## ControlFX Designer User's Guide

## Retain for Future Reference

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### **Revision History**

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## 1 About This Guide

This guide describes how to use:

- ControlFX<sup>TM</sup> Designer software from TIR<sub>®</sub>, and
- ControlFX<sup>TM</sup> Director hardware device from TIR®

## **Chapter Overview**

This chapter describes the purpose and organization of this guide.

The chapter contains the following sections:

- "Who Should Use This Guide"
- "Organization of This Guide"
- "Conventions Used In This Guide"
- "Related Documentation"
- "Your Comments"
- "Request for Service"

## Who Should Use This Guide

This guide is written for anyone using:

- ControlFX<sup>™</sup> Designer software
- ControlFX<sup>™</sup> Director device

Typically, ControlFX<sup>™</sup> Designer users are:

- Lighting architects
- Lighting designers
- Building maintenance staff
- Building owners

NOTE: If you have used ControlFX<sup>™</sup> Designer before, and need a reminder of how to work with the software, you might prefer to reference the ControlFX Designer Quickstart Guide (Part No. 940-0150).

## **Organization of This Guide**

This guide contains the following chapters:

- "About This Guide" introduces you to the purpose and organization of this guide
- "Getting Started" describes ControlFX<sup>™</sup> Designer, provides a brief look at what you can do with the program, and illustrates typical workflows
- "Installing ControlFX Director and Positioning Luminaires" describes how to install and configure the software and hardware
- "Working with Simple Effects Shows" describes how to run a pre-set Simple Effects show
- "Working with Custom Effects Shows" describes how to design and run a Custom Effects show
- "Troubleshooting" presents solutions to problems you may encounter when working with ControlFX™ Designer software and the ControlFX™ Director device
- The "Glossary" defines technical terms used with ControlFX<sup>™</sup> Designer, ControlFX<sup>™</sup> Director, and Destiny<sup>™</sup> luminaires
- The "Index" lists the most important concepts described in this guide

## **Conventions Used In This Guide**

This section lists the following conventions:

- "Basic Conventions"
- "Notes, Cautions, and Warnings"

## **Basic Conventions**

The following conventions are used in this guide:

■ Names of buttons, dialog boxes, and so forth in ControlFX<sup>TM</sup> Designer are shown in this special typeface.

## Notes, Cautions, and Warnings

Notes, cautions, and warnings are presented as follows:



## **Related Documentation**

TIR® may provide the following related document:

- ControlFX Designer Quickstart Guide (Part Number 940-0150)
- ControlFX Director Quickstart Guide (Part Number 940-0162)

## **Your Comments**

We welcome your comments about the usability of the TIR® software, hardware, and accompanying documentation. If you have questions or comments regarding this document, please contact TIR® at technical@tirsys.com or at the toll-free telephone number listed at the front or back of this guide.

### **Service Information**

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- For service outside regular hours your call will be recorded by an answering service and forwarded to a TIR® representative and responded to the next business day

## **Request for Service**

If you call TIR® for service, please have this guide in hand and be prepared to provide the following information:

- Your name and the name of the project being installed
- Your return telephone, fax, or pager number
- The system or product name on the TIR® label
- A description of the steps leading to the problem

## 2 Getting Started

## **Chapter Overview**

This chapter describes ControlFX<sup>™</sup> Designer and illustrates a typical workflow.

The chapter contains the following sections:

- "Overview of ControlFX Designer"
- "Overview of Shows"
- "Overview of ControlFX Designer Workflows"

## **Overview of ControlFX Designer**

This section provides a brief overview of the product and its functionality.

The section is organized as follows:

- "What is ControlFX Designer?"
- "Features of ControlFX Designer"
- "Computer Hardware Requirements"
- "Before Using ControlFX Designer"
- "Typical Workflow for Simple Effects and Custom Effects Shows"

## What is ControlFX Designer?

ControlFX<sup>™</sup> Designer is a software program from TIR<sub>®</sub> that, along with the ControlFX<sup>™</sup> Director device, allows you to design and run shows on installations of TIR<sub>®</sub> Destiny<sup>™</sup> CG, CV, CW, DL, LP, and SL luminaires.

ControlFX<sup>™</sup> Designer and Destiny<sup>™</sup> luminaires give you the ability to create virtually any kind of show you can imagine, from simple and subtle to extravagant and wild. Because you can preview shows in ControlFX<sup>™</sup> Designer, what you imagine in your office in the afternoon becomes what you see in the evening.

ControlFX<sup>™</sup> Designer lets you schedule shows to run automatically, days, months, or even years in advance.

## **Features of ControlFX Designer**

With ControlFX<sup>™</sup> Designer and the ControlFX<sup>™</sup> Director device, you can:

- Select, preview, schedule, and run pre-set Simple Effects shows that are pre-set at the TIR® factory. See "Working with Simple Effects Shows," on page 19.
- Design, select, preview, schedule, and run *single sequence* and *multi* sequence Custom Effects shows you design yourself. See "Working with Custom Effects Shows," on page 25.

## **Computer Hardware Requirements**

To use ControlFX<sup>™</sup> Designer you need a notebook computer meeting these minimum hardware requirements:

- Microsoft
   Windows
   XP installed
- Intel Pentium/Celeron family, AMD K6/Athlon/Duron family, or compatible processor recommended with a processor speed of 233 MHz or higher
- At least 64 megabytes of RAM (128 MB or more recommended)
- 20 megabytes of available hard disk space
- Super VGA (800 × 600) or higher resolution video adapter and monitor
- A 10Base-T ethernet card
- A CD-ROM drive
- A mouse, trackball, or other pointing device

To install ControlFX<sup>™</sup> Designer on the notebook computer, refer to the instructions in the *ControlFX Director Quickstart Guide* (Part Number 940-0153) or to the instructions included with the CD-ROM.

## **Before Using ControlFX Designer**

Before you can use ControlFX<sup>™</sup> Designer:

- ControlFX<sup>TM</sup> Designer must be installed on a notebook computer meeting the minimum hardware requirements listed above
- All Destiny<sup>™</sup> luminaires must be installed, tested, and networked

## **Overview of Shows**

A *show* is a sequence of lighting effects synchronized across multiple luminaires. A ControlFX<sup>™</sup> Designer show tells each luminaire in the system the color it should be at each moment.

See Figure 1.

1





At any moment, each luminaire in the system emits a combination of Red, Green, and Blue (RGB) light in different proportions as set in ControlFX<sup>™</sup> Designer. The RGB color for each luminaire in the system is updated many times per second, allowing dramatic transitions from one color to another for each luminaire and across the entire structure.

For an explanation of the terminology you'll need to know to work with ControlFX<sup>™</sup> Designer, see "Terminology and Concepts," on page 8.

You don't need to know the technical details of how the system works to create and run shows. But:

- If you're interested in the details of how the luminaires themselves work, refer to the documentation for the luminaires
- If you're interested in more of the terminology used in lighting, refer to the glossary in this *User's Guide*

## **Terminology and Concepts**

This section defines terms and concepts used with ControlFX<sup>™</sup> Designer.

- Luminaire. A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, position and protect the lamps, and the electrical parts required to generate the light. Each Destiny<sup>™</sup> series luminaire contains a small computer, with a memory to hold show information.
- LED (light emitting diode). A semiconductor device that emits light when an electrical current is passed through it. Each Destiny<sup>™</sup> series luminaire holds one or more sets of LEDs. Each LED can emit various brightnesses of Red, Green, or Blue light. By mixing different intensities of Red, Green, and Blue, any of 16 million colors can be emitted.
- Network. Each of the luminaires is connected to the ControlFX<sup>TM</sup> Director device and the other luminaires by a network. Shows are uploaded from ControlFX<sup>TM</sup> Designer over the network to the luminaires. While shows run, timing signals from the ControlFX<sup>TM</sup> Director device are sent over the network to keep the luminaires synchronized.
- RGB color. A mixture of Red, Green, and Blue light in varying proportions, yielding any color of light desired. Red, Green, and Blue mixed together at full strength yields white light.
- Sequence. A specified change in the lighting for a single luminaire. For example, a luminaire changing from *Red* to *Blue* to *Green* to *Yellow* is a sequence. Sequences are the building blocks for shows. You create and save individual sequences in ControlFX<sup>TM</sup> Designer. Later, you assign the sequences to luminaires and assemble the sequences, along with specific timing and transitions, into a show. Each sequence displays on one or more groups of luminaires.
- **Group.** You can group luminaires on a show by show basis. For example, during a show, you could have all the luminaires on the left side of a building running the same sequence at the same time, all the

luminaires in the middle of the building running a different sequence at the same time, and all the luminaires on the right running yet another sequence at the same time. For each show you can assign luminaires to different groups.

 Display Order. The individual luminaires in each group can have different display orders to control which luminaire (or subgroup of luminaires) begins to run the sequence first, then which luminaire (or subgroup of luminaires) is next, and so forth.

## **Overview of ControlFX Designer Workflows**

This section describes how you typically work with ControlFX<sup>™</sup> Designer. This depends on whether you choose to run a pre-set Simple Effects show, or design your own Custom Effects show.

The section is organized as follows:

- "The Work Area"
- "Typical Workflow for Simple Effects and Custom Effects Shows"
- "Safety Advisory"

### **The Work Area**

For an overview of the ControlFX<sup>™</sup> Designer work area, see Figure 2.



### Figure 2: ControlFX Work Area

1	The <b>Toolbar</b> gives you quick access to common commands.
2	The <b>Action Bar</b> gives you quick access to commands that apply to the current Workspace view. Some buttons will have no effect in certain Workspace views.
3	The <b>Workspace</b> is where you will do most of the work in ControlFX <sup>™</sup> Designer — defining and positioning luminaires, defining colors and sequences, and so forth.
4	The <b>Steps Pane</b> gives you a visual overview of the steps to create an entire multi sequence Custom Effects show. You'll use the <b>Steps Pane</b> to change Workspace views depending on the task you're performing. The buttons on the right of each section of the pane let you expand and collapse the steps.
5	The <b>Source Pane</b> is where the raw material for your show is kept — that is, color definitions, luminaire inventory, transitions, and so forth. You'll drag and drop items from the Source Pane to the Workspace to create shows.

**NOTE:** Except for the main Workspace itself, you can *undock* and move most panes and toolbars to another location on the screen if you find that more convenient. Just click the item's docking handle (the vertical or horizontal row of 4 small dots) and drag it to a new location.

## Typical Workflow for Simple Effects and Custom Effects Shows

- For a description of the typical workflow for running a Simple Effects show, see "Working with Simple Effects Shows," on page 19.
- For a description of the typical workflow for creating and running a Custom Effects show, see "Working with Custom Effects Shows," on page 25.

## **Safety Advisory**

ControlFX<sup>™</sup> Designer gives users the ability to produce a number of different lighting effects including a strobing effect. It is important to know that strobe lighting effects can precipitate epileptic seizures in some people.

The following guidelines are an accepted standard for setting strobe lighting effects:

- Where contrast changes affect a small part of the field of view (for example, in discotheques or audience events), up to five flashes per second are acceptable.
- Where high contrast changes fill the field of view, less than three flashes per second are advised.
- When possible, warn audiences in advance when there is a risk of flickering light or high-contrast image changes.

**CAUTION:** The information provided about photosensitive epilepsy is not guaranteed to be error free or to serve a specific purpose, and its use is entirely at the user's risk.

# **3** Installing ControlFX Director and Positioning Luminaires

## **Chapter Overview**

Before you can design shows with ControlFX<sup>™</sup> Designer, you will need to install the ControlFX<sup>™</sup> Director device and describe the position of each luminaire in ControlFX<sup>™</sup> Designer.

The following sections of this chapter describe how to perform these tasks:

- "Installing ControlFX Director"
- "Positioning Luminaires"

## **Installing ControlFX Director**

To install the ControlFX<sup>™</sup> Director device, refer to the instructions in the *ControlFX Director Quickstart Guide* (Part Number 940-0153).

The ControlFX<sup>™</sup> Director hardware device must remain connected to the network of luminaires.

## **Positioning Luminaires**

The physical location of each luminaire must be defined in ControlFX<sup>™</sup> Designer. You must obtain a map of all the Destiny<sup>™</sup> luminaires in the system, depicting the location and serial number of each luminaire.

See the example in Figure 3 on page 14.



#### Figure 3: Luminaires Map in Physical Space & Serial Numbers

The map must show the physical location and serial number of each luminaire. Mapping the luminaires correctly is essential, otherwise lighting commands will not be sent to the luminaires you expect, and shows will not display in the way you designed them.

You'll use the map information to drag and drop a representation of each luminaire, identified by its serial number, into the ControlFX<sup>™</sup> Designer workspace to describe where each is located in space. You must make sure the serial number of each luminaire's representation matches the real world location of the luminaire with that serial number.

### To position the luminaires:

1

- 1. Start the ControlFX<sup>™</sup> Designer software by:
  - Clicking the ControlFX icon on the desktop, or
  - Clicking Start > All Programs > TIR Systems > ControlFX.
- In the Steps Pane, click Position Luminaires in the Initial Setup step. See Figure 4.



If the Initial Setup step has been collapsed, you will not be able to see **Position Luminaires**. Click the **Expand** button  $\bigotimes$  to the right of Initial Setup to expand the step.

3. Add a list of all the luminaires in the system, identified by serial number, to the Source pane at the bottom of the ControlFX<sup>™</sup> Designer window.

If you have been given a plain-text computer file listing all the luminaires in the system:

- Click the **Import** button in the Source pane.
- Navigate to the plain-text file, and then click **Open**. The luminaires will be added to the Source pane.

*If you have not been given a text file listing all the luminaires*, you'll have to enter each luminaire one at a time:

- Click the **New** button in the Source pane.
- In the New Luminaire dialog box, enter the serial number of a luminaire.
- Click the Add Another button to add another luminaire.
- Click the **Done** button when all the luminaires have been added.
- 4. Set the **Show Grid** and **Snap** options by clicking their buttons at the top of the Workspace. These options can make positioning luminaires easier.
  - When **Show Grid** is turned on, small dots appear in the Workspace to help you align the luminaires.
  - When Snap is turned on, luminaires are automatically placed along the nearest grid lines when you drop them in the Workspace. If Snap is turned on but Show Grid is turned off, the luminaires are snapped to the same grid, but the grid itself will be invisible.

See Figure 5.





5. Drag and drop the luminaires from the Source pane into the Workspace to represent the physical position of each luminaire.

*Recommended workflow:* To help ensure every luminaire (identified by its serial number) is placed in the correct location as it appears on the structure, start placing luminaires in the bottom row, moving from left to right. Then move up to the next row, and again place luminaires from left to right. Continue until all luminaires have been placed. Be sure to place the luminaires as they appear on the structure, with the correct serial numbers.

See Figure 6.



Figure 6: Physical Position of Each Luminaire

- 6. *Aligning luminaires*. After you've placed all the luminaires, align them as they appear in the real world. You can either:
  - Move luminaires one by one into the correct alignment.
  - Align multiple luminaires all at once. First, select multiple luminaires (either click multiple luminaires while you hold down the Control key, or hold down the mouse button while dragging a box around the luminaires you want to group). Then, click one of the alignment buttons at the top of the Workspace: Align Left, Align Top, Align Bottom, or Align Right. The selected luminaires will all be moved into alignment with the luminaire you selected *last*.

- 7. Rotating luminaires. If a luminaire is not mounted horizontally, you can rotate its representation in ControlFX<sup>™</sup> Designer to match its orientation.
  - Click on the luminaire you want to rotate. Three circles will appear around the luminaire.
  - Point the mouse at the center of the luminaire. The mouse pointer changes to 4 small arrows  $\bigcirc$ .
  - Click the left mouse button and drag outward to rotate the luminaire to the correct orientation. Dragging while the mouse pointer is in the outer circle rotates the luminaire in 5 degree increments. Dragging in the inner circle rotates the luminaire in 10 degree increments. Dragging outside the circle rotates the luminaire freely.

See Figure 7.



### Figure 7: Rotating the Luminaire

Release the mouse button when the luminaire is correctly positioned.

After rotating the luminaire, you may need to move it back into alignment with the others.

8. After you've placed all the luminaires, check the locations and serial numbers shown in the workspace once more against the map and list of serial numbers.

To check serial numbers, point the mouse at a luminaire in the Workspace, then pause without moving the mouse. In a moment, the luminaire model and serial number will be displayed in a small yellow box.

See Figure 8

Figure 8: Luminaire Model & Serial Number



9. After all the luminaires have been positioned and their serial numbers checked, save the configuration to a file.

Click the File menu, and then click Save. Enter a name for the file, for example, 123-MainStreet. ControlFX<sup>™</sup> Designer automatically adds an .LFX extension to the file name to identify it as a ControlFX<sup>™</sup> Designer configuration file.

Now that you've installed the ControlFX<sup>TM</sup> Director device and set up the luminaires, you can go on to running and creating Simple Effects and Custom Effects shows.

## **4** Working with Simple Effects Shows

## **Chapter Overview**

This chapter provides an overview of Simple Effects shows and describes how to run one.

The chapter contains the following sections:

- "Overview of Simple Effects Shows"
- "Pre-Set Simple Effects Shows You Can Run"
- "Running a Simple Effects Show"

## **Overview of Simple Effects Shows**

To make your ControlFX<sup>™</sup> Director installation easily usable as soon as it's installed, 27 Simple Effects shows have been pre-set in ControlFX<sup>™</sup> Designer. You don't need to design these shows — they are ready to run.

The Simple Effects shows are elegant, interesting, and very simple to use. For some customers, Simple Effects shows may be all they ever need.

A typical Simple Effects show switches the colors of all the luminaires from one color to another and then to another, either abruptly or by fading over a few seconds. See the example in Figure 9. The sequences in a Simple Effects show apply to **all** the luminaires at the same time.

Figure 9: "Three Color Waltz", one of the pre-set Simple Effect shows



Other Simple Effects shows include one color constantly at a fixed brightness, a random fading between many colors, and so forth.

### **Pre-Set Simple Effects Shows You Can Run**

Table 1 lists the pre-set Simple Effects shows you can run.

#### Effect Description Name Number 1 Constant Color - Red Red 2 Constant Color — Green Green 3 Constant Color - Blue Blue 4 Constant Color — Cyan Cyan 5 Constant Color — Magenta Magenta 6 Constant Color - Yellow Yellow 7 Constant Color — Incandescence — a soft yellow-orange Incandescence glow 8 Two Color Wash - Blue/ Fade between Blue and Gold Gold Fade time: 5 sec • Hold time: 0 sec 9 Two Color Wash - Blue/ Fade between Blue and Red Red Fade time: 5 sec Hold time: 0 sec • 10 Two Color Wash - Green/ Fade between Green and Red. Red Fade time: 5 sec • Hold time: 0 sec • Rainbow Wash — Fast Fade between primary colors in this 11 order: Red > Blue > Green > Cyan > Magenta > Yellow Fade time: 1 sec Hold time: 0 sec 12 Rainbow Wash - Slow Fade between primary colors in this order: Red > Blue > Green > Cyan > Magenta > Yellow Fade time: 5 sec ٠ Hold time: 0 sec 13 Random Wash — Fast Fade randomly between primary colors: Red, Blue, Green, Cyan, Magenta, Yellow Fade time: 1 sec ٠ Hold time: 0 sec

### Table 1: Pre-Set Simple Effects Shows

Effect Number	Name	Description
14	Random Wash — Slow	<ul> <li>Fade randomly between primary colors:</li> <li>Red, Blue, Green, Cyan, Magenta,</li> <li>Yellow</li> <li>Fade time: 1 sec</li> <li>Hold time: 1 sec</li> </ul>
15	Two Color Switch — Blue/ Red	<ul> <li>Switch between Blue and Red</li> <li>Fade time: 0 sec</li> <li>Hold time: 2 sec</li> </ul>
16	Two Color Switch — Green/ Red	<ul><li>Switch between Green and Red</li><li>Fade time: 0 sec</li><li>Hold time: 2 sec</li></ul>
17	Two Color Switch — Blue/ Orange	<ul> <li>Switch between Blue and Orange</li> <li>Fade time: 0 sec</li> <li>Hold time: 2 sec</li> </ul>
18	Three Color Waltz	Switch between the following colors in order: Red > White > Blue • Fade time: 0 sec • Hold time: 3 sec
19	Rainbow Waltz	Switch between primary colors in order: Red > Blue > Green > Cyan > Magenta > Yellow • Fade time: 0 sec • Hold time: 3 sec
20	Rainbow Switch — fast	Switch between primary colors in order: Red > Blue > Green > Cyan > Magenta > Yellow • Fade time: 0 sec • Hold time: 1 sec
21	Color Waltz	Switch between the following colors in order: Blue > Red > Purple > Gold > Green > Orange • Fade time: 0 sec • Hold time: 3 sec
22	Random Color Waltz	<ul> <li>Switch randomly between colors: Red, Blue, Green, Cyan, Magenta, Yellow</li> <li>Fade time: 0 sec</li> <li>Hold time: 3 sec</li> </ul>
23	Red/White Strobe	Periodic White light flash breaks up constant Red <ul> <li>Cycle time: 1 sec</li> </ul>
24	Black/Green Strobe	Periodic White light flash breaks up constant Green <ul> <li>Cycle time: 1 sec</li> </ul>

Effect Number	Name	Description
25	Blue/White Strobe	Periodic white light flash breaks up constant Blue <ul> <li>Cycle time: 1 sec</li> </ul>
26	Black/Rainbow Strobe	<ul><li>Periodic rainbow light flash breaks up the off position.</li><li><i>Cycle time:</i> 1 sec</li></ul>
27	Rainbow Wave — slow	Wash wave of primary colors in order: Red > Blue > Green > Cyan > Magenta > Yellow • Fade time: 3 sec • Hold time: 0 sec • Offset: 3 sec

## **Running a Simple Effects Show**

Follow these steps to run one of the Simple Effects shows.

### To run a Simple Effects show from ControlFX Designer:

- Plug an ethernet cross-over cable into the network port on a notebook computer that has ControlFX<sup>™</sup> Designer installed. Plug the other end of the ethernet cross-over cable into the port labeled ETHERNET on the ControlFX<sup>™</sup> Director device.
- 2. Start the ControlFX<sup>™</sup> Designer software.
- **3.** From the **Edit Schedule** item in the Steps pane, click **Set Shows**. The schedule window is displayed in the workspace.

See Figure 10 on page 23.

Figure	10:	Schedule	Window
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Show Time Start Date: 9/23/2004 Start Time: 8:11:14 PM  Duration: 0 Day(s) 00h 00m Recurrence Pattern C Hourly Recur every 1 day(s) C Weekly C Weekly C Monthly	311077	Schedule
Show Time Start Date: 9/23/2004 Start Time: 8:11:14 PM Duration: 0 Day(s) 00h 00m Recurrence Pattern C Hourly Recur every 1 day(s) C Daily C Weekly C Monthly		
Show Time Start Date: 9/23/2004  Start Time: 8:11:14 PM  Duration: 0 Day(s) 00h 00m Recurrence Pattern C Hourly Recur every 1 day(s) C Daily C Weekly C Monthly		
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© Daily © Weekly © Monthly	Show Time Start Date: 9/2 Recurrence Patter	3/2004 V Start Time: 8:11:14 PM · Duration: 0 Day(s) 00h 00m ·
C Weekly C Monthly	Show Time Start Date: 9/2 Recurrence Patter C Hourly	3/2004 V Start Time: 8:11:14 PM V Duration: 0 Day(s) 00h 00m
C Monthly	Show Time Start Date: 9/2 Recurrence Patter C Hourly C Daily	3/2004 V Start Time: 8:11:14 PM V Duration: 0 Day(s) 00h 00m
	Show Time Start Date: 9/2 Recurrence Patter C Hourly C Daily C Weekly	3/2004 ▼ Start Time: 8:11:14 PM ★ Duration: 0 Day(s) 00h 00m ★ n Recur every 1 day(s)
C Yearly	Show Time Start Date: 9/2 Recurrence Patter C Hourly O Daily C Weekly C Monthly	3/2004 ▼ Start Time: S:11:14 PM ★ Duration: 0 Day(s) 00h 00m ★ n Recur every 1 day(s)
	Show Time Start Date: 9/2 Recurrence Patter C Hourly C Daily C Weekly C Monthly C Yearly	3/2004 ▼ Start Time: S:11:14 PM → Duration: 0 Day(s) 00h 00m → n Recur every 1 day(s)
	Show Time Start Date: 9/2 Recurrence Patter C Hourly	3/2004 ▼ Start Time: 8:11:14 PM → Duration: 0 Day(s) 00h 00m →
C Ora	Show Time Start Date: 9/2 Recurrence Patter C Hourly C Daily C Weekly C Monthly C Yearly C C Once	3/2004 ▼ Start Time: 8:11:14 PM * Duration: 0 Day(s) 00h 00m * n Recur every 1 day(s)

4. Drag a Simple Effects show (marked with a yellow lock icon) from the Source pane to the schedule window.

See Figure 11.

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Steps 🗆 🗙	Show	
1. Initial Setup 🛛 🛞		_
2. Edit Sequence 🛛 😵		
3. Edit Multi Sequence 🛛 😵		
4. Edit Show 😵		
5. Edit Schedule 🛛 🛞		
Set Shows	Show Time Start Date: 11/16/2004  Start Time: 11:04:43 AM  Day(s) 05h 00m Recurrence Pattern Hourly Recur every 1 day(s) Daily Weekly Monthly Yearly Once Upload Schedule	
Random Wash - fast     Andom Wash - slow     Two Color Switch - Blue/Red     Two Color Switch - Green/Red     Color Switch - Green/Red	Two Color Switch - Blue/Orange     Two Color Waltz     A Three Color Waltz - Red/White/Blue     A Random Color Waltz     A Rainbow Waltz     A Rainbow Waltz     A Rainbow Switch - fast     A Black/Green Strobe     A Rainbow Switch - fast	≞ √ ►
For Help, press F1	CAP   NUN	I SCRL

- 5. Next, specify when the show will run.
  - Click the show name in the schedule window.
  - In the Show Time group, set the Start Date and Start Time for the show.
  - In the Show Time group, set the Duration of the show.
  - Choose a **Recurrence Pattern** for the show. Then, if applicable, specify a value in the **Recur every** box.

See Figure 12.

Figure 12: Show Times

Show Time Start Date: 10/24/2004  Start Time: 8:30:00 PM  Duration: 0 Day(s) 01h 00m
Recurrence Pattern       C     Hourly       Recur every     1       day(s)       ©       Dailyi       C       Weekly       C       Monthly       C       Yearly       C       Once
Upload Program

- 6. Repeat steps 4 and 5 to add and schedule more Simple Effects shows. To remove a show from the schedule, select the show and then press the Delete key.
- 7. Click **Schedule Program** to upload the shows and schedule to the ControlFX<sup>™</sup> Director device and the luminaires.

The Simple Effects shows begin to run as soon as the start date and time for any one of the scheduled shows is reached.

8. Quit ControlFX<sup>™</sup> Designer and disconnect the notebook computer from the ControlFX<sup>™</sup> Director device.

## 5 Working with Custom Effects Shows

## **Chapter Overview**

This chapter provides an overview of Custom Effects shows and describes how to create and run single sequence and multi sequence Custom Effects shows.

The chapter contains the following sections:

- "Custom Effects Terminology and Concepts"
- "Designing a Custom Effects Show"

## **Custom Effects Terminology and Concepts**

These are the terms and concepts you'll need to know to create Custom Effects shows. (See also "Terminology and Concepts," on page 8.)

### Sequences

The building blocks for a Custom Effects show are *sequences*. A sequence is a change from one color to one or more other colors with specific *transitions*, and, if you want, certain *optional effects*.

### Transitions

A transition is the specific way that the colors change from one to another. The two types of transitions in ControlFX<sup>™</sup> Designer are:

- Switch: an instant change from one color to another, and
- *Fade:* a gradual change over time

The length of time a color is displayed before the next transition begins is set by the **Hold Time** setting. The length of time each transition takes is set by the **Fade Time** setting.

### **Optional Effects**

In ControlFX<sup>™</sup> Designer, the only optional effect available is Strobe.



### Groups

Luminaires are grouped together on a show by show basis. All luminaires belonging to a given group will run the same sequence. By dragging and dropping a sequence onto any luminaire belonging to a group, the sequence is assigned to all luminaires in the group.

### **Display Order**

When a show begins to run, all luminaires start the show at the same moment. Each luminaire begins to display the sequence for its group. However, not all luminaires have to start at the beginning of the sequence.

For example, if you had a group with a Red > Blue > Green sequence assigned to it, you might want some luminaires to start the show displaying the Red part of the sequence, some displaying the Blue part, and some displaying the Green part.

To achieve that effect, you would set the *display order* for each of the luminaires in the group. Display order settings specify when one or more luminaires in a group begin to display a sequence, specified as an offset in tenths of seconds from the beginning of the sequence. In the figure below, three display orders have been assigned to a group of luminaires.



As the show runs, each luminaire would display the part of the sequence specified by its display order, as shown in the figure below.

Figure 14: Sample Order Sequence #2



For a step by step explanation of how display orders work, see "Display Order: Detailed Example," on page 44.

The best way to get a good understanding of how display orders work is to experiment with ControlFX<sup>™</sup> Designer.

## **Designing a Custom Effects Show**

This section describes how to design a Custom Effects show. The section contains these subsections:

- "Part A. Preliminaries"
- "Part B. Creating a Sequence"
- "Part C. Creating a Multi Sequence (Optional)"
- "Part D. Creating a Name for your New Show"
- "Part E. Grouping the Luminaires for this Show"
- "Part F. Setting the Display Order for the Luminaires in Each Group"
- "Part G. Dragging a Sequence onto the Luminaires"
- "Part H. Previewing the Show"
- "Part I. Scheduling and Uploading the Show"

## **Part A. Preliminaries**

The first step is to plan your Custom Effects show. What do you want your show to do? You don't need to have the show completely thought out, but you should have a general idea of what you want the show to be.

## Part B. Creating a Sequence

A sequence is a transition from one color to one or more different colors. For any show, you might:

- Use an existing sequence, or
- Create a new sequence

If you will be using an existing sequence, go on to "Part E. Grouping the Luminaires for this Show".

If you will be creating a new sequence, follow the steps below.

### To create a new sequence:

1. In the Steps pane, expand the Edit Sequence step, and then click Load Sequence.

A list of sequences that have already been defined appears in the Source pane.

### Figure 15: List of Sequences



- 2. You can edit an existing sequence, or create a new sequence.
  - To edit an existing sequence, click the sequence in the Source tab.
  - To create a new sequence, click the **+** New button at the top of the Source pane. Name the new sequence.

**NOTE:** A sequence cannot have the same name as an existing multi sequence.

3. Click Set Colors in the Steps pane. A palette of colors appears in the Source pane. Drag colors from the Source pane to the larger boxes in the workspace, in the order you want the colors to appear. (The smaller boxes are for transitions in the next step.)

Continue dragging colors into the workspace until you have added all the colors you want in the sequence. You might want to create shows in corporate colors, national colors, holiday colors, or seasonal colors.

See Figure 16 on page 29.



Figure 16: Drag & Drop Colors

The first color in the sequence is shown in the top left box. The sequence continues across the row from left to right, and then row by row from top to bottom.

See Figure 17.





4. Click **Set Transitions** in the Steps pane. A palette of transitions appears in the Source pane. The transition settings control how one color changes to another. You can choose **Fade** (a gradual change to the next color) or **Switch** (an instant change).

Drag transitions from the Source pane to the smaller boxes in the workspace between the colors.

When prompted, set the Fade times and Hold times.

- The Hold Time sets how long the preceding color stays illuminated at full strength in seconds.
- The Fade Time sets how long it takes for the sequence to change shades from the preceding color to the next color. Fade Time is also specified in seconds.

See Figure 18.

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Eile <u>V</u> iew <u>H</u> elp				
	<u>≞</u> =  QQ   )			
Steps				<b>▲</b>
1. Initial Setup	8			
2. Edit Sequence	8	Fade	Switch	Switch
Load Sequence				
Set Colors				
Set Transitions				
Set Effects		Eade 🛛	<u>1</u>	
View Timeline			Fade	
3. Edit Multi Sequence	8	Hold Time: 30 sec		
4. Edit Show	<b>S</b>	ОК		
5. Edit Schedule	S			
×				
8				
Fade	Switch			

Figure 18: Hold Time & Fade Time

5. Click Set Effects in the Steps pane.

A palette of optional effects appears in the Source pane. The only choice in ControlFX<sup>™</sup> Designer is Strobe.

If desired, drag optional effects from the Source pane and drop them onto the color boxes in the workspace.



6. Preview the sequence you created. Click **View Timeline** in the Steps pane. The sequence is shown in a timeline at the bottom of the workspace. A large box representing how the sequence would be displayed on a single luminaire is shown above. Click the Play button at the top of the workspace. The sequence begins to play. A yellow indicator bar shows which part of the sequence is currently being displayed. Click the **Stop** or **Pause** buttons to stop playing.

See Figure 19.



Figure 19: Playing the Sequence

The sequence is now complete. ControlFX<sup>™</sup> Designer automatically saves the sequence definition. You can now adjust the sequence's transitions, colors, fade times, hold times, and so forth.

## Part C. Creating a Multi Sequence (Optional)

You may want to create a multi sequence to use in your show. A multi sequence is a series of sequences.

To create a multi sequence:

1. In the Edit Multi Sequence step in the Steps pane, click Load Multi Sequence.

- 2. You can edit an existing multi sequence, or create a new multi sequence.
  - To edit an existing multi sequence, click the multi sequence in the Source tab.
  - To create a new multi sequence, click the + New button at the top of the Source pane. Name the new multi sequence. Click the new multi sequence in the Source tab.

**NOTE:** A multi sequence cannot have the same name as an existing sequence.

3. In the Edit Multi Sequence step in the Steps pane, click Set Sequences.

A list of defined sequences appears in the Source tab.

- 4. Drag a sequence from the Source tab into the workspace.
- 5. Click the arrows to set how many times this sequence repeats before moving on to the next sequence.

See Figure 20.

### Figure 20: Sequence Repeats

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Steps X	3		
1. Initial Setup 🛞	2		
2. Edit Sequence 👔	2 .		
3. Edit Multi Sequence	-		
Set Sequences			
4. Edit Show 🛞			
5. Edit Schedule 🛞			
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RedYellowSwitch			
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For Help, press F1			CAP NUM SCRL

6. Repeat steps 4 and 5 to add all the sequences you want in your multi sequence.

### Part D. Creating a Name for your New Show

Name the show you're about to create from the sequences and multi sequences.

### To name the new show:

- 1. In the Edit Show step in the Steps pane, click Load Show.
- 2. In the Source pane, click the + New button, and then enter a name for the new show.

### Part E. Grouping the Luminaires for this Show

Assign the luminaires to groups. These groupings apply to this show only. The next show you create can have entirely different groups.

### To group the luminaires:

1. In the Edit Show step in the Steps pane, click Set Groups.

All the luminaires will be labeled with the default group identifier, A.

- 2. Hold down the Control key and then click the luminaires you want to assign to the next group, **B**. The selected luminaires turn gray.
- 3. Click the right mouse button. In the popup menu that appears, click **B**. The luminaires you selected are re-labeled as members of group **B**.

See Figure 21.





4. Repeat steps 2 and 3, changing the letter of the group identifier each time, until you have defined all the groups you want for this show.

## Part F. Setting the Display Order for the Luminaires in Each Group

Set the *display orders* for the luminaires belonging to each group. See "Custom Effects Terminology and Concepts," on page 25.

To set the display order for the luminaires:

- 1. In the Edit Show step in the Steps pane, click Set Order.
- 2. In the Source tab, click in the **Offset** boxes to set the offset times for each group in the show. The offset time sets how far into the sequence's timeline to begin showing each display order after the first. The offset time will be the same for all display orders in each group.

**Offset** values are in seconds. For example, if you want each display order to begin 2 seconds further into the sequence's timeline from the previous one, you would set the **Offset** time to 2.

Each group display orders can have a different Offset time.

See Figure 22.

	Set Shows		
< [	Group	Offset	
	А	10	
	В	10	
	С	20	
	• 11		N
🗅	•		

Figure 22: Offset Times

3. In the Source tab, click a group name, for example, A.

Luminaires belonging to group A will be displayed in black with their current display order shown. The default display order is 1. Other luminaires that don't belong to the selected group will turn gray.

See Figure 23 on page 35.

### Figure 23: Luminaire Display



4. To assign a different display order to one or more luminaires in this group, hold down the Control key and then click those luminaires. Then right-click on a selected luminaire and select a display order number from the popup box.

The display order numbers change for the selected luminaires.

See Figure 24.



### Figure 24: Changed Luminaire Display

- 5. Repeat steps 3 and 4, changing the display order number each time, until you define all the display orders you want for group A.
- 6. Repeat steps 3 and 4 for the rest of the groups defined for this show.

► **NOTE:** The best way to get a good understanding of how display orders work is to experiment with ControlFX<sup>TM</sup> Designer.

## Part G. Dragging a Sequence onto the Luminaires

Assign sequences to groups of luminaires.

### To drag sequences onto the luminaires:

1. In the Edit Show step in the Steps pane, click Place Sequences.

The defined sequences and multi sequences appear in the Source pane. Sequences are shown with a filmstrip icon  $\square$ . Multi sequences are shown with a film reel icon B.

2. Drag sequences and multi sequences from the Source tab onto the luminaires. When you drop a sequence on a luminaire, the sequence is applied to *all* luminaires belonging to the same group.

See Figure 25.



Figure 25: Drag & Drop a Sequence

## Part H. Previewing the Show

You can now preview your show and make any adjustments you want. For example, you might want to change some colors, or adjust the timing and transitions.

### To preview the show:

- 1. In the Edit Show step in the Steps pane, click Load Show.
- Click the Play ▶ button at the top of the workspace. The show begins to play. Click the Stop or Pause buttons to stop playing.

## Part I. Scheduling and Uploading the Show

After the show is completed, you can schedule a time for the show to run, and then upload it to the ControlFX<sup>™</sup> Director device and the luminaires.

### To schedule and upload the show:

- 1. Ensure your notebook computer is connected to ControlFX<sup>™</sup> Director as described in the *ControlFX Director Quickstart Guide* (Part Number 940-0153).
- 2. From the Edit Schedule item in the Steps pane, click Set Shows. The schedule window is displayed in the workspace.

See Figure 26.

Show	Schedule
Show Time	
Start Date: 9/23/200	04 ▼ Start Time: 8:11:14 PM 🔶 Duration: 0 Day(s) 00 h 00 m 🕂
,	
Recurrence Pattern	
C Hourly	Recur every 1 day(s)
Daily	
C Weekly	
O Monthly	
C Yearly	
C Once	
	Upload Program

Figure 26: Set Shows

3. Drag your show, marked with a gray film projector icon 📽, from the Source pane to the schedule window.

See Figure 27 on page 38.

steps	×	Show	Schedule	
1. Initial Setup	۲			
2. Edit Sequence	۲			
3. Edit Multi Sequence	۲			
1. Edit Show	۲			
5. Edit Schedule	۲			
		Start Date: 11/16 Recurrence Pattern C Hourly C Dally C Weekly C Monthly C Yearly C Once	/2004 Start Time: 11:04:43 AM Dur	. : 0 Døy(e) 05h 00m
			Linload Schedule	in the second

Figure 27: Drag & Drop a Show

- 4. Next, specify when the show will run.
  - Click the show name in the schedule window.
  - In the Show Time group, set the Start Date and Start Time for the show.
  - In the Show Time group, set the Duration of the show.
  - Choose a **Recurrence Pattern** for the show. Then, if applicable, specify a value in the **Recur every** box.

See Figure 28.

#### Figure 28: Show Times

Show Time           Start Date:         10/24/2004             Start Time:         8:30:00 PM             Duration:         0 Day(s) 01h 00m	
Recurrence Pattern C Hourly Recur every 1 day(s) C Daily C Weekly C Monthly C Yearly C Once	
Upload Program	)   
instant Color Incandescence 🤷 Random Wash - fast 🔗 Rainbow Waitz vo C 🔔 - ch - Blue/Gold : 🚳 Random Wash : acci 🌣 집관이었다. Switt - rast	

5. Repeat steps 3 and 4 to add and schedule more Custom Effects or Simple Effects shows.

To remove a show from the schedule, select the show and then press the Delete key.

6. Click Upload Schedule to upload the shows and schedule to the ControlFX<sup>™</sup> Director device and the luminaires.

The shows begin to run as soon as the start date and time for any one of the scheduled shows is reached.

7. Quit ControlFX<sup>™</sup> Designer and disconnect the notebook computer from the ControlFX<sup>™</sup> Director device.

## 6 Troubleshooting

## **Chapter Overview**

This chapter describes some problems you may encounter with your ControlFX<sup>™</sup> Designer software and ControlFX<sup>™</sup> Director device and how to solve those problems. If you are unable to solve the problems, contact TIR® for technical support.

The chapter contains the following sections:

- "Symptoms and Solutions"
- "Obtaining the Serial & Version Numbers"

## **Symptoms and Solutions**

For a list of symptoms of problems and solutions, see Table 2.

Symptom	Solution
One or more luminaires do not light	<ul> <li>Check the group settings for the luminaires</li> </ul>
in the expected order	• Check the display order settings for the luminaires
	<ul> <li>Check the positions and serial numbers for the luminaires in ControlFX<sup>TM</sup> Designer</li> </ul>
	<ul> <li>Check the wiring on the network of luminaires</li> </ul>
Shows end before the expected stop time	Check the schedule for the shows. If run times for active shows overlap, the currently-running show ends when the overlapping show's start time is reached
Colors change abruptly instead of fading	<ul> <li>Change the transitions between colors to Fade instead of Switch</li> </ul>
Fading between colors is too slow	<ul> <li>Adjust the Fade and Hold times for the transitions</li> </ul>
	<ul> <li>Consider changing the transitions between colors to Switch instead of Fade.</li> </ul>

Table 2: Troubleshooting Checklist

For additional troubleshooting information, refer to the *ControlFX Director Quickstart Guide* (Part Number 940-0153).

## **Obtaining the Serial & Version Numbers**

If you have trouble with your ControlFX<sup>™</sup> Director device, you will need to obtain the serial number and model number of the device and report it to TIR® technical support.

The serial number and model number are on a label attached to the bottom of the ControlFX™ Director device.

## **7** Reference Information

## **Chapter Overview**

This chapter contains reference information about ControlFX<sup>™</sup> Designer and the ControlFX<sup>™</sup> Director device.

The chapter contains these sections:

- "ControlFX Director Device Technical Specifications"
- "Display Order: Detailed Example"

## **ControlFX Director Device Technical Specifications**

The specifications in Table 3 apply to version 1.5 of the ControlFX<sup>™</sup> Director device.

Specification	Description		
Size	Width: 8.9" (225 mm)		
	Height: 4.1" (104 mm)		
	Depth: 3.1" (79 mm)		
Input voltage	12 VDC		
Input current	Maximum 250mA		
Signal input	Ethernet		
DMX connector	XLR 5-pin (female)		
DMX output	Electrically conforming to RS-485 standard, DMX communication protocol		
DMX Pinout (XLR 5)	Pin 1: GND		
	Pin 2: RS-485 data (-)		
	Pin 3: RS-485 data (+)		
	Pin 4: Not used		
	Pin 5: Not used		

Table 3: ControlFX Director Device Electrical and Mechanical Specifications

## **Display Order: Detailed Example**

When a show begins to run, all luminaires start the show at the same moment. Each luminaire begins to display the sequence for its group. However, not all luminaires have to start at the beginning of the sequence.

For example, if you had a group with a Red > Blue > Green sequence assigned to it, you might want to have some luminaires start the show displaying the Red part of the sequence, some displaying the Blue part, and some displaying the Green part.

To do that, you would set the display order for each of the luminaires in the group. Display order settings specify when one or more luminaires in a group begin to display a sequence, specified as an offset in tenths of seconds from the beginning of the sequence.

For example, if the sequence was defined as

- Red > Switch: Hold 1 second, then
- Blue > Switch: Hold 1 second, then
- Green > Switch: Hold 1 second, and so forth (see figure below).

See Figure 29.



For this example, assume 3 display orders have been defined:

- Display order #1, luminaires (a) and (b)
- Display order #2, luminaires (c) and (d)
- Display order #3, luminaires (e) and (f)

See Figure 30.

Figure 30: Sample Sequence #2

#1		#2		#3	
(a)	(b)	(c)	(d)	(e)	(f)

For this example, assume the Offset for the group was set to 1 second.

- 1. When the show begins:
  - Luminaires (a) and (b) will begin to display the sequence at the start of the sequence. These luminaires will light up in red.
  - Luminaires (c) and (d) will begin to display the sequence as defined at 1 second from the start of the sequence (because the Offset for this group display order is 1 second). These luminaires will light up in blue.
  - Luminaires (e) and (f) will begin to display the sequence defined at 2 seconds from the start of the sequence (because the Offset for this group display order is 1 second, and this is the second display order that needs to be offset into the timeline). These luminaires will light up in green.

See Figure 31.





- 2. One second after the show begins:
  - Luminaires (a) and (b) will display the sequence as defined at 1 second from the start of the sequence. These luminaires will light up in blue.
  - Luminaires (c) and (d) will begin to display the sequence as defined at 2 seconds from the start of the sequence (1 second of elapsed time + 1 second offset). These luminaires will light up in green.
  - Luminaires (e) and (f) will begin to display the sequence as defined at 3 seconds from the start of the sequence (1 second elapsed time + 2 seconds offset). These luminaires will light up in red.



#### Figure 32: Sample Sequence #4

- 3. Two seconds after the show begins:
  - Luminaires (a) and (b) will display the sequence as defined at 2 seconds from the start of the sequence. These luminaires will light up in green.
  - Luminaires (c) and (d) will begin to display the sequence as defined at 3 seconds from the start of the sequence (2 seconds elapsed time + 1 second offset). These luminaires will light up in red.
  - Luminaires (e) and (f) will begin to display the sequence as defined at 4 seconds from the start of the sequence (2 seconds elapsed time + 2 seconds offset). These luminaires will light up in blue.

See Figure 33.



- 4. Three seconds after the show begins:
  - Luminaires (a) and (b) will display the sequence as defined at 3 seconds from the start of the sequence. These luminaires will light up in red.
  - Luminaires (c) and (d) will begin to display the sequence as defined at 4 seconds from the start of the sequence (3 seconds elapsed time + 1 second offset). These luminaires will light up in blue.
  - Luminaires (e) and (f) will begin to display the sequence as defined at 5 seconds from the start of the sequence (3 seconds elapsed time + 2 seconds offset). These luminaires will light up in green.

See Figure 34.



The best way to get a good understanding of groups and display orders is to experiment with ControlFX<sup>™</sup> Designer.

## Glossary

### AC

Alternating current.

### CAUTION

Cautionary notes indicate the potential for property damage or minor personal injury through misuse or inappropriate operation of the equipment.

### ControlFX

The TIR Systems family of luminaire control products that comprises ControlFX<sup>™</sup> Designer, ControlFX<sup>™</sup> Director, ControlFX<sup>™</sup> Initializer Device and ControlFX<sup>™</sup> Initializer software.

### **ControlFX Designer**

Windows XP application used to program one or more luminaires with instructions for how to vary the color and intensity of light. Version 1.0 works with SelectFX. Version 1.5 works with ControlFX<sup>™</sup> Director.

### **ControlFX Director**

Hardware interface between a PC and a network of TIR® luminaires. Shows are developed using the ControlFX<sup>™</sup> Designer software. The instructions for each luminaire are uploaded to the luminaires via the ControlFX<sup>™</sup> Director interface. ControlFX<sup>™</sup> Director ensures the luminaires' internal clocks are synchronized.

### **ControlFX Initializer Device**

The DMX 512A standard comprises 255 "alternate START codes". The START code is the first byte of data transmitted across a DMX network. TIR Systems has registered START code 37 (hex) for its exclusive use. ControlFX<sup>™</sup> Initializer Device refers to a piece of hardware produced by TIR Systems that is used to initialize its luminaires using START code 37. Only TIR<sub>®</sub> luminaires should recognize data sent with a start code of 37.

### **ControlFX Initializer Software**

Windows® XP application to set DMX addresses of the luminaires using the ControlFX Initializer hardware interface.

### DC

Direct current.

### **Destiny CG**

A TIR Systems Ltd. product, Destiny™ CG highlights textures and details on architectural columns and other vertical elements.

### **Destiny CV**

A TIR Systems Ltd. product, Destiny<sup>™</sup> CV washes interior and exterior walls or ceilings with a linear color wash from a cove location.

### **Destiny CW**

A TIR Systems Ltd. product, Destiny<sup>™</sup> CW washes a surface or plane with a smooth uniform light of saturated colors.

### **Destiny DL**

A TIR Systems Ltd. product, Destiny<sup>™</sup> DL provides direct view delineation on architectural features for the purpose of emphasis.

### **Destiny LP**

A TIR Systems Ltd. product, Destiny™ LP provides accent or delineation lighting for architectural purposes. Features include three different heights and standard screen options, 16 gauge 304 stainless steel housing, static LED and color change LED sources and a range of finishes.

### **Destiny SL**

A TIR Systems Ltd. product, Destiny<sup>™</sup> SL provides a linear source of high intensity output for entertainment lighting.

### **Destiny series**

A TIR Systems Ltd. series of products for architectural applications, consists of six products: Destiny<sup>™</sup> CG, Destiny<sup>™</sup> CW, Destiny<sup>™</sup> CV, Destiny<sup>™</sup> DL, Destiny<sup>™</sup> LP and Destiny<sup>™</sup> SL.

### DMX (or DMX 512A)

DMX 512A is a standard protocol by means of which theatre lighting control desks can communicate with lighting equipment. It was designed to allow equipment from different companies to be used together easily. The standard is formally called USITT DMX 512 1990.

### **DMX** Combiner

A combiner is required when using more than one DMX controller on a single network (for example a main controller and a backup controller).

### DMX control system

DMX (Digital Multiplex) is the standard interface between control systems and lighting equipment such as dimmers.

### **DMX** Controller

Hardware interface that generates DMX signals. A DMX controller can be the combination of a PC and a hardware interface that converts data from the PC into the DMX protocol, or it can be a single hardware unit with pre-set functionality.

### **DMX Splitter**

Hardware device that accepts one DMX signal as input and provides two or more output ports that can be connected to luminaires or other splitters using XLR-5 cables.

### **DMX Terminator**

A DMX network must be terminated to prevent signal errors from occurring. This is accomplished by using a terminator plug with a resistance of 120 Ohms on the last DMX cable in a daisy-chain luminaire configuration.

### Horizon

Common lighting control software from Rosco Laboratories. Basic version is free and operates dimmers only. Silver and Gold paid upgrades extend the functionality. DMX capability provided via the Horizon 512 DMX interface hardware.

### light emitting diode (LED)

A semiconductor device that emits light when an electrical current is passed through it. The first practical LED device was produced in 1962 and used for indicator lights and flat panel computer displays. LEDs were originally available only in red, then amber and green and eventually blue and white. In 2000 TIR Systems Ltd. incorporated LED's into solid state lighting (SSL). The merger of SSL LED's with traditional prism light guide technology resulted in new capabilities in the areas of color change and control.

### luminaire

A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, position and protect the lamps, and the electrical parts required to generate the light.

### Luxeon Lighting Network

TIR Systems Ltd. is a founding member of the Luxeon Lighting Network. The organization has three goals: to provide specifiers and end users of Luxeon™ based lighting systems with the confidence of predictable performance; provide the lighting market with a clear understanding of the performance capabilities of solid state lighting (SSL) system design criteria and technology and; provide specifiers with standardized means for evaluating SSL products.

### SelectFX

Hardware interface between a PC and a network of TIR® luminaires. SelectFX enables up to 32 effects that can be selected using a switch (A/B) and dial (0-15). 29 effects are pre-set and 3 can be programmed using LightFX 1.0 software. SelectFX is superseded by ControlFX<sup>™</sup> Initializer.

### Show

Sequence of lighting effects synchronized across multiple luminaires.

### solid state lighting (SSL)

Lighting using solid state semiconductor sources, namely LEDs. SSL at TIR® consists of six aspects: power conversion, digital control, communication, thermal management and luminaire design, distribution and optics and system integration. An SSL platform offers several advantages including energy efficiency, optical efficiency, long useful life and electronic control. TIR® is both a pioneer and a dominant player in the field of SSL.

### **TIR Systems Limited**

Founded in 1982, TIR Systems Ltd. (TIR®) is a world leader in solid state lighting. TIR® is based in Burnaby, British Columbia, Canada.

### Virtual ControlFX Initializer

See ControlFX Initializer.

### XLR-5

A type of cable used commonly in audio visual applications.

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