Light System Manager gen6

User Guide

Contents

1 Introduction

Light System Manager controls 1,300 high-performance LED luminaires installed within the elevator shafts and antenna mast of the CN Tower in Toronto, Canada. The entire LED installation consumes 60% less energy than the fully illuminated Tower of the 1990s.

Welcome to Light System Manager

Light System Manager (LSM) is a versatile hardware and software solution optimized for a wide range of medium and large-scale LED lighting environments, including architectural, entertainment, and retail lighting applications.

Light System Engine (LSE) controller, the hardware component, delivers light output data via standard Ethernet protocols. Light System Engine supports installations ranging from simple interior spaces to complex exterior configurations.

Light System Composer (LSC) design software offers sophisticated light show effects, playback options, and automatic discovery of all lighting components in an installation.

Key Features

- Hardware support for medium and large-scale environments—Light System Engine processes simultaneous light output data for up to 15,000 individually controllable LED nodes, depending on configuration.
- Native support for multi-channel luminaires—Light System Manager supports luminaires with three or more LED channels. 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.
- Slimmer profile—Slimmer form factor offers convenient surface mounting, as well as the ability to install in server racks and rackmount cases.
- Flexible mounting options—Integrated mounting tabs allow installation overhead, on vertical surfaces, or on moving architectural or entertainment features.
- Easy to use—Featuring Ethernet-based control and automatic lighting system discovery, Light System Manager dramatically simplifies installation.
- Create shows with Light System Composer—Light System Composer software allows you to create dynamic light shows with fully customizable effects, multi-layer editing, and unique color palettes. You can design shows with single or multiple color-changing effects, animated images, geometric patterns, and more.
- 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.
- Dual configurable network ports—The Light System Engine contains two network ports that 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.
- 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 fixtures within a single installation.
- Simplified control access—Designed for use with Light System Manager, Antumbra Ethernet Keypad is a wall-mounted triggering device that controls light shows and fixture brightness at the touch of a button. LSM supports up to 10 keypads within a single lighting installation.
- Automatic show playback—Set calendar alarms to automatically trigger show playback based on a specific date or an astronomical event, such as sunrise or sunset.
- Supports the optional AuxBox expansion device—AuxBox automatically triggers up to eight light shows using any remote triggering device with a dry-contact closure. Via the AuxBox, you can trigger light shows by motion sensors, third-party control or sensor systems, and more.

Antumbra Ethernet Keypad

AuxBox Expansion Device

KiNET is the high-performance Ethernet network protocol engineered by Color Kinetics for LED lighting control.

About this Guide

System Overview

Chapter 2 discusses the Light System Engline and software modules, installation planning topics, the light show design workflow, and an installation example.

Hardware and Software Installation

Chapter 3 provides hardware and software installation instructions, steps for configuring a PC or Mac on your lighting network, instructions for connecting to the web interface, and steps for installing the latest firmware and Light System Composer versions.

Creating a Map

Chapter 4 details the process for automatically discovering lighting network components, including all KiNET interfaces (power/data supplies) and luminaires in the lighting network.

Fixture Placement and Groups

Chapter 5 provides instructions for editing node placement and orientation, grouping nodes, and creating an animation template for use with the animation effect.

Designing Shows

Chapter 6 covers how to create, refine, and test light shows using a palette of visual effects and customizable effect parameters.

Configuration

Chapter 7 describes Light System Engline system configuration, including how to upload your lighting maps to the Light System Engine and how to configure keypads.

Managing and Playing Light Shows

Appendix A contains a detailed list of all on-screen palettes, menu items, and tools.

Chapter 8 covers the show and scene playback, including how to trigger show playback from the Light System Engine web interface or a keypad.

Managing Schedules

Chapter 9 covers the Light System Engine system schedule and the options available when creating a new entry.

Reference and Tutorials

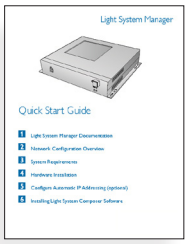
QuickPlay Pro addressing software is available online at www.colorkinetics.com/support/install_tool.

Refer to Appendix A for detailed descriptions of all menu items and tools for each Light System Composer software module. Appendix B contains DMX tables. Appendix C offers basic network troubleshooting information. Appendix D outlines the serial protocol used by Controller Keypad. Appendix E is a reference for changing your network settings so that your computer can be connected to your lighting network.

Appendix F contains multiple tutorials covering use of Light System Manager, such as creating multi-layered light shows and how to work with ColorReach Powercore luminaires in 6-channel mode.

Related Documents

The following PDF documents are available for download via the web at www.colorkinetics.com/ls/controllers/lsm/



- Light System Manager Installation Instructions
- Light System Manager Quick Start Guide
- Light System Manager Specification Sheet
- Light System Manager Product Guide

Documentation for the optional Antumbra Ethernet Keypad is available online from www.colorkinetics.com/ls/controllers/.

Documentation for the optional serial Controller Keypad is available online from www.colorkinetics.com/ls/controllers/controllerkeypad/.

Documentation for the optional AuxBox is available online from www.colorkinetics.com/ls/controllers/auxbox/.

Technical Support Contacts

Contact Color Kinetics technical support for assistance with hardware or software questions:

Phone

888.385.5742, press option number 3 (toll free US, Canada and Mexico)

+1 617.423.9999, press option number 3 (toll worldwide)

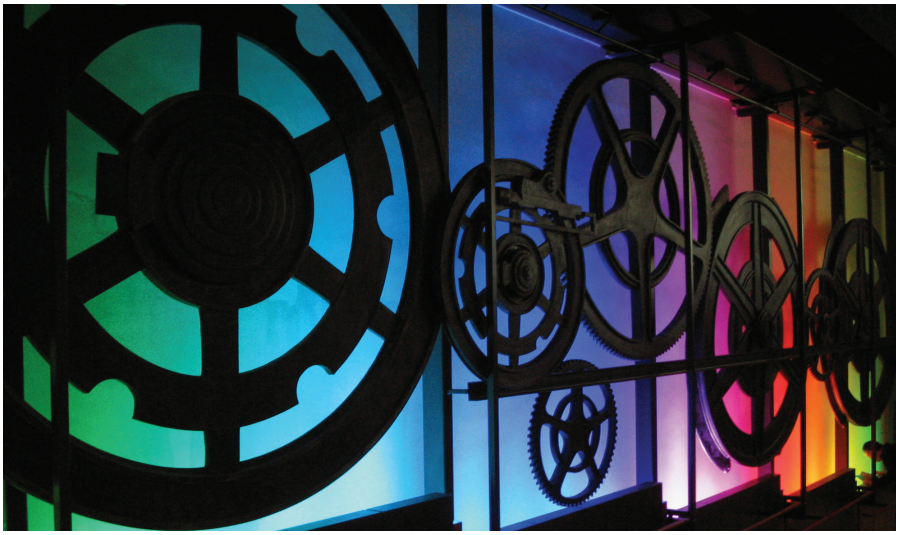
Email

technicalsupport@colorkinetics.com

Web

www.colorkinetics.com/support

2 System Overview



The Peak Tower sits on Victoria Peak, the highest mountain on Hong Kong Island. The tourist destination features multiple zones of LED lighting controlled by Light System Manager.

Introduction

This chapter covers Light System Manager hardware and software components, installation planning considerations, the light show design workflow, and an example of a completed Light System Manager installation.

There are three primary Light System Manager components: Light System Engine, the LSE web interface, and Light System Composer desktop show authoring software. Light System Composer resides on a separate computer that can be disconnected from the lighting network once your light shows are programmed and uploaded to the Light System Engine.

Hardware Overview

Once programmed and configured, Light System Engine functions as a standalone playback device on your lighting network.

Light System Engine

Light System Engine is a controller capable of managing thousands of LED luminaires. The Ethernet-based design of Light System Engine enables two-way communication with components in the lighting network, allowing automatic discovery of all power/data supplies and luminaires.

Supporting Hardware

One or more Ethernet switches, Cat. 5e or better cabling, and a personal computer (PC or Mac, for initial programming and setup) are required for the Light System Manager installation. Light System Engine stores all light show, configuration, and playback scheduling data on an internal solid-state drive.

Optional Hardware

Controller Keypads (RS-232 serial connection) and Antumbra Ethernet Keypads are optional wall-mounted devices used to manage Light System Manager installations. All keypads feature touchbutton show playback, brightness, and fixture on/off controls.

E *Refer to Chapter 7 for Controller Keypad and AuxBox configuration instructions.*

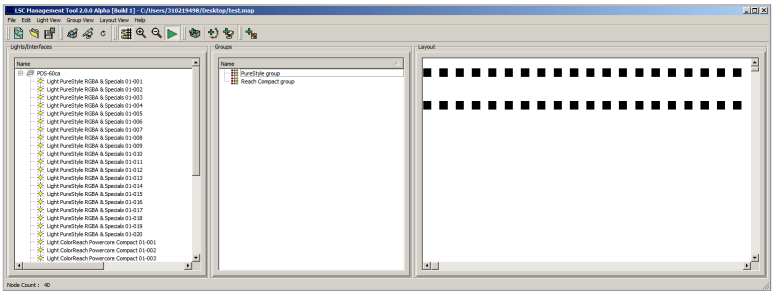
The AuxBox expansion device is also compatible with Light System Engine, over a serial connection. AuxBox triggers show playback via up to eight contact closure-type switches.

Light System Composer Software Modules

Light System Composer is a light show design software package. There are two modules in Light System Composer, which you use in the following order:

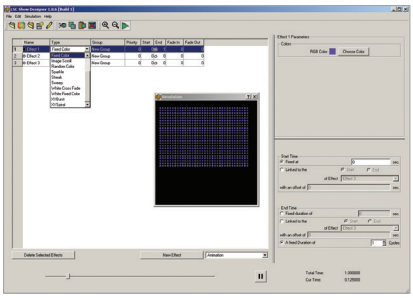
1. Management Tool
2. Show Designer

Management Tool



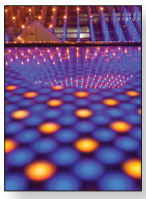
Management Tool automatically discovers all lighting components, allowing you to rapidly map your installation. The map identifies all power/data supplies and luminaire nodes by name and IP address, allowing the Light System Engine to accurately route light show data to each node. Additionally, Management Tool allows you to create a node display order, which specifies how light show effects appear on the luminaires.

Show Designer



Show Designer allows you to author and refine light shows using fixed color and chasing color effects, animated image effects, and geometric patterns. To create a basic show, you apply pre-defined effects to the map and then customize the effects by modifying their parameters. You develop a timeline by specifying start and end times for each effect. Once your show is complete, you can review your design using the Show Simulation feature.

QuickPlay Pro



For detailed QuickPlay Pro instructions, refer to the Addressing and Configuration Guide available at www.colorkinetics.com/support/addressing/.

As part of the commissioning process, all power/data supplies and luminaires must be configured with device names, unique IP addresses, light number or DMX addresses. Unique addressing allows Light System Engine to differentiate between devices in a network.

QuickPlay Pro performs addressing and configuration functions for all possible types of hardware that requiring an external addressing tool used in a Light System Manager installation. Refer to the *Addressing and Configuration Guide* for instructions on configuring devices with onboard addressing tools.

Planning the Installation

Isolated Lighting Network

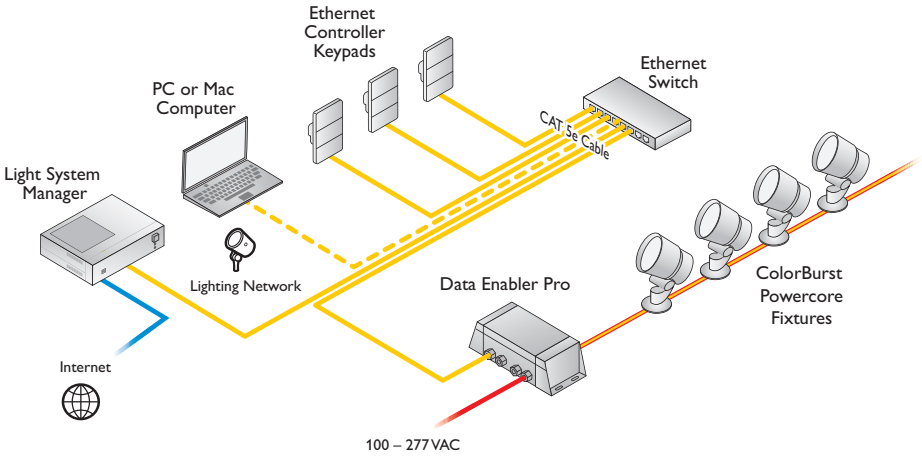
The lighting network port is identified by the icon on the Light System Engine. For the following reasons, your lighting network must be an isolated LAN (local area network):

- Some networks are configured to prevent a single device at a single IP address from monopolizing bandwidth. However, Light System Engine is designed to have complete control of the lighting network, as it is transmits large amounts of light output data each second. For this reason, such switch configurations should be avoided on the lighting network.
- Light System Engine performs broadcast operations when discovering lighting components, requiring complete control of the lighting network.

Connected Management Network

Some functionality—such as system clock synchronization with a time server or remote management using the Light System Engine web interface—requires a connection to the Internet or to a LAN that is not your lighting network. Such connections can be made using the management network port, which is identified with the icon on the Light System Engine.

Network Installation Considerations



Light System Engine communicates with lighting components via KiNET Ethernet, the proprietary network protocol developed by Color Kinetics for lighting system control. The advantages of KiNET over standard DMX lighting networks include bi-directional communication (enabling device discovery and diagnostics) and support for large lighting installations with thousands of LED nodes.

KiNET is fully compatible with standard network hardware—Light System Engine communicates with the power/data supplies via standard Ethernet wiring and components. Power/data supplies capture and convert segments of the data stream into discrete DMX channels, which are compatible with all models of LED luminaires from Color Kinetics.

Light System Engine accommodates network trees up to three layers deep. For optimal performance, use a Gigabit Ethernet (10/100/1000 mbps) switch at the top layer of the network tree (the layer connected to the Light System Engine) and Gigabit Ethernet or Fast Ethernet (10/100 mbps) switches for the second and third layers of the tree.

Light System Engine has a default IP address of 10.1.3.100. Note that all other addressable components in the network must have an IP address in the 10.x.x.x range and a subnet mask of 255.0.0.0 in order to connect to the LSE at the default IP address.

Using the configuration procedures outlined in this guide, you can change the Light System Engine IP address. If you do this, IP addresses for all other addressable components in the network must be updated in order to connect to the new Light System Engine IP address.

Cat. 5e or better cabling is required for the lighting network. It is recommended that a network professional installs the wiring, preferably with factory-terminated cables. Per the Ethernet standard specification (IEEE 802.3), Ethernet cables cannot exceed 100 m (323 ft) between network devices. For example, cables from the Light System Engine to the farthest power/data supply cannot exceed 100 m (323 ft).

Per the Ethernet standard specification, if using Antumbra Ethernet Keypads, note that you must use PoE (Power over Ethernet) compatible network switches, or use PoE injectors (available from Color Kinetics) inline between each keypad and switch.

Fiber optic cabling can extend distances between Ethernet devices. Refer to your optical fiber device user documentation for installation details.

For additional PoE device details and ordering information, refer to the Antumbra Ethernet Keypad Product Guide available at www.colorkinetics.com/ls/controllers/.

Lighting System Installation Considerations

Color Kinetics offers lighting systems suitable for environments ranging from the simplest to the most complex. A simple installation might use 25 ColorGraze® MX4 Powercore luminaires installed in a single zone, whereas a larger installation might use 150 strands of iColor® Flex LMX gen2 and 50 iColor Accent Compact luminaires displaying light shows in multiple zones. Regardless of the complexity of your installation, keep these suggestions in mind:

- 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 keypads.
- Use the Configuration Calculator from Color Kinetics, and the appropriate Product Guides and wiring diagrams, to determine the number of luminaires each circuit in your installation can support.
- As part of the lighting design plan, where possible, make use of a repeated layout that specifies the preferred orientation of each luminaire.
- 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.
- If installing in hard-to-reach areas, test, address, and configure the luminaires before physically installing them.

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

Addressing and Configuration

Prior to mapping your lighting components with Light System Composer, use QuickPlay Pro or built-in device addressing tools to assign unique IP addresses and device names to the power/data supplies and luminaires in your lighting network. When addressing and naming components, use a logical IP addressing scheme or convention that identifies where each device is located.

Addressing Methods

- *Serial addressing* applies to most Chromacore luminaires (Chromacore luminaires receive light numbers based on serial numbers).
- *Base light number configuration* applies to all Chromasic and Accent family luminaires.
- *Onboard addressing* applies to power/data supplies that have onboard hardware addressing controls. QuickPlay Pro is not used to address power/data supplies that have onboard addressing features.

Workflow: Creating and Displaying Shows

1. Create a Map

Mapping the installation is the first step in creating a light show. The map links all luminaires and power/data supplies to the Light System Engine, and acts as a virtual representation of the installation. The Management Tool module in Light System Composer enables you to automatically discover all lighting system components on 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 add power/data supplies and luminaires to the map. Once all lighting components are mapped, you can organize them into groups. Groups create a sequential order by which luminaires display light output.

2. Create a Light Show

When a map is completed, the next step is to create a light show with one or more effects. The Show Designer module lets you add effects to each group of luminaires in the installation and then modify the effect parameters to create unique results. Effects can be stacked for added depth and sophistication. Once effects are assigned, you can use the simulation feature to test and refine your show.

3. Create Playback Schedules, Zones, and Triggers

The next steps are to upload your map and light shows to the Light System Engine and to configure playback schedules, playback zones, and remote device triggering in the LSE web interface.

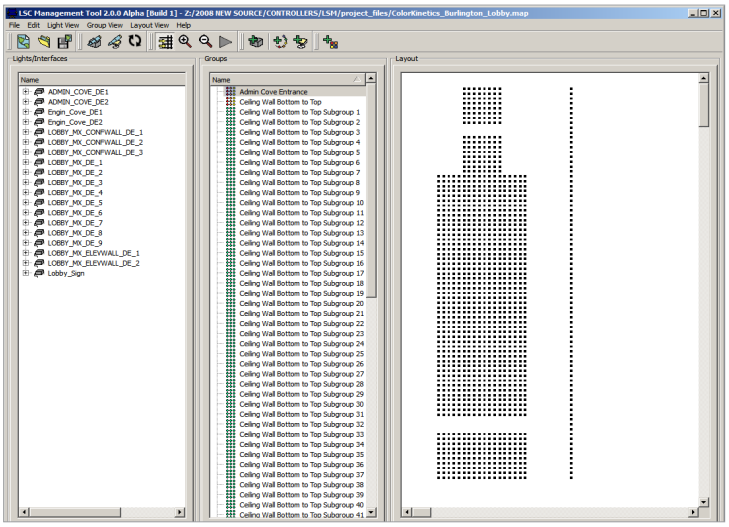
After uploading the files created in steps 1 and 2 and creating a playback schedule, the Light System Engine automatically plays designated light shows according to a schedule or when triggered by an external triggering device (a keypad or AuxBox, for example). No external computer is necessary for playback—Light System Engine functions as a standalone controller (you can remove your PC or Mac from the isolated lighting network).

Optionally, you can use the LSE web interface to override automatic scheduling and triggers.

Installation Example

The Color Kinetics headquarters comprises 4,645 m^2 (50,000 ft^2) of office, laboratory, and showroom space that utilizes LED lighting technology throughout. Light System Manager is the control solution managing multiple lighting zones in the building, including the lobby, conference rooms, work spaces, exterior signage, and product demonstration areas.

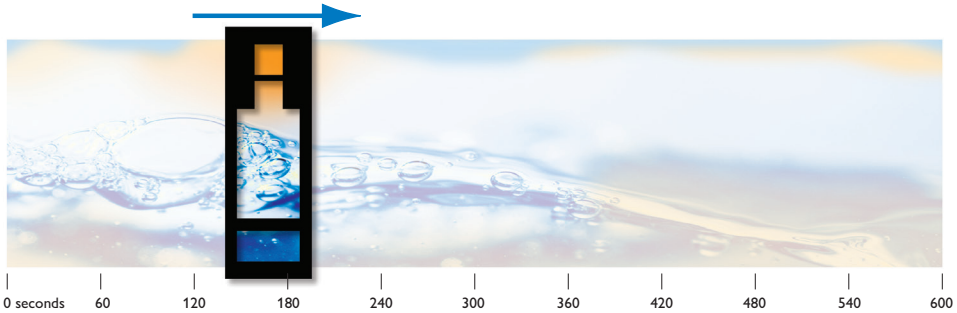
Maps



One of several maps used by Light System Manager to manage light shows at the Color Kinetics headquarters. This map represents the ceilings and walls of the lobby space, in two-dimensions.

Light System Manager uses two-dimensional maps to identify and control the lighting components in each lighting zone. The lobby map (shown above) contains four rectangular clusters of luminaires, with a row of cove lighting luminaires on either side. The larger rectangular areas of the lobby map correspond to the main ceiling, and the smaller square areas match the wall surface and ceiling adjacent to the elevator. The thin lines of mapped luminaires represent the cove luminaires lining opposite sides of the space.

Light Show Effects

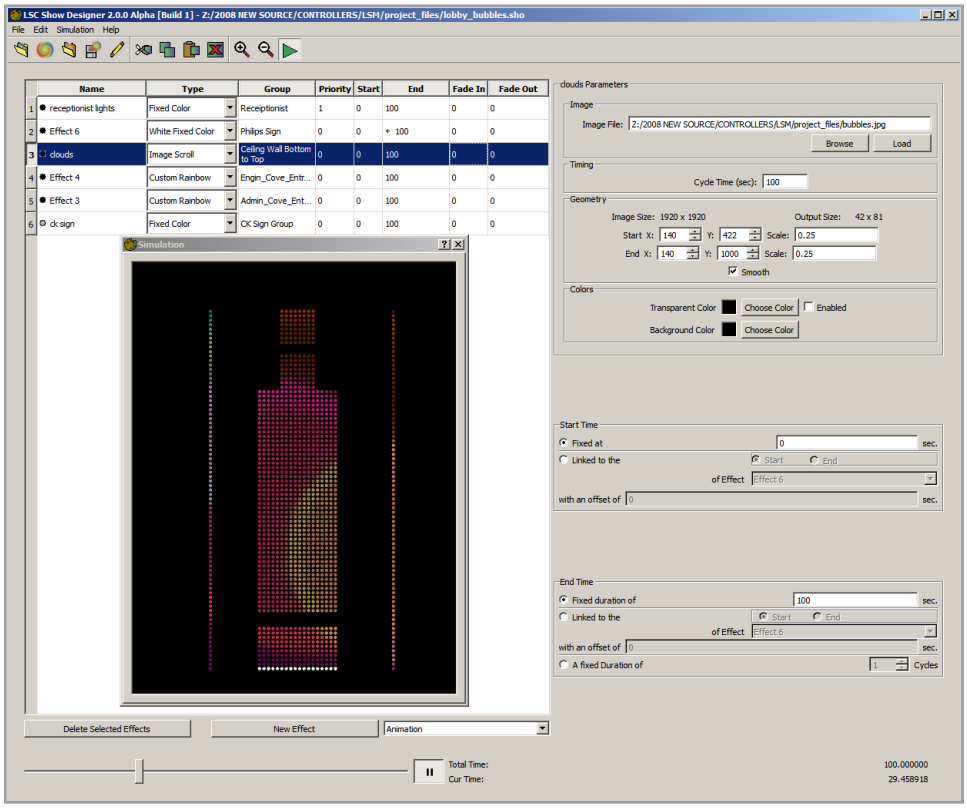


The Image Scroll effect creates unique light shows in the lobby of the Color Kinetics headquarters.

Still image files (JPEG, BMP), which Light System Manager scrolls continuously across the lobby map, are the basis for several unique shows. The Image Scroll effect uses the lobby map as a virtual window to display a portion of each side-scrolling image file.

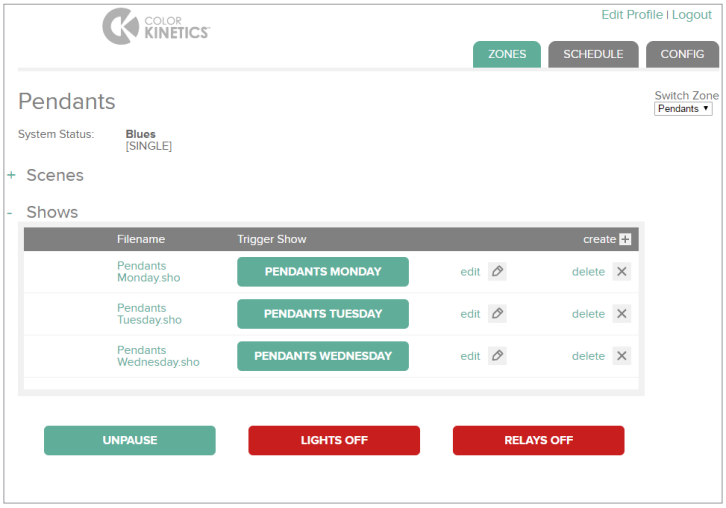
Lighting Zones

In the lobby space, 20 unique shows ranging in duration from 10 minutes to 12 hours scroll gently 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.



The simulation feature in the Show Designer module allows fine-tuning of light show parameters, timelines, and color palettes.

Scheduling



Light System Manager controls the playback schedule for each zone in the building. For example, the lobby luminaires display unique shows every day of the week and on certain holidays. Antumbra Ethernet Keypads installed in multiple lobby locations allow users to override scheduled shows at the touch of a button and select from eight additional choices.

3 Installation

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 LSM proved critical to the success of the project, which features exhibits and displays in multiple LED lighting zones.

Introduction

This chapter details how to install Light System Engine, configure a computer on the lighting network, install Light System Composer, access the LSE web interface, and update both the firmware and Light System Composer software.

Workflow Example

Before setting up Light System Manager, note the installation order of a typical project. You can change the order to suit your needs, but the following is a general guideline:

1. Install LAN infrastructure: Ethernet switches and cables.
2. Install, address and configure power/data supplies and luminaires.
3. Install Light System Engine.
4. Set up a computer on the lighting network (the computer can be removed once all map and light show files are uploaded to the Light System Engine).
5. Install Light System Composer software.
6. Update Light System Engine and/or Light System Compoaser with the latest version, as needed.

Network Installation Checklist

Use the following as a guide during network installation:

- ☐ Confirm that the Light System Manager lighting network will exist as an isolated LAN.
- ☐ The network tree may contain one, two, or three layers of Ethernet switches. Use a Gigabit Ethernet (10/100/1000 mbps) switch at the top layer of the network tree (the layer directly connected to the Light System Engine). Use Gigabit Ethernet or Fast Ethernet (10/100 mbps) switches for the second and third layers of the network tree.
- ☐ Use a network professional to install factory-terminated Cat. 5e or better Ethernet cables.
- ☐ Ethernet cables cannot exceed 100 m (328 ft) between network devices.
- ☐ Use fiber optic Ethernet cable and hardware, as needed, for cable runs exceeding 100 m (328 ft). Refer to the appropriate fiber optic documentation for specifications and installation details.
- ☐ Use the Configuration Calculator from Color Kinetics, and the appropriate product guides and wiring diagrams, to determine the number of fixtures each circuit in your installation can support.
- ☐ Follow the installation steps in the Installation Instructions and Product Guides for each power/data supply, luminaire, Antumbra Ethernet Keypad, and AuxBox you install.
- ☐ If installing Antumbra Ethernet Keypads, use PoE (Power over Ethernet) compatible switches, or install a PoE Injector (available from Color Kinetics) inline between each keypad and non-PoE switch.
- ☐ To be compatible with Light System Engine in its default configuration, all devices and computers on the lighting network must have an IP address in the 10.x.x.x range and a subnet mask of 255.0.0.0.
- ☐ Disable any firewalls, wireless network adapters, or VPN connections on computers connected to the lighting network. Leave only the default, built-in network adapter enabled.

Product Guides are available at www.colorkinetics.com/support/product_guides/.

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

If you are having trouble connecting to your lighting network, see "Appendix C: Basic Network Troubleshooting" on page 91.

Set Up Light System Engine

Before setting Light System Engine, confirm that you've received all the components:

- Light System Engine controller
- Power cord
- Mounting tabs and screws

To connect the Light System Engine to your lighting network:

1. Using a Cat. 5e or better data cable with RJ45 connectors, connect the Light System Engine lighting port (⚿) to the Gigabit Ethernet switch at the top layer of the network.
2. Turn on the Light System Engine using the power button on the front of the device.
3. Connect your computer (PC or Mac) to the top layer switch using Cat. 5e or better data cable with RJ45 connectors.
4. Turn on the computer.

We recommend that you plug the Light System Engine into an uninterruptible power supply (UPS). A UPS will continue to provide power to the Light System Engine for a short period of time in the event of an unexpected power loss, allowing you to safely shut down the system and prevent loss or corruption of your data.

Configuring a PC or Mac on the Network

A computer connected to the lighting network allows you to perform light show programming and configuration tasks using Light System Composer software. The computer can be disconnected once all setup functions are complete, or the computer can reside permanently on the network.

Light System Engine is assigned the IP address of 10.1.3.100 by factory default. In order access the LSE web interface from your web browser, you must configure your computer with a static IP address in the 10.x.x.x range and the Subnet Mask of 255.0.0.0. Refer to “Appendix E: IP Address Configuration” on page 97 for instructions on how to configure a static IP address on your PC or Mac.

To verify that IP address configuration on the computer has succeeded, connect to the LSE web interface from your computer.

See “Appendix E: IP Address Configuration” on page 97 for instructions on how to configure a static IP address on your PC or Mac.

Connect to the LSE Web Interface

With your Light System Engine (LSE) and computer connected to the lighting network and powered on, test your network connection by accessing the LSE web interface:

To connect to the LSE web interface:

1. Configure your computer with a static IP address in the 10.x.x.x range and the subnet mask of 255.0.0.0.
2. Open a web browser, and type 10.1.3.100 (the default IP address) in the Address bar. Light System Engine uses a self-signed SSL certificate, so you should bypass any SSL certificate warnings.
3. Enter your credentials in the Login and Password boxes. The LSE web interface is displayed.

From the web interface, you can set the system time, view system logs and control system playback functionality. Refer to Chapter 7 for more detailed information on Light System Engine configuration options.

*If this is your first time logging in, use the default username (**color**) and the default password (**kinetics**).*

To change the default username and password:

1. Click the Config tab.
2. In the left menu, navigate to Settings>User Accounts.
3. Locate the default user, and click Edit.
4. Update the settings as required, and then click Save.

To keep your lighting network secure, we recommend you restrict access to Light System Engine by changing the default user name and password when logging in for the first time.

Light System Composer Installation

Before you install Light System Composer, close all running applications, disable virus protection, and verify that your computer meets the following system requirements.

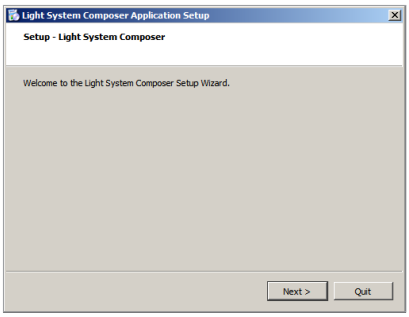
System Requirements

Light System Composer requires 64-bit Windows 7 or newer, or macOS 10.10 or newer, and at least 100 MB free storage space.

Install Light System Composer

To install Light System Composer on Windows:

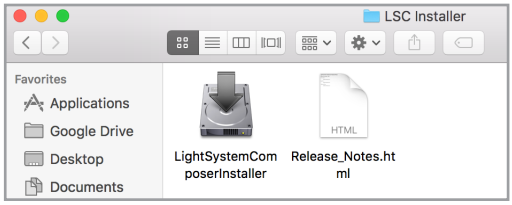
1. Download Light System Composer from www.colorkinetics.com/support/lsm/ to your computer.
2. Unzip the file you downloaded, and open the Light System Composer folder.
3. Double-click LightSystemComposerInstaller.exe to launch the Light System Composer setup wizard.



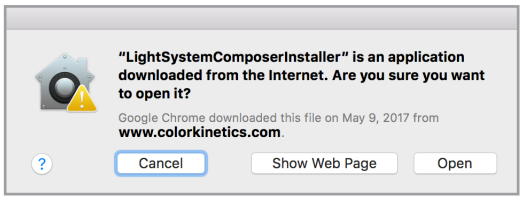
4. Click Next, and follow the prompts to proceed with the installation.
5. Once the installation is complete, click Finish. Light System Composer is now installed on your PC.

To install Light System Composer on macOS:

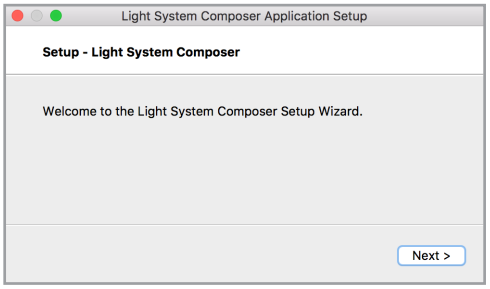
1. Download Light System Composer from www.colorkinetics.com/support/lsm/ to your computer.
2. Unzip the file you downloaded, and open the LSC Installer folder.



3. Right-click LightSystemComposerInstaller, and then click Open. A macOS security warning is displayed.



4. Click Open. The Light System Composer setup wizard launches.



5. Click Next, and follow the prompts to proceed with the installation.
6. Once the installation is complete, click Finish. Light System Composer is now installed on your Mac.

Update Light System Composer

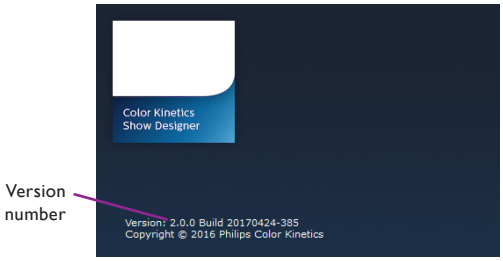
Occasionally, Light System Composer is updated to provide feature improvements and enhancements. The latest version of Light System Composer is always available at www.colorkinetics.com/support/lsm/.

To find the Light System Composer software version:

1. Open Show Designer.
2. Open the About Show Designer window.

   On Windows: Select Help>About Show Designer from the menu.

   On macOS: Select Show Designer>About Show Designer from the menu bar.



3. Compare the Light System Composer version to the latest version available at www.colorkinetics.com/support/lsm/.

To update Light System Composer:

1. Uninstall the current version of Light System Composer.
2. Download the new Light System Composer from the www.colorkinetics.com/support/lsm/.
3. Install Light System Composer. For instructions, see “Install Light System Composer” on page 16.

Upgrade Light System Engine

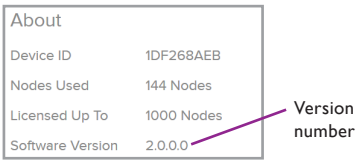
Occasionally, Light System Engine software is updated to provide feature improvements and enhancements.

Up to two software versions installed on Light System Engine gen5 at any given time, allowing you to roll back an update in the event you encounter unexpected behavior.

Software updates are available at www.colorkinetics.com/support/lsm/. You can update your software through the LSE web interface.

To find your Light System Engine software version:

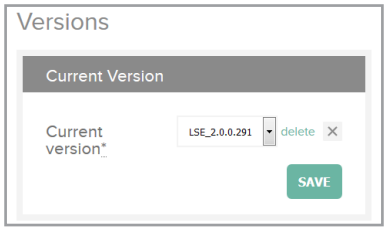
1. Click the Config tab.
2. In the left menu, navigate to Settings>About.



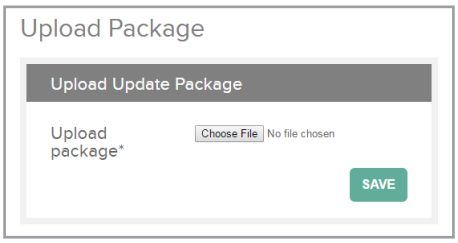
To upgrade Light System Engine from software version 2.0 or later:

If you want to upgrade Light System Engine gen5 from software version 1.9.6 or earlier, contact Color Kinetics Technical Support.

1. Download the latest software file to your computer from www.colorkinetics.com/support/lsm/. This file has the .pck extension. Do not change the file name of the downloaded software file.
2. If you already have two software versions installed, you will need to delete the inactive version:
   a. Log in to the LSE web interface, and click the Config tab.
   b. In the left menu, navigate to Updates>Versions. The Versions page is displayed.



   c. Select the inactive software version from the Current Version list, and click Delete.
3. Back up the database for the active version (the version that is currently running). For more information, see “Database Backup” on page 67.
4. Upload the .pck file to Light System Engine:
   a. Log in to the LSE web interface, and click the Config tab.
   b. From the left menu, navigate to Updates>Upload. The Upload Package page is displayed.



   c. Use the Upload Package control to select the .pck file you just downloaded, and click Save. Light System Engine displays a message indicating a successful installation.
5. Reboot Light System Engine.

Light System Engine prevents you from deleting the active software version and the recovery version.

Light System Engine copies all data from the current software version to the new software version. Data is stored independently on each software version, so any changes you make in the new version are not reflected in the previous version.

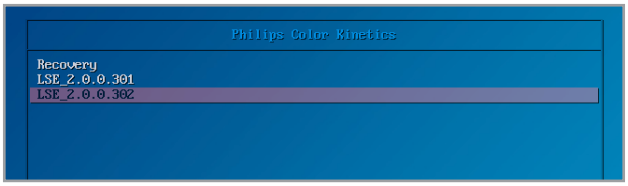
If Light System Engine successfully reboots, it runs the new software version. You have completed the upgrade process.

If Light System Engine fails to reboot, the upgrade was not successful. In such a situation, you will need to recover your Light System Engine to the previous software version, as detailed in the following procedure.

To recover Light System Engine from an unsuccessful upgrade:

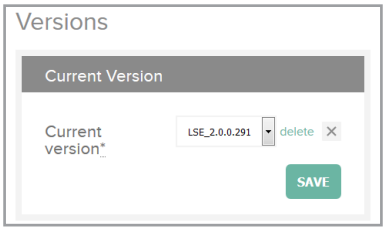
To complete this procedure, you will need a keyboard, a monitor, and physical access to the Light System Engine.

1. Power off the Light System Engine.
2. Connect your keyboard and monitor, and then press the power button to turn on the Light System Engine. The boot loader screen is displayed.



If you are unable to boot into either software version installed on your Light System Engine, contact Color Kinetics Technical Support.

3. Using the arrow keys, select the previous software version, and then press Enter. After booting, you can disconnect the keyboard and monitor from the Light System Engine.
4. Delete the inactive software version:
   a. From your computer, log in to the LSE web interface, and click the Config tab.
   b. In the left menu, navigate to Updates>Versions. The Versions page is displayed.



   c. Select the inactive software version from the Current Version list, and click Delete.

4 Device Discovery and Map Creation

The wave wall installed in the Georgia Aquarium's central plaza is 150 x 25 ft (45.7 x 7.6 m), displaying five curving bands of color-changing light. The wall acts as an immersive visual centerpiece to incoming visitors and also doubles as a projection surface for video shows.

Introduction

Maps identify all KiNET interfaces (power/data supplies) and luminaires in your installation so that Light System Engine can accurately output light data. Additionally, maps allow you to group luminaires in various configurations to produce sophisticated light shows. There are two methods for creating maps: *automatic mapping* and *manual mapping*.

Automatic Mapping Process

Automatic mapping follows this basic workflow:

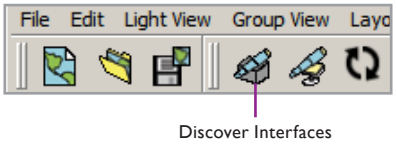
1. Discover KiNET interfaces (power/data supplies).
2. Discover the luminaires attached to each power/data supply.

Discover Interfaces

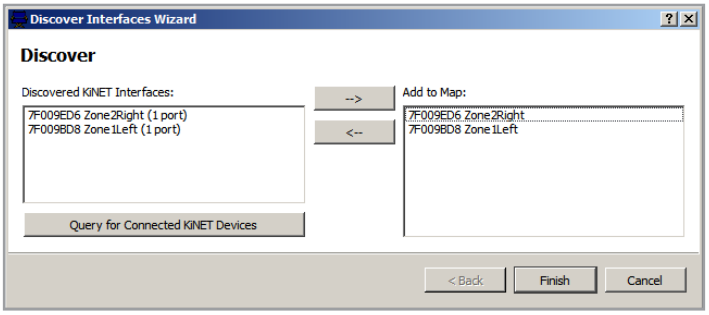
The first step in creating a map of your Ethernet network is to discover the KiNET interfaces (power/data supplies) installed on the network. Light System Composer automatically discovers all power/data supplies via an Ethernet broadcast operation.

To discover power/data supplies on your lighting network:

1. Connect your computer to the lighting network. If you need to configure your computer with a static IP address, refer to “Appendix E: IP Address Configuration” on page 97 for more information.
2. Launch Management Tool:
   - On Windows: Click the Start menu, and then select All Programs>Color Kinetics>Light System Composer>Management Tool.
   - On macOS: Click the Management Tool icon located on the Dock.



3. When Management Tool aunches, click the Discover Interfaces icon from the tool bar, or select Light View>Discover Interfaces from the menu. Light System Composer queries the network and identifies all interfaces. When the operation is complete, the Discover Interfaces Wizard is displayed.

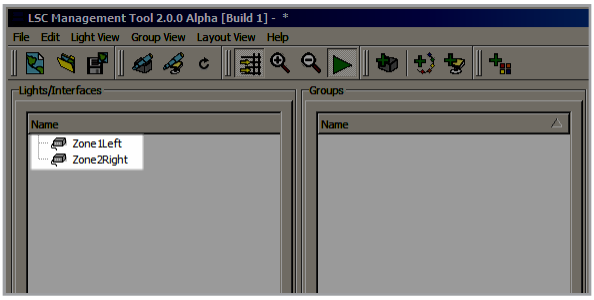


4. Select an interface that you want to add to the map in the Discovered KiNET Interfaces list. Click the right arrow button, or double-click a highlighted interface, to move it onto the Add to Map panel.

   To remove an interface from the Add to Map panel, highlight the interface and click the left arrow button.

To select multiple power/data supplies, hold down the Shift or Ctrl key while making your selections.

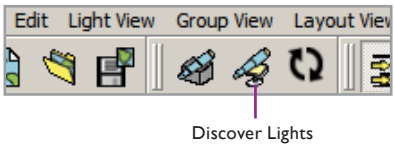
5. Click Finish to close the wizard and add the interfaces to your map. The discovered interface is shown in the Lights/Interfaces panel in the Management Tool.



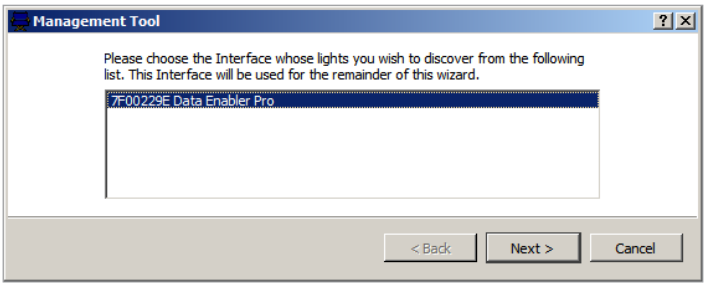
Discover Luminaires

The second step in creating a map is to query each power/data supply so that Management Tool can automatically discover any attached luminaires. Note that Chromasic luminaires, such as iColor Flex LMX gen2, are discovered differently than Chromacore luminaires, such as ColorBlast 12 and ColorGraze MX Powercore.

To discover Chromasic luminaires:

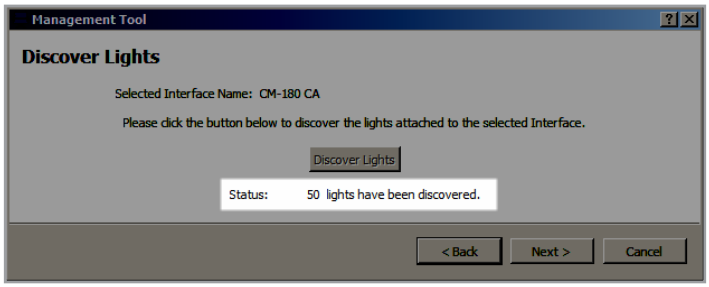


1. Click the Discover Lights icon in the tool bar to launch the Discover Lights Wizard.

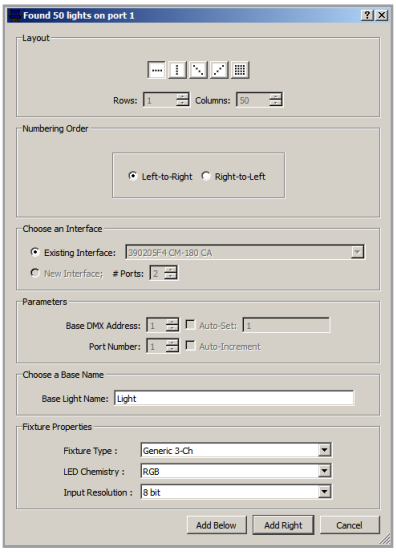


If Light System Composer did not discover all expected nodes, confirm that all devices are connected to your lighting network.

2. Select a power/data supply from the list, and click Next. Light System Composer automatically discovers all nodes attached to the selected power/data supply.



3. After discovery is complete, click Next, and then click Finish.
4. Specify the layout, naming, and properties of your nodes:



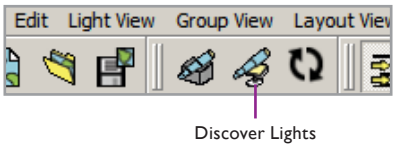
Mapped nodes appear on the map according to their base light name plus their light number. For example, if the base light name is "hallway ceiling" and the light number is "29," then the displayed name is "hallway ceiling 29." It is recommended that you change the default name to a unique identifier based on luminaire type and/or physical location.

   a. Use the options in the Layout and Numbering Order panes to specify how your nodes are oriented.
   b. Type a name in the Base Name box, or use the default name.
   c. Use the Fixture Properties pane to match your nodes' configuration.

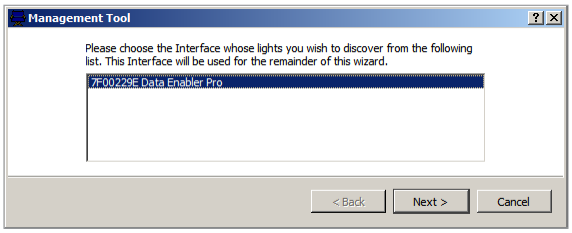
d. Click Add Below to add the nodes below the most recent luminaires on the map, or click Add Right to add the nodes to the right of the most recently added luminaires on the map. The nodes are added to the map and are shown in the layout panel.

5. If you have nodes connected to more than one port on your power/data supply, repeat step 4 for all ports.
6. Save the map by selecting File>Save Map.

To discover Chromacore luminaires:

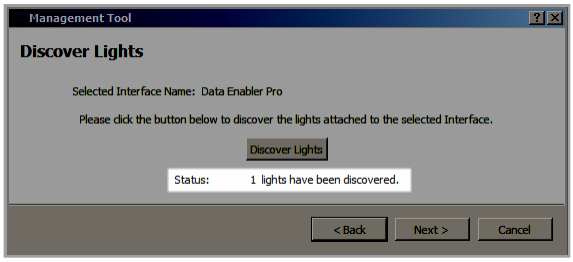


1. Click the Discover Lights icon in the tool bar to launch the Discover Lights Wizard.



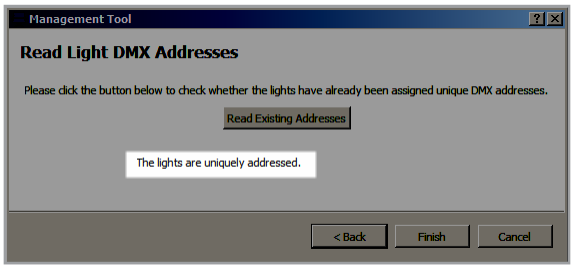
2. Select a power/data supply from the list, and click Next. Light System Composer automatically discovers all luminaires attached to the selected power/data supply.

If Light System Composer did not discover all expected luminaires, confirm that all devices are connected to your lighting network.



3. After discovery is complete, click Next. The Read Light DMX Addresses window is displayed.
4. Click Read Existing Addresses. Light System Composer reads the DMX addresses of all luminaires attached to the power/data supply. If there are no conflicting DMX addresses, you will see the message "The lights are uniquely addressed". Click Finish to exit the wizard.

If a DMX address is mapped to more than one node, those nodes will always display the same data. If that is not the intended configuration, use QuickPlay Pro to re-address affected nodes.



5. Click File>Save Map to save your map.

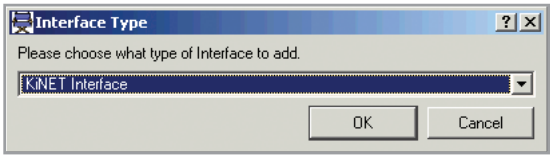
Manual Map Creation

Only create placeholder maps if you are certain of the exact installation layout. If the installation differs from the placeholder map, you may need to create a new map from scratch using the automatic discovery process.

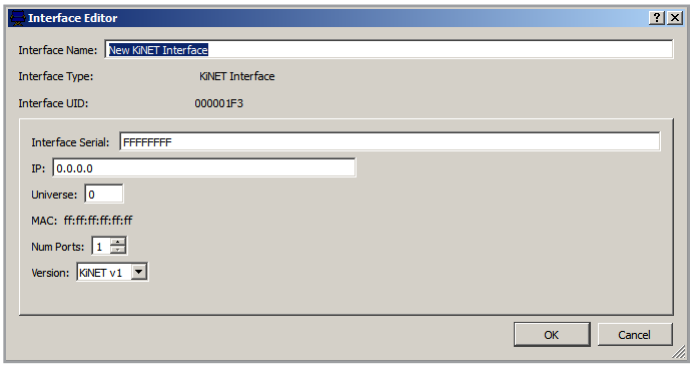
The Add tools, located on the tool bar, offer offline mapping functionality. With the Add tools, you can add power/data supplies and luminaires to an existing map when an installation expands, eliminating the need to create a new map from scratch. You can also create placeholder maps that can be associated with installations at a later time, allowing you to create maps and light shows prior to the completion of an actual lighting project.

To manually add power/data supplies to a map:

1. In Management Tool, click the Add Interface button in the tool bar, or select Light View>Add Interface from the menu. The Interface Type window is displayed.



2. Select KiNET interface from the list, and click OK.

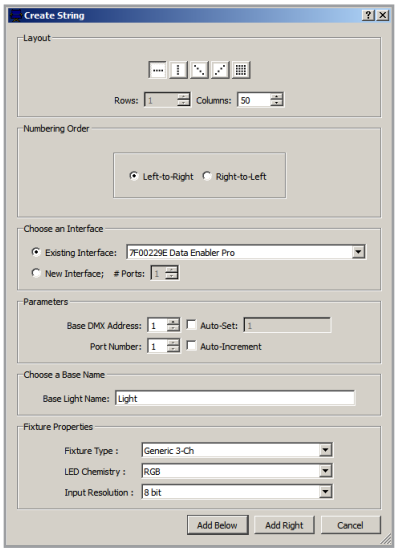


3. The Interface Editor window is displayed. Type a descriptive name in the Interface Name box.
4. If you know the serial number or IP address of the power/data supply, type the correct information in the Interface Serial box and the IP box, respectively. If you do not have this information, leave the default value in the appropriate box.
5. Use the Num Ports box to specify the number of ports on your power/data supply.
6. Click OK. The power/data supply is added to the Lights/Interfaces panel.
7. The interface icon is shown with a gray background, indicating that it is not yet associated with a discovered interface.

For light shows and installations requiring multiple maps, ensure that each map has a unique name and that each fixture or interface is placed on only one map.

To manually map flexible string luminaires:

1. Click the Add String button in the tool bar, or select Light View>Add String from the menu. The Create String dialog box is shown.
2. Specify the layout, naming, and properties of your nodes:



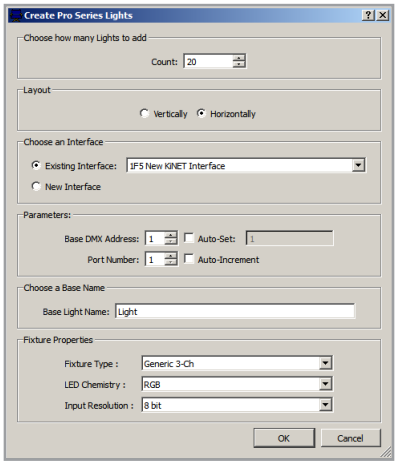
   a. Use the options in the Layout and Numbering Order panes to specify how your nodes are oriented.
   b. Use the Choose an Interface pane to select an existing power/data supply, or to specify the number of ports on a power/data supply that is not already part of your map.
   c. Set the Base DMX Address and Port Number. Select the Auto-Set check box to set to the next available DMX address. If you are adding multiple luminaires, select the Auto-Increment check box to increment each node's DMX address automatically.
   d. Type a name in the Base Light Name box, or use the default name.
   e. Use the Fixture Properties pane to match your nodes' configuration.
   f. Click Add Below to add the nodes below the most recent luminaires on the map, or click Add Right to add the nodes to the right of the most recently added luminaires on the map. The nodes are added to the map and are shown in the layout panel.
3. Save the map by selecting File>Save Map.

Flexible luminaires, such as iColor Flex LMX gen2 or iW Flex Compact, are Chromasic luminaires.

Mapped fixtures appear on the map according to their base light name plus their light number. For example, if the base light name is "hallway ceiling" and the light number is "29," then the displayed fixture name is "hallway ceiling 29." It is recommended that you change the default name to a unique identifier based on luminaire type and/or physical location.

To manually add Chromacore luminaires:

1. Click the Add Lights button in the tool bar, or select Light View>Add Lights from the menu. The Create Pro Series Lights dialog box is displayed.
2. Enter as much information about your luminaire configuration as you have available to you:



Refer to installation instructions or the online Configuration Calculator for the maximum number of luminaires supported on a power/data supply.

Mapped fixtures appear on the map according to their base light name plus their light number. For example, if the base light name is "hallway ceiling" and the light number is "29," then the displayed fixture name is "hallway ceiling 29." It is recommended that you change the default name to a unique identifier based on luminaire type and/or physical location.

a. Enter the number of lights attached to the power/data supply in the Count box.

b. Use the Choose an Interface pane to select an existing power/data supply, or a power/data supply that is not already part of your map.

c. Set the Base DMX Address and Port Number. Select the Auto-Set check box to set to the next available DMX address. If you are adding multiple luminaires, select the Auto-Increment check box to increment each node's DMX address automatically.

d. Type a name in the Base Light Name box, or use the default name.

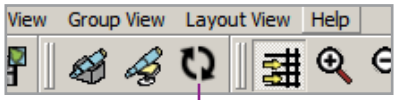
e. Use the Fixture Properties pane to match your nodes' configuration.

3. Click OK to add the fixtures to your map. The fixtures are automatically added to the map and appear in the layout panel.
4. Save your map by selecting File>Save Map.

To associate a placeholder map:

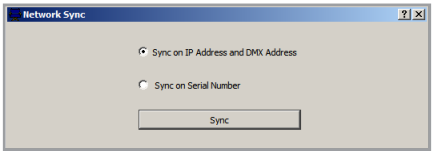
Creating a placeholder map by manually adding fixtures can save time prior to installation, if you are certain of the layout. Once the installation is complete, you can then quickly synchronize your existing placeholder map with the devices on your lighting network.

1. With your computer connected to the lighting network, open the offline map file in Management Tool.



Sync Interfaces

2. Click Sync Interfaces in the tool bar, or select Light View>Sync Interfaces from the menu. The Network Sync window is displayed.

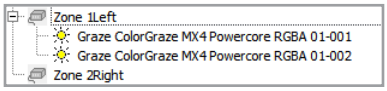


3. Select whether you want to synchronize using IP address or serial number of your power/data supplies, and then click Sync.

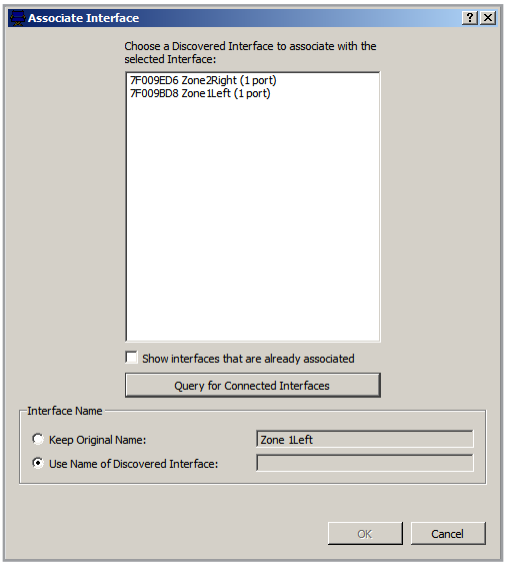
When you click Sync, Management Tool scans your lighting network. If Management Tool finds power/data supplies that match those in your placeholder map, those power/data supplies become associated with the devices on your placeholder map, and Management Tool then attempts to associate any luminaires attached to those power/data supplies.

If any devices could not be associated, continue to the following procedure to associate individual devices, one at a time.

To associate an individual power/data supply:

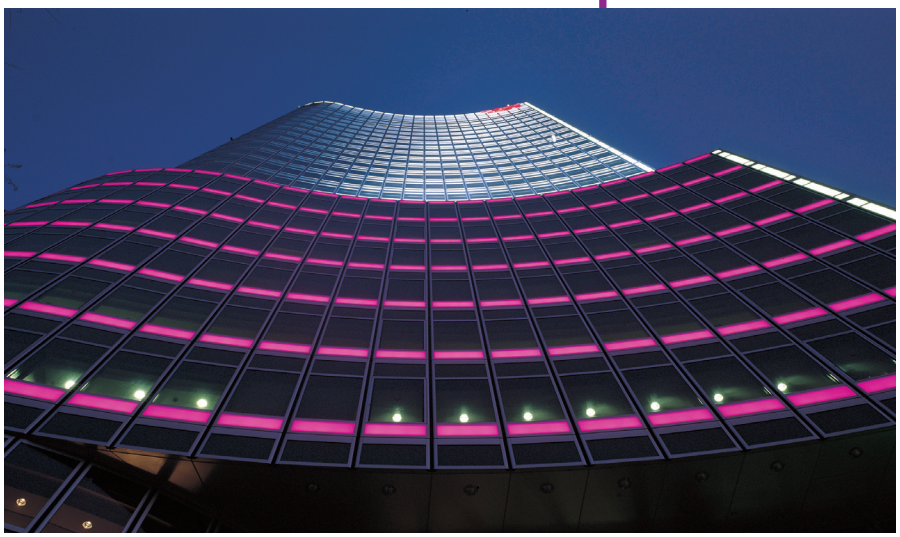


1. In the Light/Interfaces pane, right-click an offline power/data supply, and then click Associate with Discovered Interface. The Associate Interface window is displayed.



2. If no discovered power/data supplies are shown, ensure that your computer is connected to the lighting network, and then click Query for Connected Interfaces.
3. Select the intended interface, and then click OK.

5 Map Layout and Groups



The Taishin Bank Tower offers an elegant architectural design that has become an urban landmark in the city of Taipei. Light System Manager displays a different light show at the beginning of each hour.

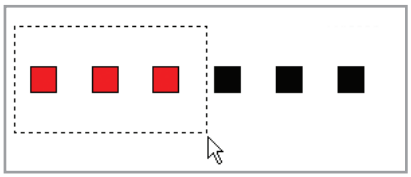
Editing the Map Layout

When you have created a map by discovering KiNET interfaces and fixtures with the Management Tool, you are ready to fine-tune the position and orientation of fixtures in the map layout panel.

In the layout panel, fixtures appear as black icons in the order that they were added to the map. You can move the fixture icons, change their order, and create groups to organize your installation.

Select Nodes

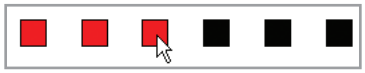
There are three ways to select nodes: *capture, pick,* and *sweep.*



To use Capture selection:

- To capture a group nodes, drag an enclosure box around the intended nodes. Node icons turn red when they are selected.
- To deselect all nodes, click a blank area away from the selected icons.

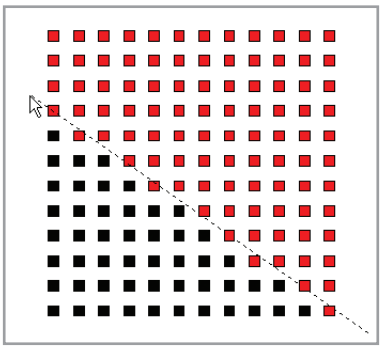
The order in which the nodes are captured is the order in which they are added to a group.



To use Pick selection:

- To select a single node, click that node.
- To select multiple nodes, hold down Ctrl (Windows) or Command (Mac) while clicking additional node icons.
- To deselect all nodes, click a blank area away from the selected icons.

The order in which the nodes are captured is the order in which they are added to a group.



To use Fan selection:

- To select nodes using a *sweep line*, position the cursor at the pivot point of the fan line, and then hold Alt while clicking the left mouse button. Drag the cursor away from the pivot point to select additional nodes. Node icons turn red as the sweep line passes over them.
- To deselect all nodes, click a blank area away from the selected icons.

The order in which the nodes are selected in the sweep is the order in which they are added to a group.

Edit Position and Orientation

To move nodes:

Select the intended node icons, and then drag the selected group to a new location.

Icons cannot be dragged on top of other icons. The selected icons will return to their previous position if any icons overlap.

To rotate a selection:

Select the nodes to be rotated, rick-click the select selection, and then click Rotate Selection CW (clockwise) or Rotate Selection CCW (counterclockwise) from the command menu.

Groups

Now that you've mapped your devices and arranged your layout, the last step in refining your map is to create groups.

- Groups determine how light show effects are associated with your luminaires. To apply an effect to a luminaire, the nodes in that luminaire must be in a group.

- There are two types of groups: *synchronized groups* and *chasing groups*. The order in which effects move across your nodes is determined by their group type.

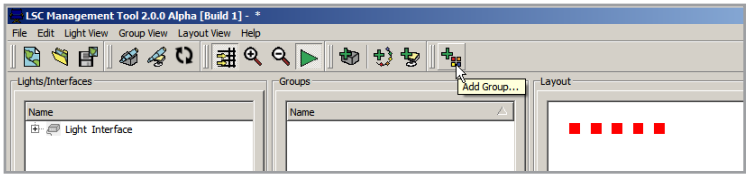
Group type	Description
Synchronized group	The nodes work in unison to display the same output.
Chasing group	Nodes in a chasing group work in series, in the order of their position within the group. For example, the first node in the group acts as fixture 1, the second node as fixture 2, and so on. Chasing groups enable animated effects to appear to chase from one node to another, then to another, and so on.

Create Groups

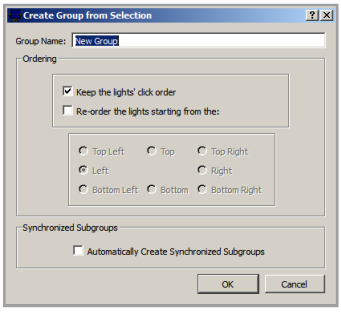
Groups are collections of nodes to which you can apply lighting effects. The group map editor and static scene creator in the LSE web interface apply effects to the groups you define in your map file. You must create a group for each collection of lights you want to control in Light System Composer Show Designer or in the LSE web interface.

To create a group from the Layout panel:

1. From the layout panel, select the nodes to be included in the group.



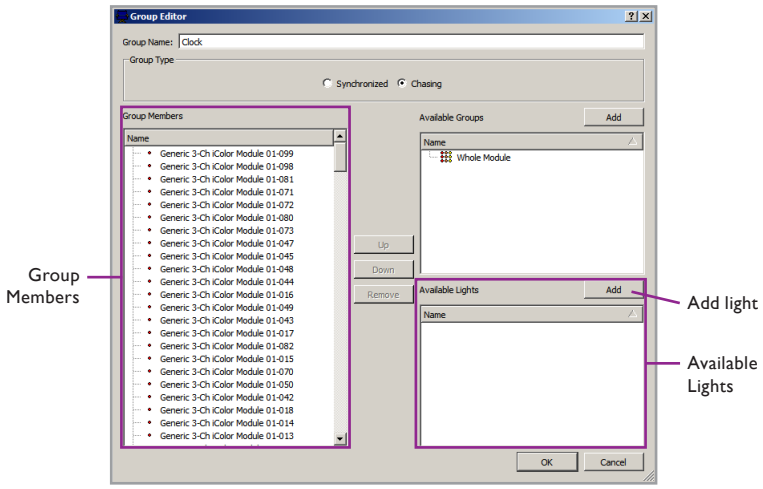
2. Click the Add Group icon from the tool bar, or select Group View>Add Group from the menu. The Create Group window is displayed.



3. When the Group Editor opens, select light ordering for the group. The light numbering order determines the sequence in which chasing effects will be displayed.
4. Click OK. The new group is added to the Groups panel in the Management Tool.

To edit a group:

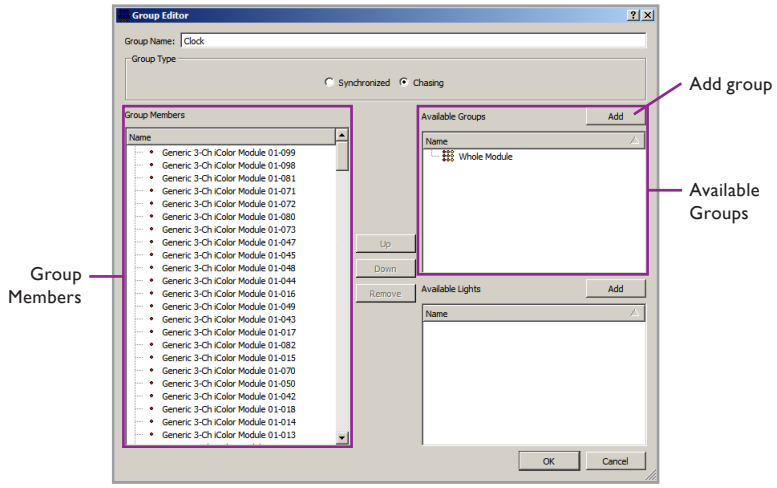
1. Double-click a group in the Groups panel. The Group Editor window is displayed. with a list of available nodes in the lower right panel.



2. Select the lights to be added to the new group, then click Add. The lights move from the Available Lights panel to the Group Members panel.
3. Use the Up, Down, and Remove buttons to arrange highlighted nodes in the desired order.
4. Rename the group, as necessary, select the group type, and then click OK.

To create a group within a group:

1. Double-click a group in the Groups panel. The Group Editor window is displayed. with a list of available nodes in the lower right panel.



2. Select the lights to be added to the new group, then click Add. The lights move from the Available Lights panel to the Group Members panel.
3. Use the Up, Down, and Remove buttons to arrange highlighted nodes in the desired order.
4. Rename the group, as necessary, select the group type, and then click OK.

Animation Template

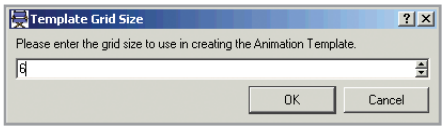
For animated effects, an *animation template* is useful for maintaining the aspect ratio of a sequence of images. Using a template ensures that you get the desired visual effect without a skewed or stretched appearance.

Grouping Nodes for an Animated Effect

When grouping nodes for an animated effect, consider the desired visual effect. For example, if you want the animated effect to play on individual nodes, create separate groups for each node. If you are using a rectangular array of iColor Flex LMX gen2 and iColor Flex MX gen2 nodes configured as a single viewing surface, create a group that includes all of those nodes.

To create an animation template:

1. After arranging the light icons in the Lights panel to match the installation, select Layout View>Create Animation Template.
2. Enter a file name at the prompt, then click Save. The template grid size dialog box appears.



3. Enter a grid size and click OK. You now have a template that you will insert into your animation file as a layer and use as a size guide for creating animation files.
4. Format your animation to fit the template.
5. Select Edit>Save Map to save your work.

The Template Grid Size sets the resolution, in LED nodes, of your animation. The smaller the grid size, the greater the density. For example, a grid size of 1 equals 1 node per 1 pixel, and a grid size of 12 equals 12 pixels per node.

6 Creating Shows

A popular Philadelphia landmark, Boathouse Row comprises twelve boating clubs in ten architecturally distinct buildings. Using the intuitive features of the Show Designer module in Light System Composer, the lighting design team rapidly achieved their vision of vibrant color and effects.

Introduction to Show Designer

When you have mapped your installation and assigned the fixtures to groups in Management Tool, you are ready to create a light show by applying effects. The Show Designer module lets you apply single or multiple effects to groups and edit the effect properties to create a custom show.

Workflow Example: Creating a Light Show

1. Load a map
2. Add effects
3. Edit effect parameters
4. Develop a timeline
5. Define transitions
6. Save the show (.sho) file

Launch Show Designer

To launch Show Designer on Windows:

Select Start>All Programs>Color Kinetics>Light System Composer>Show Designer, or double-click Show Designer from the Color Kinetics Light System Composer folder installed on your desktop.

To launch Show Designer on macOS:

In Finder, navigate to /Applications/Color Kinetics/Light System Composer/ShowDesigner, and double-click ShowDesigner.app.

Create Shows

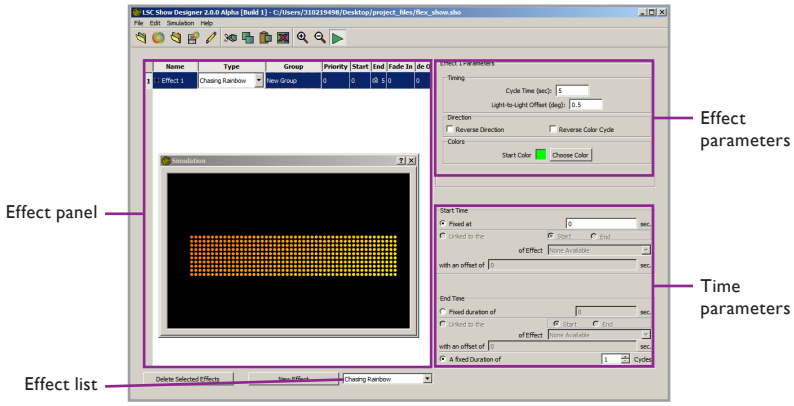
Load a Map

Before you can create a light show, you must create a map of the installation and arrange the fixtures into groups. If you have not created a map, use the Light System Composer Management Tool to either automatically map your installation or manually create a placeholder map. Placeholder maps are good tools for authoring practice shows and getting familiar with Light System Composer.

Refer to Chapter 4 and Chapter 5 for mapping instructions.

To load a map in Show Designer:

1. Launch Show Designer.



When you launch Show Designer, all command buttons are inactive. This indicates that you have not loaded a map yet.

2. Load a map by clicking the Load Map icon in the tool bar, or select File>Load Map from the menu. The Select a Map File window is displayed.
3. Navigate to the location of your .map file, select it, and click Open. The effect panel and the effect list (located below the effect panel) are now active, and the Simulation window is displayed.

If more than one controller on is trying to send data to luminaires on the lighting network, you will see the lights flicker. Show Designer sends live data to your lighting network as you work, which conflicts with data sent out by Light System Engine or QuickPlay Pro. To stop your luminaires from flickering while working in Show Designer, pause your Light System Engine using the LSE web interface, and close QuickPlay Pro.

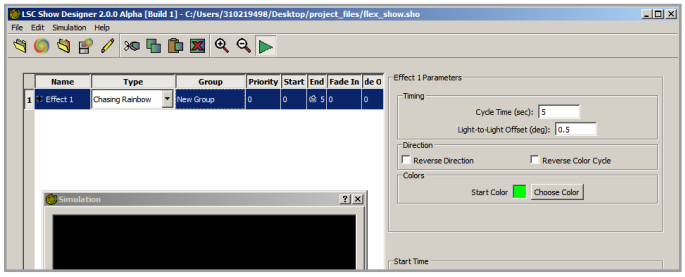
Add Effects

Now that you have loaded your map, you are ready to begin adding effects and assigning them to a group.

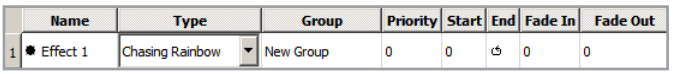
To add an effect to your show:

1. Choose an effect from the Effect list (located below the effect panel), and then click New Effect. The effect is added to the Effect panel, and its parameters appear in the Effect Parameters pane on the right side of the window.

If the Simulation window does not immediately appear, click Show Simulation in the tool bar, or select Simulation>Show Simulation from the menu.



2. Use the following fields to specify set options, detailed in the table below:

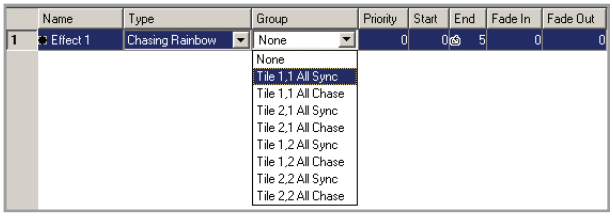


Name	Type	Group	Priority	Start	End	Fade In	Fade Out
1 Effect 1	Chasing Rainbow	New Group	0	0		0	0

Option	Details
Name	Replace the default name with one of your choice.
Type	Select a different effect from this list to change the effect type.
Group	Assign the effect to a group from this list.
Priority	Set the effect priority by entering a numeric value. Effect priority enables you to stack multiple effects in the same group.
Start	Manually set the start time, in seconds, or view the start time defined in the time settings.
End	Manually set the end time, in seconds, or view the end time defined in the time settings.
Fade In	Set a transition time at the beginning of the effect.
Fade Out	Set a transition time at the end of the effect.

Groups are defined when you create a map file in Management Tool.

3. Select a group from the Group list. You can immediately view the effect on the group you selected in the Simulation window.



4. To view the effect on your lights, select Simulation>Enable Live Play from the menu.
5. Add effects and assign them to groups as needed.

Editing Effects

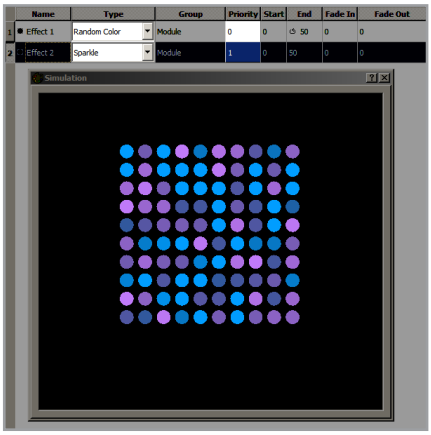
About Effect Priority

Assigning effect priority lets you create sophisticated results by stacking multiple effects on a single group. For example, a background effect is the lowest level in the stack, so its priority is set to 0. Additional effects, with transparent backgrounds, are applied over the background effect and should therefore

receive higher priority numbers. This technique allows the background to "show through" the higher priority, foreground effects.

Using priority levels, you can combine a Random Color effect with a white Sparkle effect. To this, assign both effects to the same group, and then set the priority of the Random Color effect to 0, set the priority of the Sparkle effect to 1, and set the Sparkle background color to transparent.

If effect colors appear dull or muted, check the effect priority settings. If all priorities are set to the same value, the effects are averaged together, and the result may not be what is desired.



To set effect priority:

1. Click in the Priority box for the desired effect.
2. Enter a new value, and then press Tab, or click anywhere in another box.

Create a Timeline: Set Effect Start and End Time

Light shows are typically made up of several effects running simultaneously or sequentially. To set the time of each effect, you can set a fixed time duration, link time to other effect times, or set cycle durations. All three of these procedures are detailed in this section.

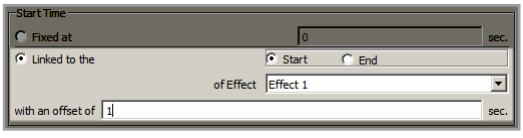
To set a fixed time duration

1. Select an effect in the Effect panel.
2. Set the time parameters:
   - Using the Effect panel: Update the Start and End boxes as needed.
   - Using the Time Settings panel: Select Fixed At, and enter the start time in seconds, and then select Fixed Duration Of and enter a time, in seconds.

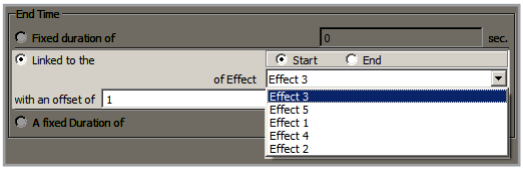
To link time:

Linking the time settings for effects simplifies future editing. When you modify the time setting for an effect, all other effects linked to the modified effect will update to reflect the change:

1. Select an effect in the Effect panel.



2. Configure your Start settings in the Time panel:
   a. In the Start Time group, click Linked to the.
   b. Select whether to link to the Start or End of the intended effect.
   c. Choose the effect that you are linking from the of Effect list.



3. Configure your End settings in the Time panel:
   a. In the End Time group, click Linked to the.
   b. Type a number, in seconds, in the with an offset of box. This configures the linked effect to begin or end after the time set for the effect to which it is linked. The linked times appear in the effect line, with a left arrow symbol indicating that the times are linked.

	Name	Type	Group	Priority	Start	End	Fade In	Fade Out
1	Effect 1	Random Color	None	0	0	15	0	0
2	Effect 2	Sparkle	None	1	← 1	← 15	0	0

In the example above, the start time of effect 2 is linked to the start time of effect 1, and will begin running one second after effect 1 begins. The end time of effect 2 is linked to the end time of effect 1, and will end simultaneously.

Editing Linked Time

Linked changes are unidirectional: modification of a child linked effect has no impact on the parent effect to which it is linked. However, modifying the parent effect (to which other effects are linked) results in all linked effects changing accordingly.

	Name	Type	Group	Priority	Start	End	Fade In	Fade Out
1	Effect 1	Chasing Rainbow	Module	0	10	↻ 25	0	0
2	Effect 2	Chasing Rainbow	Module	0	← 10	← 25	0	0

In the example above, the start time of effect 1 was changed from one second to ten seconds. Automatically, the end time of effect 1 and the start and end time of effect 2 changed by ten seconds. This feature saves valuable editing time for large light shows with numerous linked effects.

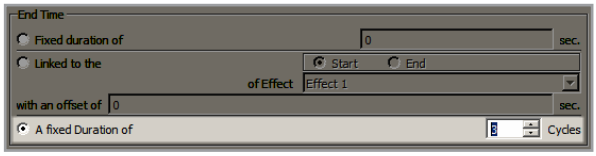
Setting Cycle Durations

The duration of an effect can be set by its cycle time. Setting a cycle time ensures that the full effect duration is displayed before the show loops and starts over again.

The Chasing Rainbow is only effective when applied to chasing groups.

To set cycle durations:

1. Select the effect by clicking in the effect line or by clicking the effect number at the left of the effect line.
2. In the time settings panel, under End Time, select A fixed Duration of.



3. In the Cycles field, specify the number of times you want the effect to run. A loop symbol (shown below) appears in the End time field of the effect line to

indicate that the duration is set to fixed number of cycles.

Time Settings Example

In the following example, effect 1 begins and runs for 15 seconds. The start and end time for effect 2 is linked to the start and end time for effect 1. Therefore, effect 1 and effect 2 run simultaneously.

	Name	Type	Group	Priority	Start	End	Fade In	Fade Out
1	Effect 1	Chasing Rainbow	Module	0	0	15	0	0
2	Effect 2	Chasing Rainbow	Module	0	← 0	← 15	0	0
3	Effect 3	Fixed Color	Module	0	← 15	30	0	0
4	Effect 4	Fixed Color	Module	0	← 15	← 30	0	0
5	Effect 5	Streak	Module	0	← 0	↻ 30	0	0
6	Effect 6	Streak	Module	0	← 0	← 30	0	0

The start time of effect 3 is linked to the end time of effect 1. Therefore, effect 3 begins immediately following effect 1. The end time of effect 3 is set to a fixed duration of 15 seconds. The start and end times for effect 4 are linked to the start and end times for effect 3, ensuring that they will run at the same time.

The start time of effect 5 is linked to the start time of effect 1, and the end time is set to three 10-second cycles. The start and end times for effect 6 are linked to effect 5, ensuring that they will run at the same time.

The results: Effects 1 and 2 begin running, with effects 3 and 4 immediately following. Effects 5 and 6 run simultaneously to all other effects.

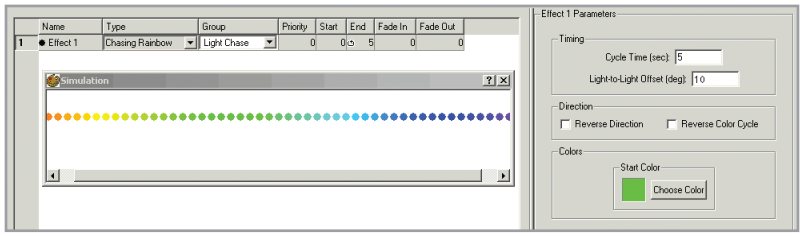
Save Your Show

Once your light show is complete, save it for use in the LSE. Light shows downloaded to the LSE must be saved as show (.SHO) files. To save, click File>Save Show.

List of Effects and Their Parameters

Chasing Rainbow

A Chasing Rainbow makes a smooth transition from color to color through the color spectrum. When applied to a chasing group, with a light-to-light offset greater than zero, the colors appear to follow each other from fixture to fixture (or node to node, where fixtures have multiple nodes).



Light-to-Light Offset Example

Light-to-Light Offset parameter set at 10°

Light-to-Light Offset parameter set at 30°

Light-to-Light Offset parameter set at 90°

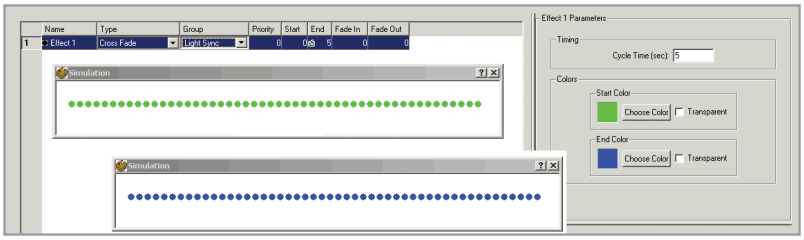
See "The Color Picker" on page 48 for details on using the Color Picker.

Chasing Rainbow Parameters

Parameter	Description
Cycle Time	Time, in seconds, for one complete cycle through the color spectrum.
Light-to-Light Offset	The light-to-light color range, based on the color wheel. See the Light-to-Light Offset examples in the margin.
Reverse Direction	Reverse the direction of the chasing rainbow effect.
Reverse Color Cycle	Reverse the cycle through the color spectrum.
Start Color	Click Choose Color to open the Color Picker. This parameter also determines the saturation and brightness of the entire effect. For example, if you pick a start color with 50% saturation, the entire Chasing Rainbow effect will use 50% saturated colors.

Cross Fade

A cross fade is a smooth transition from one color to another. For example, a cross fade from red to blue starts with solid red, then begins increasing the level of blue light and reducing the level of red light, until it ends with solid blue.

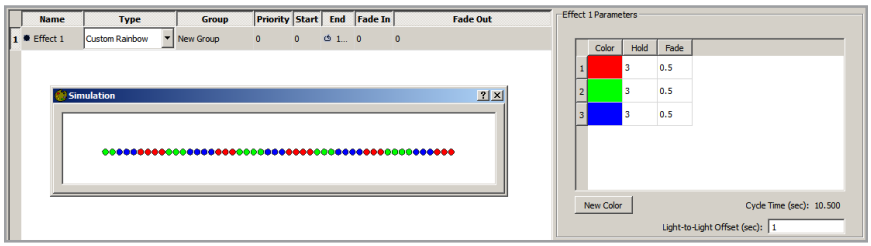


Cross Fade Parameters

Parameter	Description
Cycle Time	Time, in seconds, for one complete cycle from the start color to the end color.
Start Color	Click Choose Color to open the Color Picker, or select Transparent to enable stacked effects to show through.
End Color	Click Choose Color to open the Color Picker, or select Transparent to enable stacked effects to show through.

Custom Rainbow

The Custom Rainbow effect is similar to the Chasing Rainbow effect, but it allows you to choose your own color scheme.



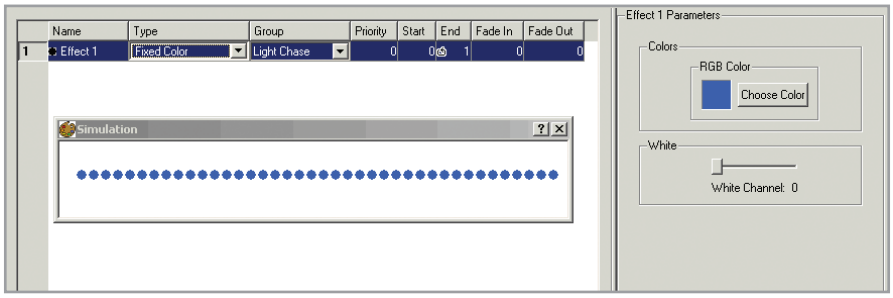
Custom Rainbow Parameters

Parameter	Description
New Color	Click New Color, then click the color bar to open the Color Picker. Repeat for each additional color in your rainbow.
Hold	Time, in seconds, to stay on this color.
Fade	Time, in seconds, to fade to next color.
Light-to-Light Offset	Time, in seconds, that it takes for a color to move from light to light.

See "The Color Picker" on page 48 for details on using the Color Picker.

Fixed Color

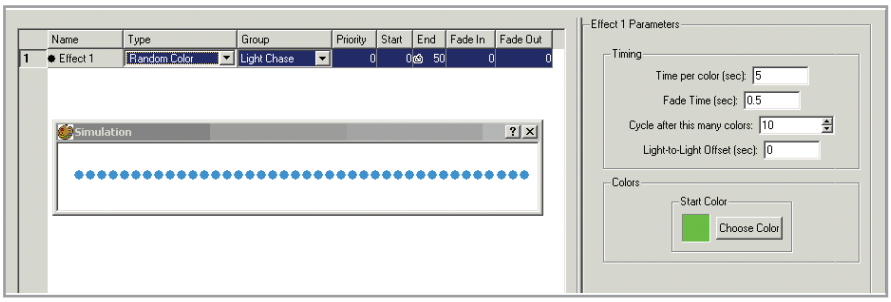
The Fixed Color effect is a static display of one solid color.



Parameter	Description
Start Color	Click Choose Color to open the Color Picker.

Random Color

The Random Color effect produces randomly generated colors at specified intervals.



Random Color Parameters

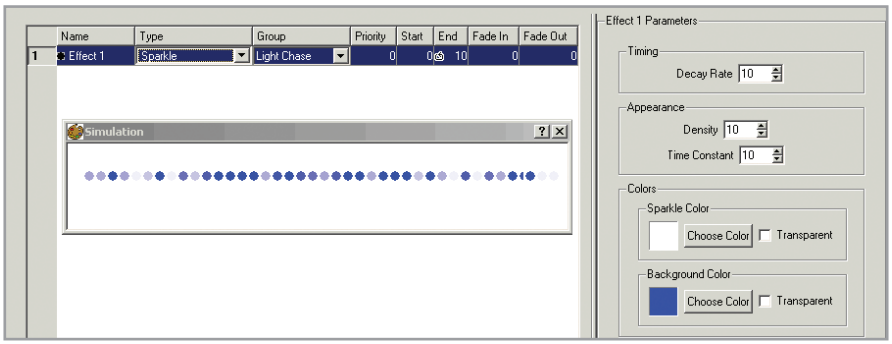
Parameter	Description
Time Per Color	Time, in seconds, for each color to display. For example, if you set the time per color to 1, each random color will be displayed for one second.
Fade Time	Time, in seconds, for transitions between colors. For example, a fade time of 0 results in abrupt color changes. Higher fade times result in longer, smoother fades between colors. Fade time should be less than time per color.
Cycle After This Many Colors	Set the number of unique colors per cycle.
Light-to-Light Offset	Time, in seconds, that it takes for a color to move from light to light.
Start Color	Click Choose Color to open the Color Picker.

See "The Color Picker" on page 48 for details on using the Color Picker.

Sparkle

The Sparkle effect produces a series of light flashes at regular intervals. When applied to a group, each flash appears randomly on a different light creating a sparkling effect.

Sparkle is most effective when applied to groups with a large number of nodes—the more nodes, the better the visual effect.

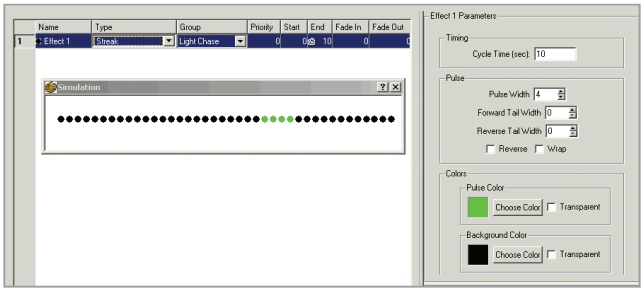


Sparkle Parameters

Parameter	Description
Decay Rate	Time that it takes for the flash of light to fade into the background color.
Density	Maximum number of nodes, in percentage, that flash simultaneously during a time interval. The higher the density, the greater the sparkle.
Time Constant	Time intervals for the flashes. The larger the time constant, the faster the flashes appear.
Sparkle Color	Click Choose Color to open the Color Picker.
Background Color	Click Choose Color to open the Color Picker.

Streak

The Streak effect is a single pulse of color that moves across a background color. You can set the pulse to give the appearance of a one-direction run across the background. The Streak effect is only effective when applied to chasing groups.



Streak Parameters

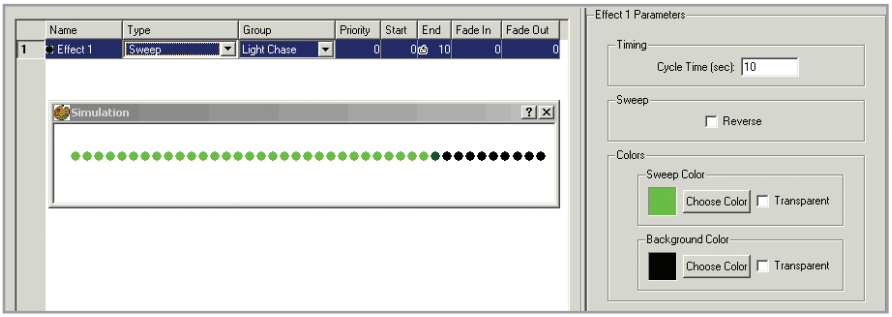
Parameter	Description
Cycle Time	Time, in seconds, for the pulse to move completely across the group.
Pulse Width	Width of the pulse, in number of nodes. A pulse width of 2 means the pulse is two nodes wide.
Forward Tail Width	Width, in number of nodes, of the graduated fade at the beginning of the streak.

Parameter	Description
Reverse Tail Width	Width, in number of nodes, of the graduated fade at the end of the streak.
Reverse	Reverse the direction of the Pulse effect.
Wrap	Select this option to have a pulse begin in the same graduated increments as the previous pulse is ending, creating a wrapping effect.
Pulse Color	Click Choose Color to open the Color Picker, or select Transparent.
Background Color	Click Choose Color to open the Color Picker, or select Transparent.

See "The Color Picker" on page 48 for details on using the Color Picker.

Sweep

The Sweep effect is a progressive transition from one color to another in a sweeping motion. You can set the sweep to give the appearance of a back and forth color change, or a one direction sweep across the light group. The Sweep effect is only effective when applied to a chasing group.



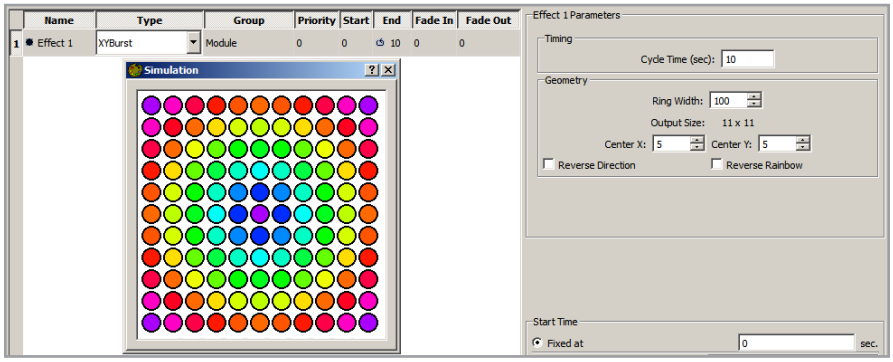
Sweep Parameters

Parameter	Description
Cycle Time	Length of time, in seconds, for the sweep to move across the group.
Reverse	Reverse the direction of the sweep effect.
Sweep Color	Click Choose Color to open the Color Picker, or select Transparent.
Background Color	Click Choose Color to open the Color Picker, or select Transparent.

See "The Color Picker" on page 48 for details on using the Color Picker.

XY Burst

The XY Burst effect is most effective when used on nodes that are arranged in a coordinate plane. The XY Burst is a progression of concentric bands of color moving from the outermost region of the fixtures to the center. XY Burst can be applied to either synchronized groups or chasing groups with the same results.

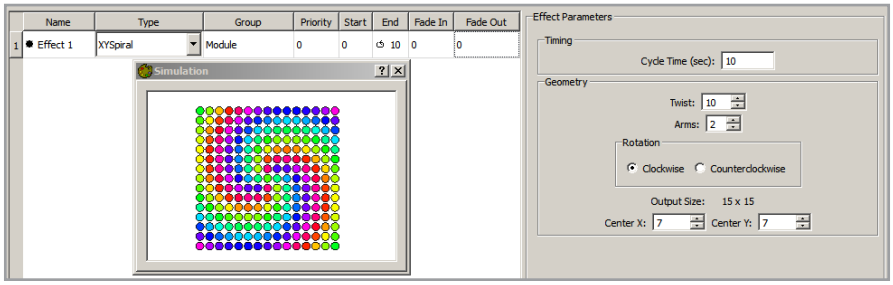


XY Burst Parameters

Parameter	Description
Cycle Time	Time, in seconds, for the Burst effect to move through the color spectrum, outside to center.
Ring Width	Size of each color ring.
Center X	Horizontal distance, relative to output size, from the upper left corner.
Center Y	Vertical distance, relative to output size, from the upper left corner.
Reverse Direction	Reverse burst direction, from center outward.
Reverse Rainbow	Reverse progression through the spectrum.

XY Spiral

The XY Spiral effect is most effective when used on fixtures that are arranged in a coordinate plane. The XY Spiral is arcs of color originating at the center of your light plane extending to the outermost region of the fixtures. XY Burst can be applied to either synchronized groups or chasing groups with the same results.



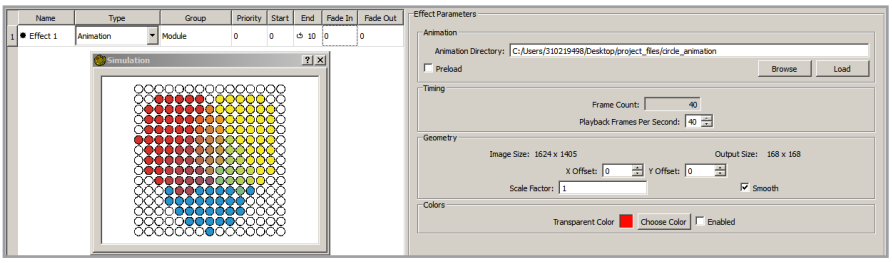
XY Spiral Parameters

Parameter	Description
Cycle Time	Time, in seconds, for the Spiral effect to make one complete rotation around the group.
Twist	Size of the radius of the arcs. Setting a negative size will result in a reversed arc.
Arms	The number of arcs of a given color rotating around the center.

Parameter	Description
Clockwise/ Counterclockwise	Rotational direction of the spiral.
Center X	Horizontal distance, relative to output size, from the upper left corner.
Center Y	Vertical distance, relative to output size, from the upper left corner.

Animation Effect

The Animation effect lets you play a sequence of graphic files on your fixtures to create an animated effect. This sequence of graphic files is created using a standard animation software, such as Adobe Animate CC.



Animation Workflow

Using animation software, create an animation file. In the animation file, insert the animation template you created with Management Tool in Chapter 5 as a layer, and use it to define the size. The template ensures that you get the desired visual effect without a skewed or stretched appearance.

Once the animation is complete, export it as a sequence of graphic files. In Adobe Animate CC, the command is File>Export Movie. From the File Format list, select PNG Sequence. Save these files into an empty directory that will be used in Show Designer to create an animated effect.

For more information on creating animations, refer to the user documentation for your animation software. After creating a sequence of images, you are ready to create an animated effect on your luminaires.

Light System Composer supports .PNG, .XPM, .JPG, and .BMP image formats.

To set up an animation:

1. After loading a map in Show Designer, select Animation from the Effect list, and then click New Effect. The Group Picker window is displayed.
2. Select the group on which the animation will play from the Group Picker, and then click OK. The animation effect is added to the effect panel and its parameters appear in the parameter settings box.
3. In the Animation panel, click Browse, and locate the directory where the animation sequence is saved. Select the intended directory, and then click OK.
4. Click Load to load the animation sequence into Show Designer. The animation begins playing in the Simulation window.
5. Configure the animation using the available parameters, detailed below.

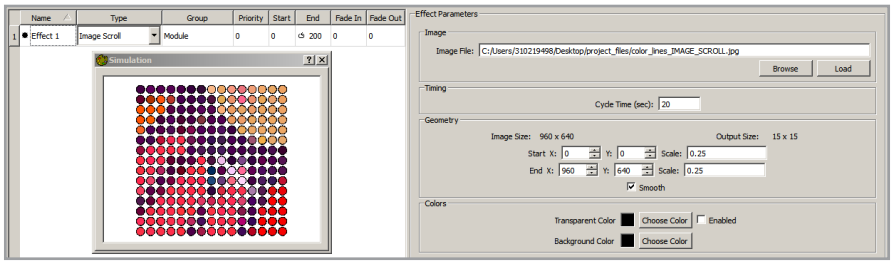
Animation Parameters

Parameter	Description
Preload	
Playback Frames Per Second	Playback speed of the animation.
X Offset	Distance from the left side that the image appears. A positive X Offset will shift the image to the right, while a negative X Offset will shift the image to the left.
Y Offset	Distance from the top side that the image appears. A positive Y Offset will shift the image up, while a negative Y Offset will shift the image down.
Scale Factor	Size of the animation on the group. The larger this number, the smaller the image.
Smooth	Soften the hard edges in the animation.
Transparent Color	Transparent color background. To set, click Choose Color to open the Color Picker, and select the Enabled check box.

See "The Color Picker" on page 48 for details on using the Color Picker.

Image Scroll

Image Scroll allows you to move a still image across a grid of fixtures. The Image Scroll effect is ideal for iColor Flex LMX gen2 or eW Flex Compact nodes installed in a grid pattern.



To create an Image Scroll effect:

1. After loading a map in Show Designer, select Image Scroll from the Effect list, and then click New Effect. The Group Picker window is displayed.
2. Select the group on which the image scroll will play from the Group Picker, and then click OK. The image scroll effect is added to the effect panel, and its parameters appear in the parameter settings box.
3. In the Image panel, click Browse, and locate the directory where the animation sequence is saved. Select the intended directory, and then click OK.
4. Click Load to load the image sequence into Show Designer. The scroll begins playing in the Simulation window.
5. Configure the image scroll using the available parameters, detailed below.

Image Scroll Parameters

Option	Details
Cycle Time	Time, in seconds, to scroll through the image.
Start X, Y	Starting location, expressed in pixels from the left and top of the image, respectively.
End X, Y	Ending location, expressed in pixels from the left and top of the image, respectively.
Start Scale	Size of the image at the start of the image scroll. The larger this number, the smaller the image. When the scale is set to 1.0, each node maps to exactly one image pixel.
End Scale	Size of the image at the end of the image scroll. The larger this number, the smaller the image. When the scale is set to 1.0, each node maps to exactly one image pixel.
Scale Factor	Specify the size of the still image.
Transparent Color	Allows you layer the scrolling image effect with other effects. To set, click Choose Color to open the Color Picker, and select the Enabled check box.
Background Color	Background color if the image does not fill all nodes in the group. Click Choose Color to open the Color Picker.

See "The Color Picker" on page 48 for details on using the Color Picker.

To set the frame rate:

Live play frame rate determines the speed that data is sent and how your animation appears on your luminaires.

1. Select Edit>Preferences from the menu. The Edit Preferences dialog box appears.
2. Set the live play frame rate in frames per second.
3. Set the live play per simulation update. The live play per simulation update sets the frequency that the simulation is redrawn, expressed as a number of live play frame passes between redraws.

Output Size and Image Size

The Image Scroll Effect should be thought of as moving a "virtual window" (the map) over a still image file. The Output Size field shows the dimensions, in virtual pixels, of your virtual window.

Similarly, the Image Size field shows the dimensions of the selected image, in pixels.

Calculating X-Y and Scale Settings, in Detail

The transformation from image space to the virtual window space is performed as follows:

1. The Scale factor setting is applied to the virtual window.
   - When the Scale is set to 1.0, each node maps exactly to one image pixel.
   - When the Scale is set to 0.5, one node maps to two image pixels.
   - When the Scale is set to 2.0, two nodes map to one image pixel.
2. The X and Y settings are applied to shift the image within the virtual window.

- The origin of the X-Y space is in the middle of the virtual window, so setting X-Y to 0,0 positions the top left corner of the image in the center of the virtual window.
- As X increases, the image appears to move to the left in the virtual window. To align the left side of the image to the left side of the virtual window, X should be set to the following:

  virtual window width / (2 * scale)
- As Y increases, the image appears to move up in the virtual window. To align the top of the image to the top of the virtual window, Y should be set to the following:

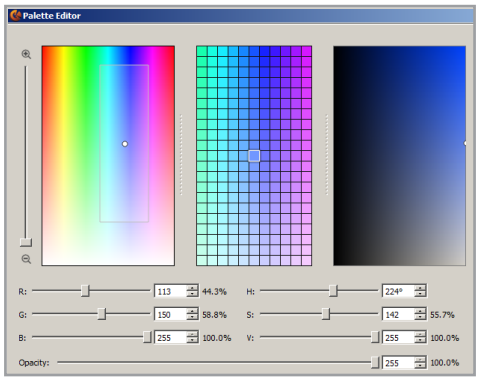
  virtual window height / (2 * scale)

The Color Picker

When a property calls for a color, you select the color using the Color Picker. To display the Color Picker, double-click a color in the Effect Parameters pane.

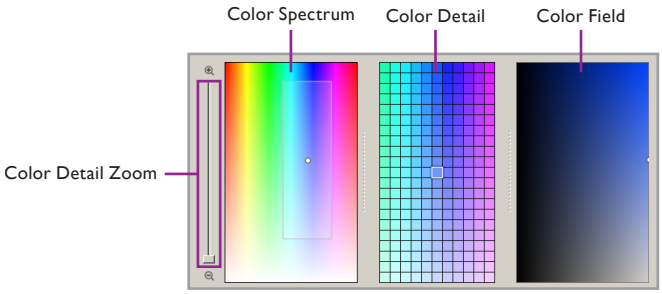
The Color Picker offers an RGB Range for picking colors, and a White Range for targeting of temperatures or tints of white light.

The RGB Range

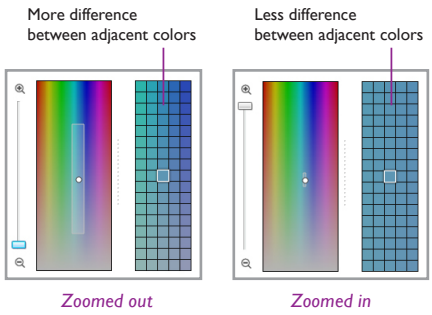


The RGB Range lets you select a specific color using the Color Spectrum, Color Detail, and Color Field controls, or using the sliders for the RGB (red/green/blue) color model, the HSV (hue/saturation/brightness) color model, and opacity.

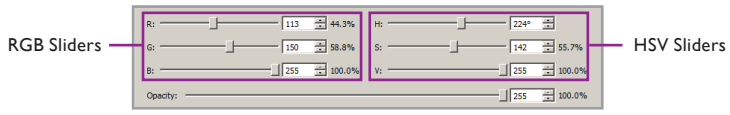
The currently selected color is shown in the Active Swatch box. This color is also indicated on the Color Spectrum and the Color Field by a color point (a white dot), and on the Color Detail control by a highlighted box.



To make it easier to select and fine-tune specific colors, the Color Detail control displays colors adjacent to the currently selected color. Using the Color Detail

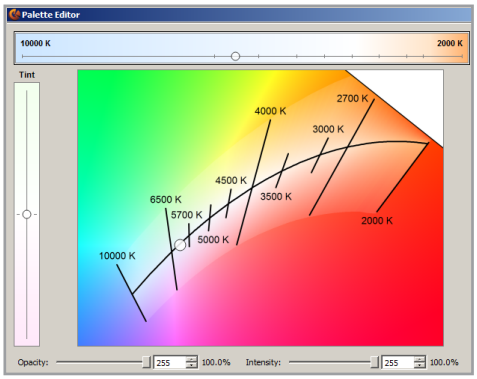


Zoom slider, you can adjust the range of colors displayed in the Color Detail control. When you zoom in and out, the white bounding box on the Color Spectrum shrinks or expands to indicate the region displayed in the Color Detail control. The more you zoom in, the smaller the difference between adjacent colors in the Color Detail control.



You can change the currently selected color by dragging the white dot to a new location on any of the color controls, or by using the RGB and HSV sliders, in any combination. If the Live Play check box is selected, any lights connected to your computer will display the Active Swatch color.

The White Range

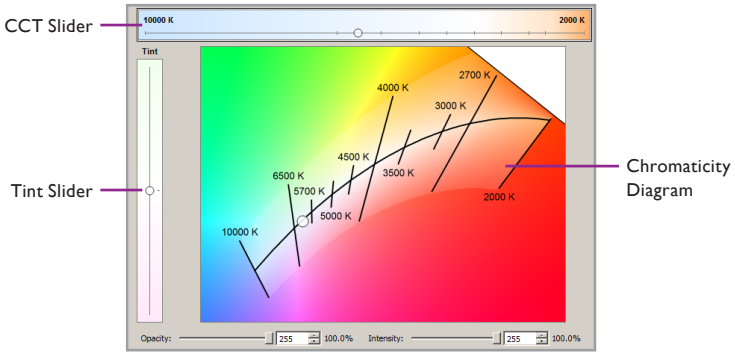


The White Range helps you target temperatures and tints of white light using color-changing fixtures of three or more channels. You can also use the RGB Range with IntelliWhite fixtures in 3-channel mode.

The White Range targets an area within the CIE 1931 x-y chromaticity space, on which CCTs (correlated color temperatures) for white light are defined. To make it easier to select temperatures of white light and tinted white light, the White Range constrains color selections to an area along the black-body curve and the iso lines that extend above and below it. To select colors outside of this area, use the RGB Range.

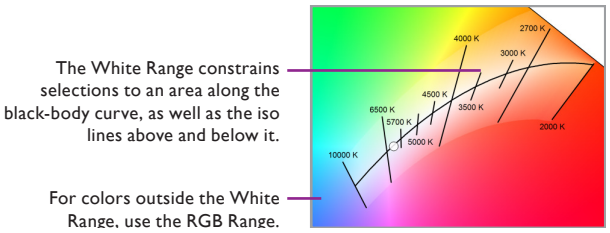
The White Range lets you select a specific temperature or tint of white using the Chromaticity Diagram, as well as the Tint slider and the CCT slider. The currently selected white appears in the Active Swatch. The currently selected white is also indicated on the Chromaticity Diagram by a color point (a white dot), and by positions on the Tint and CCT sliders.

The color point and the slider positions make a general indication of CCT and tint, and do not imply or guarantee color accuracy or color consistency across different fixture types. Think of the color point and slider positions as good starting points. If targeting an exact color temperature or x-y coordinate is critical, be sure to use a light meter or other measurement device to test the output of your lighting fixtures.



You can change the currently selected white by dragging the white dot to a new location on the Chromaticity Diagram, or by using the Tint slider and CCT slider,

in any combination. The CCT slider moves the color point along the black-body curve, while the Tint slider moves the color point perpendicular to the black-body curve, parallel with the iso lines. If the Live Play check box is selected, any lights connected to your computer will display the Active Swatch color.



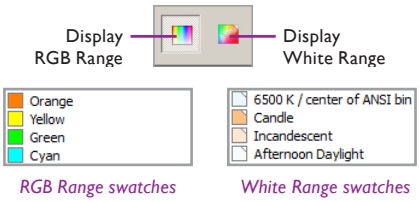
Color definitions created with the White Range differ depending on fixture type. To reuse temperatures of white and tinted whites with different fixture types, make sure you save them to your Project Swatches. You can then reload the colors and resave the effects when you change fixture types.

Switch Between the RGB Range and the White Range

Show Designer offers two convenient methods for displaying the intended color range.

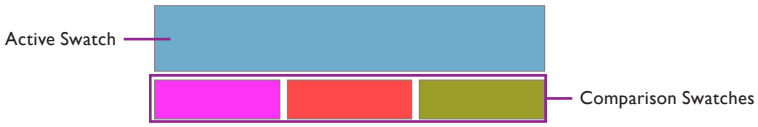
To switch between color ranges:

- Using the buttons: Click the Display RGB Range or the Display White Range button to toggle between the RGB Range and the White Range.
- Using Project Swatches: Select a swatch. The applicable color range is displayed. Swatches from the White Range are shown with a small triangle in the upper-right corner of the icon.



Use the Active Swatch and Comparison Swatches

The Active Swatch and Comparison Swatches make it easier to compare and select colors.



The currently selected color appears in the Active Swatch. When you save settings for the Fixed Color or Variable Color effect, or when you add a color to the Custom Wash effect, ColorPlay 3 uses the currently loaded color in the Active Swatch.

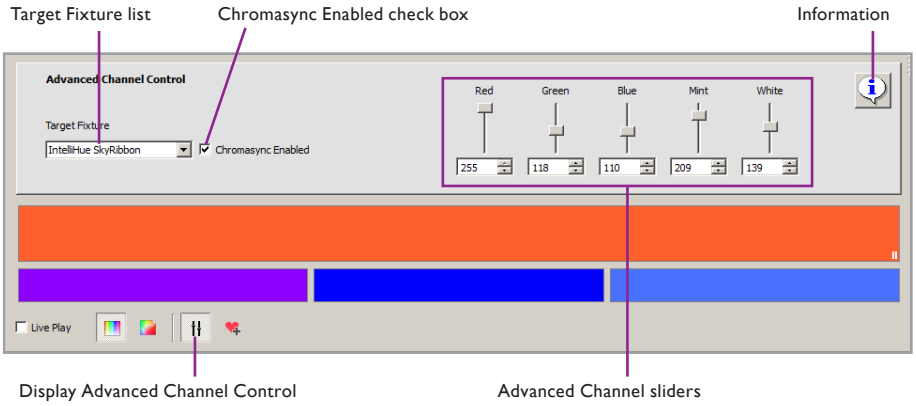
To load a color into the Active Swatch:

To load a color into the Active Swatch, select the intended color from the Project Swatches.

To load a color into the Comparison Swatches:

To load a color into a Comparison Swatch, drag the desired color from the Active Swatch, from the Color Detail control, or from your Project Swatches.

Use Advanced Channel Control



For most users, the standard RGB Range and White Range color selection options are enough to meet the expectations of a lighting designer. For users who want a little more control, Show Designer offers the Advanced Channel Control.

The Color Type list will display options based on the luminaires contained in the selected group. For instance, if your group contains only RGB fixtures, only the RGB option is shown in the Color Type list.

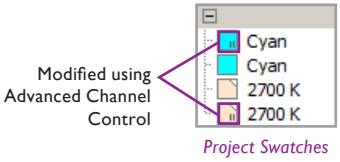
Which Fixture Profile Should I Use with Advanced Channel Control?

Advanced Channel Control displays the LED channel values that are transmitted to the Target Fixture. If you are able to see your fixtures, choose a reference fixture, and select that fixture from the Target Fixture list. The values shown in Advanced Channel Control will reflect the Target Fixture, while other fixtures will match color according to their own configurations.

To use Advanced Channel Control:

1. Click the Display Advanced Channel Control button.
2. In your lighting installation, choose a fixture to use as a reference. Select that fixture from the Target Fixture list. The Advanced Channel sliders specific to the selected fixture are shown to the right.
3. Adjust the Advanced Channel sliders as needed.

Colors that have been modified from Advanced Channel Control are shown with a small indicator (▮▮) at different places in the Color Picker. Some examples of these are shown in the margin.



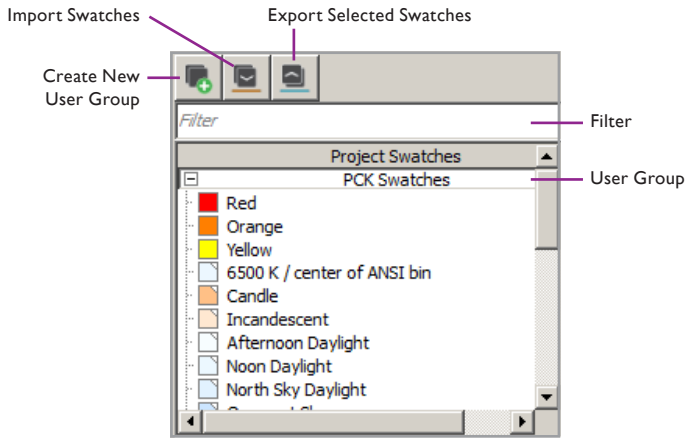
Project Swatches

Active Swatch

Project Swatches

Show Designer offers robust functionality for managing colors for your light shows. The Project Swatches list allows you to save and load single colors.

Work with Project Swatches

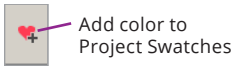


The Project Swatches list contains colors that are saved for later use in Show Designer. Project Swatches are organized into User Groups.

By default, Show Designer offers the PCK Swatches user group, which includes 12 RGB colors and 20 temperatures or tints of white.

To create, rename, or delete a swatch:

- To create a new swatch, select a color and click the Add to Project Swatches button. The new swatch appears with a default name (Color, Color 2, Color 3, and so on) in the Project Swatches User Group.
- To rename a swatch, double-click the swatch, and then enter a new name.
- To delete a swatch, right-click the swatch, and then click Delete.



To apply a swatch to the current effect:

- Click an RGB swatch to display the RGB Range and load the selected color into the Active Swatch.
- Click a White swatch to display the White Range and load the selected color into the Active Swatch. White Range colors are indicated by a white triangle in the upper-right corner of the swatch icon.
- Type in the Filter text box to limit the Project Swatches list to only those colors whose names contain the search string. Click ⊗ to clear the search string and display all available colors.

To create, rename, or delete a user group:

- To create a new user group, click the Create a New User Group button. The new user group is shown at the bottom of the Favorites list.
- To rename a user group, double-click the user group title, and enter a new name.
- To delete a user group, right-click the user group title, and then click Delete.
- Click the title of a user group to expand or collapse that group.

To select multiple Project Swatches for export, hold down the Ctrl key (Windows) or the Command key (macOS), and then click the Project Swatches you intend to export.

To import and export swatches:

- To export, select one or more swatch, and then click the Export Selected Swatches to a File button. Enter a file name and location, and then click Save. The CK Color File export is saved to your computer with the .ckcolors extension.

- To import, click the Import Swatches From a File to a New User Group button. Select a CK Color File (.ckcolors extension) from your computer, and then click Open. A new user group containing the imported swatches is created.

Color Picker Keyboard Shortcuts

Color Range	To do this	Press this on Windows	Press this on macOS
RGB Range only	Zoom in on the Color Spectrum	Ctrl+Plus Sign	Command+Plus Sign
	Zoom out on the Color Spectrum	Ctrl+Minus Sign	Command+Minus Sign
White Range only	Increase red	Ctrl+R	Command+R
	Decrease red	Ctrl+Shift+R	Command+Shift+R
	Increase green	Ctrl+G	Command+G
	Decrease green	Ctrl+Shift+G	Command+Shift+G
	Increase blue	Ctrl+B	Command+B
	Decrease blue	Ctrl+Shift+B	Command+Shift+B
RGB Range and White Range	Select a color diagram without moving the color point	Hold down Ctrl, and then click in an inactive color diagram	Hold down Command, and then click in an inactive color diagram
	Move the color point on a color diagram	Select a color diagram, and then press an arrow key	
	Move a slider to the left or right	Select a slider, and then press Left Arrow or Right Arrow	
	Move a slider up or down	Select a slider, and then press Up Arrow or Down Arrow	
	Copy Comparison Swatch 1 to the Active Swatch	Ctrl+1	Command+1
	Copy Comparison Swatch 2 to the Active Swatch	Ctrl+2	Command+2
	Copy Comparison Swatch 3 to the Active Swatch	Ctrl+3	Command+3

7 Light System Engine Configuration

Zones

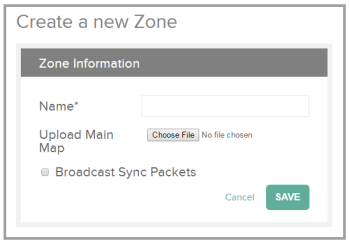
Zones enable show playback control. All fixtures in a zone are triggered together, whether from a keypad or a scheduled light show. Additionally, you can set multiple zones to react to an event, such as a recurring scheduled time on a specific day of the week.

For instructions on logging in to the LSE web interface, see "Connect to the LSE Web Interface" on page 15.

To create a zone:

1. Log in to the LSE web interface, and then click the Config tab.

2. Click Create. The Create a New Zone page is displayed.



3. Type a descriptive name in the Name box.
4. Use the Upload Main Map control to select a map file that you created in Light System Composer.
5. If you anticipate large amounts of data to be broadcast over your lighting network, select the Broadcast Sync Packets check box. Otherwise, clear the check box.
6. Click Save. Add additional zones to your configuration as necessary.

Luminaires and map files must be unique to a single zone. If more than one zone (and, therefore, more than one map file) are trying to control a node, unexpected flickering can occur.

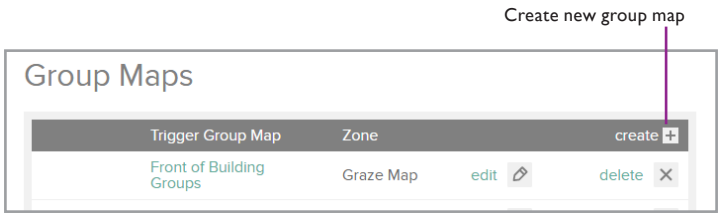
Sync packets allow installations with large amounts of network data to synchronize all lighting nodes. This feature is not necessary for most installations.

Group Maps

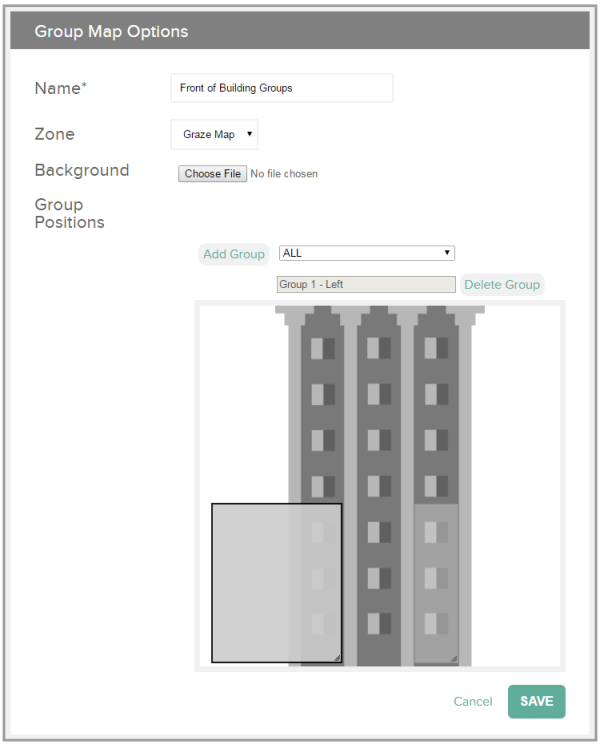
A group map is a visual layout of groups shown on top of a background image (such as a floor plan or elevation view). Group maps are used for easy point-and-click creation of static, fixed color scenes, which you can create directly in the web interface.

To create a group map:

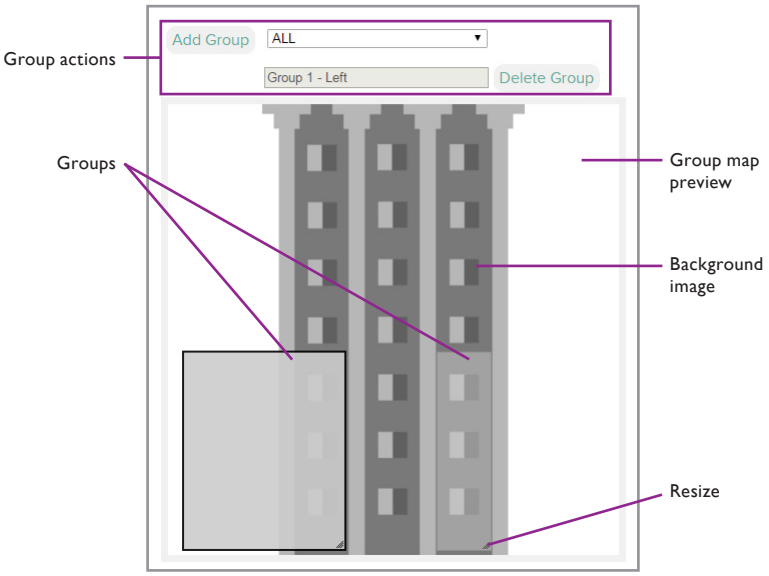
1. Click the Config tab.
2. In the left menu, click Group Maps. The Group Maps page is displayed.



3. Click Create. The Create a New Group Map page is displayed.



4. Enter a descriptive name in the Name box.
5. Select a zone from the Zone list.
6. Use the Background field to choose a background image for use in the Preview box.



Groups are defined in the map files that you previously created in Management Tool and then attached to zones in Light System Engine.

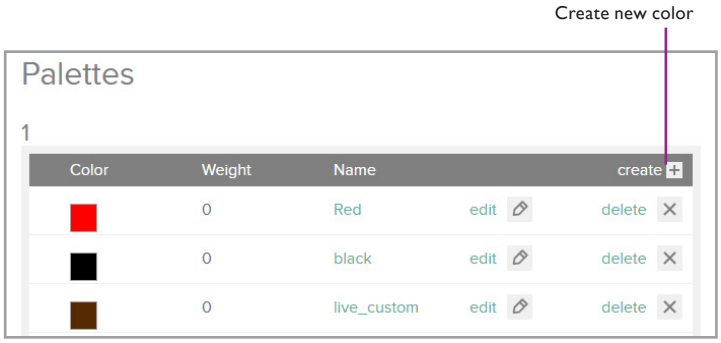
7. Use the Group Positions controls to arrange groups in the group map preview:
   a. To add a group to the preview, select a group from the list, and then click Add Group.
   b. To relocate a group, drag the intended group in the group map preview.
   c. To resize a group, drag the resize handle in the lower right corner of the intended group.
   d. To delete a group, click the intended group. The group name is shown in the text box above the group map preview, so you can use this to confirm that you have selected the correct group. Click Delete Group to remove from the group map.
8. Click Save.

Palettes

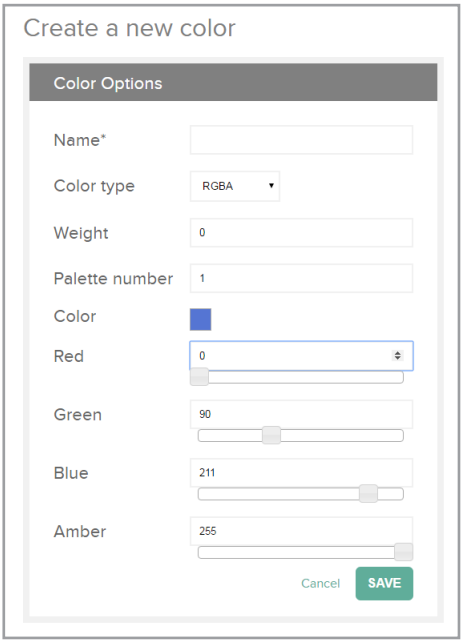
Light System Engine allows you to save colors used in custom scenes created in the LSE web interface. To help you manage saved colors, your colors can be grouped into palettes.

To create a new color:

1. Click the Config tab.
2. In the left menu, click Palettes. The Palettes page is displayed.



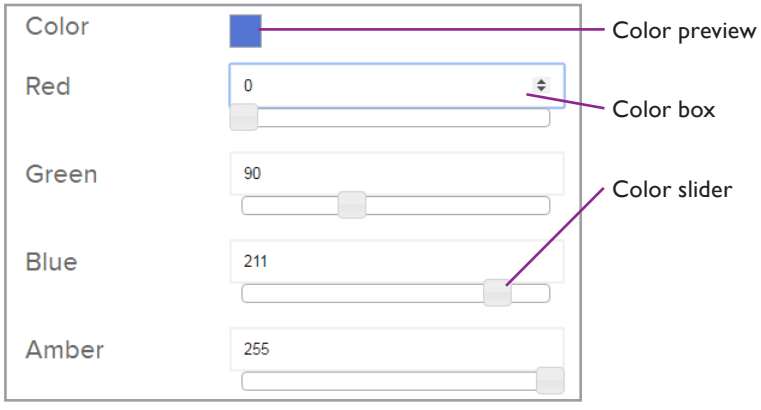
3. Click Create. The Create a New Color page is displayed.



4. Type a descriptive name in the Name box.
5. Use the Color Type list to changes the available color sliders, as detailed in the following table:

Color Type	Available sliders
RGB	Red, green, blue
RGBA	Red, green, blue, amber
RGBW	Red, green, blue, white
RGBAW	Red, green, blue, amber, white
Color Temp	Single slider for selecting tints of white

6. Type a number in the Weight box. This number determines the order in which colors are displayed on the palette. Colors are ordered sequentially in the palette, starting with 0.
7. Type a number in the Palette Number box. This is the palette that this color will be included in.



8. Use the available color sliders or color boxes to select the intended color.
9. Click Save.

Manage Colors

To modify a color:

1. Locate the color in the Palettes configuration page, and click Edit.
2. Change the settings as needed, and then click Save.

To delete a color:

Locate the color in the Palettes configuration page, and click Delete.

Manage Palettes

Palettes are created based on the settings of each saved color. The Palette Number setting controls which palette a color belongs to, while the Weight setting controls the sort order of colors in each palette.

To move a color to a different palette:

1. Locate the intended color in the Palettes configuration page, and click Edit.
2. Type a number in the Palette Number box. To move the color to a new Palette, type a palette number that does not exist yet.
3. Click Save.

To change the sort order of colors in a palette:

1. Locate the intended color in the Palettes configuration page, and click Edit.
2. Type a number in the Weight box. Type 0 to place a color at the top of the palette. Palettes are sorted by weight, in ascending order.
3. Click Save.

To delete a palette:

To delete a palette, move or delete all colors in that palette.

Keypads

Light System Engine can trigger events using three types of keypads: a serial keypad, a broadcast keypad (Remote Keypad app), or Ethernet keypads. You can configure one serial keypad, one broadcast keypad, and up to 10 Ethernet keypads. The serial keypad supports up to 225 buttons. Serial button events can be triggered using an AuxBox, a Color Kinetics Controller Keypad, or a compatible third party system.

To configure a third party serial controller, refer to Appendix D for the serial keypad protocol.

Using an AuxBox in your installation lets you trigger shows via contact closure switches such as motion detectors and electronic eyes.

Add Keypads

To add a serial keypad or remoate app keypad:

1. Click the Config tab.
2. In the left menu, click Keypads. The Keypad Configuration page is displayed.
3. Click Create in the keypad type that you want to create (Serial Keypad or Remote App Keypad).
4. Enter a descriptive Name for this keypad.
5. Click Save. To configure your keypad, see the “Configure Keypads” section below.

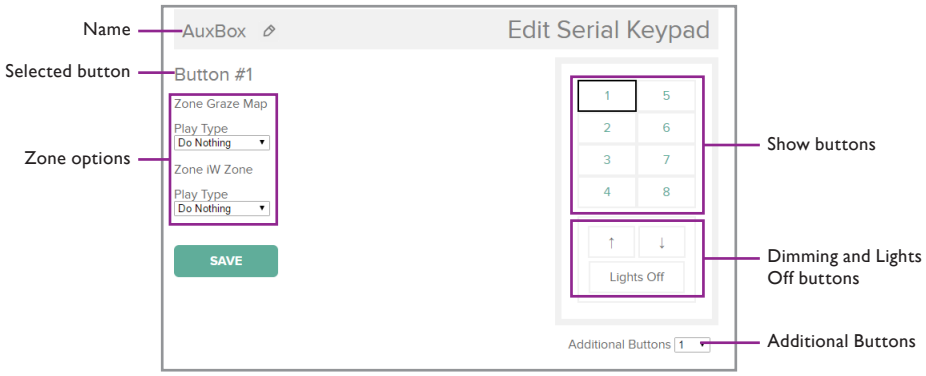
To add an Ethernet keypad:

1. Click the Config tab.
2. In the left menu, click Keypads. The Keypad Configuration page is displayed.
3. Click Create in the keypad type that you want to create (Serial Keypad or Remote App Keypad).
4. Enter a descriptive Name and an IP Address for this keypad.
5. If you are adding an Antumbra Ethernet Keypad, select the Antumbra check box. Otherwise, to add an Ethernet Controller Keypad, clear the Antumbra check box.
6. Click Save. To configure your keypad, see the "Configure Keypads" section below.

Configure Keypads

To configure a serial keypad:

1. Click the Config tab.
2. In the left menu, click Keypads. The Keypad Configuration page is displayed.
3. Locate the keypad whose configuration you want to modify and click Edit. The Edit Serial Keypad screen is displayed.



4. To edit the keypad name, click ✎ next to the current name. Type a new name and press Enter.
5. Click a show button on the on-sreen keypad, or use the Additional Buttons list. The button number is shown above the zone options.
6. Assign zone options for all intended buttons. Zone options are detailed in the following table:

Up to 225 buttons can be configured for serial keypads using the Additional Buttons list.

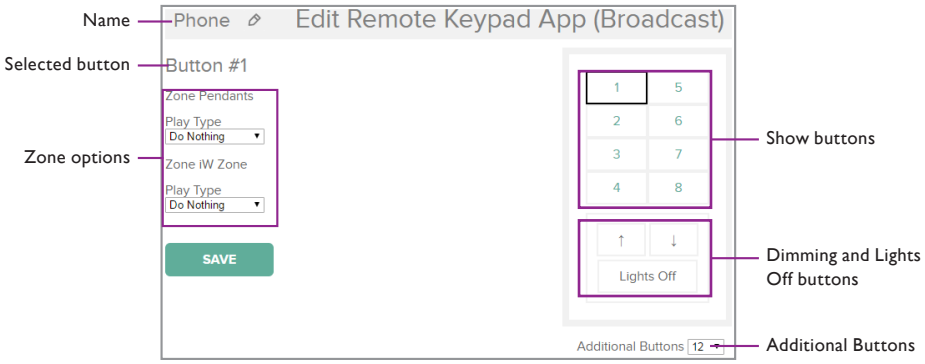
Zone option	Description
Play Type	*Do Nothing* Do not perform any action in this zone.
	Play Scene or *Play Show* Play a scene or show.
	Lights Off Turn the lights off.
	Diagnostic Scan For installations using ActiveSite, perform a scan of the lighting system.
	Relays Off Shut off power/data supplies in a group. This is a lower power state than Lights Off. Used in combination with the Group setting.
Scene	The scene to be played. Used in combination with the Play Scene options.

Zone option	Description
Show	The show to be played. Used in combination with the Play Show options.
Transition	*Snap* Zero-second transition (no fade).
	Cross-Fade Fade to the selected scene or show. Used in combination with the Transition Time setting.
	Fade-to-Black Fade to black, then fade to the selected scene or show. Used in combination with the Transition Time setting.
Transition Time	Transition time in hours, minutes and seconds. Used in combination with Cross-Fade or Fade-to-Black options.
Group	The group whose power/data supplies will be turned off. Used in combination with the Relays Off option.

8. Click the dimming and Lights Off buttons. Select all check boxes for the zones that these buttons should control.
9. Click Save.

To configure a remote app keypad:

1. Click the Config tab.
2. In the left menu, click Keypads. The Keypad Configuration page is displayed.
3. Locate the keypad whose configuration you want to modify and click Edit. The Edit Serial Keypad screen is displayed.



4. To edit the keypad name, click next to the current name. Type a new name and press Enter.
5. Click a show button on the on-sreen keypad, or use the Additional Buttons list. The button number is shown above the zone options.
6. Assign zone options for all intended buttons. Zone options are detailed in the following table:

Up to 225 buttons can be configured for serial keypads using the Additional Buttons list.

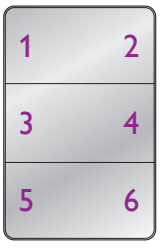
Zone option	Description
Play Type	*Do Nothing* Do not perform any action in this zone.
	Play Scene or *Play Show* Play a scene or show.
	Lights Off Turn the lights off.
	Diagnostic Scan For installations using ActiveSite, perform a scan of the lighting system.
	Relays Off Shut off power/data supplies in a group. This is a lower power state than Lights Off. Used in combination with the Group setting.
Scene	The scene to be played. Used in combination with the Play Scene options.
Show	The show to be played. Used in combination with the Play Show options.
Transition	*Snap* Zero-second transition (no fade).
	Cross-Fade Fade to the selected scene or show. Used in combination with the Transition Time setting.
	Fade-to-Black Fade to black, then fade to the selected scene or show. Used in combination with the Transition Time setting.
Transition Time	Transition time in hours, minutes and seconds. Used in combination with Cross-Fade or Fade-to-Black options.
Group	The group whose power/data supplies will be turned off. Used in combination with the Relays Off option.

7. Click the dimming and Lights Off buttons. Select all check boxes for the zones that these buttons should control.
8. Click Save.

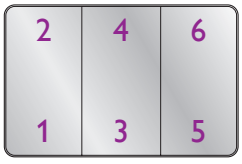
To configure an Ethernet keypad:

1. Click the Config tab.
2. In the left menu, click Keypads. The Keypad Configuration page is displayed.
3. Locate the keypad whose configuration you want to modify and click Edit. The Edit Serial Keypad screen is displayed.

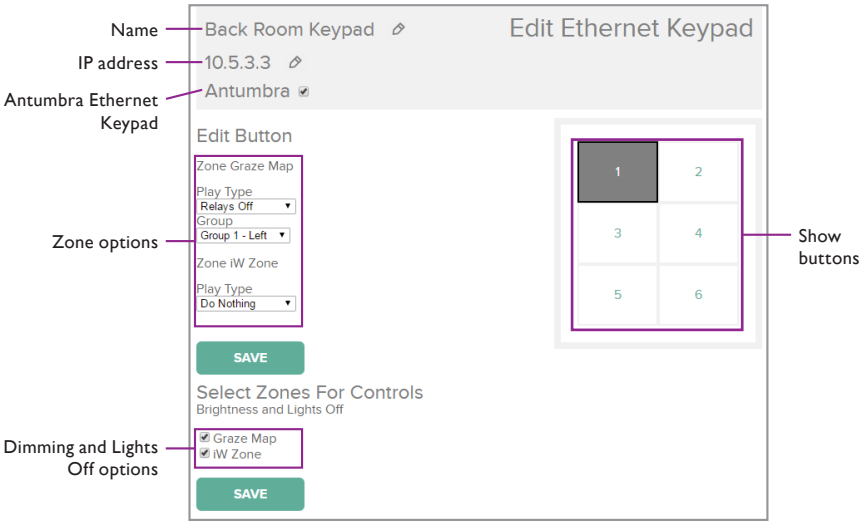
E *Refer to the illustrations below to understand Antumbra Ethernet Keypad button numbering in portrait orientation and landscape orientation.*



Antumbra Ethernet Keypad, portrait orientation



Antumbra Ethernet Keypad,



4. To edit the keypad name, click next to the current name. Type a new name and press Enter.
5. To change the keypad IP address, click next to the current IP address. Type a new IP address and press Enter.
6. Click a button on the on-sreen keypad.
7. Assign zone options for all intended buttons. Zone options are detailed in the following table:

Zone option	Description
Play Type	*Do Nothing* Do not perform any action in this zone.
	Play Scene or *Play Show* Play a scene or show.
	Lights Off Turn the lights off.
	Diagnostic Scan For installations using ActiveSite, perform a scan of the lighting system.
	Relays Off Shut off power/data supplies in a group. This is a lower power state than Lights Off. Used in combination with the Group setting.
Scene	The scene to be played. Used in combination with the Play Scene options.
Show	The show to be played. Used in combination with the Play Show options.
Transition	*Snap* Zero-second transition (no fade).
	Cross-Fade Fade to the selected scene or show. Used in combination with the Transition Time setting.
	Fade-to-Black Fade to black, then fade to the selected scene or show. Used in combination with the Transition Time setting.
Transition Time	Transition time in hours, minutes and seconds. Used in combination with Cross-Fade or Fade-to-Black options.
Group	The group whose power/data supplies will be turned off. Used in combination with the Relays Off option.

8. If you are configuring Ethernet Controller Keypad:
   Click the dimming and Lights Off buttons. Select all check boxes for the zones that these buttons should control.

   If you are configuring Antumbra Ethernet Keypad:
   Select the check boxes for the zones that should be controlled by Lights Off and dimming functions. In order to use dimming controls, enable this functionality on your Antumbra Ethernet Keypad using QuickPlay Pro. QuickPlay Pro is available from Color Kinetics at www.colorkinetics.com/support/addressing/.
9. Click Save.

Trigger an ActiveSite Diagnostic Scan

Users can manually trigger a diagnostic scan of lighting installations that use ActiveSite to detect and identify of all the devices on the lighting network.

To trigger a diagnostic scan:

1. Click the Config tab. The configuration page is displayed.
2. In the left menu, click ActiveSite, and then click Scan Now.

Light System Engine Logs

Light System Engine logs allow admin users to view detailed system information and recent history. There are three types of logs: Frontend, Shows, and Backend.

Log type	Details
Frontend	All actions taken by users.
Shows	History of all triggered events, separated by zone.
Backend	Diagnostic information useful for advanced troubleshooting by Color Kinetics Support Representatives.

System Settings

Light System Engine offers additional options, detailed below, that will allow you to further customize default behaviors.

Global Transitions

This setting affects how shows will play when you trigger them from the Zones tab.

To change your default Global Transition:

1. Click the Config tab.
2. In the left menu, select Settings>Global Transitions.

3. Select a Transition Type and Transition Time:

Option	Details
Transition Type	*Snap* Immediate transition (no fade).
	Cross-Fade Fade directly to a scene or show. Speed of the transition can be set using the Transition Time option.
	Fade-to-Black Fade to black, then fade to a scene or show. Speed of the transition can be set using the Transition Time option.
Transition Time	Duration of the transition in hours, minutes and seconds. Available only if you selected a Transition Type of Cross-Fade or Fade-to-Black.

4. Click Save.

Default Event Settings

Light System Engine allows you to configure default settings for new scheduled events. Changing these settings will not affect any existing scheduled events.

To configure event defaults:

1. Click the Config tab.
2. In the left menu, navigate to Settings>Global Transitions.
3. Select a Transition Type. The following options are available:

Option	Details
Start at	*Fixed Time* Trigger the event at a specific hour and minute of the day. Used in combination with the Time setting.
	Before Sunrise or *After Sunrise* Trigger the event relative to sunrise. Used in combination with the Offset setting.
	Before Sunset or *After Sunset* Trigger the event relative to sunset. Used in combination with the Offset setting.
Time	The time that an event will be triggered. Used in combination with the Fixed Time option.
Offset	The amount of time before or after sunrise or sunset to trigger an event. Used in combination with the Before Sunrise, After Sunrise, Before Sunset, or After Sunset options.
Transition	*Snap* Immediate transition (no fade).
	Cross-Fade Fade to a scene or show. Speed of the transition is set using the Transition Time setting.
	Fade-to-Black Fade to black, then fade to a scene or show. Speed of the transition is set using the Transition Time setting.

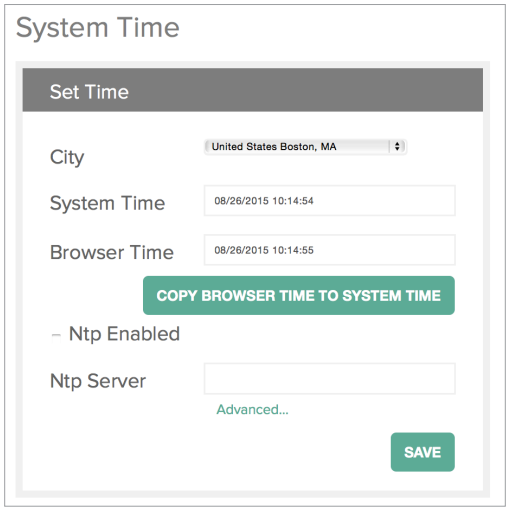
Option	Details
Transition time	Duration of the transition in hours, minutes and seconds. Used in combinatin with the Cross-Fade or Fade-to-Black options.

Configure the System Time

The Light System Engine system time must be correct in order to ensure scheduled events are triggered at their intended times.

To set the system time:

1. Click the Config tab.
2. In the left menu, navigate to Settings>System Time.



3. Set your location using one of the following options:

Option	How to set
Option 1: *By City*	Select the city closest to the installation site from the City list.
Option 2: *By Latitude, Longitude and Time Zone*	Click Advanced, and then enter the installation Timezone, Latitude, and Longitude.

Setting your location ensures that your Light System Engine will have the correct astronomical times (sunrise and sunset).

4. Set the system time using one of the following options:

Option	How to set
Option 1: *Copy Browser Time to System Time*	Change your computer's time zone to match that of the Light System Engine, and then click Copy Browser Time to System Time.
Option 2: *Synchronize with NTP*	Select the NTP Enabled check box, and then type an IP address or host name for a valid NTP Server, such as pool.ntp.org.

If you are copying your computer's browser time, LSE expects your browser time zone to match the system time zone set in LSE. If the two time zones do not match, your scheduled events will not trigger at the correct time.

NTP is the most accurate option to maintain system time.

5. Click Save.

Network Configuration

Most installations use the default IP address on their Light System Engine. However, if your installation has specialized network requirements, you will need to modify the Light System Engine default configuration.

Before updating your settings, determine whether you need to update your Lighting Network settings, your Wide Area Network (Internet) settings, or both.

By default the Wide Area Network uses DHCP. This can be set to Static if required for your local network configuration. Check with your local network administrator before changing the Wide Area Network settings.

To change the network configuration:

1. Click the Config tab.
2. In the left menu, navigate to Settings>Network.
3. If you need to update your lighting network settings, locate the Lighting Network section, and type a Static IP address and Subnet mask.
4. If you need to change your Wide Area Network settings, clear the Use DHCP check box, and enter the information in the Wide Area Network section.
5. Click Save. Light System Engine will restart and redirect your browser to the new IP address.
6. If you changed the lighting network IP address, change your computer's IP settings so that you can continue to access the LSE web interface.

Make sure you write down the new IP address for your Light System Engine, and keep it in a memorable location. You will be unable to log in to your Light System Engine from your computer if you forget its IP address.

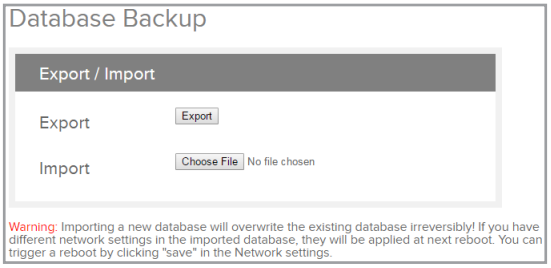
Database Backup

We recommend backing up your data before updating or deleting software on the Light System Engine.

Light System Engine data—including network settings, show files, scenes, zones, system configuration, and schedules—can be backed up to your local computer. In the event you lose any of this data, you can load a backup to Light System Engine.

To export a database backup:

1. Click the Config tab.
2. In the left menu, navigate to Settings>Database Backup.



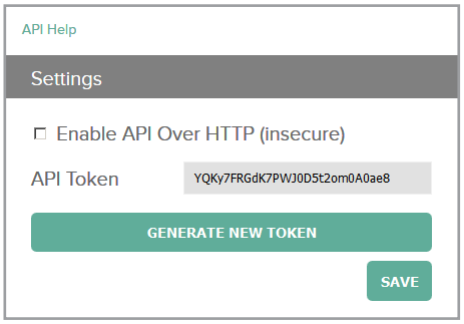
3. Click Export.
4. When the download is ready, click Download, and then select a location on your computer to store the backup file.

Importing a database backup will overwrite all system configuration, including network settings and user login information. Ensure that you know the network and user login information contained in the backup file before importing it.

To import a database backup:

1. Click the Config tab.
2. In the left menu, navigate to Settings>Database Backup.
3. Use the Import control to select a database backup file (.pck) from your computer. Light System Engine displays a message indicating the result of the back up.

API Settings



Light System Engine can receive commands from your own custom applications through a REST API over HTTPS. You can view API documentation in the LSE web interface. Simply navigate to Config>Settings>API, and then click API Help.

User Accounts

Light System Engine provides three levels of access to the web interface in order to maintain security while allowing individuals to modify the system and trigger events as needed.

User type	Details
User *(Admin)*	Full access to the LSE web interface, including the ability to make system configuration changes and to manage users.
User *(Not Admin)*	Full access to show schedule. Can create, edit and trigger shows and scenes, but cannot delete. No access to make system configuration changes, to manage users, or to alter color palettes.
Kiosk User	Can trigger only shows, scenes, lights off, and diagnostic scan functionality to which this user has been given access.

To create a user account:

1. Click the Config tab.
2. In the left menu, navigate to Settings>User Accounts.
3. In the top table (with the headings Username and Administrator), click Create.
4. Enter a Username, Email address and New Password. Password is case-sensitive.
5. Click Save.

To create a kiosk user account:

1. Click the Config tab.
2. In the left menu, navigate to Settings>User Accounts.
3. In the bottom table (with the heading Kiosk Users), click Create.
4. Type a 5 Digit Numerical Pin.
5. In the Permitted Actions list, select only those check boxes for events that this user will need to be able to trigger. Clear all other check boxes.
6. Click Save.

To restrict access to Light System Engine, change the default user name and password.

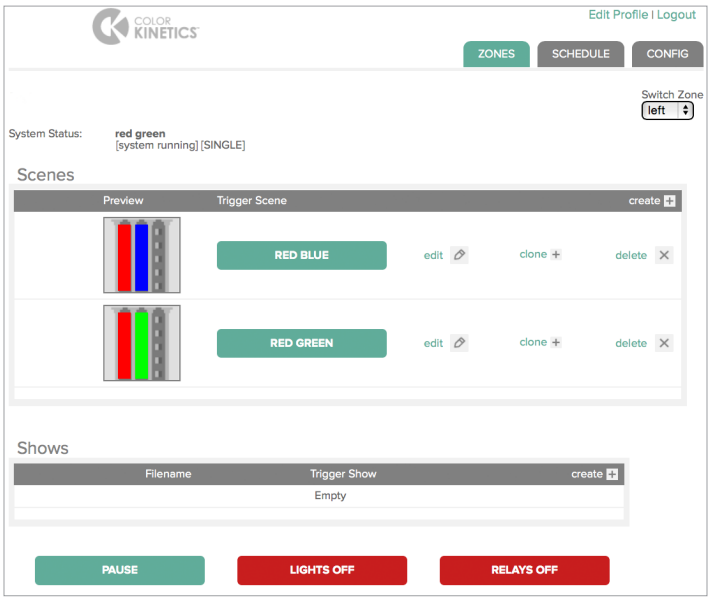
To modify an existing user:

1. Click the Config tab.
2. In the left menu, navigate to Settings>User Accounts.
3. Locate the user or kiosk user, and click Edit.
4. Update the settings as required, and then click Save.

To delete a user:

1. Click the Config tab.
2. In the left menu, navigate to Settings>User Accounts.
3. Locate the user or kiosk user, and click Delete.

8 Working with Scenes and Shows

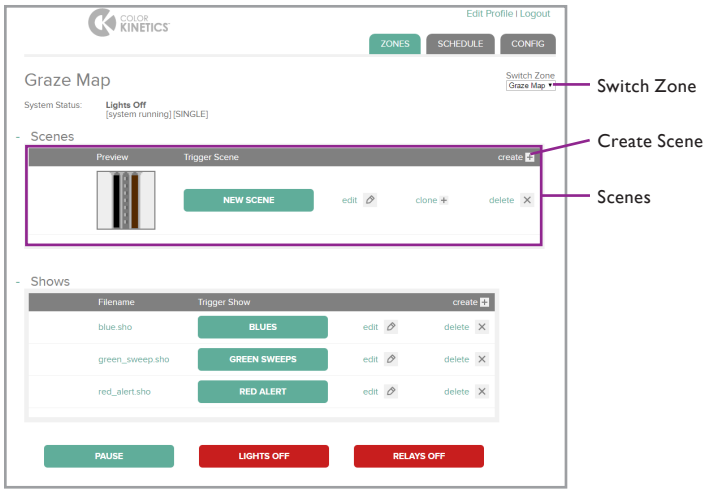


Scenes

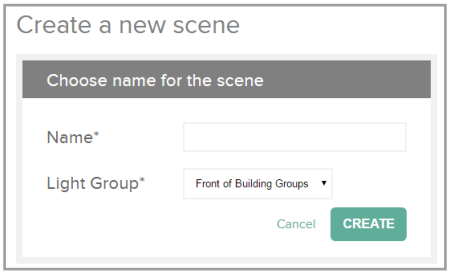
For instructions on logging in to the LSE web interface, see "Connect to the LSE Web Interface" on page 15.

To create a scene:

1. In the LSC web interface, click the Zones tab. The Zones page is displayed.

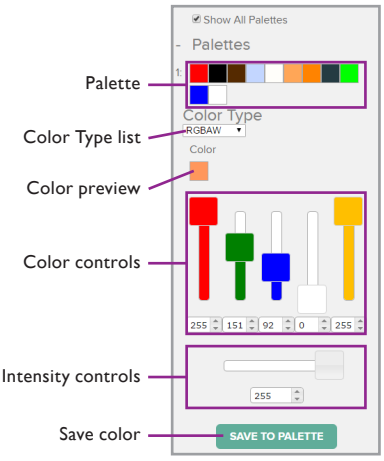


2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. In the Scenes table, click Create. The Create New Scene page is displayed.



4. Enter a descriptive name in the Name box.
5. Select the intended group map from the Light Group list.
6. Click Save. The Edit Scene page is displayed.

7. If needed, edit the scene name or notes.
8. Click a group to which you want a color to be applied. To select more than one group, hold the Shift key while clicking, or click and drag your mouse.
9. Apply a color to your selection:

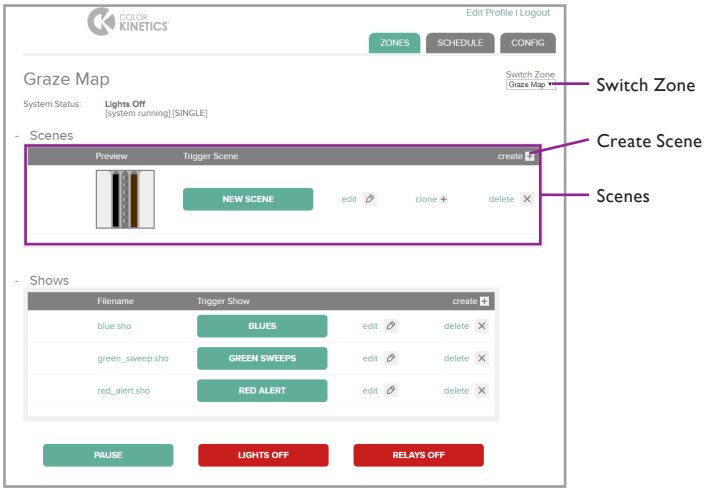


- Using palettes: Click a swatch in an available palette.
- Using the color controls: Select an option from the Color Type list, and then use the color controls and intensity controls to set the desired color. To save your color, click Save to Palette.

10. Click Save.

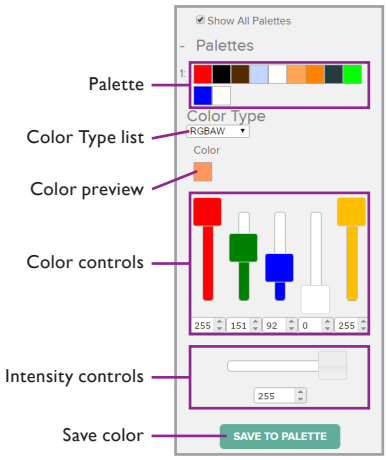
To edit a scene:

1. In the LSC web interface, click the Zones tab. The Zones page is displayed.



2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Find the intended scene in the Scenes table, and then click Edit. The Edit Scene page is displayed.

4. If needed, edit the scene name or notes.
5. Click a group to which you want a color to be applied. To select more than one group, hold the Shift key while clicking, or click and drag your mouse.



6. Apply a color to your selection:
   - Using palettes: Click a swatch in an available palette.
   - Using the color controls: Select an option from the Color Type list, and then use the color controls and intensity controls to set the desired color. To save your color, click Save to Palette.
7. Click Save.

To clone a scene:

1. In the LSC web interface, click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Find the intended scene in the Scenes table, and then click Clone. The cloned scene is shown in the Scenes table.

To trigger a scene:

1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Click the trigger button for the intended scene.

To delete a scene:

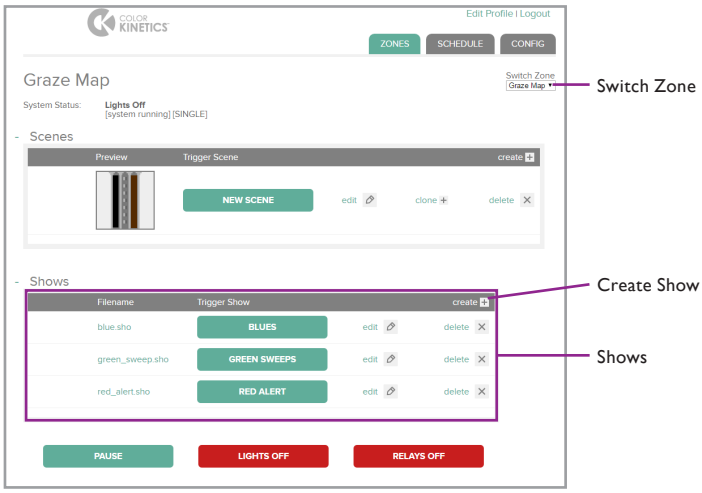
1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Find the intended scene in the Scenes table, and then click Delete. The scene is removed from Light System Engine.

Shows

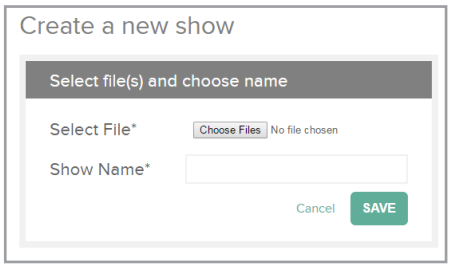
Shows are dynamic lighting effects created in the Show Designer module of Light System Composer. If a show has animation or image scroll effects, make sure that you upload those electronic assets to Light System Engine. An animation requires a .zip file containing all of the individual images, and an image scroll requires a single image file.

To upload a show:

1. Click the Zones tab. The Zones page is displayed.



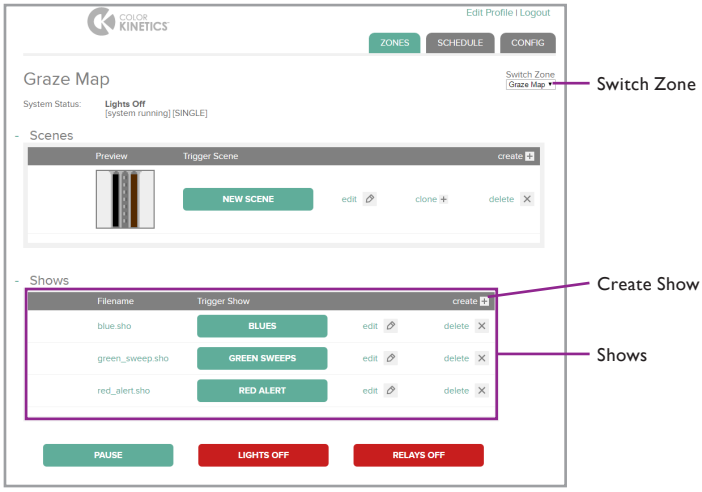
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. In the Shows table, click Create. The Create a New Show page is displayed.



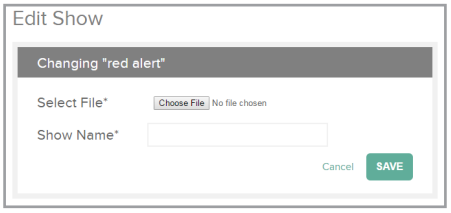
4. Use the Select File control to select a show file that you created in Light System Composer.
5. Enter a descriptive name in the Name box, and click Save.

To edit a show:

1. Click the Zones tab. The Zones page is displayed.



2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Find the intended show in the Shows table, and then click Edit. The Edit Show page is displayed.



4. If you want to replace the show file, use the Select File control.
5. If desired, enter a descriptive name in the Name box, and click Save.

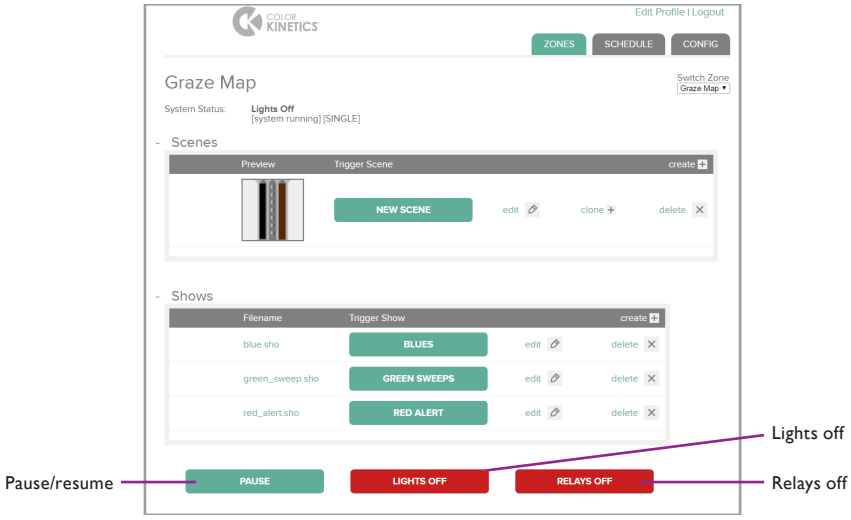
To trigger a show:

1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Click the trigger button for the intended show.

To delete a show:

1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Find the intended show in the Shows table, and then click Delete. The show is removed from Light System Engine.

Additional Actions



To pause and resume Light System Engine control:

1. Click the Zones tab. The Zones page is displayed.
2. To pause Light System Engine, click Pause. Light System Engine is no longer sending light data to the lighting network.
3. To resume, click Pause again, or play a scene or show. Light System Engine returns to normal operation.

When you pause the Light System Engine, it stops sending KiNET data to the lighting network. Pausing the Light System Engine is useful when you need to use QuickPlay Pro to configure devices.

To turn the lights off in a zone:

1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.

The Lights Off button turns off all the luminaires in a selected zone.

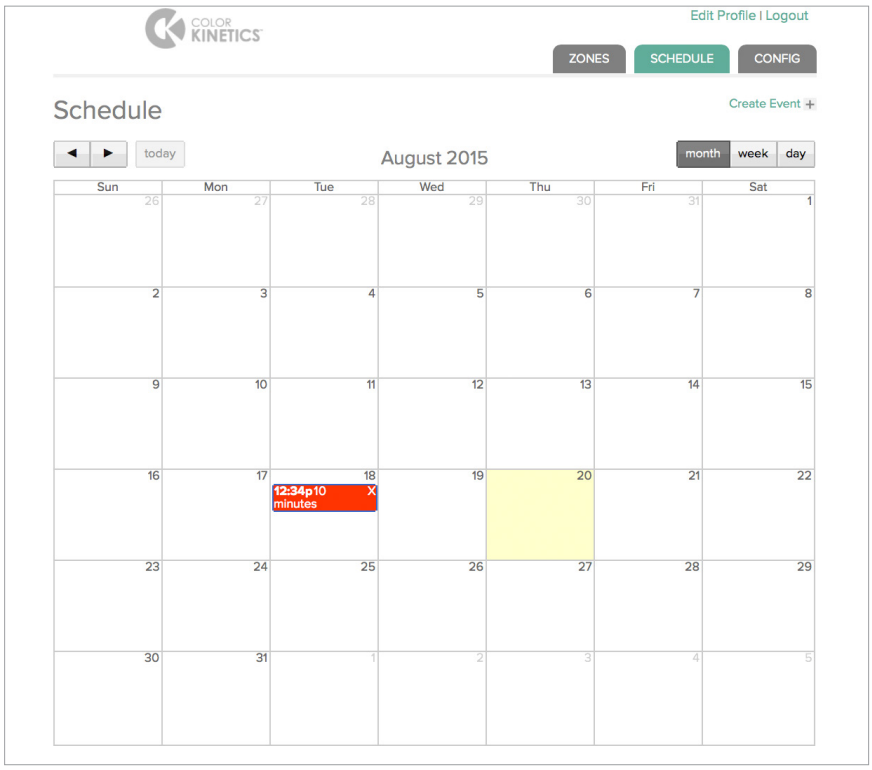
3. Click Lights Off.
4. Play a scene or show to resume normal operation.

Opening the relays on a power/data supply removes power from any attached luminaires, reducing energy consumption.

To turn off the power/data supply relays in a zone:

1. Click the Zones tab. The Zones page is displayed.
2. If necessary, select the intended zone from the Switch Zone list. The Switch Zone list is located in the top right corner of the page.
3. Click Relays Off.
4. Play a scene or show to close relays and resume normal operation.

9 Working with Schedules



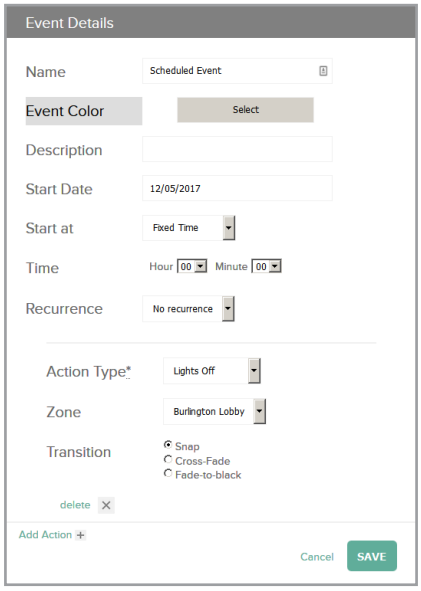
For instructions on logging in to the LSE web interface, see "Connect to the LSE Web Interface" on page 15.

Schedule a Light Show

Using the web interface, you can set calendar alarms to automatically trigger show playback based on a specific date or an astronomical event, such as sunrise or sunset.

To schedule an event:

1. Click the Schedule tab, and then click Create Event.
2. Enter a Name for the event.
3. Click Select to choose a color. The selected color will represent this event in the calendar. This color only pertains to the calendar and does not affect the lights in any way.
4. Enter a Description.



5. Set the start date and time options:

   a. In the Start Date box, click and select a date from the calendar.

   b. Select an option from the Start At list:

Option	Details
Fixed Time	Trigger the event at a specific hour and minute of the day.
Before Sunrise *or* After Sunrise	Trigger the event relative to sunrise.
Before Sunset *or* After Sunset	Trigger the event relative to sunset.

   c. The Time options available to you depend on the selected start option. See the table below for details:

Option	Details
Time	If you selected Fixed Time, the time when an event will be triggered.
Offset	The amount of time to trigger an event before or after sunrise or sunset.

   e. Select a Recurrence option: Select No Recurrence for a one-time event, or select Daily, Weekly, Monthly, or Yearly for a repeating event. Follow the instructions on screen to complete this step.

6. Set the action options:

   a. Select an Action Type:

Option	Details
Play Scene	Play a static scene.
Play Show	Play a dynamic show.
Lights Off	Turn the lights off.
Diagnostic Scan	For installations using ActiveSite, perform a diagnostic scan of the lighting system.

Option	Details
Relays Off	Open relays to a specific group so that the LED nodes in that group are not receiving power. This is a lower power state than Lights Off.

b. The action options available to you will change depending on the selected Action Type. See the table below for details:

Option	Details
Zone	Zone to which the event applies.
Scene	Scenes available for playback in the selected zone.
Show	Light show available for playback in the selected zone.
Group	Group whose relays will be opened. Available only if the Action Type option is set to Relays Off.
Transition	*Snap* Zero-second transition (no fade).
	Cross-Fade Fade to a scene or show. Speed of the transition can be set using the Transition Time option.
	Fade-to-Black Fade to black, then fade to a scene or show. Speed of the transition can be set using the Transition Time option.
Transition Time	Duration of the transition in hours, minutes and seconds.

7. If desired, add another action.

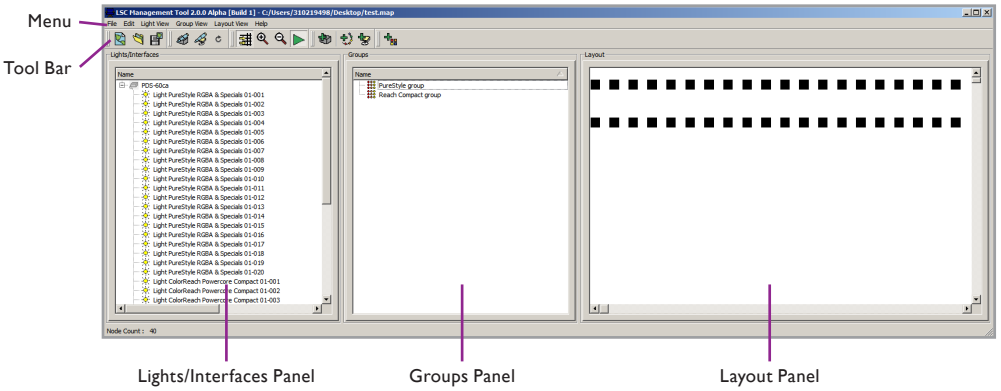
8. Click Save.

Appendix A: The Light System Composer Interface

This appendix details the work environments, menus, and tools within each Light System Composer software module.

Management Tool Module

Management Tool Work Environment



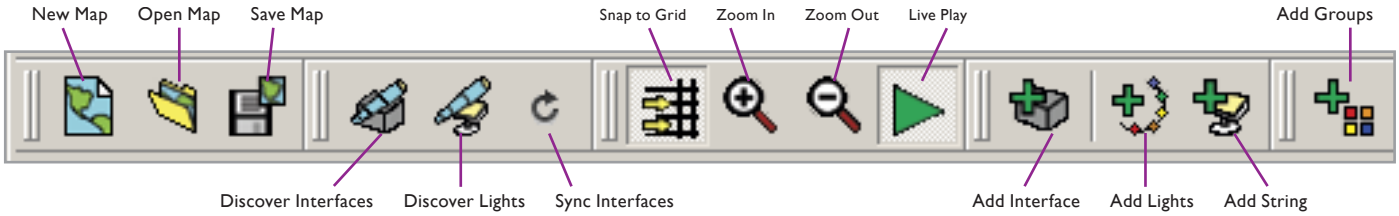
Panel	Description
Fixtures/ Interfaces Panel	A list of KiNET interfaces (power/data supplies) and luminaires in your installation.
Groups Panel	A list of groups assigned to your luminaires.
Layout Panel	A virtual map of your lighting installation.

Management Tool Menus

Menu	Available Options
File	Create, open, save, or print a map; exit Management Tool.
Edit	Undo or redo recent actions; access Management Tool preferences.
Light View	Discover power/data supplies and luminaires on the lighting network; synchronize an offline map with the lighting network; manually add power/data supplies and luminaires.
Group View	Define groups of nodes.
Layout View	Toggle Snap-to-Grid option; adjust the zoom of your Layout view; select all nodes; toggle Live Play; or create a template for animated effects.

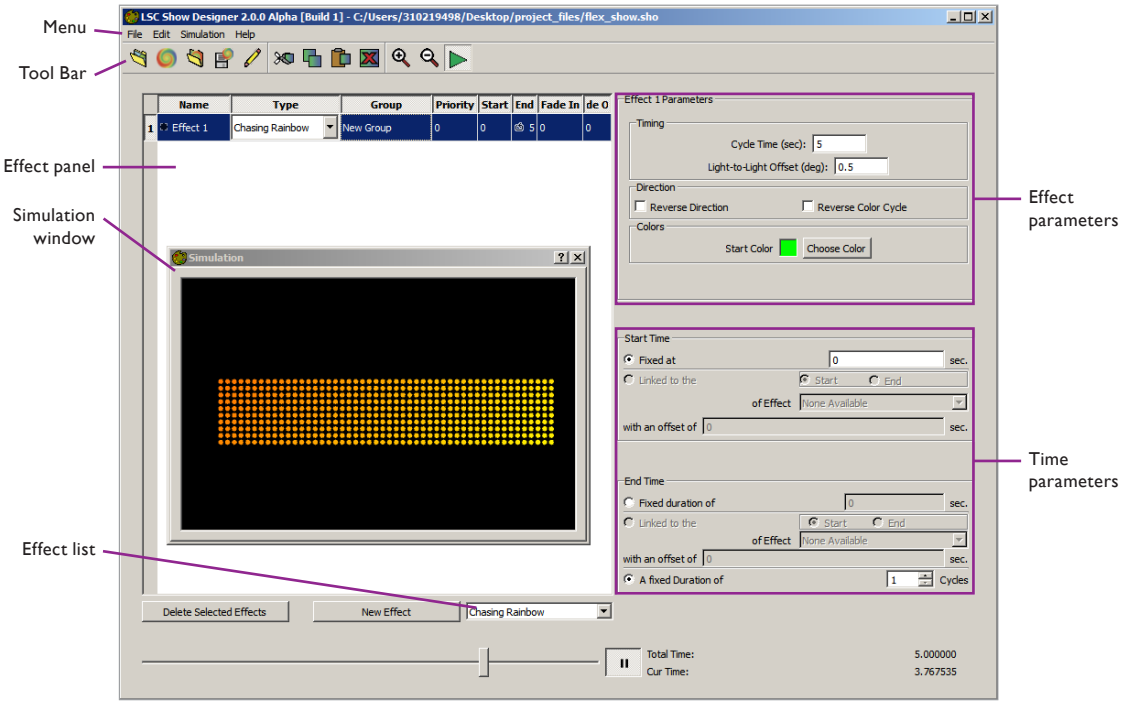
Menu	Available Options
Help	View information about this version of Management Tool.

The Tool Bar



Show Designer Module

Show Designer Work Environment

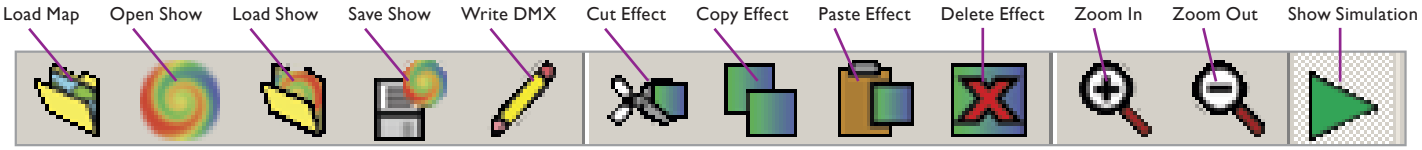


Panel	Description
Effects Panel	Allows you to view and change effects, and edit time and visual properties of each effect.
Simulation Window	Scrollable viewing area that shows real time effects and changes to your mapped nodes.
Effect Parameters	Allows you to set and edit the properties of each effect.
Time Settings	Allows you to set and edit the running time for each effect.

Show Designer Menus

Menu	Description
File	Load a map to the current show; create, open, or save a show; save DMX data from the current show to a text file; exit Show Designer.
Edit	Cut, copy, paste, or delete an effect; select all effects; access Show Designer preferences
Simulation	Toggle Simulation window; toggle always-on-top option; toggle Live Play; pause light simulation; adjust the zoom of the simulation window.
Help	View information about this version of Show Designer.

The Tool Bar



Effect Parameters

When an effect is selected, its effect parameters appear in the upper-right corner of the Show Designer main screen. Editing the effect parameters lets you customize your light show. With the show simulation feature, you can view the changes to the parameters as you make them.

Time Parameters

When an effect is selected, its time settings appear in the lower-right corner of the Show Designer main screen. When creating a show, each effect is assigned an increment of time to run. Light shows are made up of multiple levels of timed effects.

You can set the start and stop time for each effect by a given fixed time, linked to other effect times, or by setting a fixed number of cycles.

Effects Panel

As new effects are added, they appear in the effects panel of the Show Designer main screen. Each effect is displayed as a row in a table of effects. From this row you can edit the effect name, select and change the effect type, select or change the group, as well as set the priority, start, and end times, and fade in and fade out time.

Simulation Window

The simulation window gives you a real-time view of your map layout with effects applied to the groups. As you assign new effects, edit effect parameters, and set effect times, you can see the changes immediately. The simulation window is an excellent alternative when you are unable to view the actual fixtures in live-play mode.

Appendix B: DMX Tables

eW Flex Compact, eW Flex Micro, and iW Flex Compact nodes each receive three channels of data, but contain only two LED channels. For this reason, each node is treated as a three-channel light. The tables below offer DMX addresses for the first three nodes of eW Flex or iW Flex.

eW Flex Compact, eW Flex Micro

Light number	DMX address	LED channel control
1	1	All LEDs, half brightness
	2	All LEDs, half brightness
	3	Not used
2	4	All LEDs, half brightness
	5	All LEDs, half brightness
	6	Not used
3	7	All LEDs, half brightness
	8	All LEDs, half brightness
	9	Not used

iW Flex Compact

Light number	DMX address	LED channel control
1	1	Cool white
	2	Warm white
	3	Not used
2	4	Cool white
	5	Warm white
	6	Not used
3	7	Cool white
	8	Warm white
	9	Not used

Light Number	Starting DMX addresses							
	3-channel		4-channel		5-channel		6-channel	
	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit
1	1	1	1	1	1	1	1	1
2	4	7	5	9	6	11	7	13
3	7	13	9	17	11	21	13	25
4	10	19	13	25	16	31	19	37
5	13	25	17	33	21	41	25	49
6	16	31	21	41	26	51	31	61
7	19	37	25	49	31	61	37	73
8	22	43	29	57	36	71	43	85
9	25	49	33	65	41	81	49	97
10	28	55	37	73	46	91	55	109
11	31	61	41	81	51	101	61	121
12	34	67	45	89	56	111	67	133
13	37	73	49	97	61	121	73	145
14	40	79	53	105	66	131	79	157
15	43	85	57	113	71	141	85	169
16	46	91	61	121	76	151	91	181
17	49	97	65	129	81	161	97	193
18	52	103	69	137	86	171	103	205
19	55	109	73	145	91	181	109	217
20	58	115	77	153	96	191	115	229
21	61	121	81	161	101	201	121	241
22	64	127	85	169	106	211	127	253
23	67	133	89	177	111	221	133	265
24	70	139	93	185	116	231	139	277
25	73	145	97	193	121	241	145	289
26	76	151	101	201	126	251	151	301
27	79	157	105	209	131	261	157	313
28	82	163	109	217	136	271	163	325
29	85	169	113	225	141	281	169	337
30	88	175	117	233	146	291	175	349
31	91	181	121	241	151	301	181	361
32	94	187	125	249	156	311	187	373
33	97	193	129	257	161	321	193	385

Light Number	Starting DMX addresses							
	3-channel		4-channel		5-channel		6-channel	
	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit
34	100	199	133	265	166	331	199	397
35	103	205	137	273	171	341	205	409
36	106	211	141	281	176	351	211	421
37	109	217	145	289	181	361	217	433
38	112	223	149	297	186	371	223	445
39	115	229	153	305	191	381	229	457
40	118	235	157	313	196	391	235	469
41	121	241	161	321	201	401	241	481
42	124	247	165	329	206	411	247	493
43	127	253	169	337	211	421	253	
44	130	259	173	345	216	431	259	
45	133	265	177	353	221	441	265	
46	136	271	181	361	226	451	271	
47	139	277	185	369	231	461	277	
48	142	283	189	377	236	471	283	
49	145	289	193	385	241	481	289	
50	148	295	197	393	246	491	295	
51	151	301	201	401	251	501	301	
52	154	307	205	409	256		307	
53	157	313	209	417	261		313	
54	160	319	213	425	266		319	
55	163	325	217	433	271		325	
56	166	331	221	441	276		331	
57	169	337	225	449	281		337	
58	172	343	229	457	286		343	
59	175	349	233	465	291		349	
60	178	355	237	473	296		355	
61	181	361	241	481	301		361	
62	184	367	245	489	306		367	
63	187	373	249	497	311		373	
64	190	379	253		316		379	
65	193	385	257		321		385	
66	196	391	261		326		391	
67	199	397	265		331		397	
68	202	403	269		336		403	
69	205	409	273		341		409	
70	208	415	277		346		415	
71	211	421	281		351		421	

Light Number	Starting DMX addresses							
	3-channel		4-channel		5-channel		6-channel	
	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit
72	214	427	285		356		427	
73	217	433	289		361		433	
74	220	439	293		366		439	
75	223	445	297		371		445	
76	226	451	301		376		451	
77	229	457	305		381		457	
78	232	463	309		386		463	
79	235	469	313		391		469	
80	238	475	317		396		475	
81	241	481	321		401		481	
82	244	487	325		406		487	
83	247	493	329		411		493	
84	250	499	333		416		499	
85	253	505	337		421		505	
86	256		341		426			
87	259		345		431			
88	262		349		436			
89	265		353		441			
90	268		357		446			
91	271		361		451			
92	274		365		456			
93	277		369		461			
94	280		373		466			
95	283		377		471			
96	286		381		476			
97	289		385		481			
98	292		389		486			
99	295		393		491			
100	298		397		496			
101	301		401		501			
102	304		405		506			
103	307		409					
104	310		413					
105	313		417					
106	316		421					
107	319		425					
108	322		429					
109	325		433					

Light Number	Starting DMX addresses							
	3-channel		4-channel		5-channel		6-channel	
	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit
110	328		437					
111	331		441					
112	334		445					
113	337		449					
114	340		453					
115	343		457					
116	346		461					
117	349		465					
118	352		469					
119	355		473					
120	358		477					
121	361		481					
122	364		485					
123	367		489					
124	370		493					
125	373		497					
126	376		501					
127	379		505					
128	382							
129	385							
130	388							
131	391							
132	394							
133	397							
134	400							
135	403							
136	406							
137	409							
138	412							
139	415							
140	418							
141	421							
142	424							
143	427							
144	430							
145	433							
146	436							
147	439							

Light Number	Starting DMX addresses							
	3-channel		4-channel		5-channel		6-channel	
	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit	8-bit	16-bit
148	442							
149	445							
150	448							
151	451							
152	454							
153	457							
154	460							
155	463							
156	466							
157	469							
158	472							
159	475							
160	478							
161	481							
162	484							
163	487							
164	490							
165	493							
166	496							
167	499							
168	502							
169	505							
170	508							

Appendix C: Basic Network Troubleshooting

During Mapping and System Setup

The following cases address common issues with initial system configuration.

Case 1: Cannot discover power/data supply or Light System Engine

1. **Check Network Specifications**

   Cabling: Are the cables factory cables (did they come with connectors attached)?

   If no, check all cables.

   Cabling: Is the Ethernet cable run length within spec?

   The maximum cable run length is 100 m (323 ft) for Cat. 5e.

   Ethernet Switches: If using managed switches, use switch utility to verify connection.

2. **LSE network port inactive (neither power nor data indicator light is on)**

   Boot Sequence: Connect a monitor to the LSE to see if the boot process is stopping because the BIOS is looking for a keyboard.

3. **Computer Configuration**

   Settings: For default Light System Engine lighting network settings, IP address must be in the IP address range of 10.x.x.x and have a subnet mask of 255.0.0.0. If settings were incorrect, verify accepted change before continuing.

   Active wireless connection: Disable the wireless network card.

   Utility software: Disable all firewalls, anti-virus software, and VPNs.

Case 2: Cannot discover luminaires, but can discover power/data supplies or Light System Engine

1. **Check Network Specifications**

   Cabling: Are the cables factory cables (did they come with connectors attached)?

   If no, check all cables.

   Cabling: Is the Ethernet cable run length within spec?

   The maximum cable run length is 100 m (323 ft) for Cat. 5e.

   Ethernet Switches: If using managed switches, use switch utility to verify connection.

2. **Computer Configuration**

Settings: For default Light System Engine lighting network settings, IP address must be in the IP address range of 10.x.x.x and have a subnet mask of 255.0.0.0. If settings were incorrect, verify accepted change before continuing.

Active wireless connection: Disable the wireless network card.

Utility software: Disable all firewalls, anti-virus software, and VPNs.

Case 3: Cannot connect to Light System Engine, but all other network components are accessible

1. **Test Network Cables/Switches**

   Cables: If cables/switches are suspected, use a crossover cable to directly connect the computer to Light System Engine and verify connectivity.

2. **Ping Light System Engine**

   For default Light System Engine lighting network settings, ping 10.1.3.100. If "request timed out", check the Light System Engine network activity light.

3. **Reboot**

   Make sure Light System Engine boots completely.

   If an incomplete boot is suspected, attach a monitor; if a keyboard or mouse is
   requested, connect a keyboard or mouse, accordingly.

Post-Mapping

The following cases address issues where the the lighting installation has been functional for a period of time.

Case 1: Cannot discover power/data supplies or Light System Engine

1. **Computer Configuration**

   Settings: For default Light System Engine lighting network settings, IP address must be in the IP address range of 10.x.x.x and have a subnet mask of 255.0.0.0.

   Active wireless connection: Disable the wireless network card.

   Utility software: Turn off all firewalls, anti-virus software, and VPNs.

2. **Network**

   Cabling: Were the cables factory cables (did they come with connectors attached)?

   If no, check all cables.

   Ethernet Switches: Switches can fail; use a switch tester to verify that the switches are functional

Case 2: Cannot discover luminaires, but can discover power/data supplies or Light System Engine

1. **Computer Configuration**

Settings: For default Light System Engine lighting network settings, IP address must be in the IP address range of 10.x.x.x and have a subnet mask of 255.0.0.0.

Active wireless connection: Disable the wireless network card.

Utility software: Turn off all firewalls, anti-virus software, and VPNs

2. **Network**

Cabling: Were the cables factory cables (did they come with connectors attached)?

If no, check all cables.

Ethernet Switches: Switches can fail; use a switch tester to verify that the switches are functional

Case 3: Cannot connect to Light System Engine, but all other network components are accessible

1. **Test Network Cables/Switches**

Cables: If cables/switches are suspected, use a crossover cable to directly connect the computer to Light System Engine and verify connectivity.

2. **Ping LSE**

Ping 10.1.3.100. If "request timed out", check the Light System Engine network activity indicator light.

3. **Reboot**

Make sure Light System Engine boots completely.

If an incomplete boot is suspected, attach a monitor; if a keyboard or mouse is requested, connect a keyboard or mouse, accordingly.

Case 4: Some luminaires do not work

1. **Network**

Check connections to all power/data supplies

Rediscover all lighting components using Management Tool. If some components don't register, begin the Network troubleshooting processes listed in the previous cases.

Technical Support Contacts

Contact Color Kinetics technical support for assistance with hardware or software questions:

Phone

888.Full.RGB (888.385.5742), press option number 3 (toll free US, Canada and Mexico)

617.423.9999, press option number 3 (toll worldwide)

Email

technicalsupport@colorkinetics.com

Web

www.colorkinetics.com/support

Appendix D: Serial Keypad Protocol

Electrical

The RS-232 serial port on the LSM is a DB9M connector. The following pinout information applies to the DB9M connector. Unlisted pins are unconnected:

Pin	Details
Pin 2	RxD
Pin 3	TxD
Pin 5	Ground

Protocol

The serial protocol used to communicate with the Controller Keypad, AuxBox or third-party triggering device is 9600 baud, 8 data bits, no parity, 1 stop bit. There is no flow control.

Each command to the LSE consists of five characters. The first character is always X. The next two characters are dd, the ASCII representation of a hexadecimal command byte. The last two characters are a hexadecimal data byte. The hexadecimal alpha characters are uppercase (0 – 9, A – F).

- Responses from Light System Engine are also in this format, but begin with Y instead of X.
- Characters are not echoed by Light System Engine when they are received.
- Illegal characters or badly formatted packets are ignored with no error indication.

Serial Commands

In this table, the italicized characters dd represent a hexadecimal byte.

Command	Details
X00*dd*	Set Mode. Sets the current operating mode to *dd*. Not currently used.
X0100	Lights Off.
X02*dd*	Set Absolute Intensity. Sets the global brightness level to *dd.* 00 equals Off, and FF equals Full On.
X03*dd*	Set Relative Intensity. Raises or lowers the global brightness level by *dd*.

When setting relative intensity, dd *is the interval by which lighting brightness will change. Values between 00 and 7F will increase intensity, and values between 80 and FF will decrease intensity. For example, 02 will increase intensity by two, and FE will decrease intensity by two. Brightness is between 0 and 255.*

Command	Details
X04*dd*	Set Show. Starts the show with trigger number *dd*, playing from the beginning. The trigger number must be in the range 1 through 225 (E1).

Serial Responses

In this table, the italicized characters *dd* represent a hexadecimal byte.

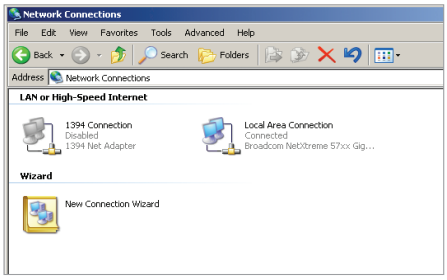
Response	Details
Y00*dd*	Returns the current mode.
Y0100	Entered Off mode.
Y02*dd*	Returns current intensity level.
Y03*dd*	Not sent.
Y04*dd*	Returns current show.
Y0F*dd*	Indicates that an error occurred, where *dd* represents the show number. This is most often returned when the selected show is not available so that the keypad knows to make the indicator LED blink.

Appendix E: IP Address Configuration

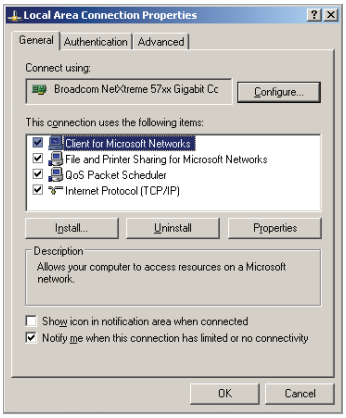
To connect to the LSE web interface, you will need to reconfigure your computer's network settings. This appendix covers procedures for setting a static IP address on your PC or your Mac so that you can connect to the LSE web interface.

To configure your PC to connect to the Light System Engine:

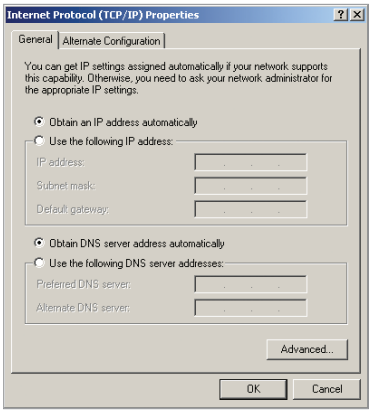
1. From the Start menu, select Control Panel, then double-click Network Connections.
2. From the Network Connections window, double-click the Local Area Connection icon associated with your computer's network card. Disable your wireless network card and any VPN connection.



3. In the Local Area Connection Status window, click Properties. The Local Area Connection Properties dialog appears:



4. Select Internet Protocol (TCP/IP), then click Properties. The Internet Protocol (TCP/IP) Properties dialog is displayed.



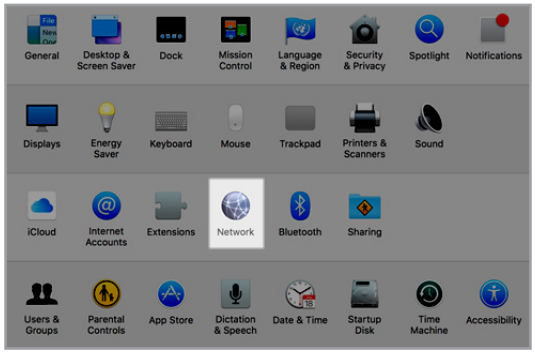
5. Select Use the following IP address. Enter an IP address of 10.1.2.3 and a Subnet mask of 255.0.0.0.
6. Click OK to return to the Local Area Connection Status window, and then click Close.
7. Disable firewall protection:
   a. In the Control Panel, click System and Security. Then click Windows Firewall. The Windows Firewall settings will be displayed.
   b. In the left pane, click Turn Windows Firewall on or off.
   c. Select Turn off Windows Firewall (not recommended), and then click OK.
8. Restart your computer.
9. When your computer finishes starting up, verify your computer's IP address:
   a. Click the Start menu, then click Run....
   b. Type "cmd". The command prompt is displayed.
   c. Type "ipconfig", and then press Enter. The resulting IP Address and Subnet mask should match the settings you manually configured.

```
U:\>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:

        Connection-specific DNS Suffix  . :
        IP Address. . . . . . . . . . . . : 10.1.3.20
        Subnet Mask . . . . . . . . . . . : 255.0.0.0
        Default Gateway . . . . . . . . . :
```

Record the existing IP and DNS addresses in case you need them for future use.

To configure your Mac to connect to the Light System Engine:

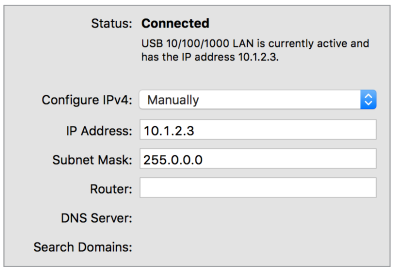
1. From the Apple menu or the Dock, open System Preferences, and then click Network:



2. From the Location list, select Automatic.
3. Select your Ethernet device from the left pane.

Record the existing IP and DNS addresses in case you need them for future use.

4. From the Configure IPv4 list, select Manually.
5. Enter an IP Address of 10.1.2.3 and Subnet Mask of 255.0.0.0.



6. Click Apply.
7. Restart your Mac.

Appendix F: Additional Configuration Software

Introduction

Configuration tools help you rename and address luminaires, power/data supplies, and Antumbra Ethernet Keypads from Color Kinetics.

QuickPlay Pro addressing and configuration software is available for download online at www.colorkinetics.com/support/userguides/.

QuickPlay Pro

Overview

As part of the configuration process, all power/data supplies and luminaires must be configured with unique device names, IP addresses, and/or light numbers or DMX addresses. Unique naming and addressing allows Light System Engine to differentiate between devices in a network. QuickPlay Pro performs addressing and naming functions for all possible types of hardware used in an Light System Manager installation requiring an external addressing tool (some fixtures and interfaces have built-in addressing tools).

There are three methods for addressing fixtures from Color Kinetics, two of which require QuickPlay Pro:

- *Serial addressing* applies to most Chromacore fixtures (Chromacore fixtures receive light numbers based on serial numbers) and all ColorReach Powercore fixtures.
- *Base light number configuration* applies to all Chromasic fixtures and Accent family fixtures.
- *Onboard addressing* applies to fixtures and power/data supplies that have onboard hardware addressing controls. QuickPlay Pro is not used to address fixtures or power/data supplies that have onboard addressing features.

Chromacore luminaires are programmed with light numbers via the Fixture Configuration tool in QuickPlay Pro. To configure a Chromacore luminaire or node, you enter the serial number, specify a light number, and then click Program. The unique serial numbers for Chromacore luminaires can be found on barcode labels typically located on the back of each unit.

If your installation uses Chromasic luminaires, the power/data supplies controlling those luminaires must be configured. You configure power/data supplies using the PDS Configuration Tool in QuickPlay Pro.

Launch QuickPlay Pro

On Windows: Select Start>All Programs>Color Kinetics>QuickPlay Pro

On macOS: Click the QuickPlay Pro icon in the Dock

Appendix G: Tutorials

Create a Placeholder Map

Overview

When connected to a lighting network, Management Tool automatically discovers all Ethernet lighting components. There are two stages of the automatic discovery process:

1. Discover KiNET interfaces (power/data supplies and Ethernet Data Enablers)
2. Discover fixtures

However, in this tutorial, we are going to create a placeholder map. Placeholder maps are useful when you are offline, not connected to the lighting network, but know the location of each KiNET interface and fixture. You can create a placeholder map and then associate the map with an actual installation at a later time.

Steps

1. Open the Management Tool module.
2. Click Add Interface and leave the default interface type (KiNET) selected.
3. Click OK.
4. Enter a name for the interface, for example "PDS-60ca 01 West Hallway"
5. Enter an IP address in the 10.1.x.x range.
6. Select Add RGB Lights.
7. Enter a fixture quantity of 10.
8. Select the Horizontally radio button to specify layout orientation.
9. Select the existing interface created in steps four and five.
10. Enter a base DMX address as the starting DMX address for the first fixture.
11. Select a port number on the interface, for example 1 or 2.
12. Choose a base light name. For example West Hallway Cove. Management Tool displays each fixture on-screen according to its light name plus its light number, for example "West Hallway Cove 27".
13. Click OK.
14. Select all of the fixtures, then select Add Group.
15. Enter a group name, then click OK.
16. Select File>Save Map to save your work.

Later, when you are onsite at an installation for example, you can associate the map with the actual interfaces fixtures in your installation. See page 38 for details on associating placeholder maps.

www.colorkinetics.com

Cover photography credits: George Fischer

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