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LD Assistant 2013

By: Stephen Ellison

Inside the popular design software

LD Assistant 13 is the latest lighting design and event planning software by Design and Drafting, and it's a package that raises the bar for lighting designers who want to create drawings, schedules, and rendered movies of their designs. Combining lighting, sound, video, set design, and event planning into one program, the Windows-compatible software's 2-D drafting and 3-D modeling tools are designed to save time and streamline work flow, get the client to interact with the design process, and ultimately win more jobs.

Menus and 2-D/3-D tools

Design and Drafting is a licensed developer and OEM partner with Autodesk, from which it leverages

licensed technology. Building on this, LD Assistant 13 offers advanced menus, including Lighting, Visualization, and Production. If you need a generic virtual space to test out fixtures, the Lighting menu includes Create Room, where you can define a 3-D room with a stage inside and general downlighting. In the Lighting menu, Panel View is a button for LD Task, which brings up a list of nine tasks; each takes the user to another window populated with the choices associated with the task. These windows are designed for novices as they familiarize themselves with the program. It is organized in the order that you would design your plot; as you go from task to task, a plot and documentation are created.

The Lighting menu is home to the tools that work with lighting fixtures: Create, Data, View, Focus, Display, Modify, Schedules, and Utilities. Create offers content fly-out windows with library folders of the blocks that you can add to your drawing. The content section contains blocks for light fixtures, truss, stage elements, chairs, and more. Create includes three tools to help automate the design process. The first is the Create Room tool, while the second allows truss and lights to be quickly added to a space. The third, Automatic Lighting, uses a pop-up window to add fixtures to light a target object using the standard McCandless 45° method or along a polyline you create.

A lighting fixture or other object in a plot contains data that may need to be visible on the plot or only in a schedule. A button in the Data section accesses a pop-up window based on the object you select. The attributes available to fill in are based on the type of object. The choice of visible



by G. B. Stephens
University of South Florida
School of Theatre and Dance



Special effects such as color mixing, volume light, and lens effects are available.

attributes is in the Display section.

The View section provides a visual button for each type of 2-D and 3-D view available. The Focus section provides two ways to select and focus lighting fixtures along with buttons to focus a camera, speaker, and projector. The Display section allows fixtures to be turned on and off. One note about lighting fixtures: You must focus them with Quick Focus before using the On and Off functions. With a large enough plot of fixtures turned on with visible disbursements as cones, the drawing gets a bit confusing; you can change them to a line representing the center of the light. This choice is only visible in 3-D mode.

The Modify section provides buttons to access popular attributes, including Intensity, Color, Gobo, Shutter, and Specific Data. The latter brings up a window that allows you to select the attribute and enter new data. The final two buttons provide a window to renumber five different attributes or help you find a fixture on the plot by position and unit number.

In the next section, data from the plot can create schedules or paperwork documentation. Once you have fixtures on the plot, assign at least a

position and unit number. To control the plot from a console, you must patch the fixtures, keeping track of that information. If the plot is going on tour, you can create the circuit numbers and cable connections. This information can be changed in the plot or schedule and updated to the other. The worksheet button allows the data to be manipulated outside the program in Excel, allowing for custom schedules.

Utilities contains ten buttons for utilities. The first two allow the creation of lighting scenes within the drawing and saving the information as if creating cues. You can open a scene later, which behaves as if you are playing a cue so that you could render that scene. The next utility is for objects; it provides a window to choose utilities that affect the geometry, data, and plot of either the block as a whole or specific attributes. If you don't want to create a legend or key yourself, a utility will do the work for you.

One utility allows individual fixtures to be changed into a multi-light group. This becomes a special group, which acts as one fixture. To make a plot look neat, the Align and Nudge utility aligns all selected objects along any axis. Three available wizards create a new LD object, a complete project report with multiple drawings and schedules, or a script file to run every time you want to produce a report. The last of the ten buttons opens the LD Options box where options specific to LD Assistant may be changed.

Production menu

The Production menu provides tools to automate the process of creating your show. The Production tab is broken down into six sections, the first being Lights. In it, you can create a theatrical lighting fixture. The options available in the pop-up window will design a basic can fixture by choosing the insert location, fixture length, and diameter; you also can choose the orientation. Clicking Okay creates a block with all the attributes associated with a lighting fixture, which can

be used in schedules and renderings.

For House Lights, you can only make a cone-shaped fixture. The next item is the Pipe/Tube-Rope Light. I haven't had a chance to make use of the rope light function, but I use it to create pipe for hanging lights. It will create a pipe from a line quite nicely. I played with the Rope Light function for fun, and it creates a nice effect.

The next section is Trussing. To create truss, start with a line from which to build it around. The pop-up box offers the basic choices for building box, triangle, and I-beam truss along with options for pipe and block truss. The pipe truss only has the choice of diameter. The block truss has no choices; simply pick the line and click Okay and it becomes a 12" box truss. The pipe tool creates a pipe just like the tool in Lights.

With Stage/Access, you can build stairs up to your stage and add security posts and curtains. The Stair tools allow you to choose the staircase height, tread width, and number of treads, which sets the height of each step based on your stage height.

The Curtain tool starts with a line that is used to build the curtain. It will be at the bottom of the curtain; as you build the stage, set this line at the height of the stage. The pop-up window allows you to set the height, fold width, and fold depth; there is also a check box for Straight on Top. When you click Okay, it creates a curtain in 3-D. You can change the color by setting the color in Properties.

Next, we find a section named Room, where a 2-D drawing can be turned into a 3-D structure by building walls. Trace over-the-wall lines with a polyline and then use the Wall Build tool to make them into walls. Choose the wall width, height, and where the line meets the wall. Finally, add doors and windows to your walls and use the Wall Build command to turn all the objects into a block.

Seating allows an area to be filled with seating so that chairs don't have to be individually inserted. The Fill



A rendering completed by Kevin Denzel to share with clients of his event services firm.

Area Table-Chair tool will populate a space with the chairs you choose.

The Riser tool allows the user to rapidly create a stage. If the predefined chair and tables don't help, create your own curved seating arrangements based on an arc and a seat. Another neat part of creating seating arrangements is the ability to define areas in the room without seating.

Equipment creates blocks that represent either a video projector or a camera, a function that will make your rendering presentation stand head and shoulders above others. Adding a camera allows you to create a walk-through video of the room based on a track you define.

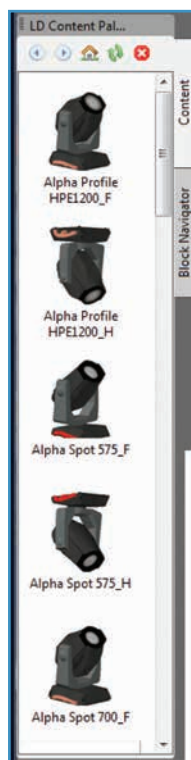
The last three tools help take this drawing package to another level by adding the ability to define wires/cables, and two-fers help produce detailed documentation for touring or packaged shows from a rental house. The last tool creates equipment racks that can be placed in the drawing to show how much space is required for each rack. The last special menu is Visualization,

which is used to create renderings that allow you to not only visualize your design but also render images.

Blocks

Blocks are actual drawings. Those who do a lot of drafting find themselves drawing the same thing over and over again, which can get boring. Blocks minimize the time spent.

When drawing an object in LD Assistant, it's easy to turn that set of lines into a block. Go to Draw and scroll down to Block. Three options appear: Make, Base, and Define Attributes. The first turns the objects into a block, allowing you to assign a name and manipulate four block parameters. Base Point defines where the placement grip handle will be located, while the objects aspect allows you to choose the objects to include in the block and what happens to the selected objects. They can be deleted. Next is the behavior of the block when added to the drawing. The options define how the block responds to scaling of the drawing when inserted and if it can be scaled along a single axis or uniformly. The last aspect fea-



The blocks in the LD Assistant library are represented as realistic views.

tures two settings: units and a hyperlink to be created. If you are into long descriptions, there is a dialogue box just for that purpose.

Once you have turned your objects into a block, it is now part of that drawing and can be added again later. If you've added 30 when you decide to change from a 6" lens to an 8" lens, you can edit the block, and every instance of it in the drawing will update. At this point, this block is only available to this design but could be used in other drawings; start creating a block library so you only have to draw something once. Choose Export from the File menu. Change the Files of Type at the bottom of the box to Block (*.dwg) and enter a name for the block. Press Enter and the display returns to the drawing, where the name of the block can be entered into the dynamic entry box. You need to know the exact name for the block; otherwise, look under Misc in the Properties box for the name.

LD control and animation

You can now take your client on a virtual tour of the space while cues are running and sound is playing. The key to mastering this skill is LD animation. Let's assume that you can build the space in 3-D and add the instruments. The next step is to focus the lights and add color. In the Motion Path Animations window, there are two boxes: Camera and Target. For a walk-through, the camera must be linked to a path; you will also want to create a target and link the target to a point.

The path is a simple polyline drawn in the space following the path of travel on the virtual tour. Remember to set the height of the path so that the view is not of the floor. The target is a circle placed so that the imaginary head is always looking at that spot. At this point, you could make a movie right from this window, but you can't run a light show from here. For that, you first need to go to LD Control.

Turn on your lights and open LD Control from the Visualization menu.

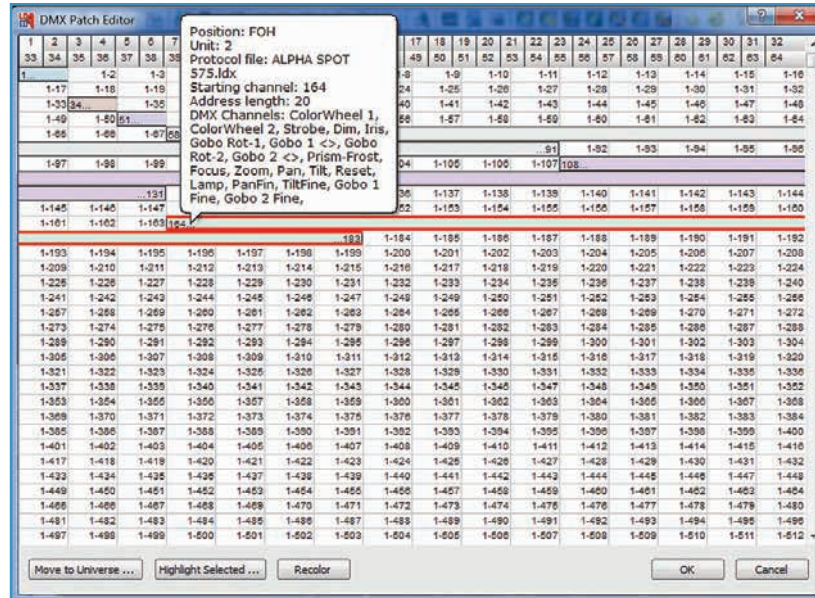
You can create a scene and add cues to it. You need to enter a value in milliseconds, not seconds. Then click on the Film icon in the Scenes section and go to Animation. Preview your animation and make adjustments before saving the movie. If not pleased with the results, you can adjust the camera. In the Image window, the image can be adjusted to achieve the starting look, and, by pressing F5, the size of the image that the camera sees (zoom) can be changed. Once you like the movie, click the Create Movie button and save a copy. Check the output settings at the top of the window to set the size and file location. Of LD Assistant's many tools, LD Control and LD Animation are among the most powerful, giving the designer the ability to quickly fine-tune a project to the client's satisfaction and win the job.

DMX patch editor

One reason to use this program instead of AutoCAD is the ability to control the lighting fixtures. Designs can be tested through pre-visualization, and cues can be written into a console. To accomplish this, fixtures are added to a space and connected through DMX to a console.

First, add fixtures to the light plot. Fixtures with a DMX profile are automatically added to the DMX patch. However, they all default to Universe 1, Channel 1. Once in the plot, each fixture will need a unique DMX address. This can be accomplished by selecting a fixture and right-clicking, bringing up a pop-up window with the option to Attach Data. Here, you can change a vast amount of data about the fixture sorted by tabs. Under the control tab, you can find out more about where the fixture is in the DMX world.

A second method involves updating a spreadsheet. LD Assistant ships pre-loaded with spreadsheets. When you choose the Control Schedule, it opens with information already filled in for the fixtures sorted for you by DMX. The Control Schedule lists the fixtures in order by position so that you can

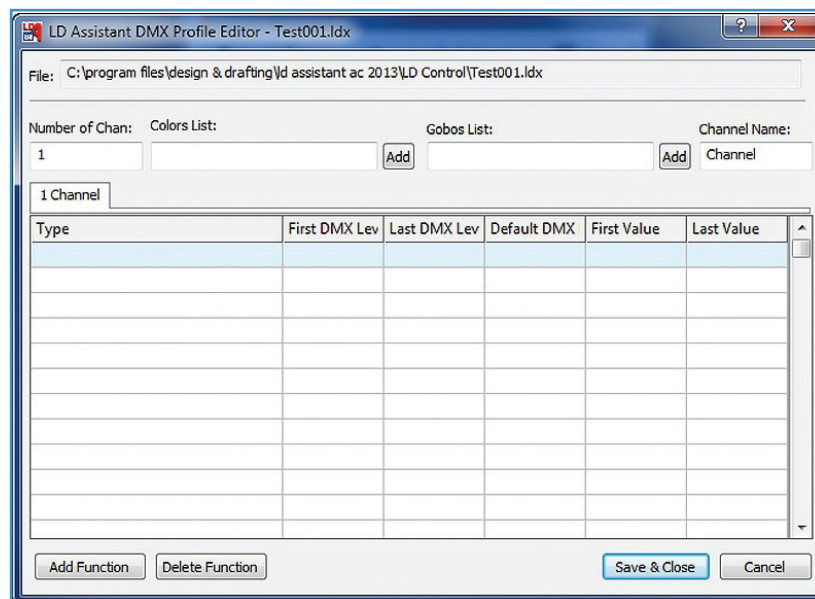


The data associated with each instrument is easily viewed by right-mouse clicking.

make sense of which one is where and update the DMX. Many people do not want to calculate all of the DMX addresses for the rig, so here is where the Patch Editor can help.

Assign each type of fixture to a different universe for the moment and let them all start with one. Open the Patch Editor, found in the Visualization Tab. At the top are buttons for all 64 universes. Under the universe buttons are the 512 possible addresses for

that universe. Occupying Address 1 through the channels in the profile for that fixture are boxes with a red X indicating that an error exists. You can determine the proper addresses by left-clicking on the row and dragging it to a new address. Spread them out until you have them all separated, then hover over each one and right-click to see the floating window, which will identify the fixture and provide the data associated with the fixture. Now



When creating a new Profile, LD Assistant's DMX Profile Editor offers a blank canvas.

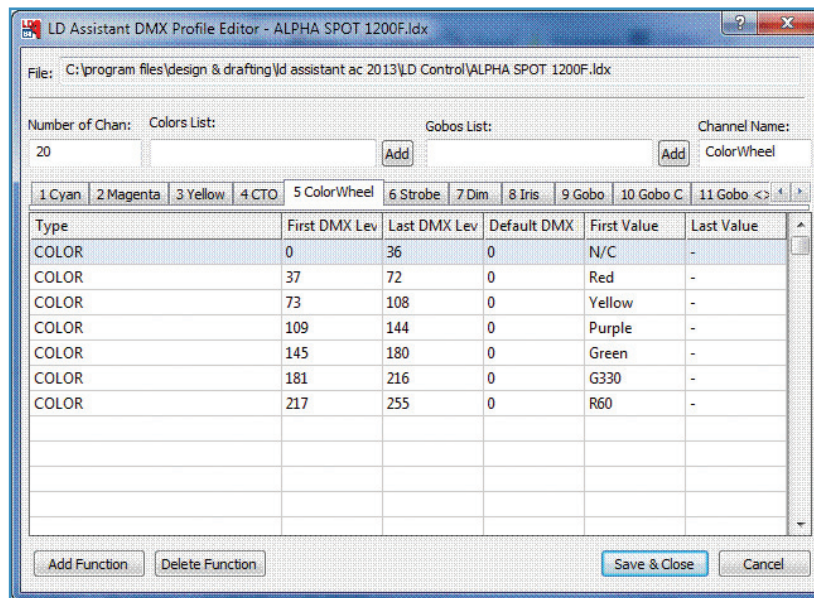
the fixtures can be arranged in each universe. If you wish to have them in one universe, start at one in the first universe and then start the next universe with the last number in the first. After they've been arranged, select the fixtures in the second universe and click the Move to Universe button; when prompted, enter the new number. Close the Patch Editor, refresh the Control Schedule, and all of the DMX start channels will be updated and ready to load into fixtures.

DMX Profile editor

To show a client a preview of the event, LD Assistant provides tools to create realistic renderings of the finished design. One tool allows you to create movies that show lighting in time, meaning you must be able to program your lights into cues. In order to work with the latest and best fixtures, you must communicate with them through DMX-512 protocol. LD Assistant is not a full-on lighting console or preprogramming visualizer, so it does not have an extensive library of DMX profiles. But if you need to share your work with creative services designers or exchange files with architects, then this is the program for you.

A DMX Profile defines the order in which the fixture responds to the data stream from a DMX control device. In the Attach Data to Light Fixture pop-up window (under the Control tab), there is a selection labeled DMX Protocol; choose from a list of profiles that come with the program to assign to that fixture. If you cannot find one that fits your needs, you can create your own profile. When I wanted to use the Selador D60 Vivid fixture, there was no profile. I felt the fixture looked close enough to an ETC Source Four PAR that I could make a minor modification to the existing block and save it as the new Selador for my rendering.

Creating a new profile is easy once you understand a few concepts. Under the Visualization tab, the DMX Profile Editor offers four choices: Create, Edit, Edit One That Is Attached, and Attach



With the Add Function button, the user can add color, pan, tilt, gobo, and other data.

a Profile to a Fixture. To create a new profile, choose Create and name the profile. The next window is divided into a small top section and a larger spreadsheet at the bottom. With the DMX profile from the manufacturer in hand, fill in the number of channels that the fixture uses. Remember, many fixtures can be set up in different modes; each will work as a different personality. One example is an RGB LED wash fixture, which can be configured to operate in three-channel mode (1 – red, 2 – green, 3 – blue) as well as a four-channel mode with intensity, five-channel with strobe, etc. When naming your personality, consider adding the mode number to the name if you plan to use it for a different application in the future.

The Color List and Gobo List are to the right of the Number of Chan window. These are placeholders for lists of colors and gobos you will use as you build a profile. When you press the Add Colors button, a color chart appears with choices from Rosco/GAM Products and Lee as well as generic colors. The Add Gobos button brings up a window with folders by manufacturer and fixture type such as “575 MAC.” The final window on the right allows users to name the chan-

nels; select a tab; and change the name. The spreadsheet below this area holds the data based on the manufacturer-provided profile. Each channel is represented by a tab. Select a tab to work on and press the Add Function button to choose what attribute the channel controls, such as the first one that pops up, Pan. The chart is now filled in with default values for the DMX levels. These values may or may not work for you; the Pan fills in with a first DMX of 0, a last DMX of 255, a default DMX of 127, a first value of 0, and a last cue of 360. Remember that the values for DMX are 0 – 255, not the 0 – 100% that you see on console screens. The default DMX value is the home position for that function, which, for pan, would be in the middle of the range so that the fixture is pointing up or down, depending on where it is mounted. The first value and last value relate to the function, not the DMX value, which, for the pan, is from 0 – 360° of rotation. Color only uses the First Value to list the colors.

While it's easy to work out the values for Pan and Tilt, for color wheels or gobo wheels, the complexity is more apparent. Take the Clay Paky Alpha Spot 1200 Channel 5 Color Wheel for example. This fixture has

seven slots in the wheel: six colors plus open. In this chart, seven lines are used—one for each color and values so that as you move from DMX 0 to 255, you can address each color. The manufacturer will supply these values.

When building these personalities, only add the information you care about working for your rendering; the rest won't make a difference. One caveat—if you intend to create paperwork that shows the Patch Table, take care to include the correct number of channels so that as you patch them, they will occupy the proper amount of space. If you are building fixtures not in the program, it would be best to create the Block and the Personality before adding them to the drawing.

Creating seating using the production tab

Creating a block of seating using the old method—dropping a seat onto the drawing and then creating an array—can be tedious. To move that grouping around, one must either select each chair carefully or turn them into a group. This edition of LDA includes three new seating tools under the Production tab that can streamline the creation of seating layouts.

The Table/Chair tool allows the user to create his or her own table and/or chair. If you can't find the furniture you need in the Content Palettes and don't want to build a 3-D block of your chair, you're in luck. When you choose this tool, a window lets you specify the size of the furniture and how many chairs of what size you want.

The next tool, Fill Area Table-Chair, creates an array of furniture in your space. In its simplest form, the tool will fill a defined area with chairs. Start by drawing a rectangle of the desired room space. Add a chair to the drawing, then click on the tool; first select the object that represents the area to fill in, and then select the object to multiply. A pop-up box will prompt you to set the distance between rows and columns; press Okay and the seating array is created. The command line

displays the total number of objects. Now you can move the array as a group, explode the group to manipulate items individually, or work with them using group commands.

The Fill Area Table-Chair tool can also facilitate more complex seating arrangements. Starting with the outline of the room, add rectangles to represent the areas that will not have tables and chairs, such as the stage, dance floor, and food stations. When you are selecting objects, you will choose these shapes at the same time before selecting the seating objects to multiply. Thus, I was able to produce a layout that detailed exactly how many people the ballroom seated.

The Seatings tool lets designers create theatre seating quickly for any shape or space. These tools speed up seating layout and give you the power to create your own tables/chairs and place them in unlimited scenarios.

Pyrotechnics

This latest version of LD Assistant has some fun and unique toys beyond a standard CAD program's offerings, including lens effects, atmospheric effects, and high-end global illumination rendering that samples the photons. The program also has a variety of impressive pyrotechnic effects. To wow your client with movies of what the event will look like, you'll need to become familiar with the Visualization tab. It's really quite easy to add fireworks to your rendering and capture it as a movie. LD Assistant 13 offers two types of pyro: stream and rocket. Stream pyro can simulate numerous ground effects; by adjusting the parameters, you can get everything from a fountain effect to a propane blast. The rocket option will produce chrysanthemum, and round fireworks will create aerial effects.

To create the effect, start in the top view by drawing an arc or circle where you want the effect to originate. Go to the Visualization tab and select Pyrotechnic Effects. A pop-up window appears with three choices; the first

two allow you to select stream or rocket; the third is the editing choice.

When you choose either effect, you are navigated back to the drawing to select the curve entity. Once you click on the entity, it turns into a block. Click again on the new block to specify a new pyrotechnic block insertion point. After the second click, the pop-up window reappears; you have created a block but will not see any effects until you adjust the parameters.

Next, click on Edit and select the object you wish to edit. A pop-up window appears with all of the parameters to set. A button at the top of the window enables the effect so that you can choose when to show the pyro in the rendering window. There are ten color choices with the stream effect and six rocket color options. The number of particles can also be defined, ranging from 50 – 1,000. The next parameter determines how many emitters the object produces. If you've selected rocket, this will control how many rockets fire. With stream, numerous emitters can muddy the effect. An alternate choice is to select a distance between emitters along the curve; the number of emitters is then chosen by how many can fit along the curve.

Two parameters, labeled Duration and Period Time (how long the total effect plays before repeating), allow for precise timing of the effects. Making the two the same value will produce a continuous effect, while a longer period of time will create a delay equal to the difference in the times. The next parameter, Stream Angle, allows a range of 5° – 60°. Five degrees produces a tight fountain similar to a propane blast, while 60° produces a wide shower effect. The final option is Stream Height.

Five buttons on the right-hand side of the window augment the editing tools. The first fills in a default set of data for all of the parameters, while Apply allows these values to be applied to other pyro objects. A Preview button conveniently activates a Render window without leaving the

Editor. In order to see the effects correctly, you should change to a 3-D view before editing. In the Preview window, if you like what you see, simply hit Accept. When using more than one effect in a scene, press the Load button to load the whole scene with all effects running. OK and Cancel round out the button suite.

Definable parameters for the Rocket effect include rocket height and sphere radius. Both distances are entered in inches or chosen on the screen. I decided to create a simple rocket display, adding six different arcs and varying the timing so the durations and periods were unique. I didn't start recording until after the first period had passed so that the timing differences kicked in, and I was easily able to create what would be a grand finale for a fireworks show, complete with ground effects. The corresponding video now not only walks my client through the space but the big finish convinces them that the show will be fantastic.

As I mentioned in the beginning of this article, it's difficult to embrace all of LD Assistant 13's features; therein lies the beauty of the program. Power users will never exhaust all the potential of the software, but they are consistently able to push the envelope of their own designs. Novices can intuitively use advanced tools to create beautiful drawings, renderings, and videos that will sell jobs; for most working LDs, that's what matters. For more information on LD Assistant's software solutions, visit www.ldassistant.com.

Stephen Ellison has a degree in lighting design from North Carolina School of the Arts. He has been involved in the lighting industry in a variety of positions for the past 35 years and is now a designer/engineer.



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