The 4,645 m² (50,000 ft²) office, laboratory, and showroom space utilizes LED lighting technology throughout. Light System Manager manages the LED lighting zones in the building, including the lobby, conference rooms, work spaces, exterior signage, and product demonstration areas.

Lighting Zone Details

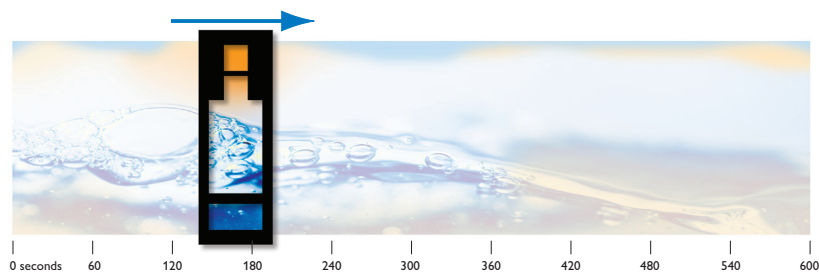
The lobby space features subtly animated light shows displayed on both RGB and white LED lighting systems. 20 unique shows ranging in duration from 10 minutes to 12 hours gently scroll across the ceiling, wall surfaces, and alcoves. Additionally, the luminaires installed directly above the reception desk are controlled by Light System Manager as a separate region within the lobby zone, allowing for warm white illumination focused on the receptionist work space and visitor seating area, as needed.

How it Works

Light System Manager uses two-dimensional maps to identify and control the lighting components in each lighting zone. The lobby map, for example, contains four rectangular clusters of luminaires, varying in size. The large rectangular area corresponds to the main ceiling, and the smaller rectangular areas match the wall adjacent to the elevator, the ceiling adjacent to the elevator, and the wall behind the reception desk.



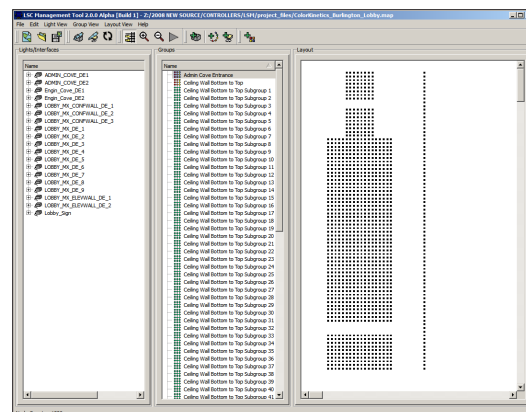
Color Kinetics Headquarters and Showroom



The lobby map allows Light System Manager to accurately display light shows according to the position of each luminaire. Based on a schedule, Light System Manager continuously scrolls images across the lobby map, creating a seamless animated effect. Because each image is configured to be larger than the map dimensions, only a portion of the image is displayed at any given time.

Playback Controls

Once set up, Light System Manager functions as a standalone device that automatically displays one or more scheduled light shows in each lighting zone. The lobby schedule calls for unique shows each day of the week and on certain holidays. Additionally, Antumbra Ethernet Keypads installed in multiple locations allow users to override a scheduled lobby show at the touch of a button and select from six additional choices.





Boathouse Row
Philadelphia, Pennsylvania

Photography Jacques-Jean Tiziou

Architectural Exterior

A popular Philadelphia landmark, Boathouse Row comprises twelve boating clubs in ten architecturally distinct buildings along a half-mile stretch of the Schuylkill River. The lighting system from Color Kinetics replaces a 30-year-old incandescent system that required frequent and costly maintenance.

Like the CN Tower, Boathouse Row uses LED lighting to transform a well-known but static exterior scene into an expressive canvas. The lighting design team envisioned a primary display of white light with the capability to punctuate the boathouses with vibrant color and visual effects for special occasions. The designers accomplished their goal by creating shows with the Show Designer module in Light System Manager Composer. The straightforward and easy-to-use software interface enabled the team to focus on the creative aspects of the project rather than configuration. New users were able to program and submit light shows for conceptual approval in a matter of minutes, with limited prior experience using Light System Manager.



Hard Rock Hotel & Casino Biloxi
Biloxi, Mississippi

Photography Buddy Pope, 4Wall
Entertainment Lighting

Architectural Interior

The restored Hard Rock Hotel & Casino Biloxi opened its doors on lucky 7.7.07 (July 7, 2007) after suffering extensive damage from Hurricane Katrina. The scalable, Ethernet-based design of Light System Manager proved critical to the success of the complex project, which features intricate and varied designs for the thousands of LED nodes and luminaires within the hotel. Light System Manager's compatibility with commonly used network components allowed for reliable and seamless installation.

Light System Manager controls eight separate lighting zones, including the Hard Rock Biloxi Memorabilia Wall, which pays homage to Rock and Roll's greatest influences. The luminaires from Color Kinetics used in the two story display feature zero ultraviolet and infrared emissions, preventing damage to the display's priceless contents.



Georgia Aquarium
Atlanta, Georgia

Photography Kieran Reynolds Photography

Theater and Entertainment

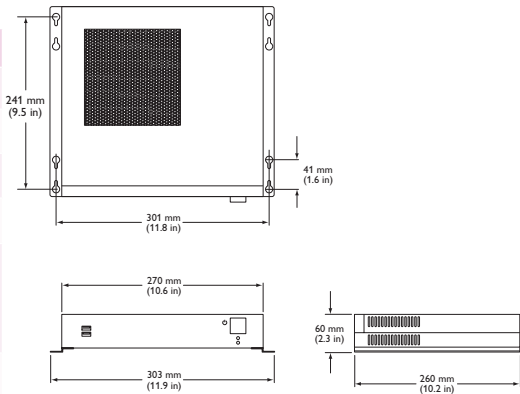
The wave wall installed in the Georgia Aquarium's central plaza is 45.7 x 7.6 m (150 x 25 ft) and comprises five curving bands of color-changing light. The wave wall acts as an immersive visual centerpiece to incoming visitors.

Additionally, the wall doubles as a 22.9 m (75 ft) wide projection surface for video shows. For video presentation, the luminaires in the center of the wall turn off, creating a white "video screen", and the luminaires along the perimeter of the wall remain on, creating a colorful frame surrounding the presentation.

Specifications

Due to continuous improvements and innovations, specifications may change without notice.

Item	Specification	Details
Electrical	Input Voltage	100 to 240 VAC, auto-switching, 50/60 Hz
	Power Consumption	180 W maximum
Control	Supported LED Nodes	Up to 15,000 nodes
	Network Data	KiNET Ethernet protocol* via Gigabit Ethernet†
	Light System Composer Software	Light System Composer from Color Kinetics is required to create light shows for Light System Manager. To download Light System Composer, visit www.colorkinetics.com/support/lsm/ .
Physical	Dimensions (Height x Width x Depth)	241 x 303 x 60 mm (9.5 x 11.9 x 2.3 in)
	Weight	4.2 kg (9.3 lb)
	Operating Temperature	0 to 35 °C (32 to 95 °F)
	Housing	Aluminium enclosure
	Connector/Cable	(2) RJ45 ports, shielded Cat. 5e or better data cable (not included)
	Operating Humidity	0 to 90%, relative humidity, non-condensing
Certification and Safety	Approbation	UL/cUL, FCC, CE, RCM, CCC
	Environment	Dry Location



* KiNET is the Ethernet lighting protocol from Color Kinetics.



† Use PoE (Power-over-Ethernet) switches, or PoE injectors, when installing a lighting system containing one or more Antumbra Ethernet Keypads.

‡ Requires 64-bit Windows 7 or newer, or macOS 10.10 or newer, with at least 100 MB of free space.

Light System Manager

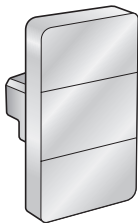
Item	Item Number	12NC
Light System Manger gen5, 500 node	103-000042-00	912400135993
Light System Manager gen5, 1,000 Node	103-000042-01	912400134287
Light System Manager gen5, 2,000 Node	103-000042-02	912400134288
Light System Manager gen5, 3,000 Node	103-000042-03	912400134289
Light System Manager gen5, 5,000 Node	103-000042-05	912400134290
Light System Manager gen5, 8,000 Node	103-000042-08	912400134291
Light System Manager gen5, 12,000 Node	103-000042-12	912400134292
Light System Manager gen5, 15,000 Node	103-000042-15	912400134293

Use Item Number when ordering in North America.

Accessories

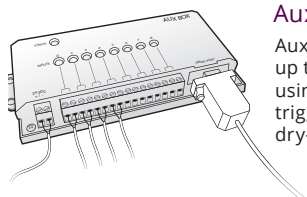
Item	Item Number	12NC
Antumbra Ethernet Keypad	Visit www.colorkinetics.com/lc/controllers/ for ordering details.	
PoE Injector (North America Power Cord)	109-000029-00	910503700383
PoE Injector (Europe Power Cord)	109-000029-01	910503700384
AuxBox	103-000021-01	910503702433

Use Item Number when ordering in North America.



Antumbra Ethernet Keypad

Antumbra Ethernet Keypad is a wall-mounted triggering device that controls up to six light shows and luminaire brightness at the touch of a button.

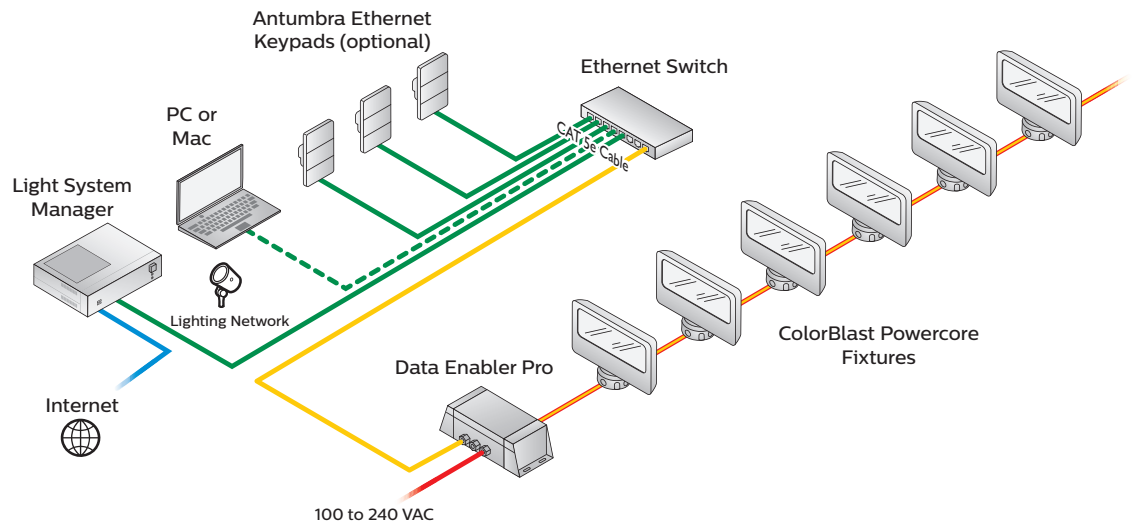


AuxBox

AuxBox instantly activates up to eight light shows using any remote triggering device with a dry-contact closure.

Configuration Overview

Light System Manager allows your lighting installation to display a variety of light show designs and choreographed moving images. Light System Manager comprises Light System Engine, a computer (for initial setup and programming), one or more Antumbra Ethernet Keypads (optional), network hardware, and lighting components.




Ethernet Layout

Light System Engine hardware communicates with the interfaces in the lighting installation (power/data supplies) via KiNET, the Ethernet network protocol engineered by Color Kinetics for high-performance lighting system control. Light System Engine offers full compatibility with all conventional Ethernet hardware, accommodating network trees up to three switches deep between the Light System Engine and the farthest KiNET interface. Ethernet limits the maximum cable run to 100 m (328 ft). Adding Ethernet optical data cabling and hardware to your layout extends the maximum cable run distance.

Antumbra Ethernet Keypads are Power over Ethernet (PoE) devices. Use PoE-compatible Ethernet switches if Antumbra Ethernet Keypads are installed on the network. Alternatively, if using non-PoE switches, install PoE injectors from Color Kinetics inline between each keypad and switch.


Dedicated Local Area Network

To achieve optimal display and network connectivity performance, the lighting network port () of the Light System Engine and all lighting components must be installed on a dedicated Local Area Network. Light System Engine hardware delivers thousands of packets of light output data per second to your lighting installation, requiring uninterrupted data throughput.

You can use the Internet network port () to connect to an existing building network, and maintain Internet connectivity.

Automatic Interface Discovery and Creating Maps

Light System Engine references a map file when communicating with the lighting components in the network. The map allows the Light System Engine to identify every luminaire and interface in the installation as a separate device and route data accordingly. For your convenience, the Management Tool module in Light System Composer automatically discovers all connected Ethernet power/data supplies and luminaires, including device properties such as IP address, DMX address, device name, and luminaire configuration.

 For optical device Ethernet network specifications, refer to your optical device user documentation.

Prepare for the Installation

Owner/User Responsibilities

It is the responsibility of the contractor, installer, purchaser, owner, and user to install, maintain, and operate the Light System Manager system in such a manner as to comply with all applicable codes, state and local laws, ordinances, and regulations. Consult with an appropriate electrical inspector to ensure compliance.

Planning the Installation

Color Kinetics offers lighting systems suitable for environments ranging from the simplest to the most complex. A simple Light System Manager installation might use 25 ColorGraze MX4 Powercore luminaires installed in a single zone, whereas a larger installation might use 200 strands of iColor Flex LMX gen2 displaying light shows in multiple zones. Regardless of the size and complexity of your project, the time you spend up front can help minimize installation and configuration issues. Keep these suggestions in mind as you plan your installation:

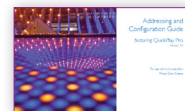
1. Create a lighting design (CAD layout, architectural plan, or other diagram) that specifies the locations of all luminaires, power/data supplies, Ethernet switches, Ethernet cables, the Light System Engine, and Antumbra Ethernet Key pads.
2. Use the Configuration Calculator, and the appropriate Product Guides and wiring diagrams, to determine the number of luminaires each circuit in your installation can support, based on type of luminaire, power source, line voltage, circuit load, and cable lengths.
3. Light System Manager is an Ethernet-based system offering flexible and convenient installation options. Note that Ethernet limits maximum individual cable runs to 100 m (328 ft). For larger installations, adding fiber optic data cabling and hardware to your lighting network extends the maximum cable run distance.
4. As part of the lighting design plan, where possible, make use of a repeated layout that specifies the preferred orientation of each luminaire. For example, if using ColorGraze MX4 Powercore luminaires, install each luminaire in a uniform manner so that jumper cables plug into the same side of each luminaire in a sequence.
5. The Management Tool module in Light System Composer automatically discovers all connected Ethernet power/data supplies and addressable luminaires. As needed, use QuickPlay Pro addressing and configuration software to assign unique IP addresses and device names to all power/data supplies and addressable luminaires before using the Management Tool to map your installation.
6. To streamline physical installation and future maintenance, affix a weatherproof label identifying installation placement, IP address, and device name to an inconspicuous location on each power/data supply and luminaire housing.
7. Refer to the Light System Manager User Guide for detailed instructions on using the Light System Manager.



* Product Guides are available online at www.colorkinetics.com/support/productguides/

* The Configuration Calculator is available online at www.colorkinetics.com/support/install_tool/

* For detailed optical device Ethernet network specifications and installation steps, refer to your optical device user documentation.



* The Addressing and Configuration Guide and QuickPlay Pro software download are available at www.colorkinetics.com/support/addressing/



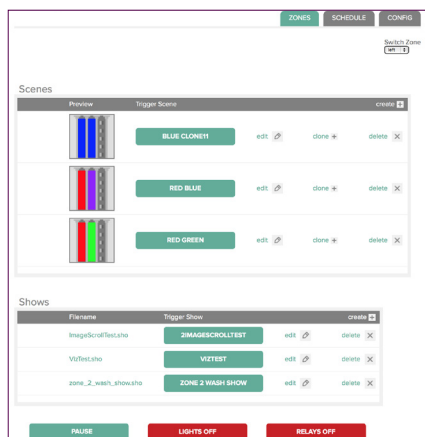
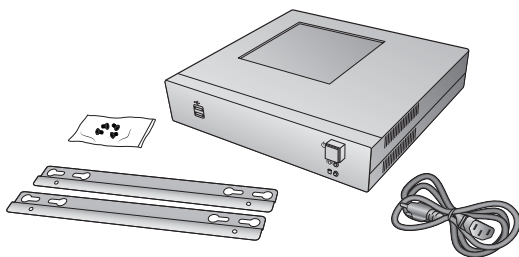
* The Light System Manager User Guide is available online at www.colorkinetics.com/lsm/controllers/lsm/

Included in the Box

Light System Engine

Power cable

(2) Mounting brackets and (6) Mounting screws



Start the Installation

1. Install all luminaires and power/data supplies. If your installation calls for jumper cables to add space between luminaires, make sure they are available.
2. Verify that your Light System Engine lighting network port is connected to a dedicated LAN using standard Ethernet switches.
3. If using one or more Antumbra Ethernet Keypads, you must use a PoE (Power over Ethernet) switch, or install PoE injectors inline between each keypad and the switch to which it is connected.

Install Light System Manager

Light System Manager comprises two components: the Light System Engine controller and Light System Composer software:

Light System Engine Installation Overview

- Install Light System Engine in a convenient, temperature-controlled location. Use the Installation Instructions document included in the product packaging for step-by-step hardware installation instructions.
- Assign a static IP address to the personal computer and connect it to the lighting network. After connecting the personal computer, verify that the computer can connect to the Light System Engine. Note that following light show programming and configuration, you can disconnect and remove the personal computer from the network.
- Refer to the Light System Manager User Guide for additional details, as needed. The Light System Manager User Guide is available online at www.colorkinetics.com/lsc/controllers/lsm/.

Light System Composer Installation Overview

- Use the Light System Manager Quick Start Guide included in the product packaging for step-by-step software installation instructions.
- Download and install Light System Composer from www.colorkinetics.com/lsc/controllers/lsm/.

Using the Light System Engine Web Interface

The Light System Engine has a powerful web interface that you can use to set event triggering, create show schedules, and easily select point-and-click static color scenes. The web interface supports multiple users with activity logging for each user account.

Connect to the Light System Engine interface by entering its IP address in a web browser on the computer connected to the dedicated local area network. The default lighting network IP is 10.1.3.100. The default username is color and the default password is kinetics.

About Light System Composer Software

Light System Composer is a full-featured software package containing the following modules:

Management Tool—When connected to a lighting network, the Management Tool module automatically discovers all lighting system components, allowing you to create a map of the installation. The map identifies all hardware so that the Light System Engine controller can send accurate light output instructions. Additionally, Management Tool allows you to create groups of luminaires that can have colors or effects applied to them using Show Designer or the Web Interface.

Show Designer—The Show Designer module enables you to author and refine dynamic light shows using eight fixed color and chasing color effects, two animated image effects, and two geometric effects. You can apply pre-defined effects to groups of luminaires, and then modify those effects by modifying their parameters. Show Designer also allows you to simulate your show via the Live Play simulation feature, which displays the light shows on the luminaires in your installation.

Workflow: Creating and Displaying a Light Show

1. Create a Map

The first step in creating a light show is to map the installation. The map links all lighting luminaires and interfaces (power/data supplies) to the Light System Engine controller, and acts as a virtual representation of the installation. The Management Tool module enables you to automatically discover all lighting system components and build the map. When new luminaires are added to an existing installation, or when working off site, the Management Tool module also allows you to manually build a fully functional virtual map.

2. Create a Zone

Access the Web Interface, and click the Config tab. Click Zones, and upload your map file to create a new zone.

3. Create a Dynamic Light Show or Static Color Scene

After the zone is created, create a dynamic light show or static color scene.

Dynamic Light Show

Use Show Designer to create dynamic lighting effects. Show Designer lets you add effects to each group of luminaires in the installation and then modify the effect parameters to create unique results. Use the Live Play feature to test and refine your show. Once your show is created, use the built-in Web Interface to upload your show file and any related image assets. Each animation effect requires a zip file containing the animation images. Each image scroll effect requires an image file (.png, .jpg, or .bmp)

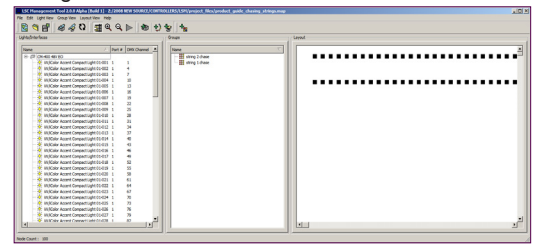
Static Color Scene

Use the Web Interface to create static color scenes. Colors can be applied to groups of lights in your installation. These groups are created in Management Tool, and are assigned to point-and-click areas through the group map editor, which is located in the Configuration tab of the Web Interface. You can use the scene editor to select colors live on your installation while the selected scene is actively playing.

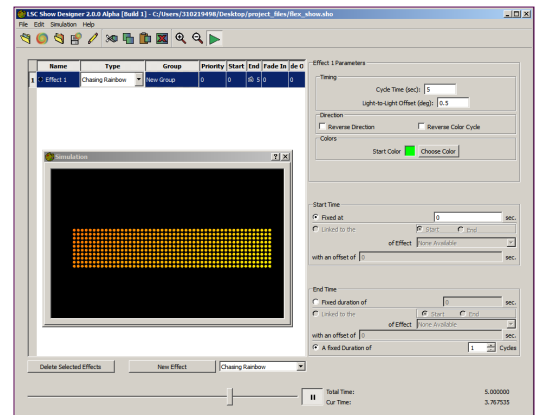
4. Schedule Show or Scene

Using the Schedules tab of the Web Interface, you can schedule shows or scenes to play at a fixed or astronomical time. You can manually trigger a show or scene using the Zones tab of the Web Interface.

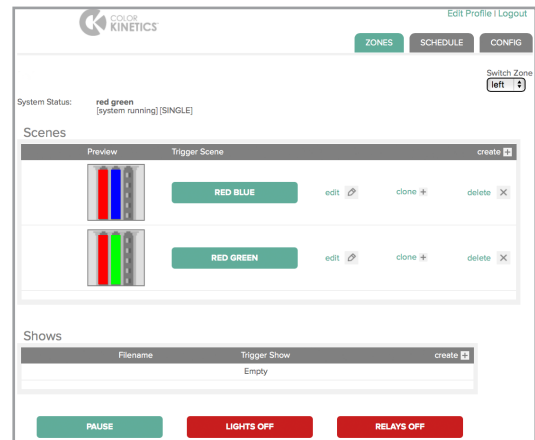
Management Tool



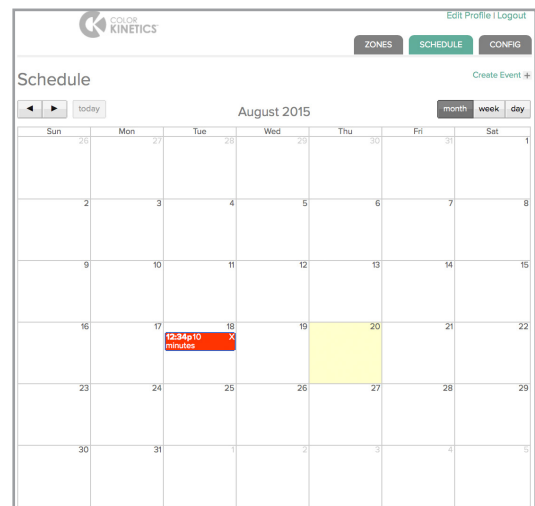
Show Designer



Static Color Scene



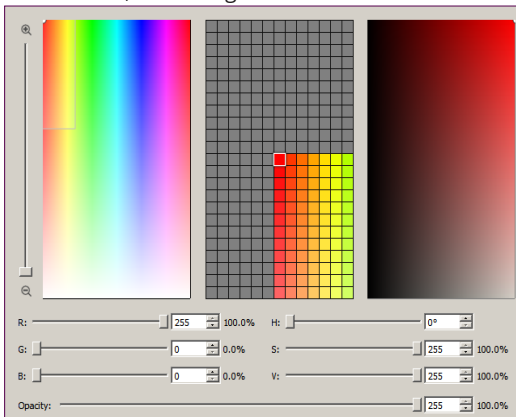
Show Schedule Calendar



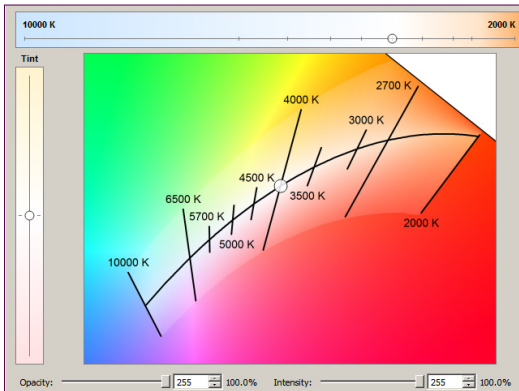
Light System Manager Effects Palette



Color Picker, RGB Range



Color Picker, White Range



The Light System Composer Show Designer module offers a palette of fourteen pre-defined visual effects:

Animation

A series of still images appears in rapid succession, creating an animation sequence.

Chasing Rainbow

When applied to a group of luminaires, colors of the rainbow appear to chase each other from node to node.

Color Sweep

When applied to a group of luminaires, a color advances from node to node in a sweeping motion.

Cross Fade

Colors fade gracefully from a solid color to another solid color.

Custom Rainbow

Custom Rainbow is similar to Chasing Rainbow, but allows a choice of colors.

Fixed Color

Static display of a single color.

Image Scroll

A still image moves across the luminaires in a user-defined motion.

Random Color

At specified intervals, colors jump cut from one color to the next, in random order.

Sparkle

When applied to a group of luminaires, flashes of light appears on several luminaires in the group, in random order.

Streak

When applied to a group of luminaires, a pulse of color races from node to node.

XY-Burst

Produces multiple expanding concentric circles of color.

XY-Spiral

Produces a color-changing wheel revolving around a center point.



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Color Kinetics
www.colorkinetics.com