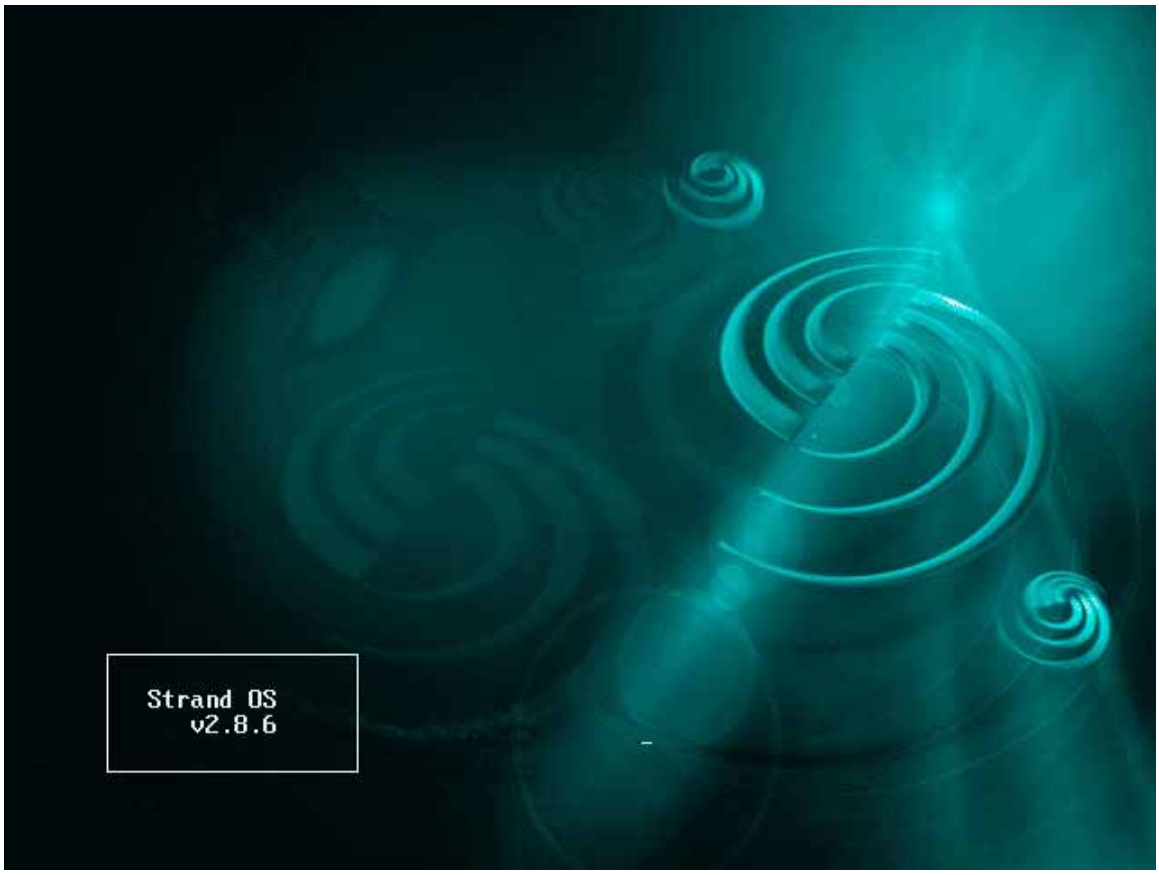
Automated Lighting Tutorial for Version 2.8.6 with Console Screen Examples



This addendum tutorial covers the 500 series console software version 2.8.6 for the operation of automated fixtures only. It is designed as the third instructional tutorial to follow the *Strand 500 Series Console Tutorial – Conventionals (with screen capture) V2.8.6* and the *Strand 500 Series Console Tutorial – Scroller Addendum (with screen capture) V2.8.6.* If you haven't done so, I recommend going through the conventional tutorial *first* and the scroller tutorial *second.* If you haven't gone through these tutorials but feel comfortable enough with conventional and scroller control, then feel free to continue here. This version includes console screen examples as visual aids.

This tutorial is setup to give the operator a place to start as a hands-on training session.

The tutorial will cover setup and operation geared toward the Broadway market which has been dominated by Light Palette friendly consoles such as the Light Palette series and the Obsession series. This workbook will go through all operational functions that are considered both normal and advanced for a Broadway-style programming session. This does not intend to mimic any one designer's style of language used for programming but is intended to get the programmer familiar with all programming features of these consoles that are typical of theatre, opera, and dance. Experience is still the best teacher, but this should get anyone, not previously familiar with the 500 series consoles, on their way to being able to program any advanced lighting show.

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Tutorial Syntax

This font and box indicates the syntax for standard hard key input.

Any > indicates a soft key that is a level below the previous soft key.

Any **{bracketed}** text indicates a **hard display** key that should be pressed. The display tile is at the upper right hand portion of the console.

Any **(enclosed)** text indicates a soft key that should be pressed.

Any **"quoted"** text indicates keyboard entry that will label a cue, group, or the like.

On the screen captures, I will also draw a circle around the area of the screen that has the appropriate information.

During the tutorial, perform the keystrokes when listed. This will keep you in the proper screen as you go through the text and allow you to maximize your benefit from the lesson.

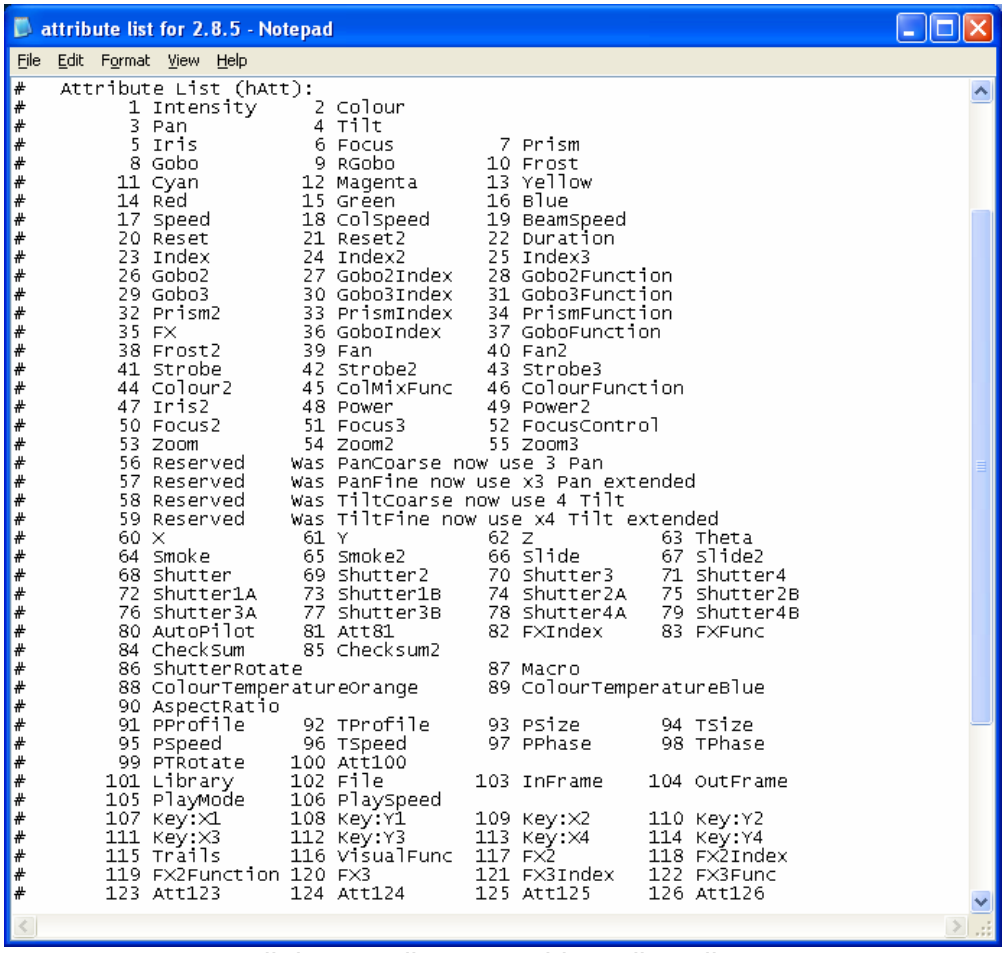
Even with the powerful features of the 500 Series consoles, it must be simple to operate the simple things. Here is where we will start…

Another thing, some screen shots will be from Windows, these are just text files and the visual format does not change the content in any way. Most of the screen shots are based on a 2 screen system, if you only have 1 monitor your screens may vary.

Understanding the Strand Attribute System

Here is the attribute list found in the fixture library. To access the fixture library…

{MORE} (NOTES DISP>) (LOAD FILE>) (FIXT LIB)



Note: Scroll down until you see this attribute list on screen.

This list of attributes is consistent within the world of Strand's automated luminaire control. With this system, pan is always attribute 3, gobo is always attribute 8 and so on. This consistency of attributes allows you to change fixtures (as needed for tours) and all the cue data will stay the same within the show file. Any combination of any attributes can run any DMX-based moving light that's out there. It's just a matter of choosing the Strand attribute number that you want and relating it to the appropriate parameter of the fixture in the right order. The attribute order is based on the DMX table from the fixture manufacturer.

Fixture Library

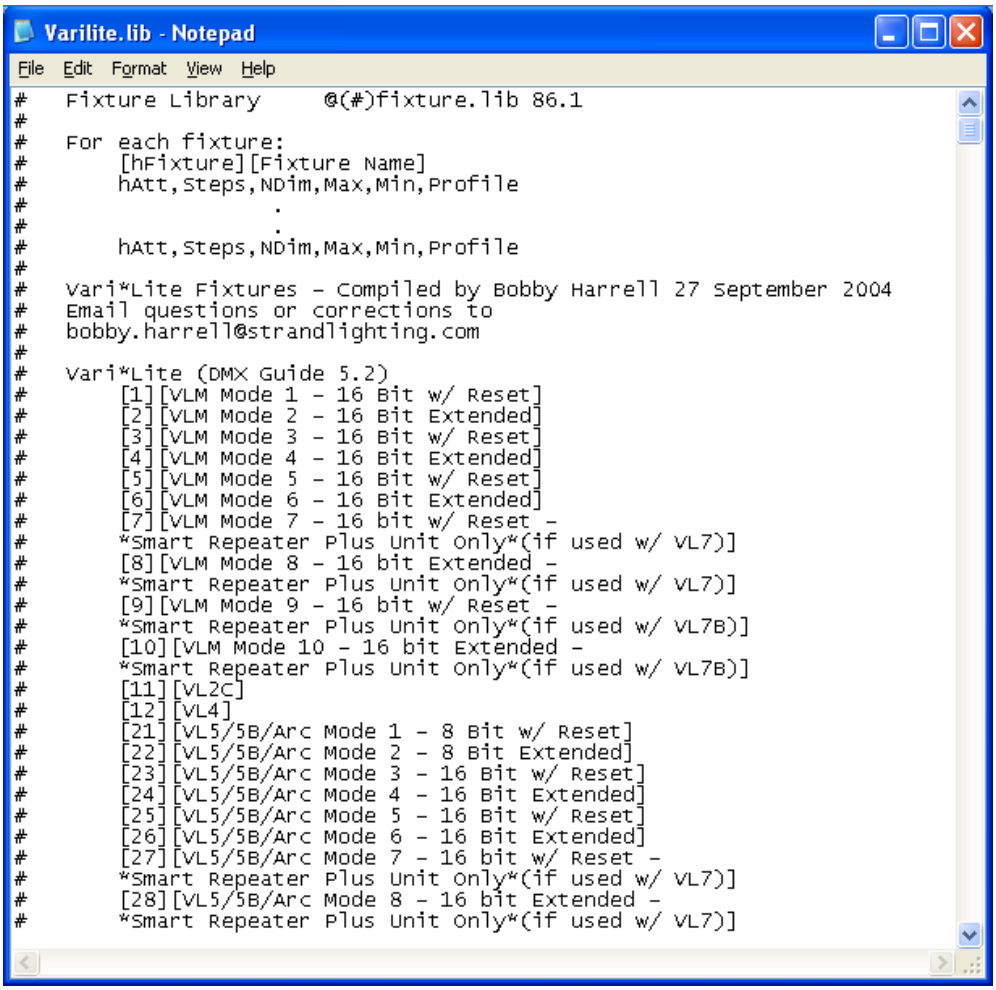
The fixture library itself holds a total of 99 fixtures from many different manufacturers. With more than 99 fixtures out there, you may find that a fixture that you need isn't currently in the library. Not to fear….Strand has many libraries on their website that are built by manufacturer so start there for fixture info. Otherwise, it's simple to build a fixture yourself or email Strand for help.

The library is just a text file so the information can be edited quickly and easily as needed. Let's take a look at the beginning of the fixture library.

Fixture Library Access

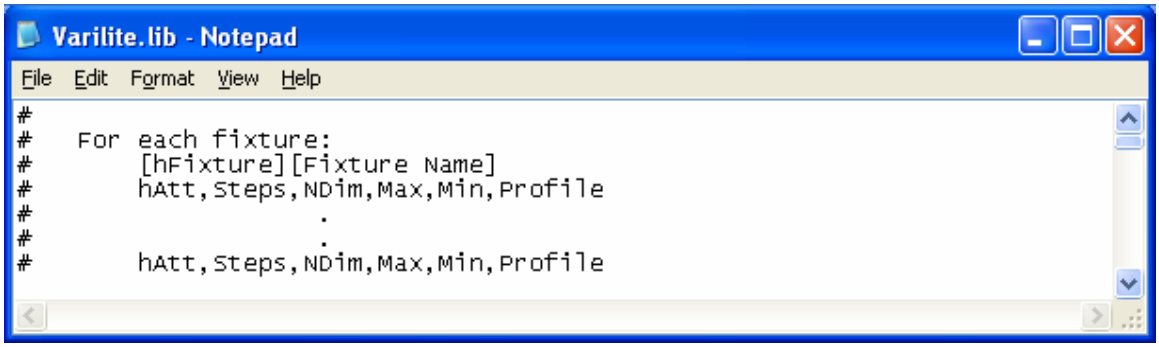
In case you are not already there…

{MORE} (NOTES DISP>) (LOAD FILE) (FIXT LIB)



*Note: The # at the beginning of the line indicates a remark statement. This isn't the default fixture library. It's the Vari*Lite library from the website.*

It starts by giving you remark statements. At the beginning of this file is a key, or legend, of the information to follow.

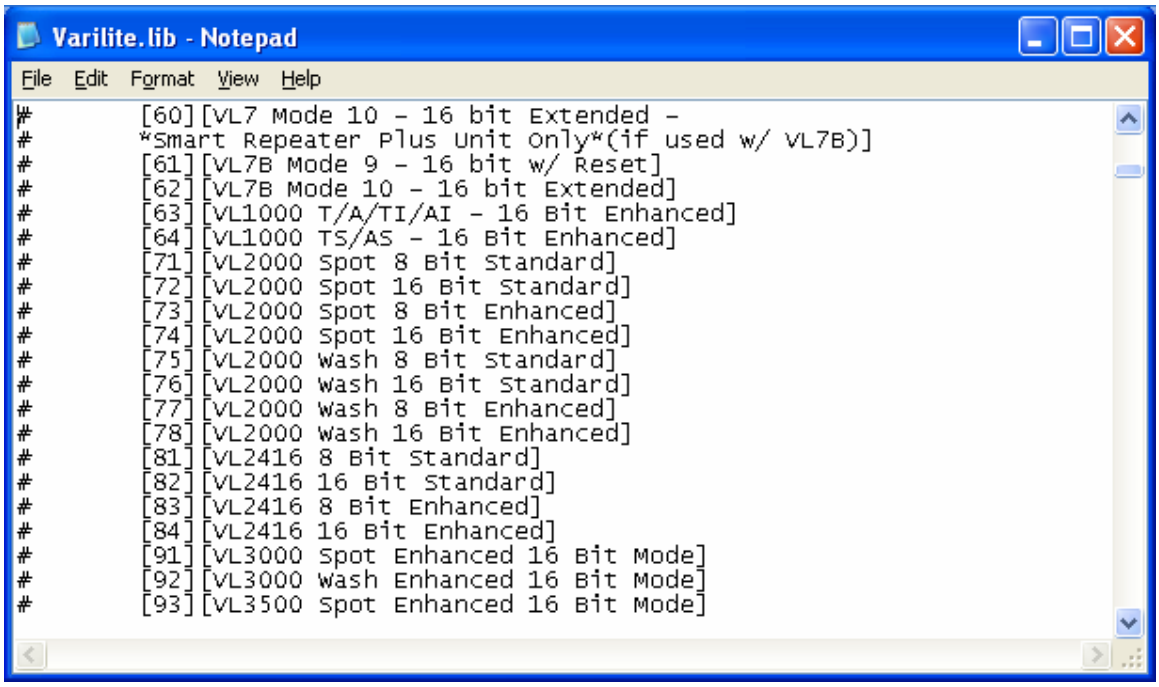


Below you will find that the actual fixture data within the library is broken down into 6 columns exampled above.

hAtt – is the attribute number from the attribute list. (3 for pan, 4 for tilt…)
Steps – is the number of steps or frames that an attribute has. A color wheel might have 11 steps, a gobo wheel might have 8 steps. One rule though, since attributes can never be off, frame 0 is a position.
NDim – determines if this attributes is dimmable or not.
Max – sets the maximum DMX value for this attribute.
Min – sets the minimum DMX value for this attribute.
Profile – assigns a profile to this attribute when its fixture is patched.

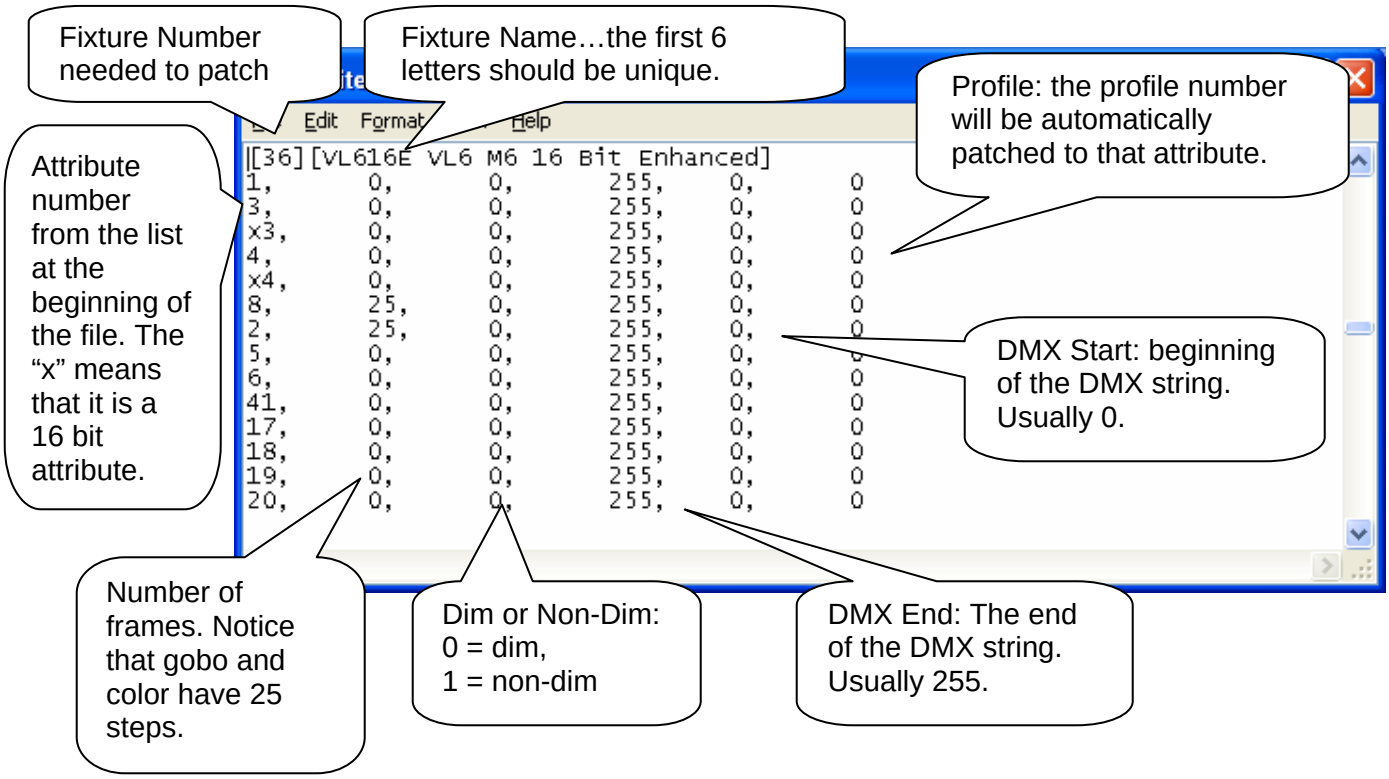
See picture with icons on the next page.

Next is a partial list of fixtures that are in this library. The example listed is the Vari*Lite library that is on the website.



Note: This is only a partial fixture list for this library file.

Scrolling down below all the remark statements, you will get to the actual content of the fixture library file. Let's break this down…



Fixture Library Editing

Editing the fixture library is simple. It's just a text file so use your keyboard to edit current fixtures or add new ones. Just remember that your softkeys (*cut line*, *copy line* and *paste line*) can help you.

Take the DMX table from any fixture and determine what Strand attribute numbers that you want to control the fixtures parameters. If the first parameter is Control, then use 20 (Reset). If the second one is Pan, then use 3. if the third one is Pan Fine, then use x3. Just continue until you have your list and then input into the fixture library. It's that simple!

Patch

Just remember that with a Strand console, patching is always *Dimmer @ Channel ENTER*. Patching a moving light is just an extension of that. *DMX number @ Channel (@FIXTURE) Fixture Number ENTER*.

Patching Automated Fixtures

Most production electricians that I work with like to separate the automated fixtures to a different universe that the universe that is used for dimmers. This is often universe 1 for dimmers and universe 2 and up for movers. We'll use this format in the patch example.

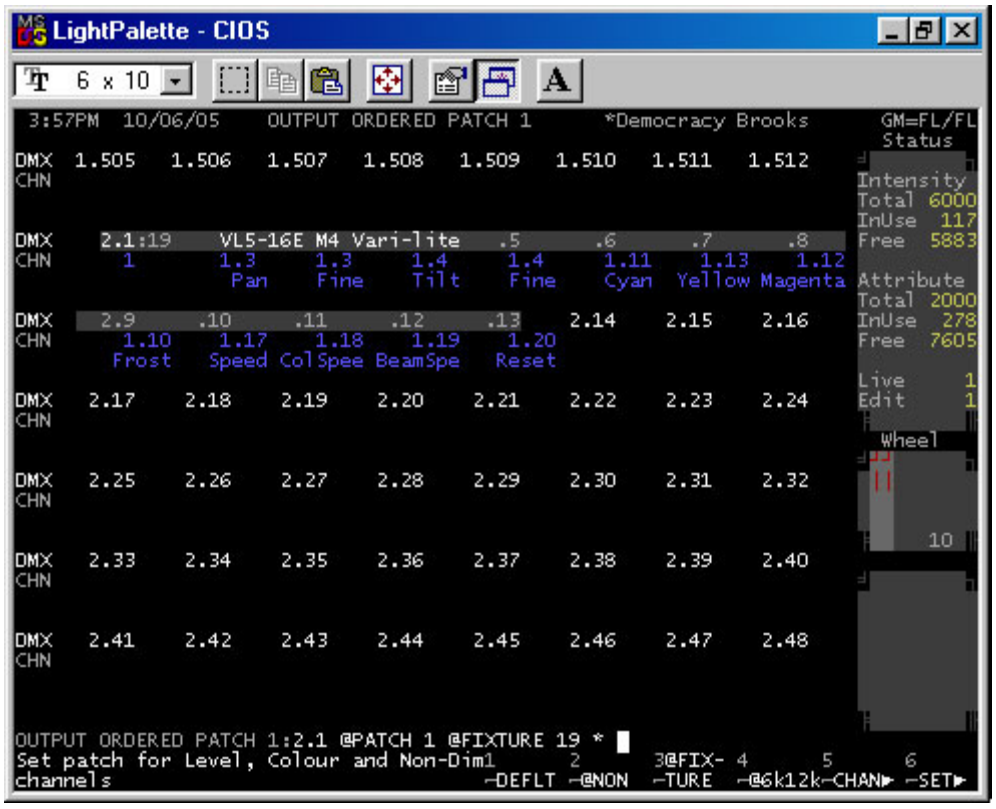
The first thing that I like to do when patching to multiple universes is set the desk to show me universe and DMX output numbers versus dimmer number. So instead of typing in 513, I type in 2.1. The 2 or the number left of the period is the universe number and the .1 or the number to the right of the period is the DMX number. So the first DMX address in the 2nd universe is 2.1. Here is how you change your display…

{PATCH} (SET>) (DMX/OUTPUT) (<BACK)

Single Fixture

To patch a single fixture, it's…

2.1 @ 1 (@FIXTURE) 19 ENTER



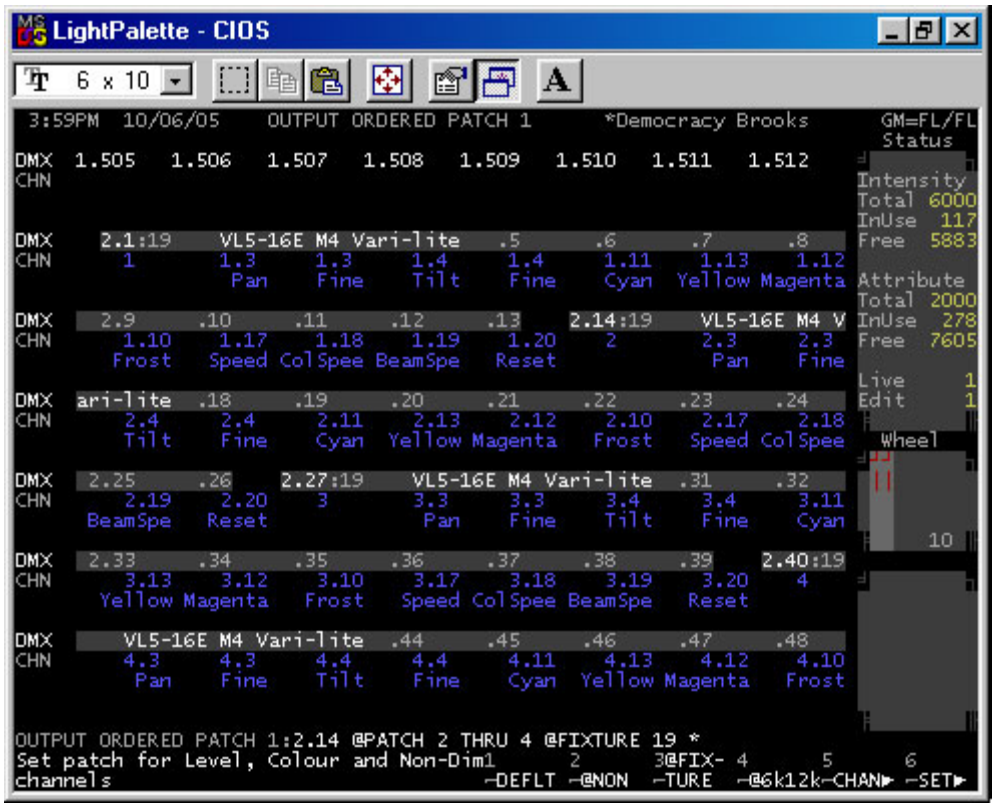
When you type in the fixture number (19 in this case) you will see the fixture name show up at the bottom of your screen. This is BEFORE you press the *Enter* key. If the number is not the correct fixture, just

press *Next* or *Last* and you'll cycle through all the fixtures in the library. When the right one is selected, just press *Enter*.

Range of Fixtures

A range of fixtures can be patched as well. This will minimize the keystrokes that are needed for patching multiple fixtures.

2.14 @ 2 THRU 4 (@FIXTURE) 19 ENTER

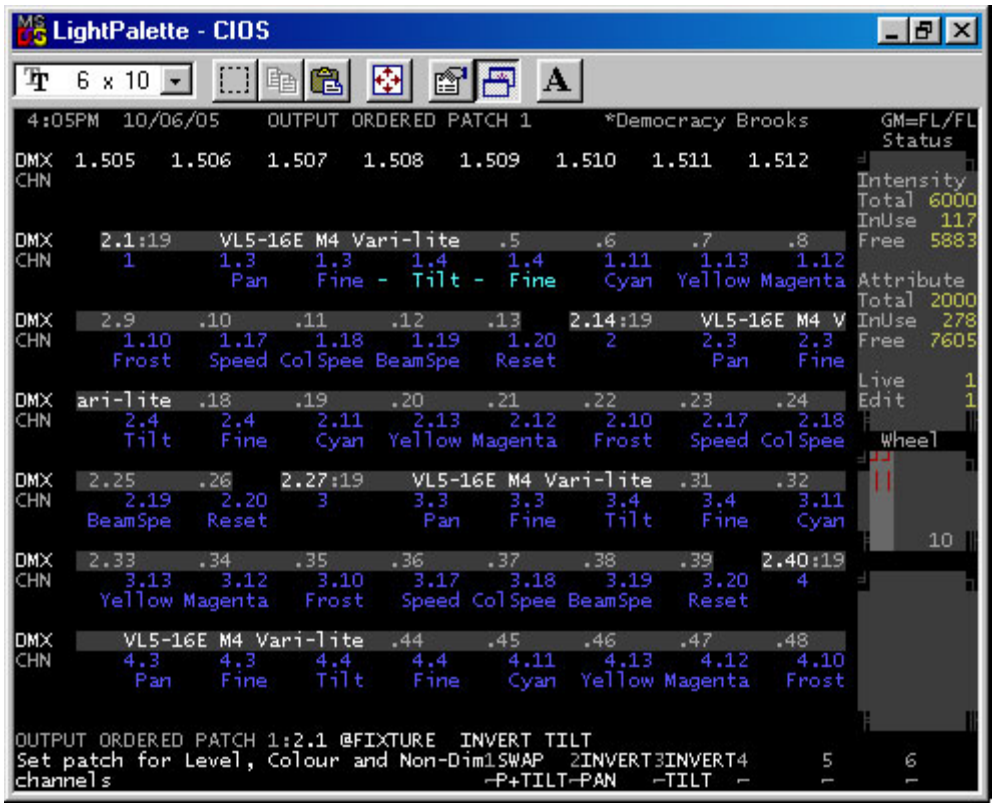


This took the next available DMX address in universe 2 and patched the VL5 to channels 2 thru 4. Notice that I didn't have to identify the starting address of every fixture. The software did that for me. This way, I can patch the show and then give the patch information to the electrician to address the fixtures.

Invert Pan / Tilt

I always make sue that the lights are working intuitively on the trackball. So that when I roll the trackball upstage, the fixture moves upstage as well. If it doesn't, then I usually need to invert the tilt on the unit.

2.1 (@FIXTURE) (INVERT TILT) ENTER



Notice that the softkeys change once you press *@FIXTURE*. *Invert Tilt* is now available as a soft key. Once it is accepted, the labels for the tilt attributes change to cyan from blue. This lets you know that these attributes have been inverted.

Also notice the other softkeys available now. *Swap Pan & Tilt* does just that. Pan now controls tilt and tilt now controls pan. *Invert Pan* should be used if the light pans right when you roll the trackball to the left. Just invert what is necessary on all fixtures until you have intuitive movement for everyone. It will make your life much easier for programming.

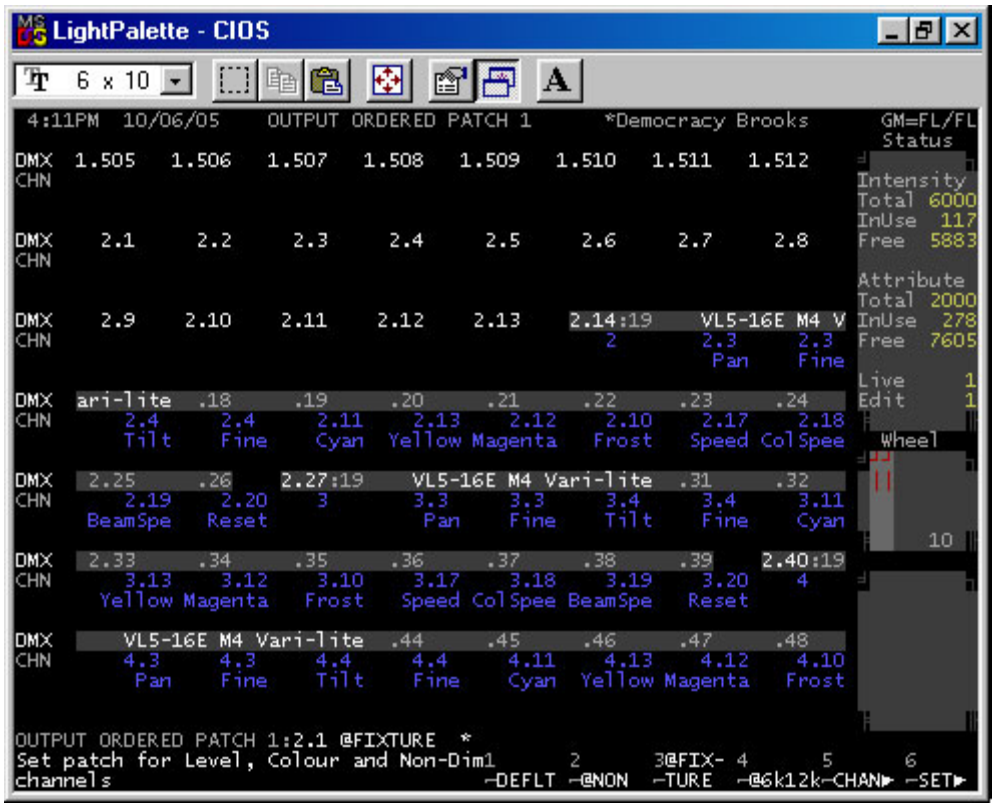
A quick note…If the fixtures are not oriented properly, don't program cues prior to inverting pan and tilt. This WILL insure that the lights will be pointing in the wrong direction so make sure they are oriented correctly prior to cueing.

Delete Fixture Patch

If you need to delete a fixture, it's as simple as following the old LightPalette syntax for getting rid of a command…just expanded a little for the moving light world.

2.1 (@FIXTURE) ENTER

Unpatching a fixture does just that. But you should take note that it doesn't delete the channels. All the show data (cue, group, sub and fx) are still within the console. It's just that the channel doesn't control anything because a fixture isn't patched.

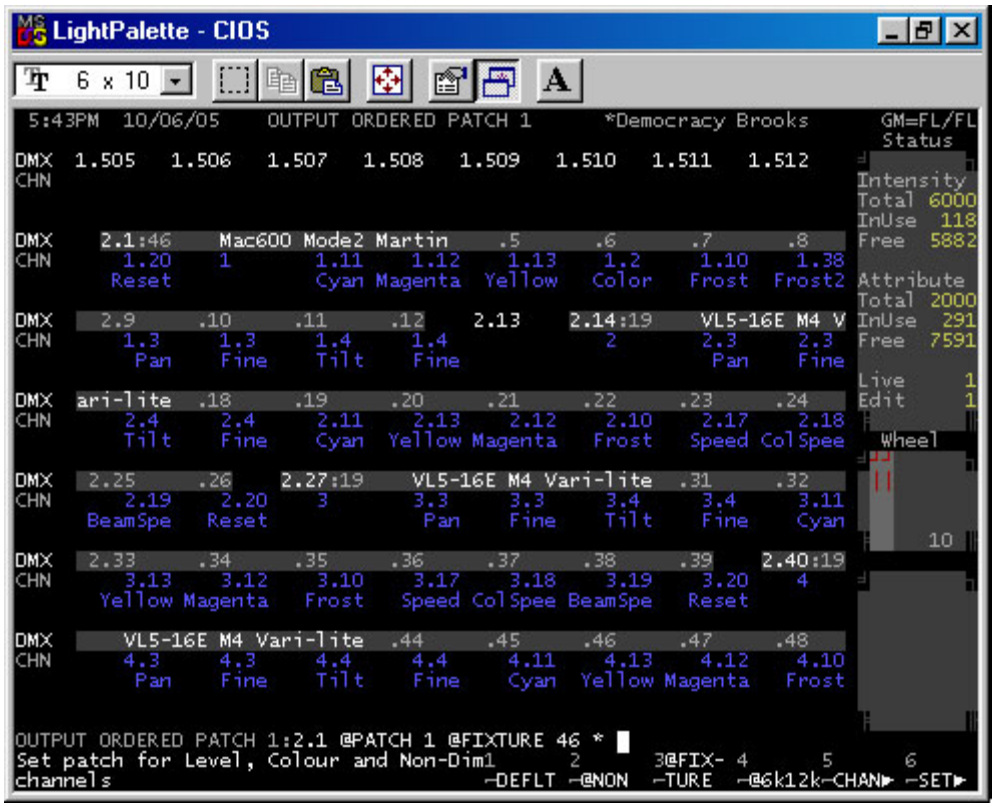


This leads to the next item.

Replace One Type of Fixture with Another

If you program a show that moves and some of your equipment changes, all you have to do is unpatch one type of moving light and patch in another. The first step was accomplished above by unpatching the VL5. Now if another wash light is going to be used, like a Mac600, you can just patch that new fixture to the old channel number.

2.1 @ 4 (@FIXTURE) 46 ENTER



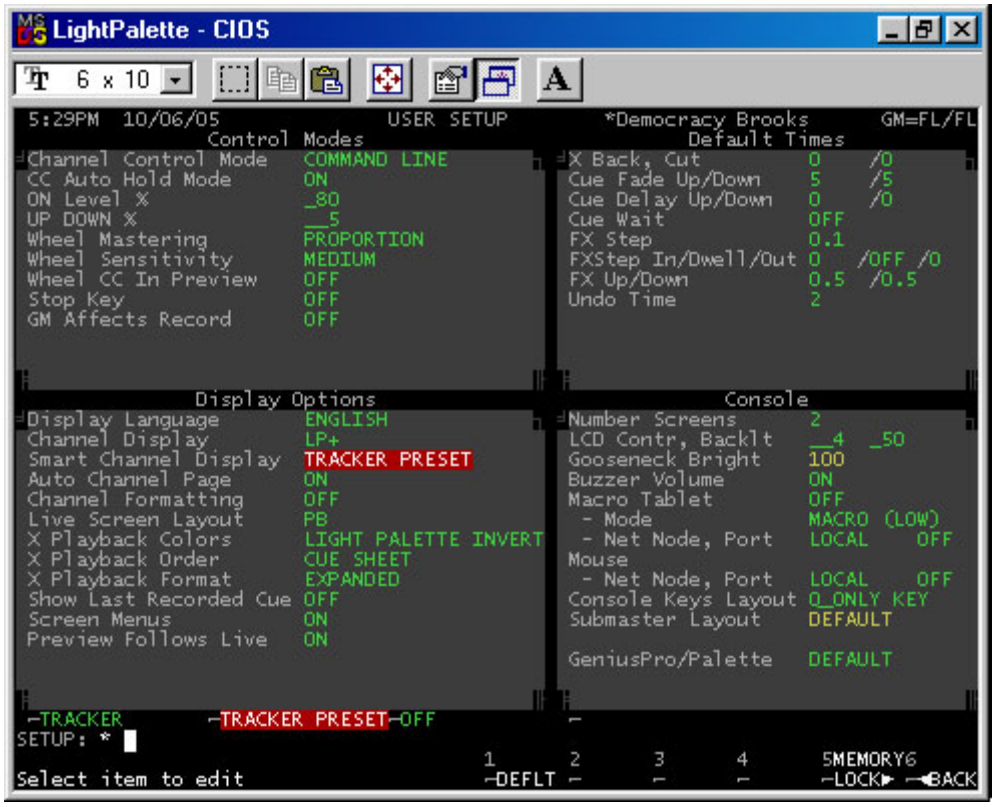
This patched the Mac 600 in its place. Now, as long as the attributes are the same, then all the show data will still be there. Different manufactures deal with fixtures differently so there may be variation in the show data based on the physical differences in the fixtures. Allow time to convert the data appropriately.

Just repeat patching your fixtures until you have all your moving lights patched for your show. Make sure that all pans and tilts are inverted properly before we move on.

FYI, I'll repatch the Mac 600 back to a VL5 for the remainder of the tutorial.

Setup Options

There are some setup options that I recommend to facilitate automated fixture programming. See the screen below…



This is the way I like my User Setup screen. You don't have to copy it exactly but the important setup selection is the display option – *Smart Channel Display*. Set that to *Tracker Preset*.

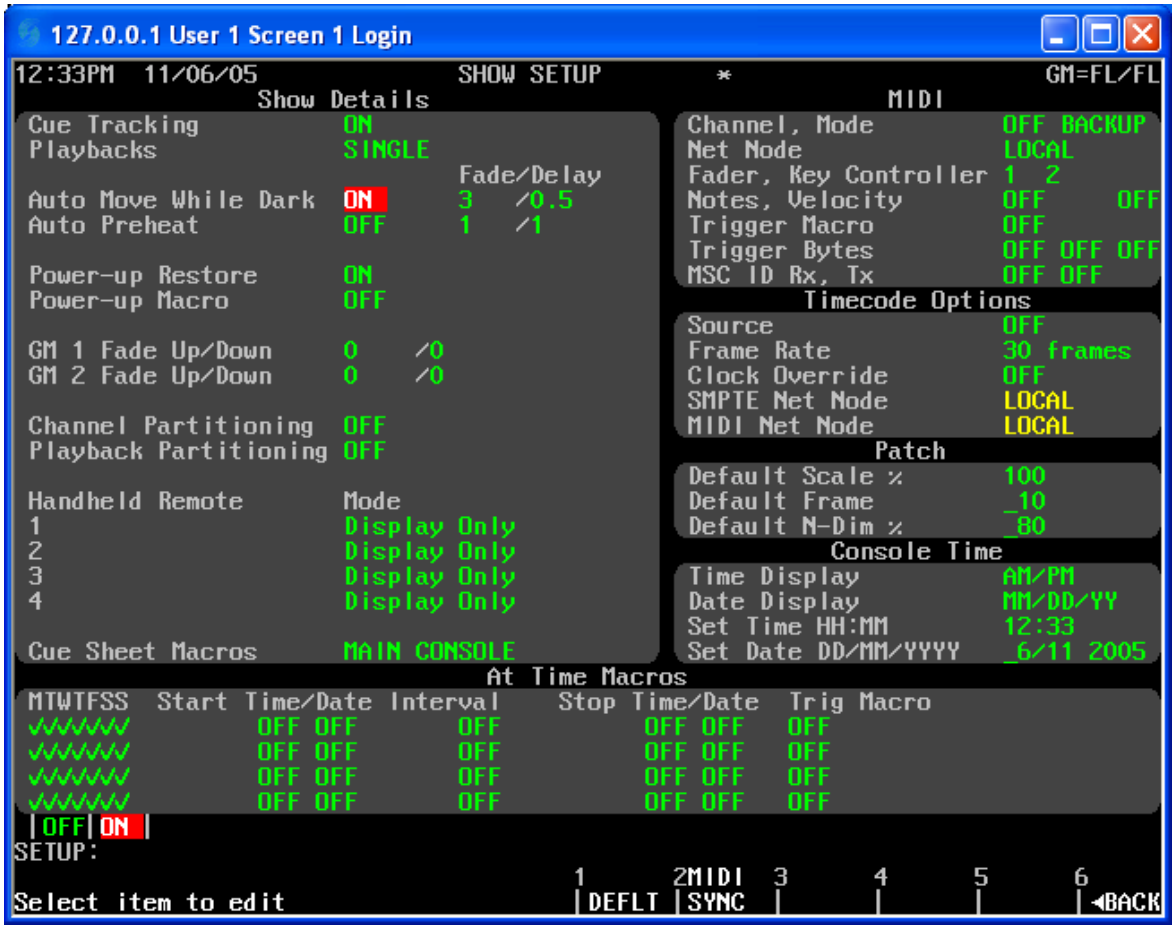
Tracker Preset

Tracker is the moving light application for the Strand operating software. Tracker Preset will allow you to see the Preset Focus Groups for moving lights. You'll see what this looks like when we go to the Live display.

Auto Move While Dark

Let's not forget about Auto Move While Dark. That lovely feature that was discussed in the Scroller Addendum tutorial. Set it and forget it!

{REPORT} (ADV SETUP>) (SHOW SETUP)



{LIVE}

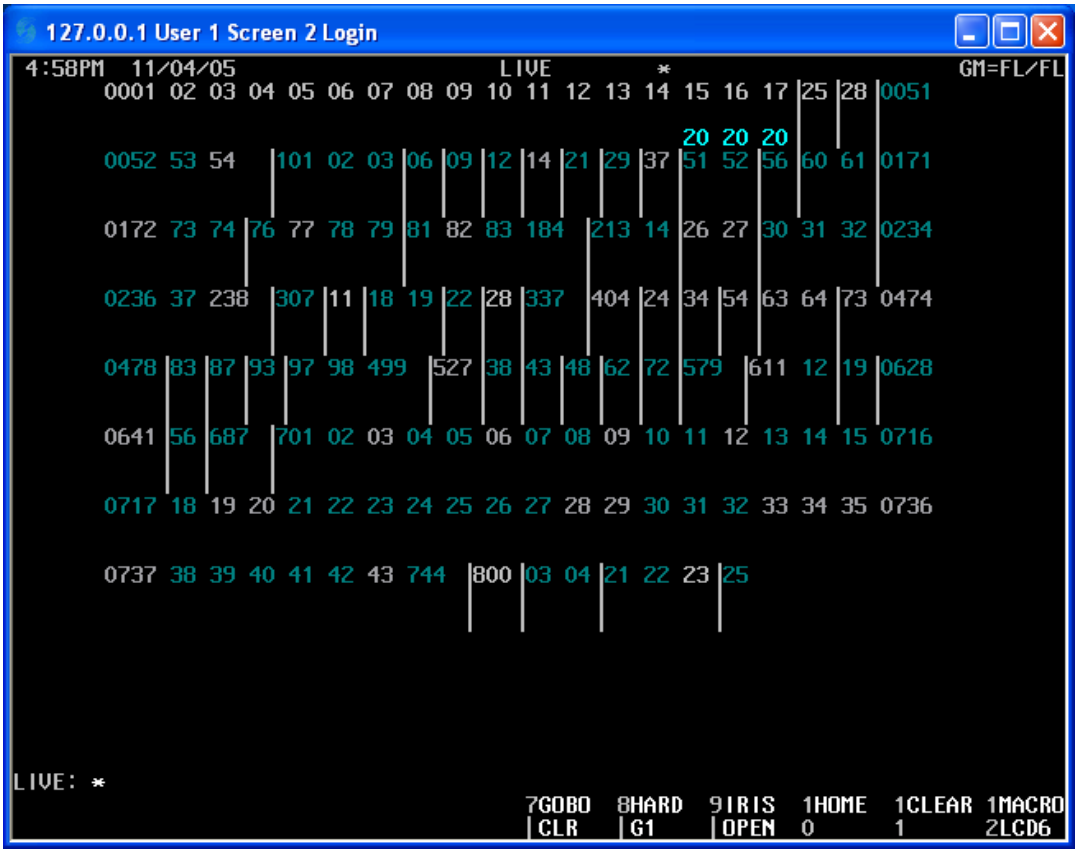
While running cues, the console will look ahead one cue and one cue only. Any automated fixtures that have intensity in the next cue will be automatically set to the attribute values for the next cue in the default time that was set in the *Show Setup* screen shown above.

I've used my default values for the settings. The fade time will determine how fast or slow the fixtures move and the delay time sets the amount of time that the console holds before it processes the auto move after the previous cue completes.

Live Control

Let's go to Live and see what we have.

{LIVE}



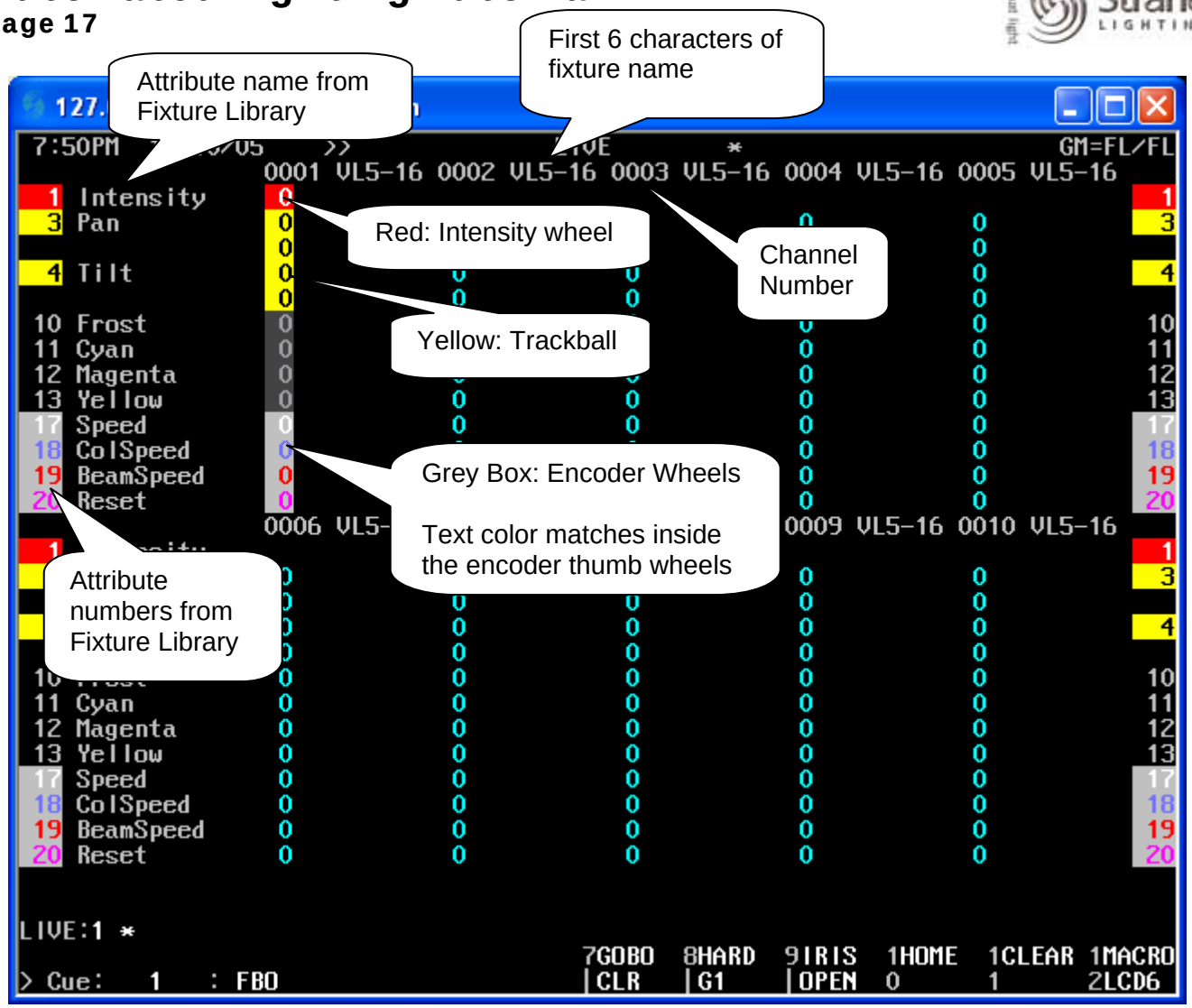
Note: This screen will differ from yours as it is a screen shot from an actual Broadway show.

This shows the conventional screen but notice a few things. I only have the channels that I'm actually using showing. This is because I only patch the channels that I'm using. This is NOT just a display option. All other channels have actually been deleted.

Also notice that most of the channels numbers are in cyan or white. (Cyan for LightPalette – white for GeniusPro) This represents a standard intensity channel. Some of the channels are in light grey. This represents an intelligent fixture. An intelligent fixture can be anything from a Leko with a scroller up to a moving light or media server. If you capture one of the intelligent channels, Tracker Preset will show you the rest. The number under the intensity value location for channels 15 thru 17 indicate a color wheel or color scroller.

Let's capture our first moving light and see what we have…

1 ENTER



Note: Pan and Tilt have two attribute controls but only one attribute listing. That's because, the second attribute for each is 16bit and has been combined on the same encoder.

Locking Pan and Tilt

You can choose to lock Pan and Tilt if you ever need to just move just the X or the Y on the unit.

HOLD THE CENTER TEAL KEY ABOVE THE TRACKBALL

TOGGLE THE LEFT TEAL KEY ABOVE THE TRACKBALL

Now there is a flag on the bottom right of the cue list that says PAN LOCKED and the appropriate attribute is in grey on the channel screen's attribute list.

Toggle the left teal key again while holding down the center teal key and it will release it. Repeat for the right teal key and the tilt will lock.

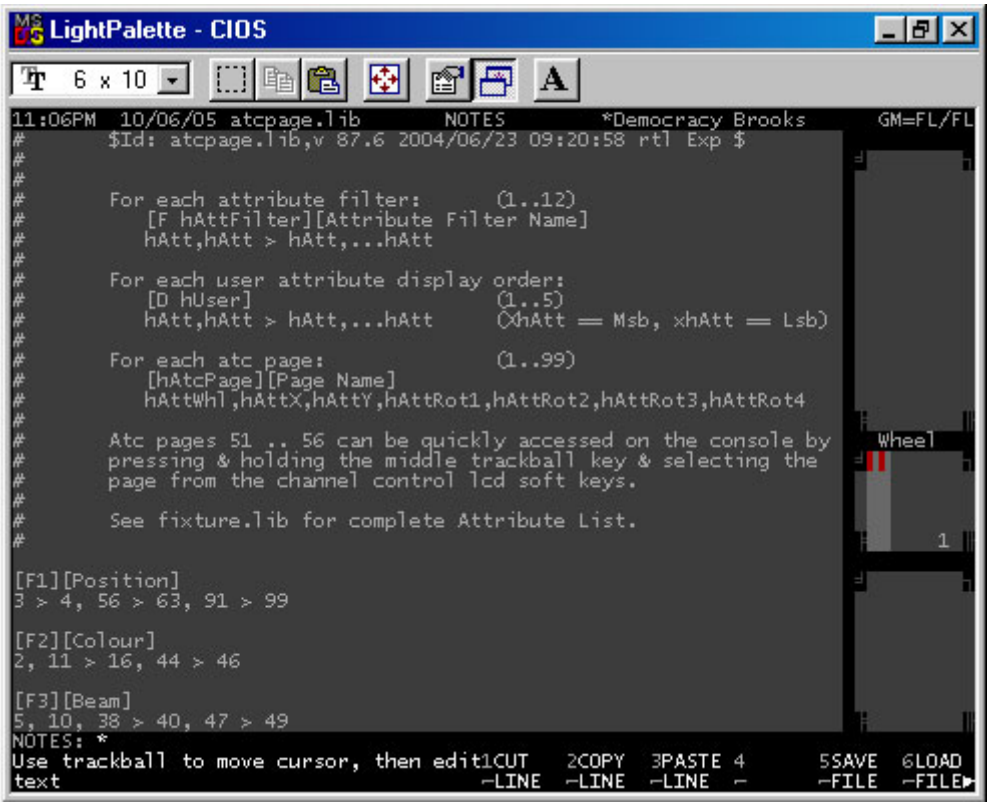
Speed Multiplier

You can also hold down the center teal key and move the trackball. This multiplies the rate of movement.

ATC Page

The ATC or Attribute Control Page is a simple text document that allows flexibility in how the automated fixtures are controlled, displayed and filtered for recording. There are 3 sections to the ATC Page. We'll go into each one at a time but first, let's access the file.

{MORE} (NOTES DISP) (LOAD FILE) (ATC PAGE)

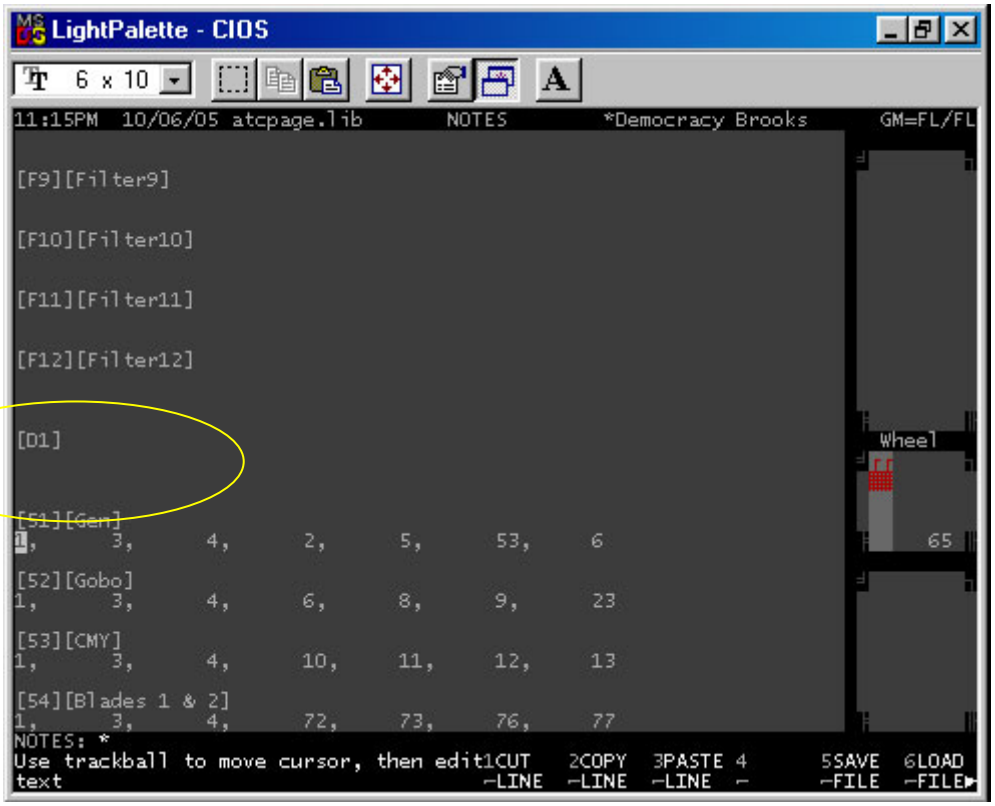


Note: to return to this screen after going back to Live, press LAST SCREEN

The remark statements at the beginning of the file give the details of the information contained within the file. I'll go through this file in the order that I edit the file…not in the order of the information presented.

Display Order

The display order allows the flexibility of determining the display order of the attributes. Scroll down until you find the information displayed below…



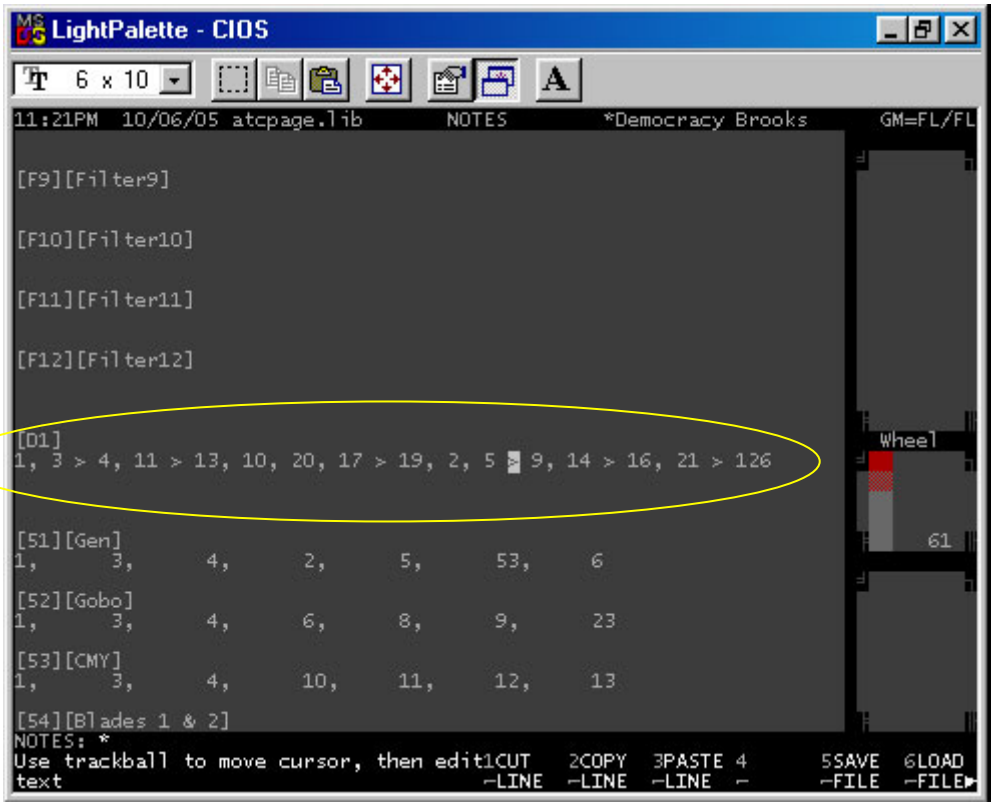
D1 – stands for Display 1 and that is for the display of user 1 which is always the main console. With the line below it blank or default, this means that you are seeing the attribute information in numerical order - 1 thru 126. Since we have VL5s, let's assume that we want to change that display order and we want Frost to appear below CMY and that all the speed channels want to be moved below reset. Simply input the numerical order that you want. Scroll your cursor to the line below [D1] and type this in…

1, 3>4, 11>13, 10, 20, 17>19, 2>126

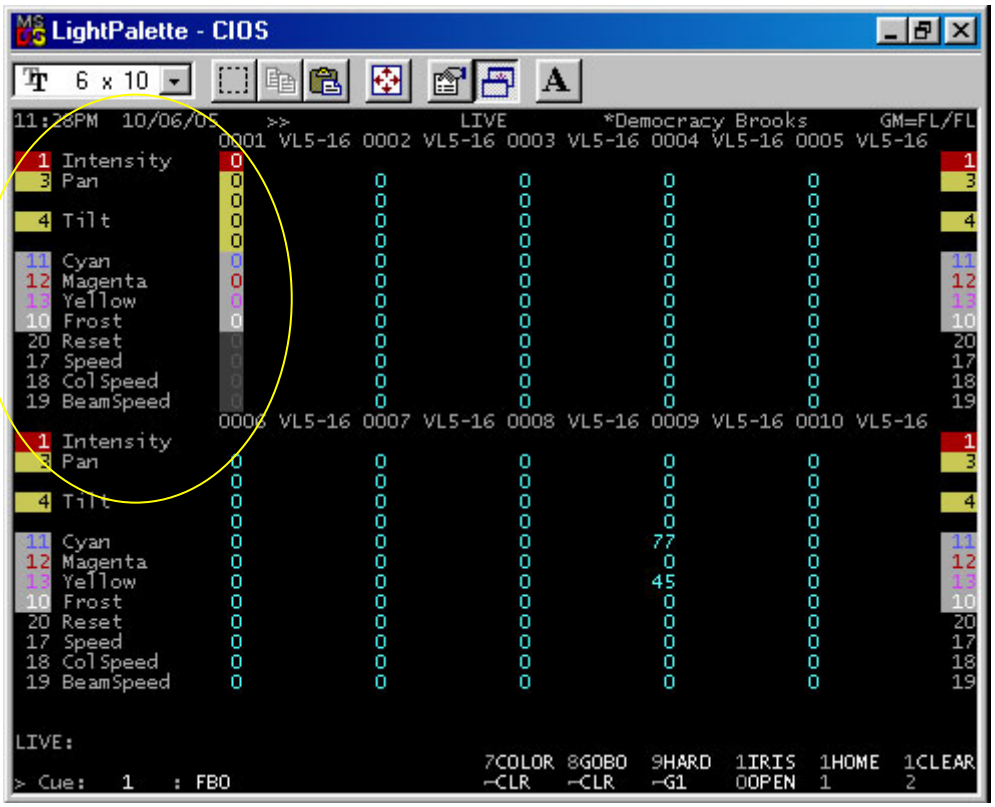
What you have done is set the attribute order numerically. You inputted the specific info; now let the software do the tedious math. Press *(Save File)* and watch the screen.

(SAVE FILE)

The software has fixed all of the syntax for you to make that a legal entry. Here is what you should see…



To see the fruits of your labor, go to Live and press Live again 3 times total. What this will do is refresh your Tracker Preset screen to show the new order…



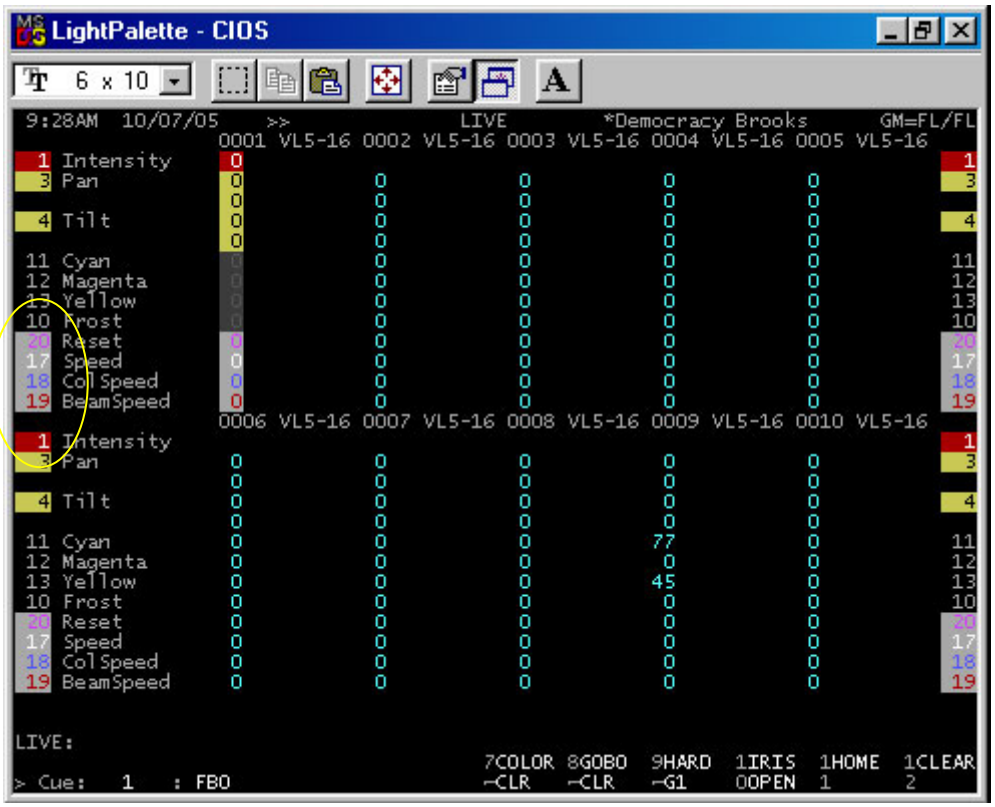
The really nice thing about this feature is that if you are on a multiple desk system, you can add D2 for the 2nd user and so on. The maximum is 5 consoles on a system so you can have 5 user lists. This is great for a programmer that wants one list and a designer that wants another order.

Attribute Groupings

There are two line groupings in the *ATCPAGE.LIB*. Each of these groupings is an ATC Page. They allow the flexibility to determine which grouping of attributes work together on the encoders. To understand this better, let's see how these are used.

From the Live screen, go to the 3 teal keys that are above the trackball. If you press the right one of the three, the attribute selection will move down the ATC Pages list.

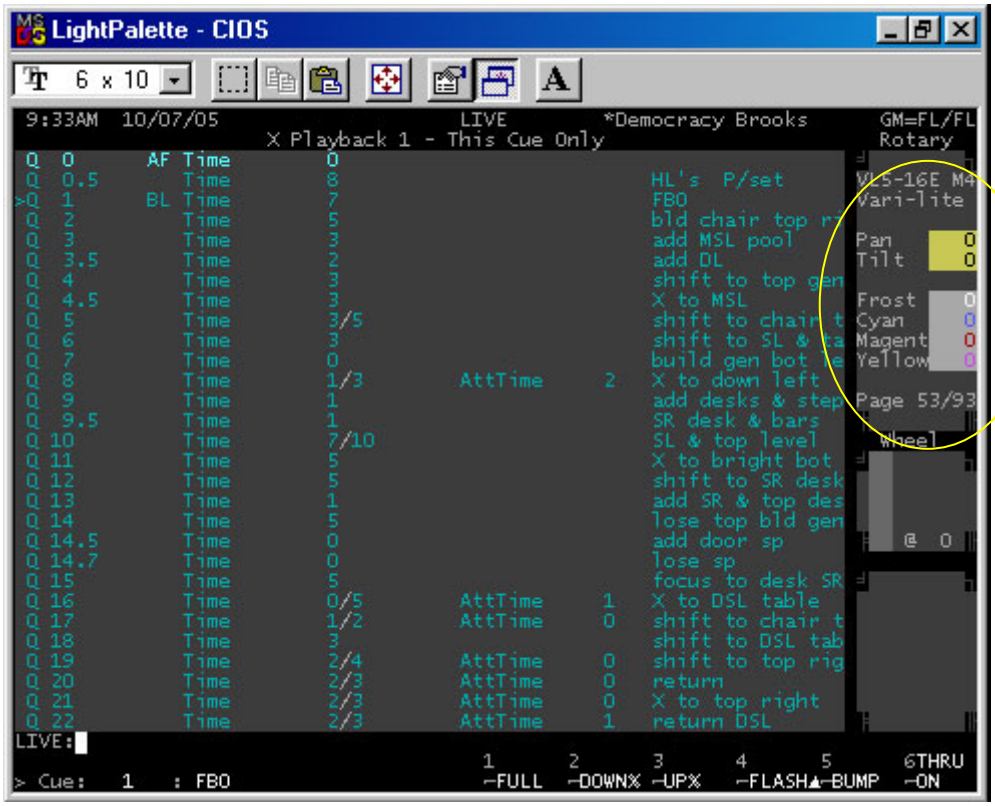
On my console, this is what I get…



Now, it's the Reset and Speed attributes that are on the encoders where it was CMY and Frost on the earlier set. If you press the left teal key, it will go back to the previous assignment.

Rotary Window

Now look at the cue list screen. (This assumes you have a 2 monitor setup) in the upper right hand corner at the "Rotary Window". This will show you the DMX values rather than the percentages for the attribute values. The important thing for now is look at the Page info. It says 53/93. This tells us that the encoders are using ATC Page 53 and the highest numbered ATC Page is 93. If you page through using the right and left teal keys, the encoder assignments will change as the page number changes.

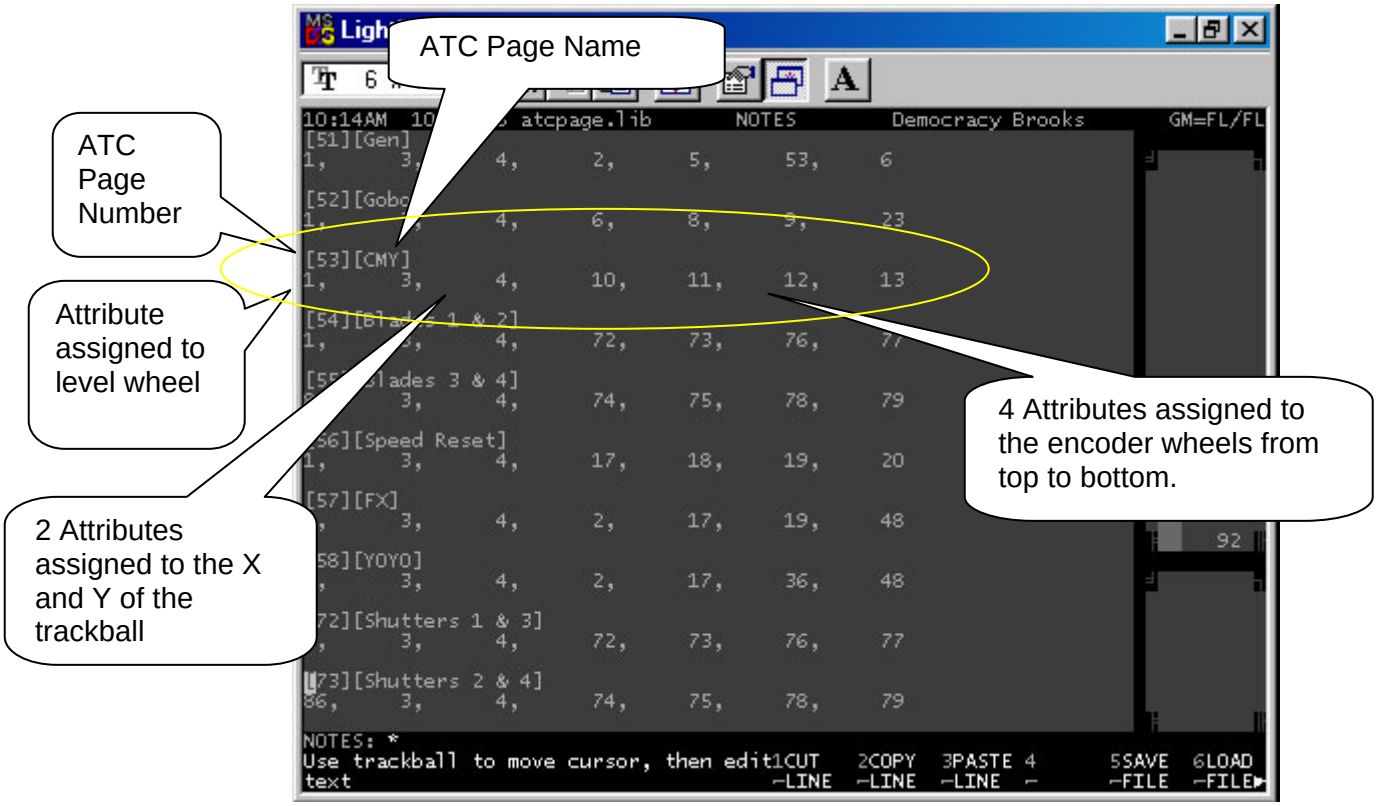


Also, if you press and hold the center teal key above the trackball and look at your softkeys, you'll see that these are ATC Pages for encoder assignments. Pressing any of these softkeys will assign that attribute grouping to the encoder wheels. The softkeys are accessing ATC Pages 51 thru 56.

Now let's go back to the ATC Page and see what we can edit to help our encoder assignments. If you haven't gone to any other page, you can just press *Last Screen* to get back.

LAST SCREEN

Scroll down until you find a page that looks similar to this. You'll find different ATC Pages since the file that I'm using has already been modified for this production.



Editing this file is easy, just change the ATC Page number, name or attribute number that the appropriate device is controlling. If you look at the one that has been highlighted, 53 is the Attribute Map number and since this is within the range of 51 through 56, it shows up on the softkeys when the center teal key is pressed. I have named it CMY because it assigns Frost, Cyan, Magenta and Yellow to the White, Blue, Red (or orange) and Purple encoders in that order.

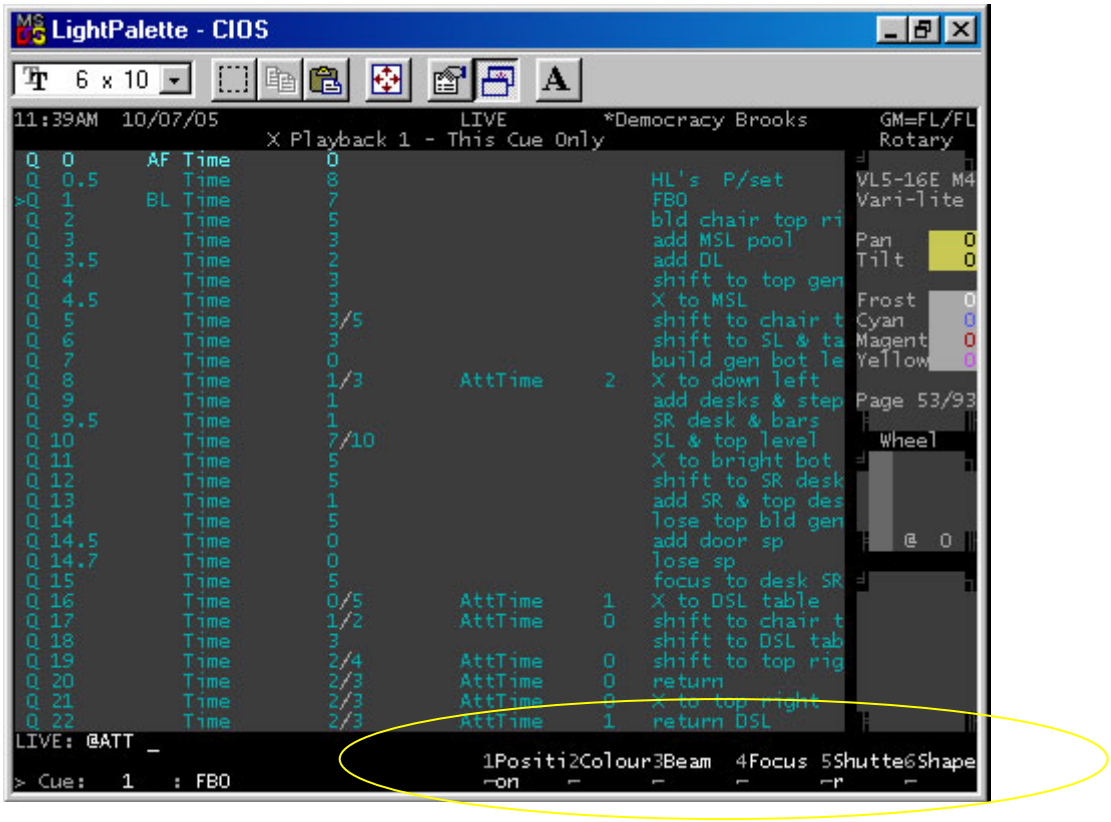
Create as many ATC Pages as you need. You'll probably notice that many ATC Pages already exist in your file. Some are specific to fixtures where some are generic to attribute groupings. You can also delete ones that you don't use. That is something that I do. I don't want to use the right and left teal keys and page thru a bunch of ATC Pages that I never use. Just use the *Cut Line, Copy Line* and *Paste Line* soft keys to help in editing. Just remember to press *Save File* when you are done. If you forget to…don't worry. It automatically saves. I like to do it so that it I see the console fix any formatting issues.

Attribute Filters

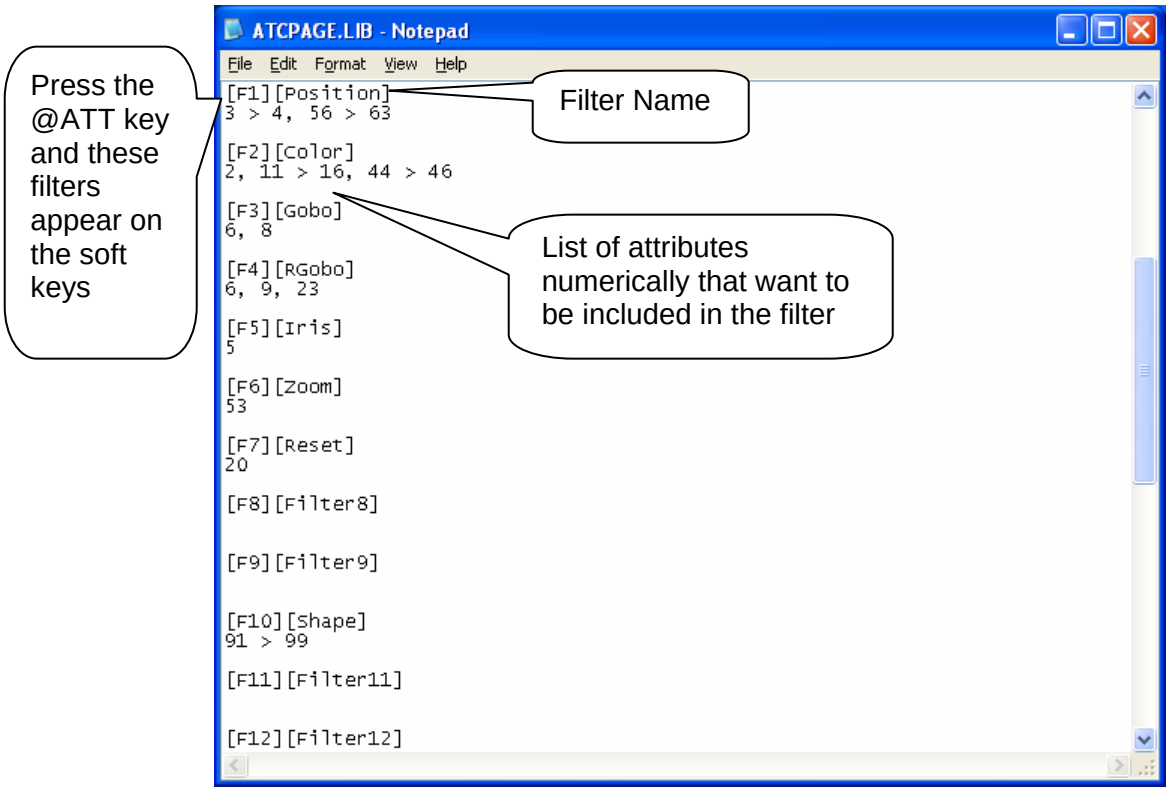
The attribute filters allow the flexibility of filtering out information for recording of preset focus groups. When you press the @ATT key, the attribute filters show up on your softkeys.

@ATT

Attribute filters F1 thru F6 appear on your softkeys. If you need more, attribute filters F7 thru F10 are available on the 520i. They are your center 4 teal keys. Just watch the screen menus. Attribute filters F7 thru F12 are available on the 530i and 550i on your center grouping of teal keys.



These attribute filters can be edited quickly and easily to filter the attributes that you want to group together. Look toward the beginning of the ATC Page for the filters.



Shown here is an ATC Page that has been edited. Notice that any numerical list can be included in any filter. Just setup what is needed for speed of programming.

Recording Preset Focus Groups

Preset Focus Groups are groups that allow cue data to reference back to the group data for attributes only. The way this works is lights are placed in the correct color groups, gobo groups and position groups and then the current state is recorded as a cue. Once recorded, the cue is now referencing the preset focus groups. If you change the info in the groups, then all cue data is automatically updated. Remember that preset focus groups are from 1 to 750. Groups from 751 and up are NOT preset focus groups as well as point groups.

Group Layout

Although not mandatory, I recommend defining a group layout for your show. This is just a numerical framework that makes it easier to catalog your show groups. There are two main categories for these listed below.

Utility Groups

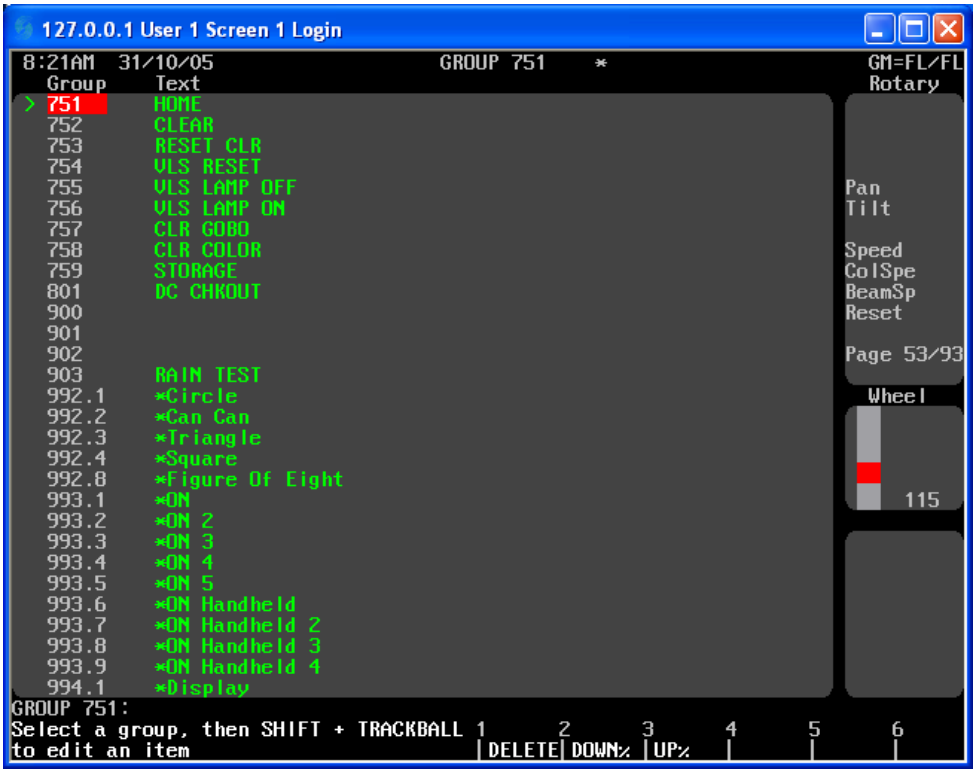
Utility groups are programming tools that prepare the lights for creating show content groups. There are two main utility groups that I use: Home and Clear.

Home takes the light back to a default position without affecting other attributes. If the light is a yoke based fixture (not a mirror unit) and the fixture is hung on a standard electric where the housing is square to the electric, then this will be pan at 50 and tilt at 50. Some programmers refer to this as 50/50. Using this group orients the light straight down and rotates the yoke until its square to the electric. This usually has the yoke running stage left to stage right. If the light is a mirror unit, then the pan and tilt values can be anything you want. Just have the fixture focused where you would like for its home position.

Clear takes all other attributes to a default position. Iris, Focus, Color, Gobo, Shutters…everything else goes to a default position. For Color and Gobo this will be zero so there is no color or gobo present. For Iris it could be open (Full), it could be closed (0) or 50% or anything in between. Just put it where you want it to be as a place to start. For Focus, this could be a value that would give you a hard edge or maybe a soft edge. You get the idea. I also include the reset channel at the manufacturer's required value to have the lamp on.

These groups are not meant to be part of show content so I place them outside the range of preset focus groups. Home is Group 751 and Clear is Group 752. You are also not limited to these two utility groups. If you wish you have a Clear Color group then record just color info into a Group 753. If you want a Clear Gobo group, then record the gobo info at 0 as Group 754. Remember that for a Clear Gobo group you might want focus as part of it, you might not. I usually make this determination based on the type of show that I'm doing. The main this is that I don't always assume the groups and the info in the groups will be the same for every show. Adjust the data to apply to the show as you need it.

Below is an example of utility groups that I used on a Broadway show.



Show Groups

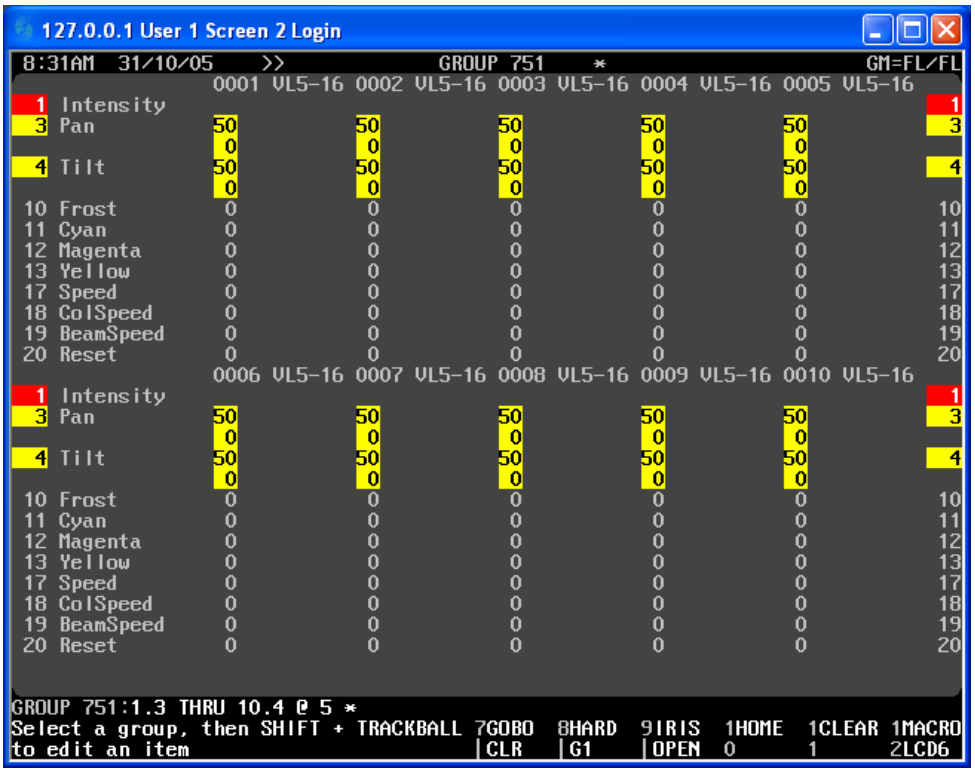
Show groups are groups that contain show data for programming the cues. These usually break down into positions, colors and gobos as a minimum. On some shows, I might include FX groups, beam groups, iris groups and anything else that the show requires. On the example below, notice how I predefined my group numbering scheme so that each new item type starts with the next hundred.

Building Groups

In Preview

Let's start by building our utility groups. I usually build those blind in preview. The example is based on 10 VL5s that have been patched as channels 1 thru 10. Just adjust your channel numbers accordingly if you don't have the same fixtures patched.

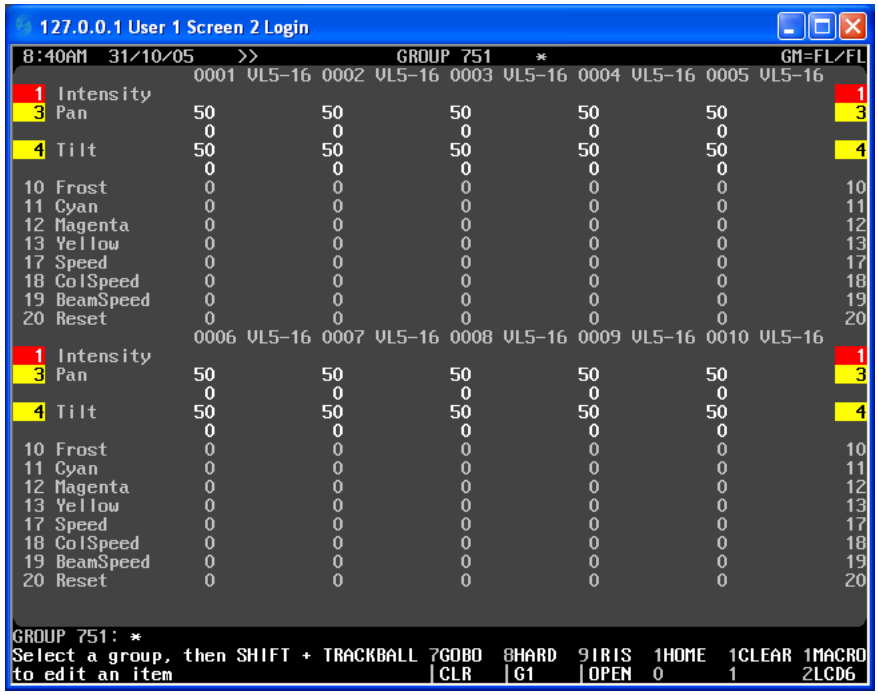
> ***{PREVIEW}***
>
> ***GROUP 751 ENTER ENTER***
>
> ***1.3 THRU 10.4 @ 5 ENTER***



Notice that I captured the attributes that I wanted just by typing them in. The number on the left side of the point is the channel. The number on the right side of the point is the attribute number. Also notice that "THRU" worked on both sides of the point so that 1.3 thru 10.4 is actually processing 1 thru 10 but only .3 (pan) thru .4 (tilt).

I always like to press clear afterwards so that I can see the actual values not selected.

> ***CLEAR***



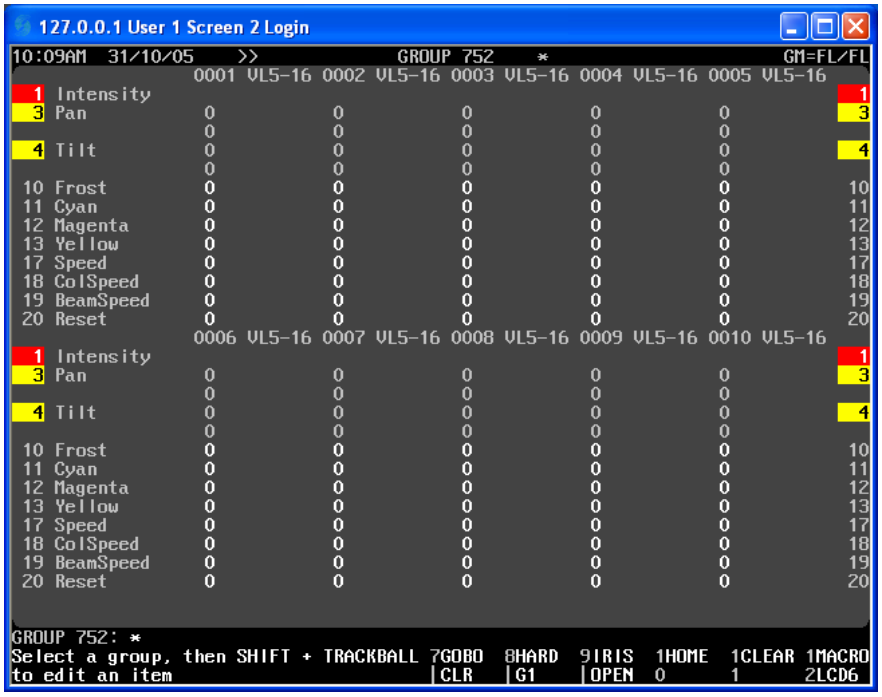
Note: White values are the only ones that are actually values in the group. Grey values are legal attributes that don't have values in this particular group.

Now let's build the clear group.

GROUP 752 ENTER ENTER

1.10 THRU 10.20 @ 0 ENTER

CLEAR



Depending on the fixtures that you have patched, your syntax will change to include a wider range of attributes. That syntax was used because the fixtures were VL5s. Just reference your numerical attribute list on the left side of the channel page.

In Live

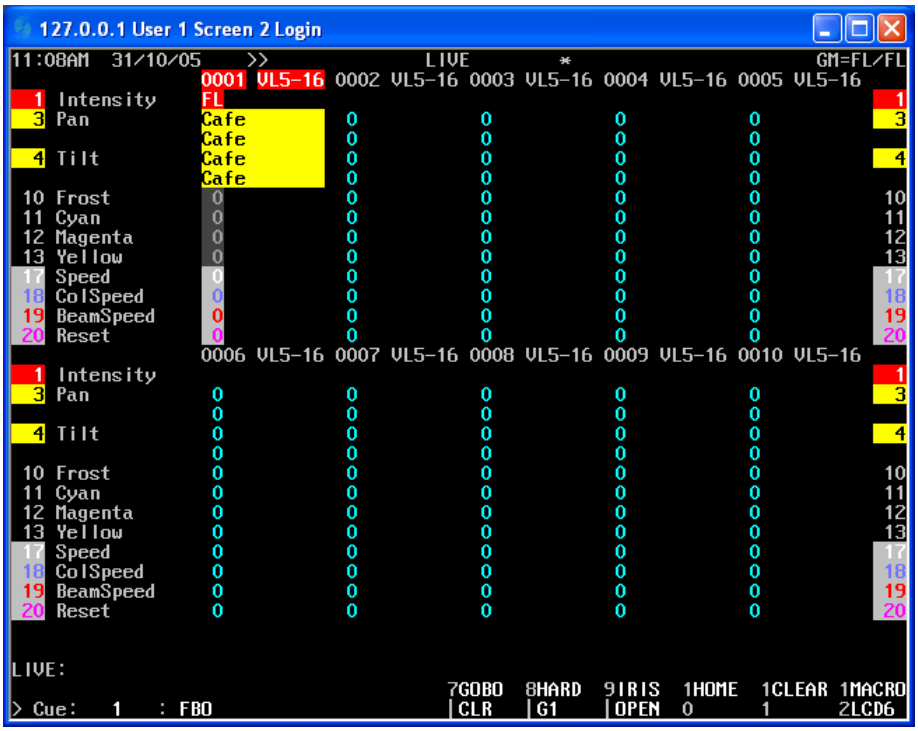
Building groups in Live is easy using the attribute filters. Let's build a position group first. Select the unit, turn it on, move the unit into position, record the group. Let's see how…

1 ON

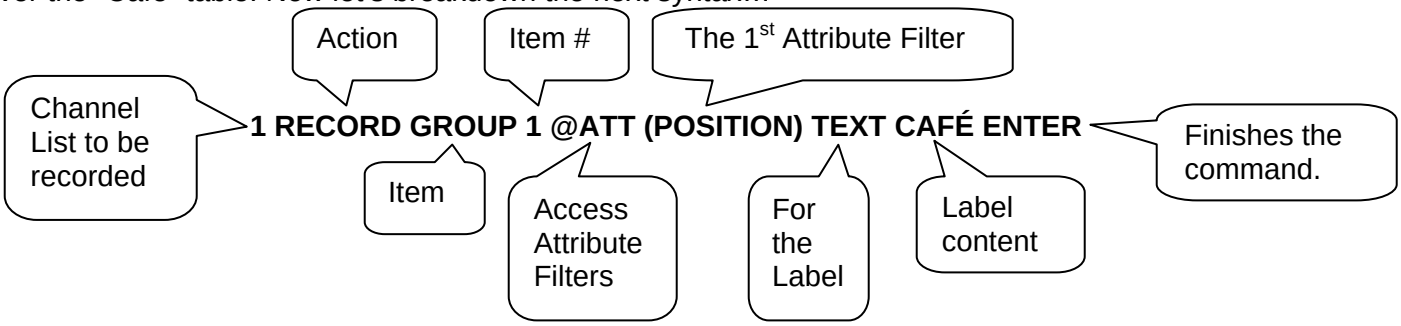
TRACKBALL THE UNIT INTO POSITION

1 RECORD GROUP 1 @ATT (POSITION) TEXT "CAFÉ" ENTER

@ GROUP 1 ENTER



So the first thing was channel one was captured and turned on. Then the unit was moved into position over the "Café" table. Now let's breakdown the next syntax…



Now that we see all the different components to this syntax, let's talk about the options.

Channel List: With a channel list, the following action will only apply to the channels in the channel list. If this is excluded, the command string would start w/ Record. This means that it would take all fixtures in the show that have position attributes.

RECORD: That's the action for this command. You could change this out for *Update*.

Item: This could be changed so that you are recording into a *Cue* or *Sub* rather than a *Group*.

Item #: Choose any number that you want. Groups can be numbered from 1 to 999. If you use point groups like 1.1, then it will NOT be a preset focus group. Only whole numbers are preset focus groups. Also there are utility groups in the 900s range. These are defaults.

@ATT: This changes the softkeys to access the attribute filters.

(POSITION): This is the first attribute filter that is in the ATCPAGE.LIB.

TEXT: So that the group can be labeled at the same time that it is created. This step is optional.

"CAFÉ": Just the content of the label.

ENTER: Finishes the command syntax.

Notice that the last line of the previous example was "@ GROUP 1 ENTER". Prior to that command, the group was recorded but the fixture was not accessing the group. This tells the fixture to access or go to the group. If the data on screen is numerical, then it is NOT accessing the focus group. If the data shows the label then it IS accessing the group.

Now let's repeat this recording process for a color group.

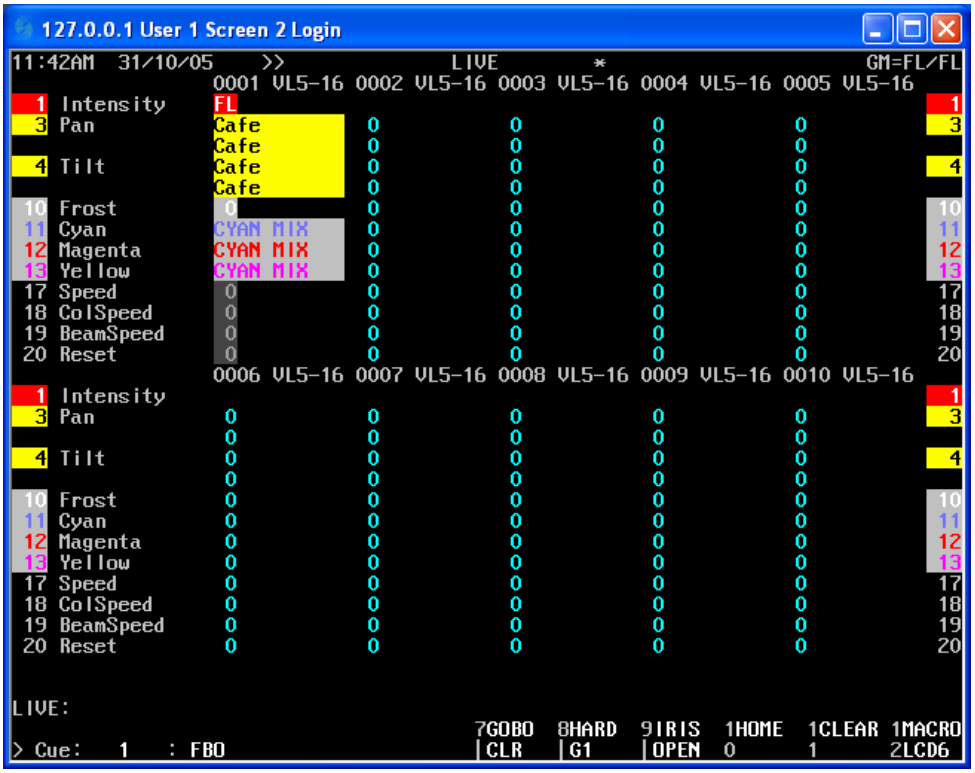
1 ON

ROLL THE BLUE WHEEL FOR THE CYAN COLOR FLAG

1 RECORD GROUP 101 @ATT (COLOUR) TEXT CYAN MIX ENTER

@ GROUP 101 ENTER

Note: depending on your ATC Pages, Cyan may be on a different encoder.



Just repeat this process for all colors that are needed in the show. You can also repeat this process using other attribute filters for gobos, shutters, focus, and iris…whatever you want! Just remember to set the attribute filters that you want to use in the ATC Page.

Preset Focus Group Display Options

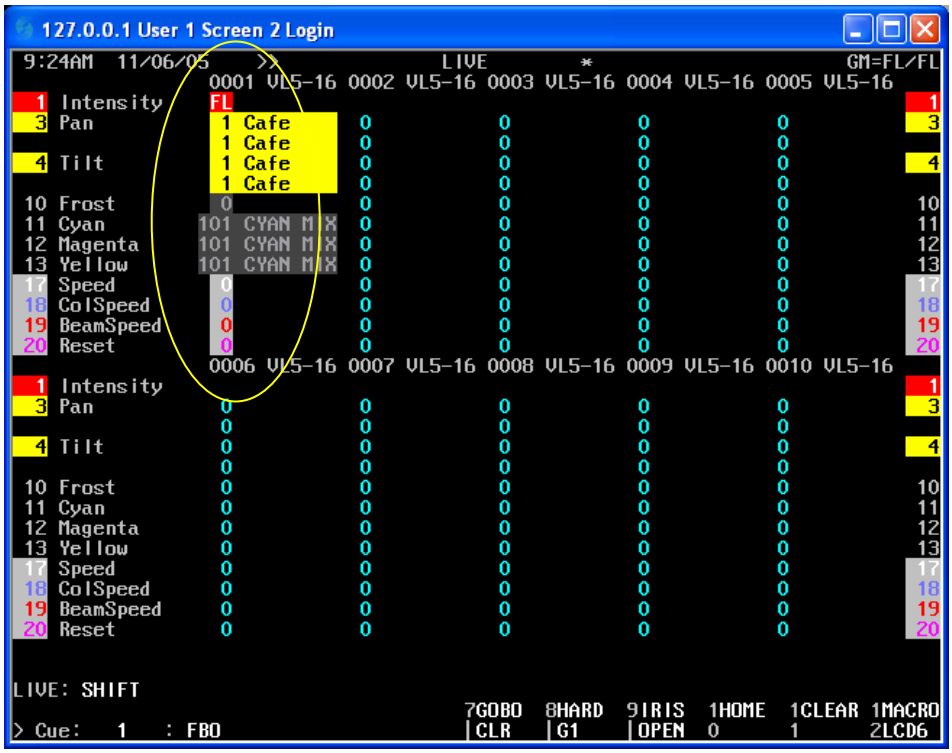
Standard Group Display

You have different group displays that can help you view the group information in different ways. The view above where you see the group text is the standard group display.

Preset Display

By pressing *Shift + the Group Display* button at the same time, you can toggle through the group display options.

SHIFT {GROUP}



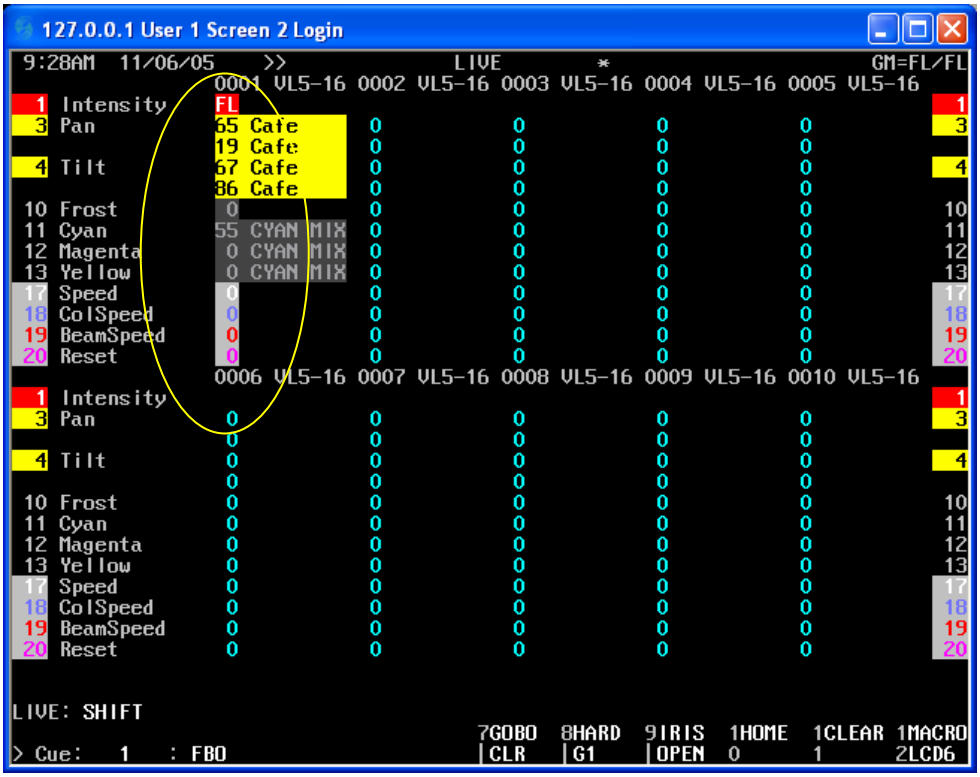
Note: Notice the red flag at the bottom right hand corner of your cue list that says Preset Display

This is now displaying the group number first, then the group text because sometimes it's easier to deal with group number info.

Control

Let's see what other options there are…

SHIFT {GROUP}



Note: Notice the red flag at the bottom right hand corner of your cue list that says Control

This shows the percentage values first, then the group text because sometimes, you just want to know what the mix values are on colors.

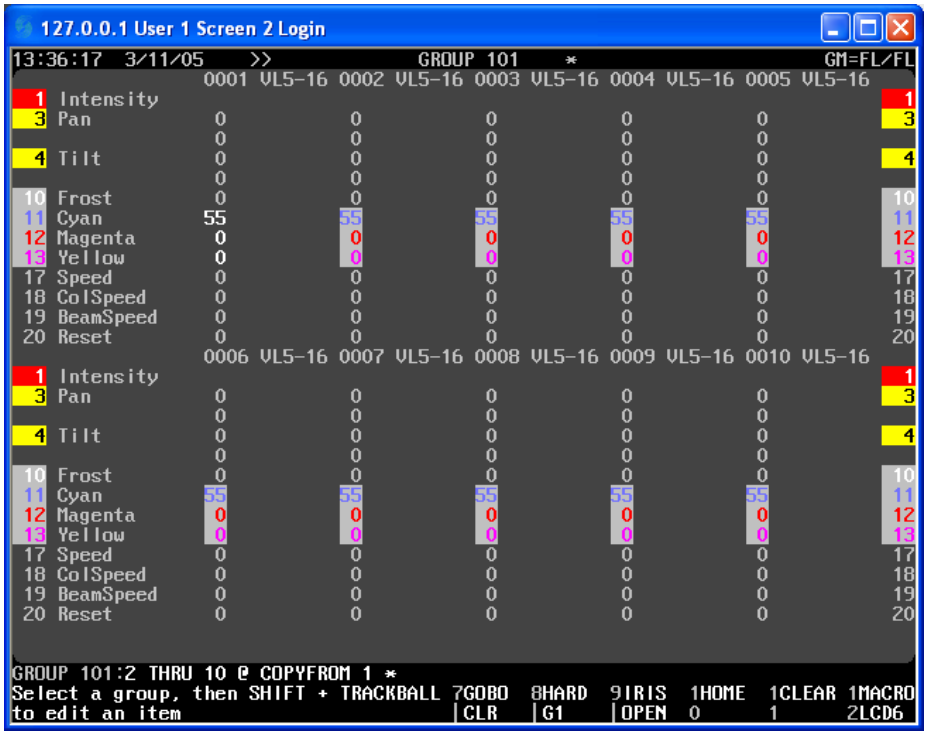
SHIFT {GROUP}

Pressing *Shift* + *Group Display* again will toggle you back to the default group display.

Copying Info from One Fixture to All Fixtures

So we have stored our CYAN MIX color for channel 1. What if we want to copy this to all of our VL5s?

{GROUP} ***TRACKBALL TO GROUP 101*** ***2 THRU 10 @ (COPYFROM) 1 ENTER*** ***CLR***



Note: This is the view prior to pressing CLR. Once you press CLR, all the recorded info shows up in white vs the grey info.

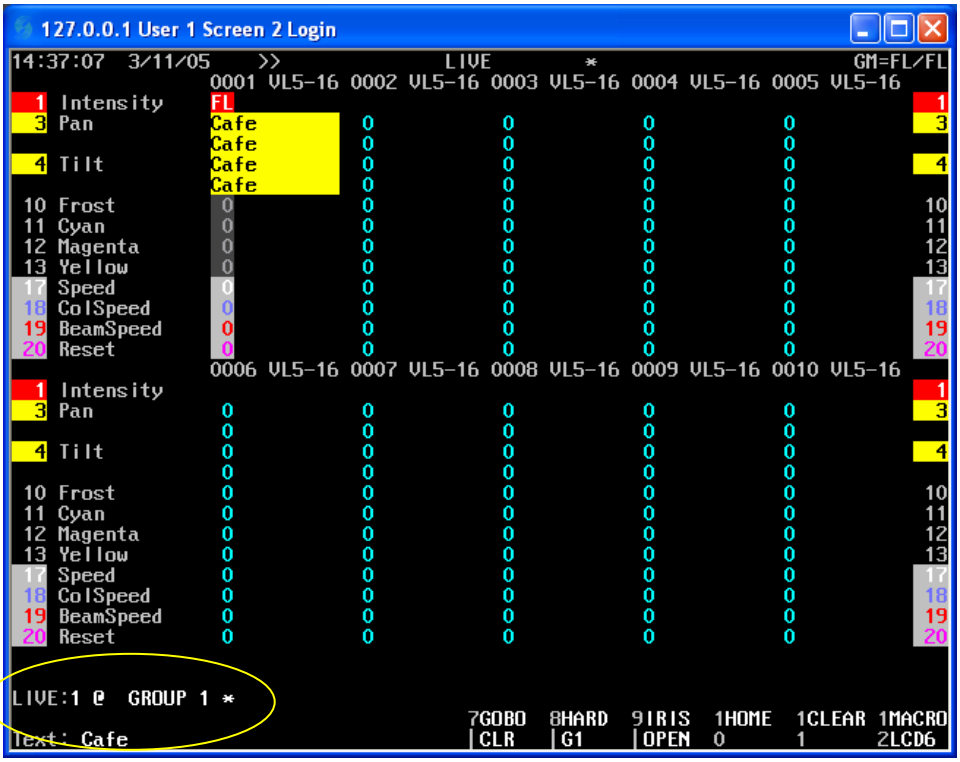
Quick Access for Palettes

Now that you have built several colors, let's talk about the different ways to access those preset focus groups.

Access by Group Number

The traditional way to access any preset focus groups is by group number.

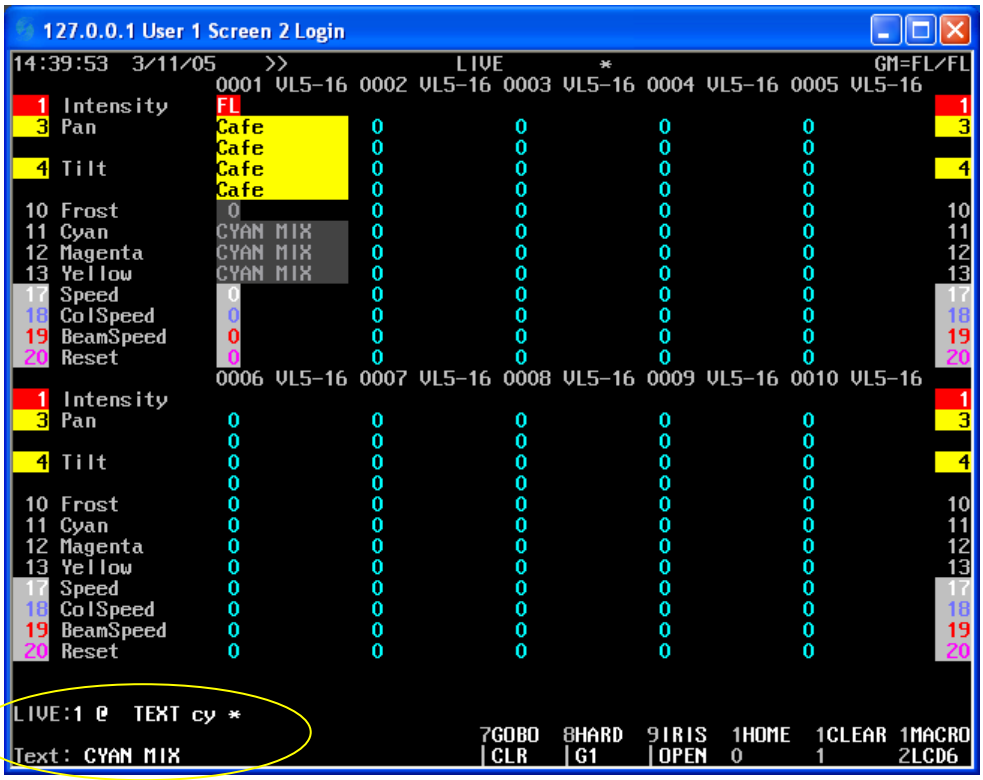
> ***LIVE***
>
> ***1 @ GROUP 1 ENTER***



Access by Text

It may not always be convenient to access the group by number. Another way to access the group info would be by the text label.

> ***1 @ TEXT CY ENTER***



When @ TEXT is entered, the console is now looking for group label info to access the groups for you. As you enter each key, it will text match at the bottom of your screen. When the correct group label is matched, you can stop entering text and just press Enter. That's why I only typed in "CY" for Cyan Mix.

My favorite thing to do is to mix color groups and label them 68R for Roscolux 68 and 201L for Lee 201. By saving the manufacturers letter for the last, I can input the label text from the console's numerical keypad rather than searching on the keyboard. Try it and see how you like it!

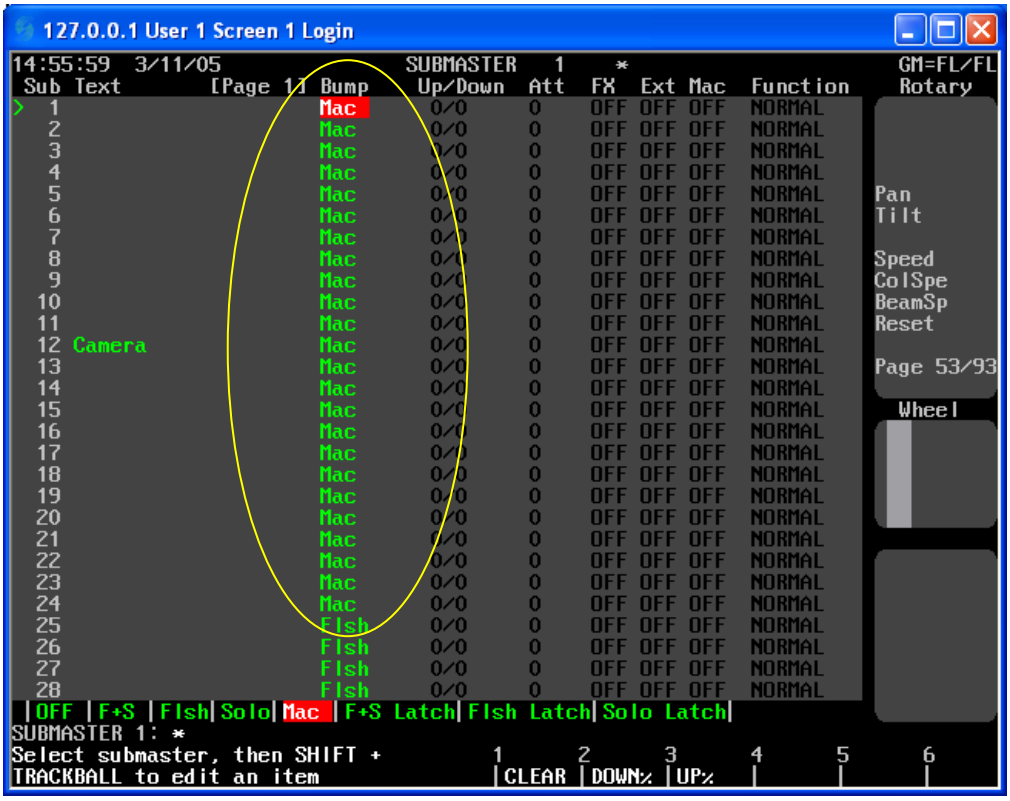
Access by Macros on Submaster Bump Buttons

If you like to work with palettes, the way to setup them up is to turn the submaster bump buttons into macro buttons. The first step is to build the groups and we have already learned how to do that. The second step is to switch the bump buttons over to macros.

{SUB}

TRACKBALL OVER TO THE BUMP COLUMN UNDER SUB 1

CHANGE FROM FLSH TO MAC



Now these subs will fire the macro equal to the sub number plus 100. So Sub 1 will fire Macro 101, Sub 24 will fire Macro 124 and so on. There is also a second page of these macros. If you hold down the *Shift* key, the bump buttons will access the sub number plus 300.

The only thing left is building the macros themselves.

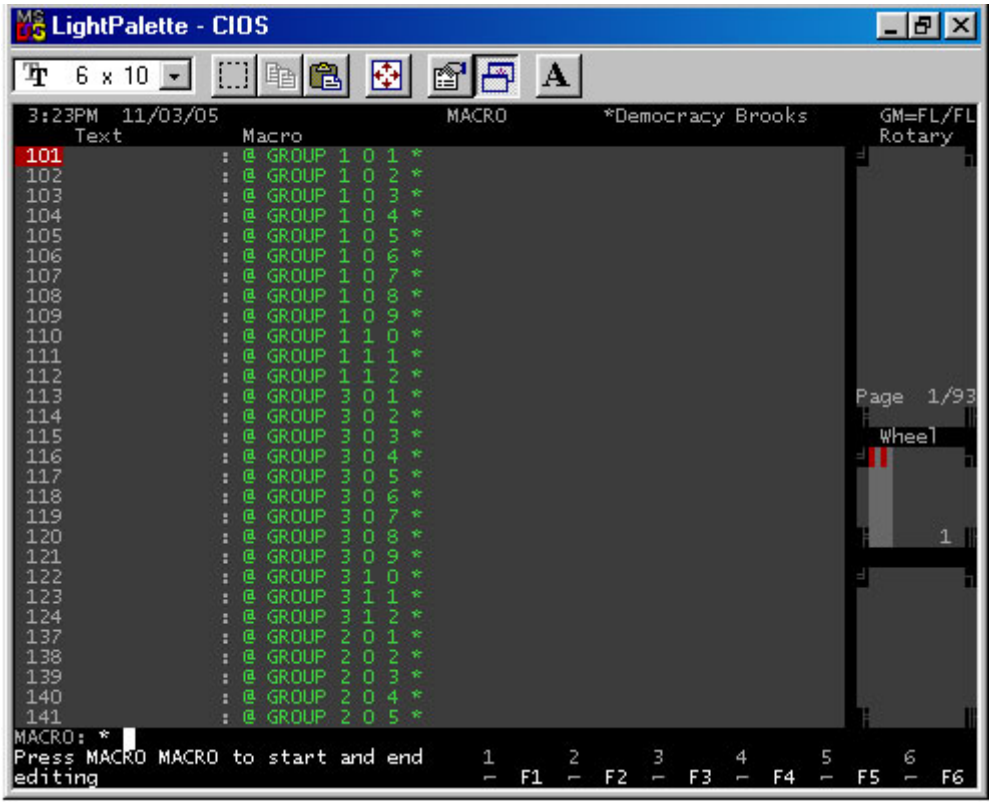
Build Macros

Let's go into the Macro screen and build the macros in preview.

{MACRO}

MACRO 101 ENTER ENTER

@ GROUP 101 ENTER



Note: This is an example from a Broadway show. Your actual Macros and macro content may vary.

Just continue this format for all macros that need to be written.

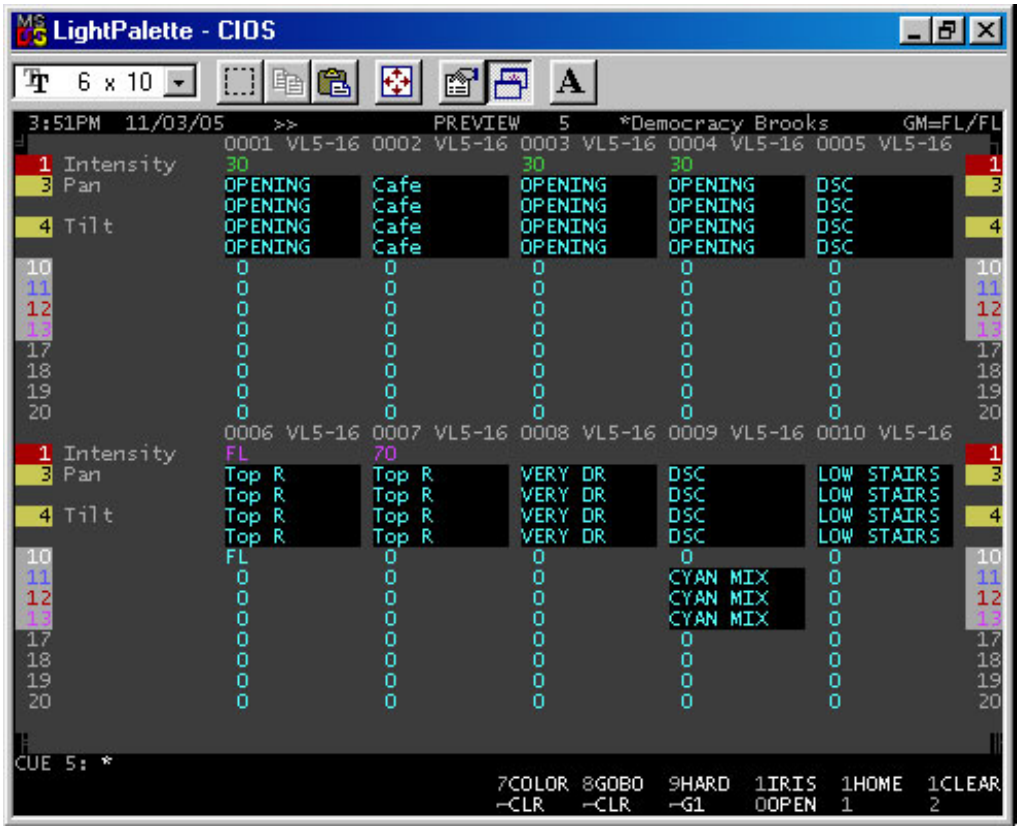
I usually decide before I start writing macros how I want to break down the submaster panels. I'll usually do 1 thru 12 as colors, 13 thru 24 as gobos, with the shift version of 1 thru 12 as positions and the shift version of 13 thru 24 as gobo effects, beam and iris groups.

Remember that writing the macros without a leading channel number will allow the macro to work with any combination of moving lights. Just put in the channel list prior to pressing the sub bump button. That will run that macro for all the selected channels.

Writing Cues

I spend a lot of time building preset focus groups for several reasons. 1. Its faster programming than moving a light into position or mixing a color every time. 2. When I look at my moving light screens, seeing text based info is much more useful that numerical info.

Below is a look at a cue in preview. It shows the first 10 channels of VL5s in the recorded positions for Cue 5. Notice that all fixtures are referencing a position group. This is evident by the text as well as the black box surrounding the data.

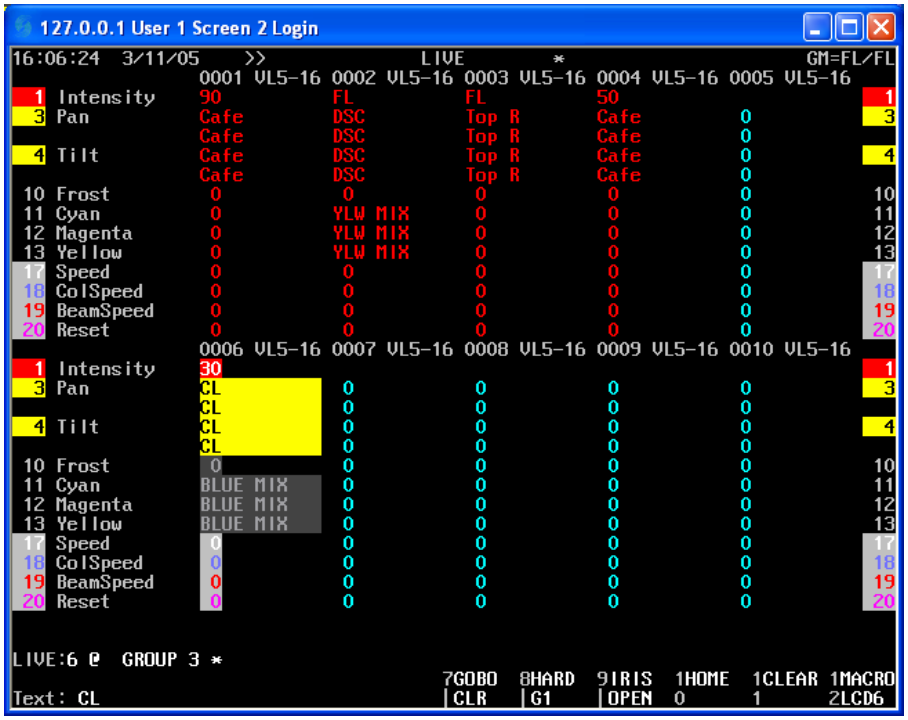


Let's talk about accessing those groups a little more.

Accessing Preset Focus Groups

We've learned the 3 ways to access the preset focus groups so you just need to choose the most intuitive way for you when building cues.

Below is a sample screen shot after I have placed a few lights into position and colors using preset focus groups.



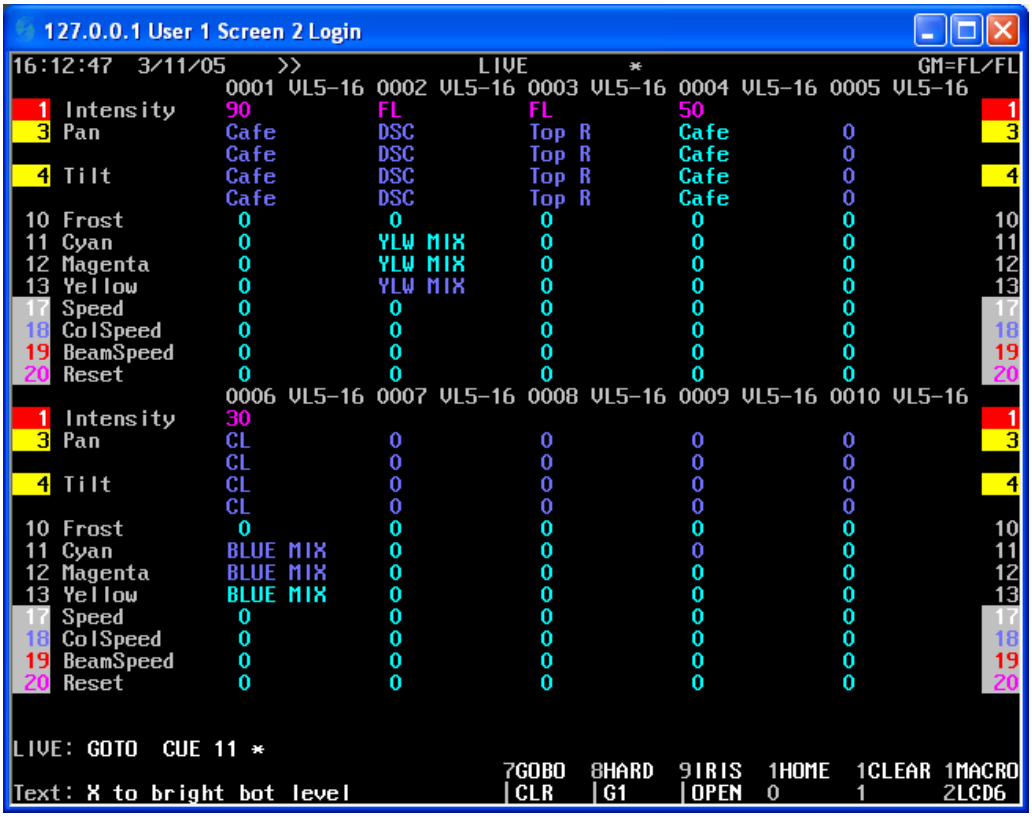
Remember the 3 ways of access the groups…

@ GROUP 1 ENTER – for accessing the group by number.
@ TEXT CYAN ENTER – for accessing the group by text.
Pressing Sub Bump Buttons – for accessing the groups via pallets.

Recording Cues

Recording cues with moving lights is no different than recording cues with conventional units. When you set your levels and attributes using the preset focus groups just record!

RECORD 11 ENTER
GOTO ENTER



Note: I recorded this as Cue 11 then gave it a GOTO command. This allows me to see all info in the proper colors.

I chose to record this as Cue 11 but you can record to any cue you wish. When the cue is recorded, all info will be cyan. This is to let you know that the channel info has been stored as a cue. By forcing a GOTO command with GOTO ENTER, I now see all info in its proper colors. Purple is up, green is down; cyan is tracking and blue is changed attribute info. Remember that attributes can never be off so up or down don't relate to attributes. We only want to know if the attribute info is the same (cyan) or different (blue).

Part Cues

Part cues are a fabulous way to have channel levels get to the completed results of a cue in different times. Many people find part cues confusing but I hope to clear up any issues and convert any non-believers in part cues because there are huge advantages over using multiple cues and assigning autofollows. In this example, we will have the color move in its own part at a different rate and to come up later than the other attributes.

First, a few rules about part cues…

There is a limit of 12 parts per cue.
Each part goes toward your total capacity of 2000 cue parts per show on a 500 series console.
All parts start at the same time. They don't start after the previous part completes.
If you start by building Part 2, then Part 1 will be the base part. (Previous desks like LightPalette and Obsession use Part 8 as the base.)
Each part can have its own time, delay, effect, macro and text assigned to it.

Advantages…

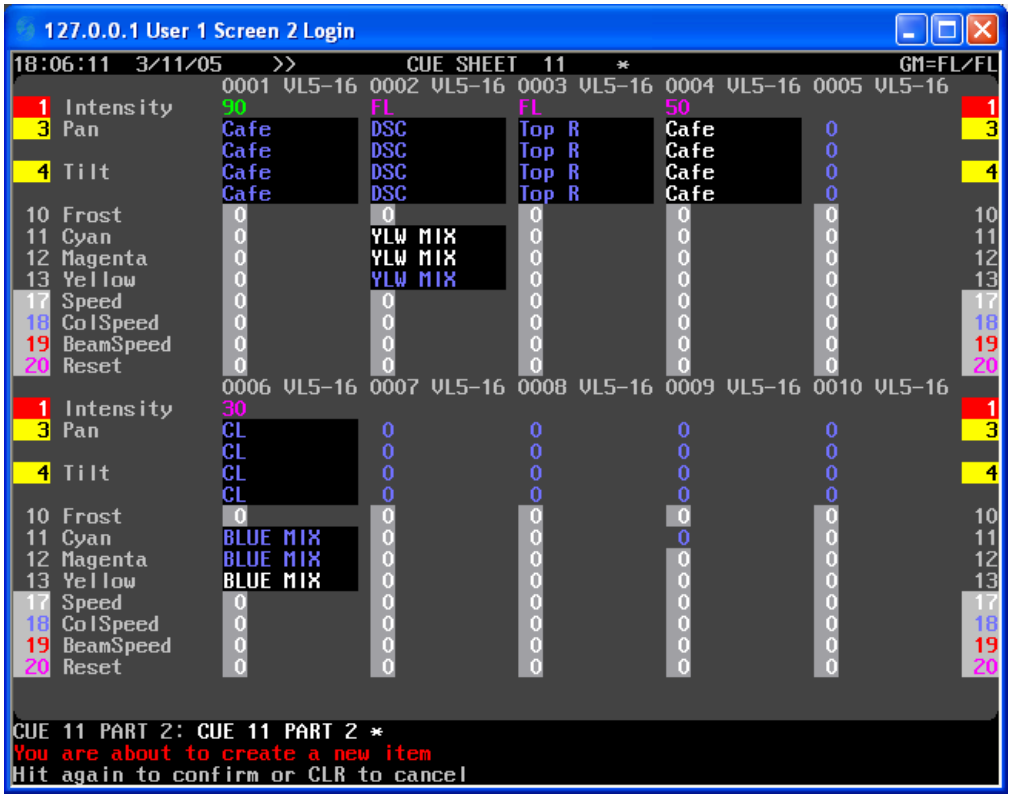
When I need to edit a part cue, I just make my changes and Update the cue. I don't have to worry about tracking my changes through multiple cues.
Some designers use part cues in a consistent format for automated fixtures. For example Part 5 is always pan and tilt, Part 6 is always color, Part 7 is always gobo…that sort of thing. If the show is programmed like this, then one can always tell when live moves and color are happening simply by looking at the cue sheet. This is great for stage managers.

The most popular and easiest way to write a part cue is to first record the cue as a regular cue. Then create the parts in preview. Then assign certain channels (or attributes) to the appropriate part. After that, just adjust the time and you've got it.

Creating the Part

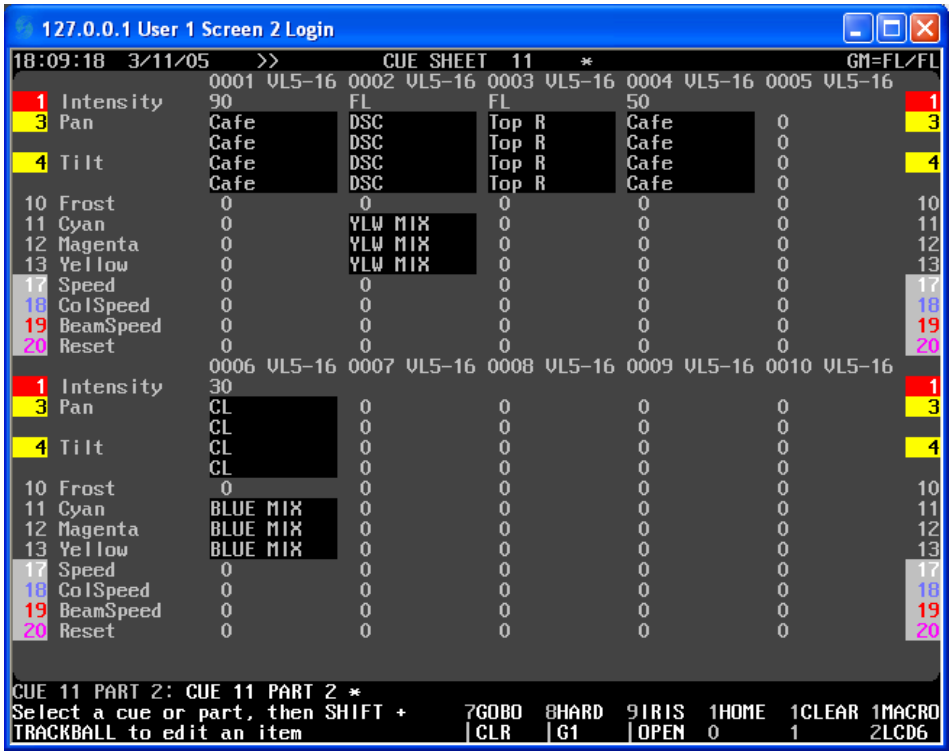
Let's get into the appropriate cue and create the parts.

> ***{PREVIEW} CUE 11 ENTER***
>
> ***CUE (PART) 2 ENTER ENTER***



Note: The screen shot is taken prior to the final ENTER.

Once you have created the additional part, use the NEXT and LAST keys to look at the differences in data between the two parts.



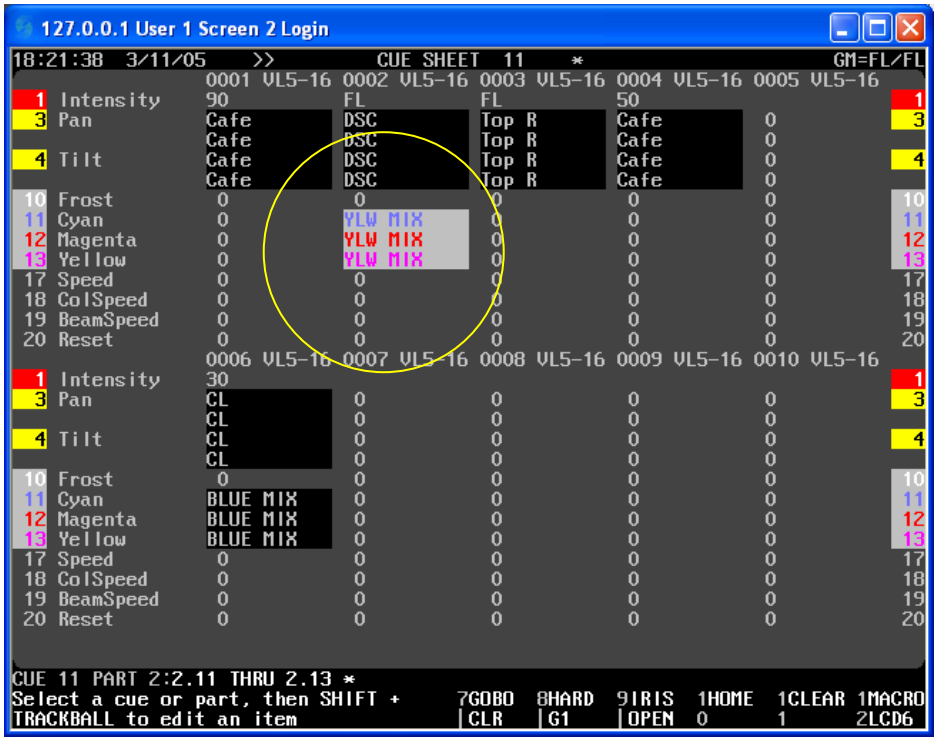
Notice that all the data is in a background color in the newly created part. This indicates that the data resides in another part. Now we need to place the correct data in the new part.

To place conventional channels into a part, it is simply CHAN LIST ENTER. (51 THRU 55 ENTER) But with attributes it's more specific.

Assigning Attributes to a Part: Manually

To assign attributes of a channel to a part manually, just type the channel info and then press enter.

2.11 THRU .13 ENTER
CLR



Note: the screenshot was taken before pressing CLR

Pressing CLR will show you the actual data. While some attributes may be white (for hard values) and some may be blue (for changed values) that's normal. This is because going from one color mix to another may not change all attributes. If they don't change then the attributes will be in white. If they do change, the attributes will be blue.

Now let's change the color for channel 6 using the attribute filters.

Assigning Attributes to a Part: Using Attribute Filters

Here we use the *Softblock* command to move data around in part cues by taking advantage of the attribute filters.

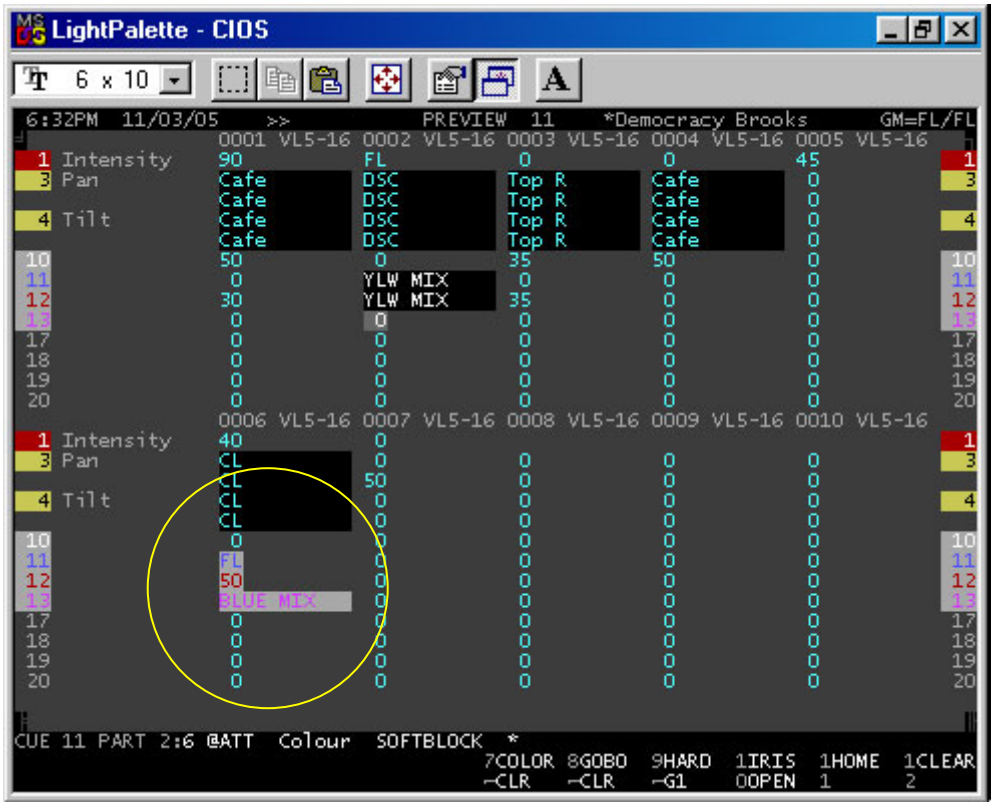
This is the command if you are on a 550 or 530…

6 @ATT (Colour) (SOFTBLOCK)

…and this is the command if you are on a 520…

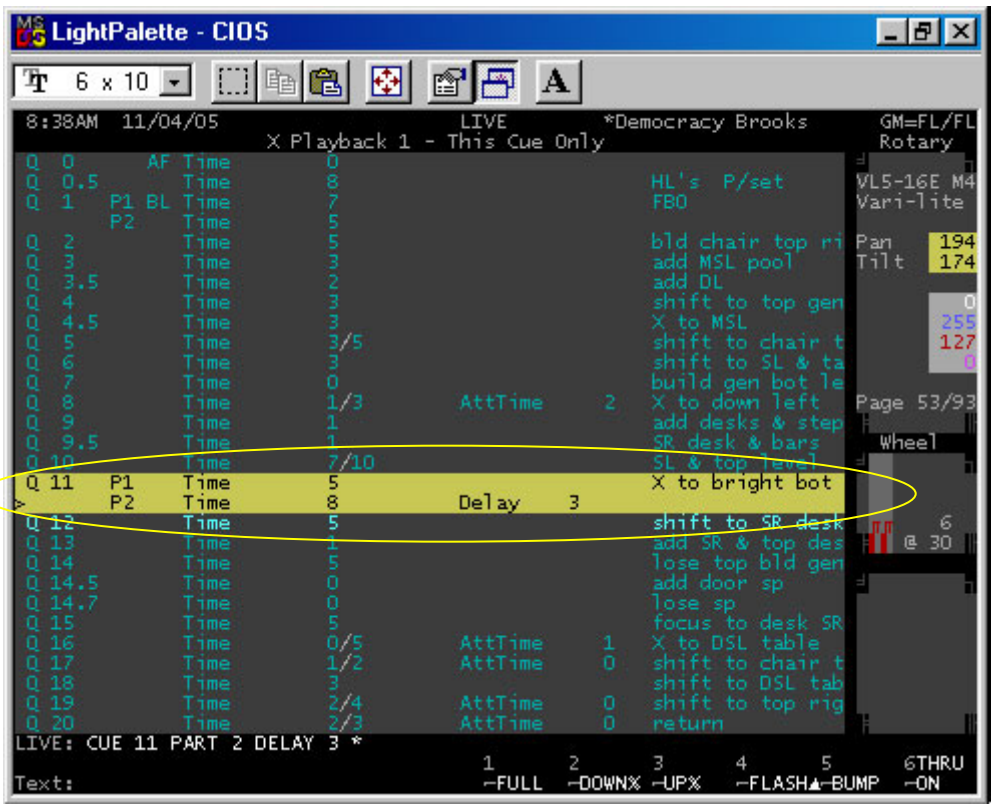
6 @ATT (Colour) REC MODE (SOFTBLOCK)

The difference in syntax is because the 520 doesn't have a center LCD screen and pressing REC MODE brings up the *Softblock* softkey on the softkey LCD screen.



While in Preview and in the right part (the current part is always listed at the beginning of the command line on both screens) it's easy to change time and add a delay if you want.

TIME 8 DELAY 3 ENTER



Remember; just repeat this process for all the parts that you want for the cue up to the maximum of 12. When you return to the cue during the rehearsal process and make changes to any part cue, Update rather than Record. Update will only take changed values (levels in red) while Record will always store the entire state of the rig. This will record into the part that the karat is on and corrupt your part cue.

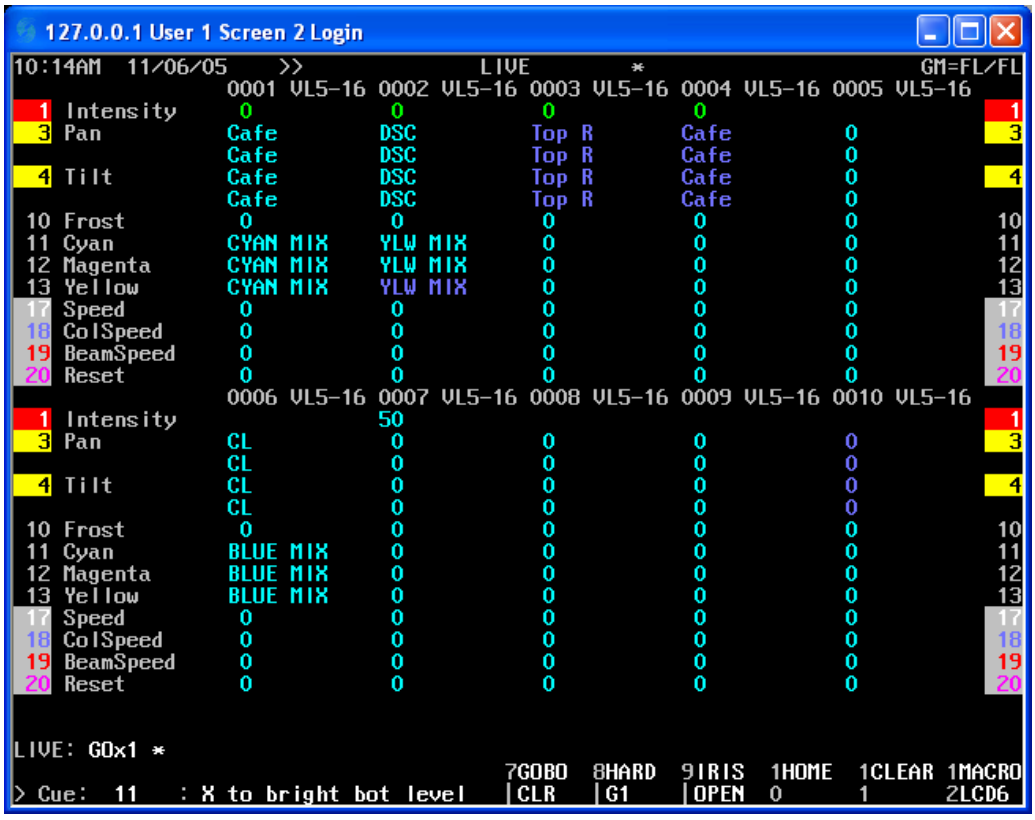
Of course, if that mistake gets made, you can always *UNDO RECORD ENTER* and then update as is appropriate.

Updating

Updating Cues

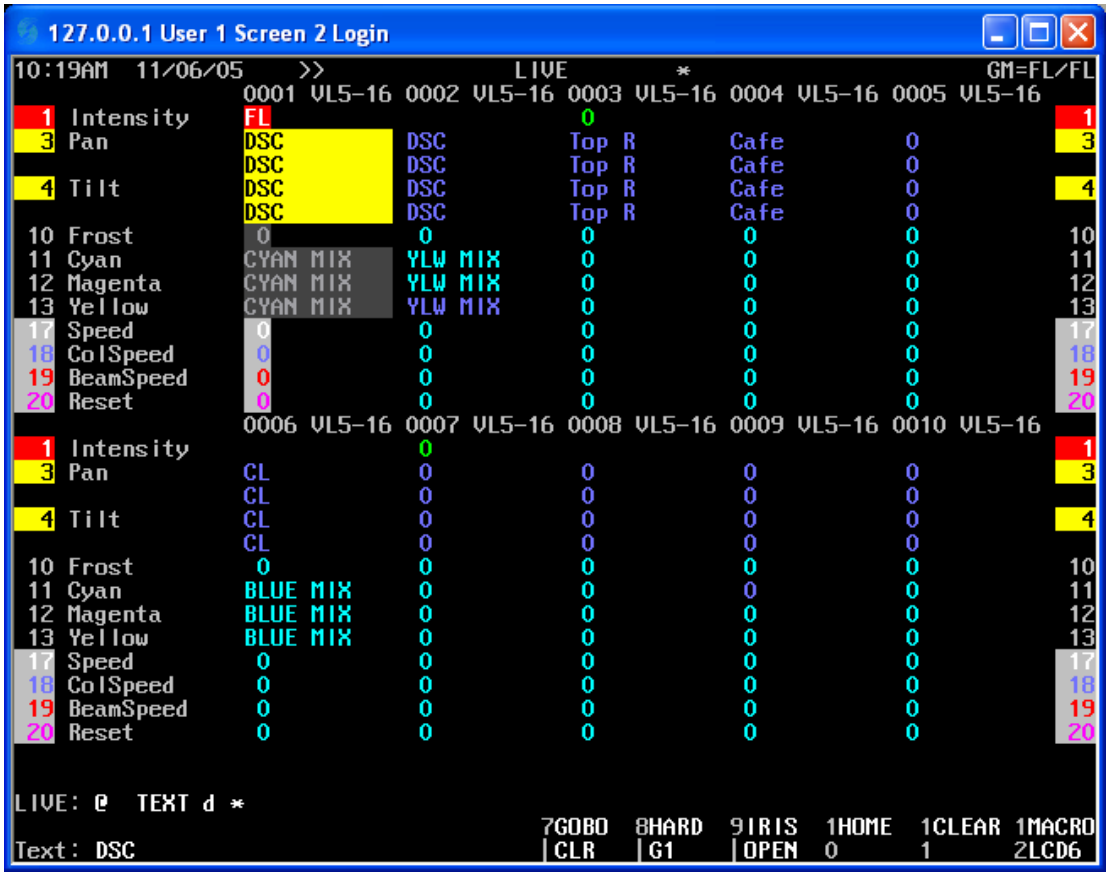
The general practice that I use is to *Record* the cue the first time and then *Update* after that. The main reason is that record always takes the entire state of the system and stores it. Update only takes changed values. This means that update ignores subs, FX and other cues that are running.

Let's talk about updating moving lights by looking at a cue that contains attribute content.



I can easily see what my fixtures are doing because of my group data. If I need channel 1 to be in my DSC group instead of the Café group then I just place the light in my DSC group and update.

1 ON
@ TEXT "D" ENTER



When the lights are set, just *Update*…

UPDATE ENTER

Update will update the cue that has the karat. This will be the current cue that you are in. Update will update to Track or Cue Only depending on the default mode that you are in. Look at the top of the cue list for this information.

Now let's talk about editing the group data through cues.

Updating Groups

Live

To update a group live, just alter the info and update the group calling out the channel number and group number…

TRACKBALL TO MOVE THE FIXTURE HEAD ***1 UPDATE GROUP 2 @ATT (Position) ENTER***

This will update channel 1's position info into group 2.

Preview

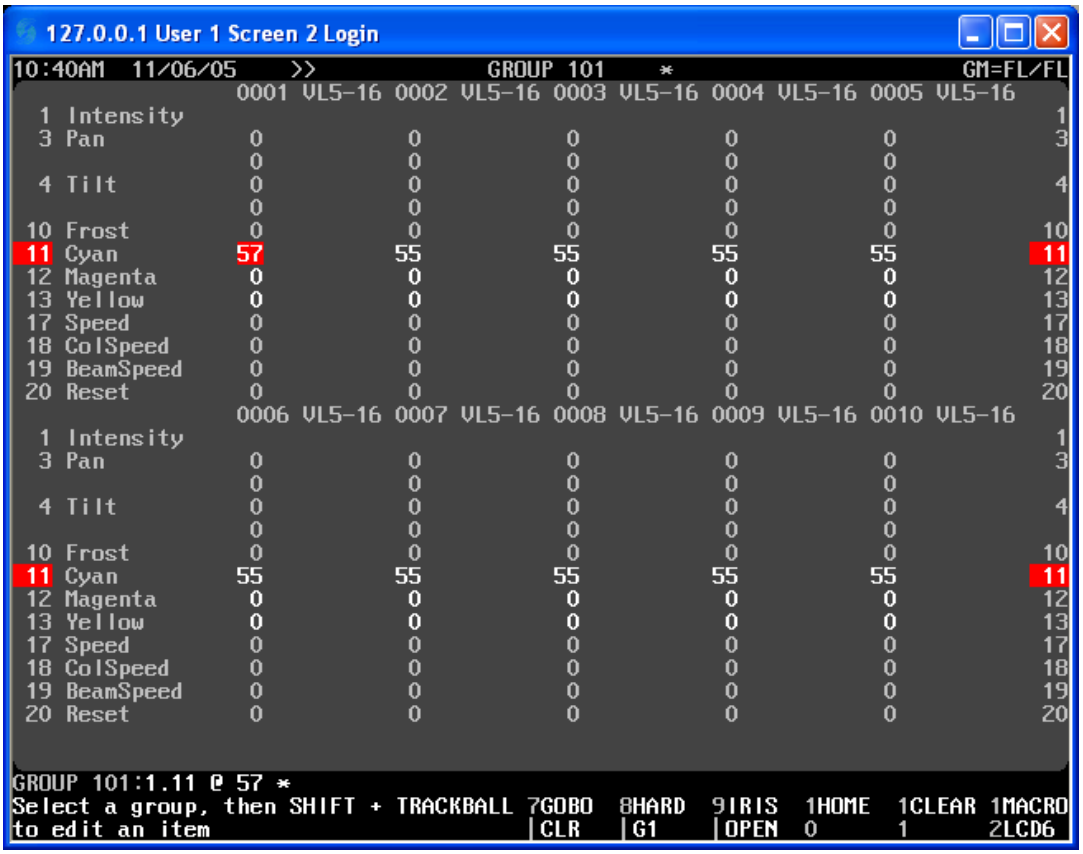
If you want to change info in Preview, just go into Preview and change the info manually. Let's say that you need to add 2 points of Cyan to the Cyan Mix group which is Group 101.

{PREVIEW}

GROUP 101 ENTER

1.11 @ 57 ENTER

CLR



Note: This screen shot was taken prior to pressing CLR.

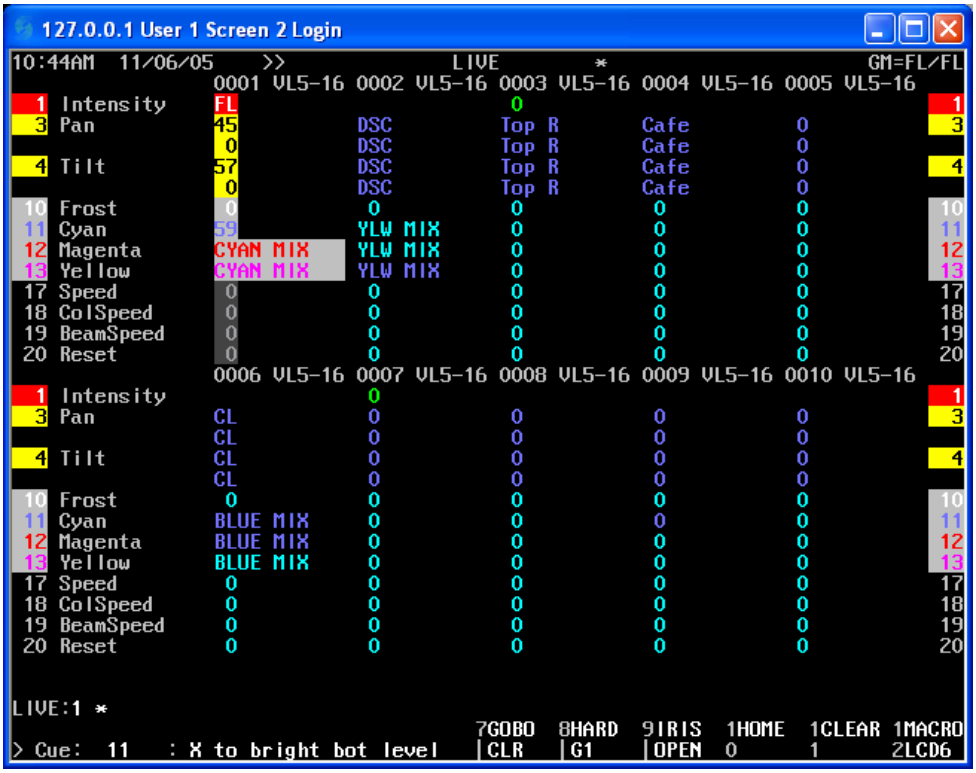
Preview with Live

Another option for updating in Preview, is to make the changes Live, go into Preview, and then pull the info from Live.

{LIVE}

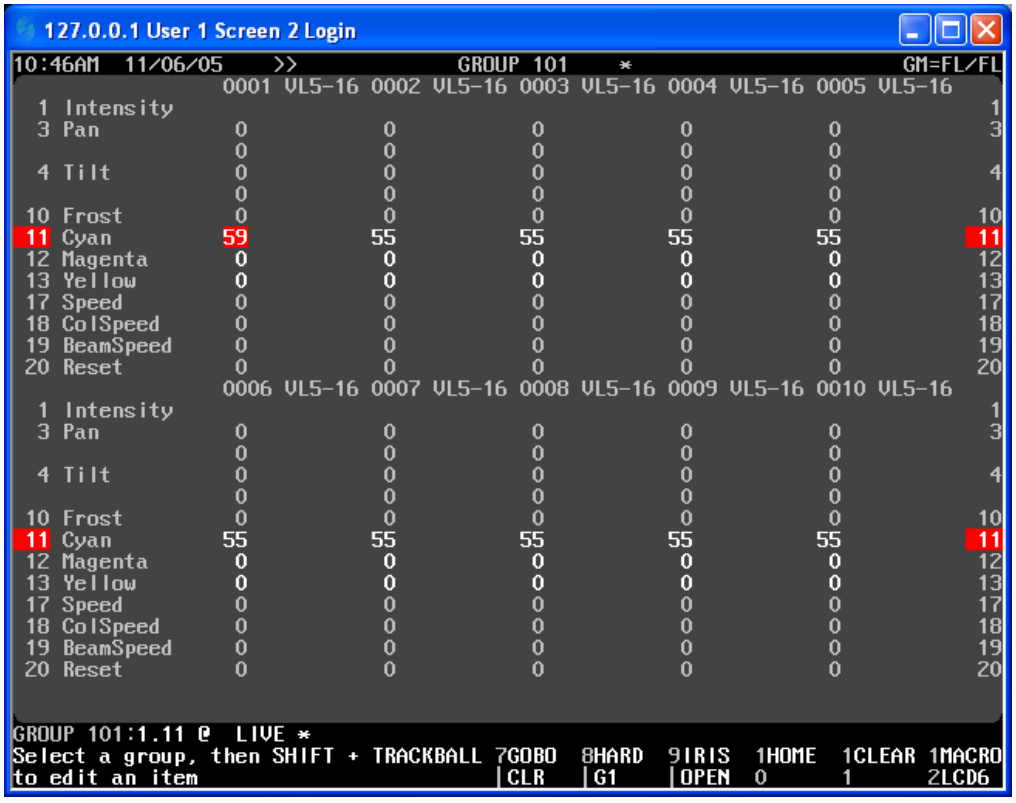
1 ENTER

ROLL THE BLUE ENCODER (CYAN ATTRIBUTE) TO A LEVEL OF 59



See that the Cyan attributes is no longer referencing the preset focus group? You can tell by the numerical data vs the text data shown on the Live screen. Now let's go in the Preview screen and pull the info live.

1.11 @ {LIVE} ENTER



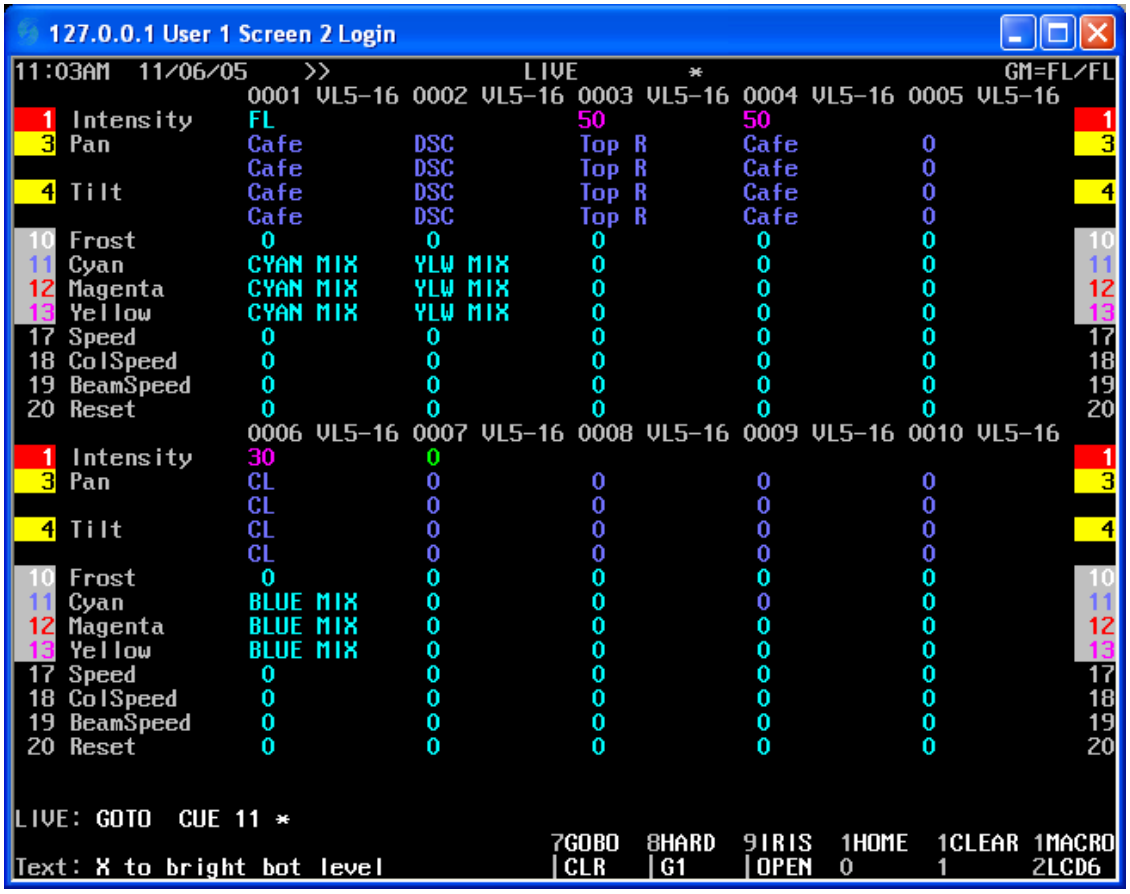
This example pulled just one attribute but you can pull any channel, combination of channels or combination of attributes this way.

Magic Update: Overview

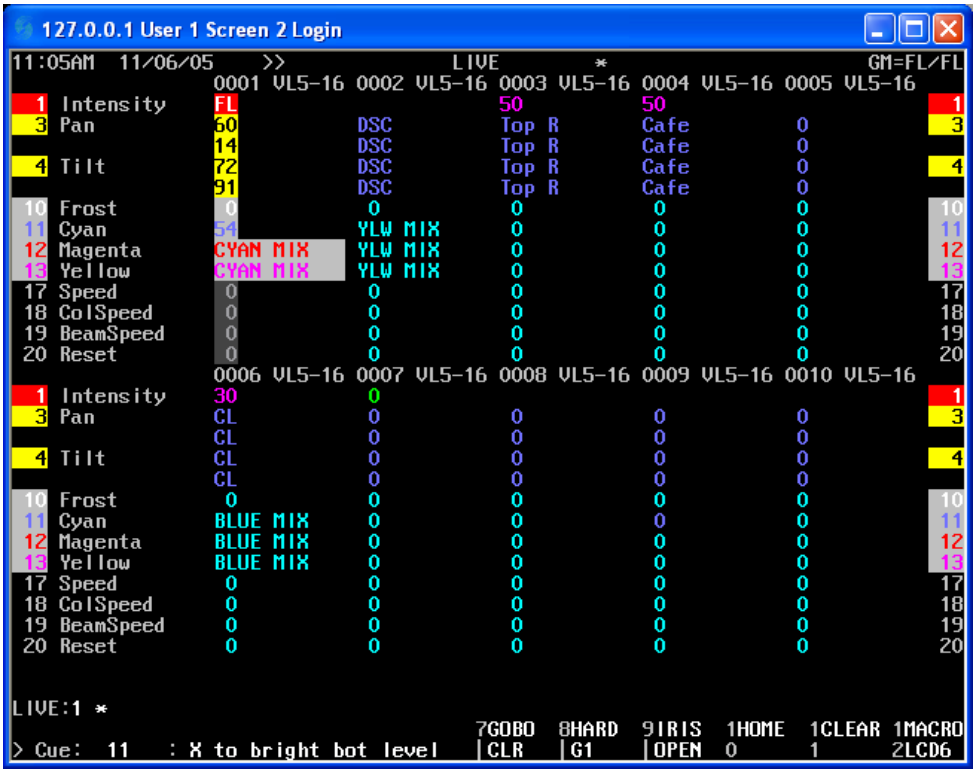
This is one of my favorite new features…Magic Update. Magic Update remembers all attributes references to preset focus groups. When you change the attributes live using the trackball and the encoder wheels, it keeps a reference to the last preset focus group that it was in so that updating groups is intelligent and easy.

Magic Update: By Channel List

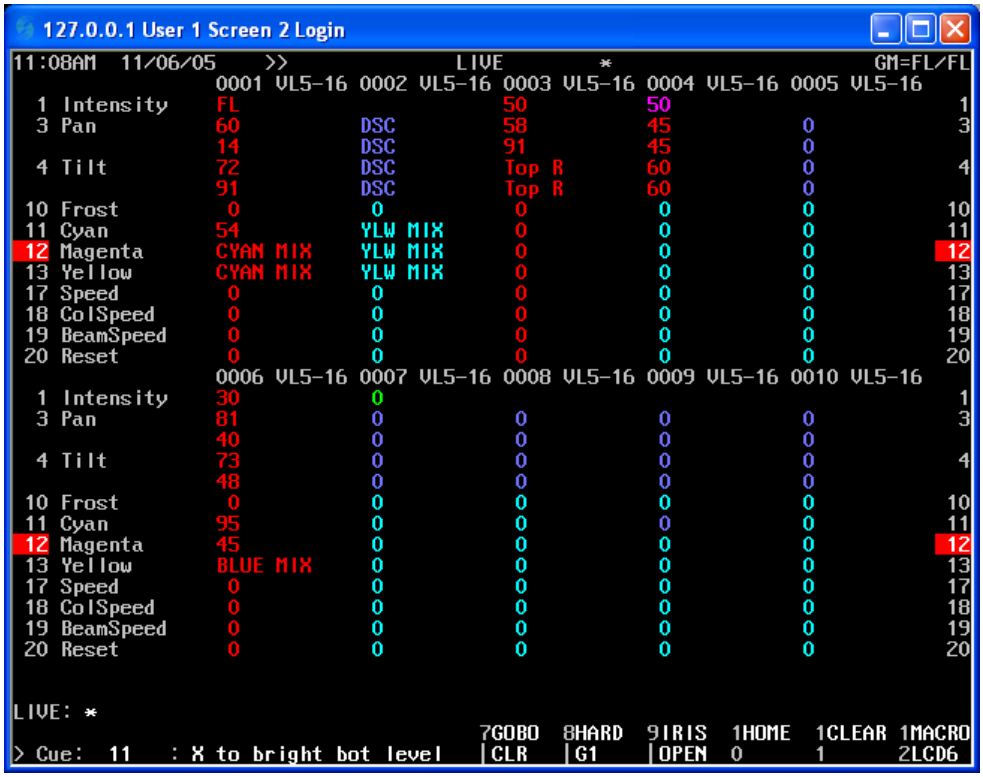
Let's go Live and into Cue 11 and see what we have on screen. You're cue content will vary from mine.



So here we have a cue that has 5 VL5s accessing 5 different position groups and 3 different color groups. I'll turn them on one at a time and make adjustments as needed.



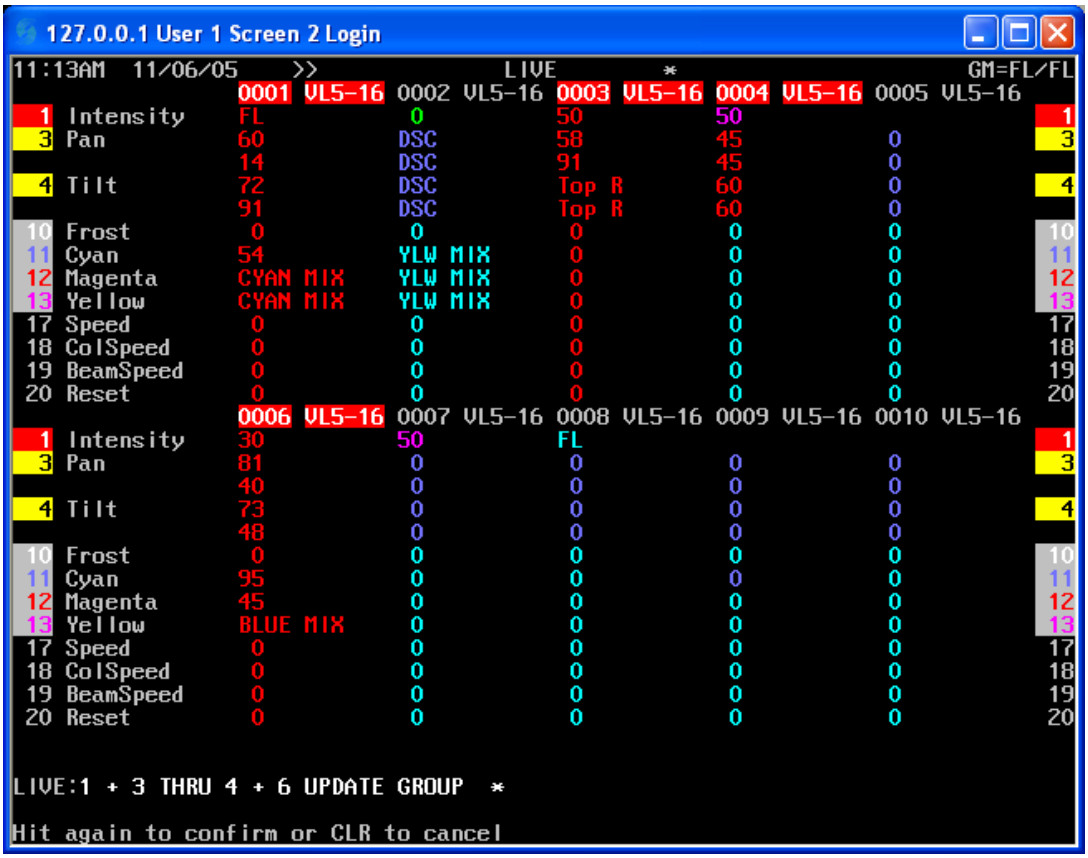
Here I've adjusted channel 1's position and the cyan wheel of the color group CYAN MIX. Now I'll adjust the other fixtures.



So all the channels that are in red have been selected and we know they have been adjusted by seeing the attributes that have numerical data vs showing us the text data. With the labels showing, we are seeing that the fixtures are referencing the preset focus groups. Once we adjust the information live with the trackball and encoders, the data is no longer referencing the preset focus groups. We could update

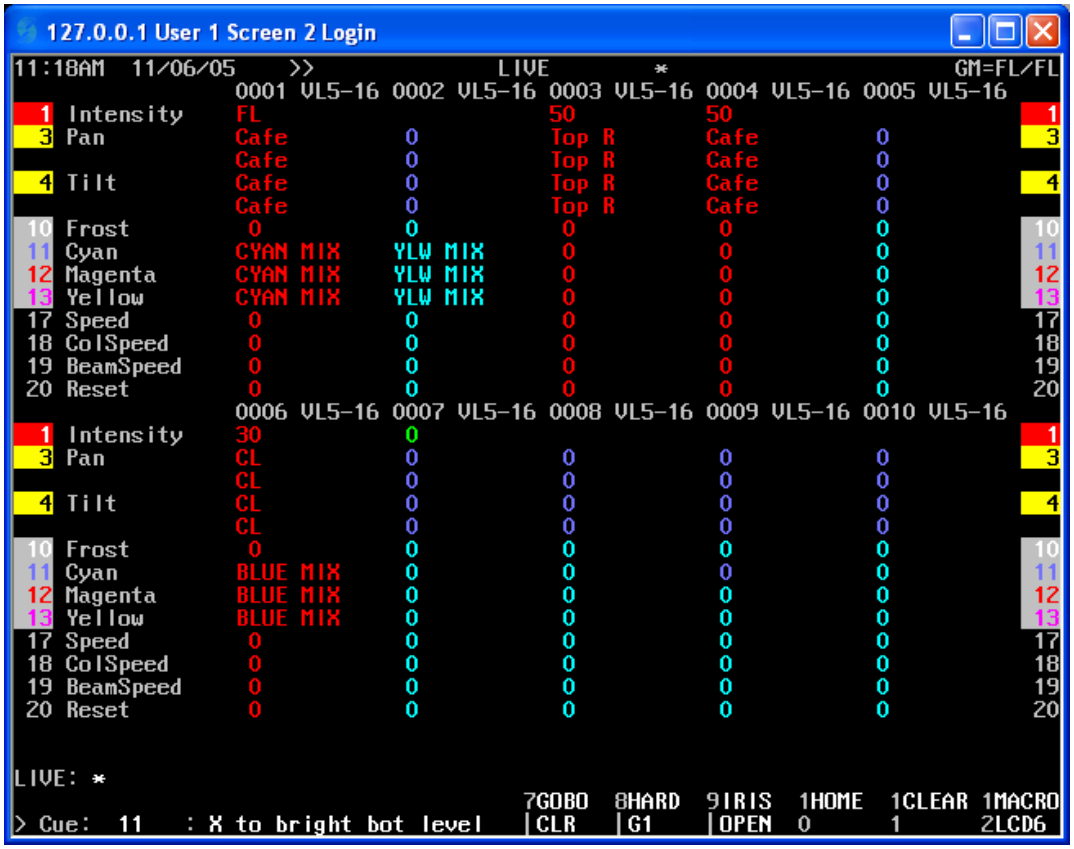
the cue here but then the cue would have raw data rather than group references and that's not what we want to do here. What we want is to update the groups that have been adjusted but this can get complicated. Channels 1 and 6 alone have adjusted references for 4 groups (1 position group and 1 color group each) and we still have other units. This is where the magic part comes in with magic update.

1 + 3 THRU 4 + 6 UPDATE GROUP ENTER ENTER



Note: This screen was captured prior to the second ENTER.

Now look at your screen, all attributes are back to referencing the same preset focus group. The difference is that the groups now have the new data in all of the groups!



The console magically keeps track of every attribute for every channel. When you change attribute info Live, it remembers the last group that it referenced so you can update globally without having to worry about which groups each attribute was last referencing.

Magic Update: By Attribute Filter

Magic Update can also be done by attribute filter.

The scenario is similar to before, you are in a cue and several moving lights need to be adjusted for position info and for color info. After you adjust, you realize that you only need to update the position info and not the color info. So the command would be…

UPDATE GROUP @ATT (Position) ENTER ENTER

There are 2 differences in this command syntax. 1. I didn't provide a leading channel list. Therefore the Update command applied to all channels that have the filtered attributes. In this case, Position. 2. I added an attribute filter so that the update process would filter out everything "except" what is in the Position filter. Therefore it updated red values (changed values) for all channels that have attributes .3 and .4.

Magic Update: Globally

There is a very powerful version of this command that works by taking everyone.

UPDATE GROUP ENTER ENTER

But beware. In certain situations, this command can be TOO powerful because it doesn't discriminate between preset focus groups and non-preset focus groups. Therefore, if you have taken one fixture to *Home* and or *Clear*, and you move to another fixture that is referencing a preset focus group and then you use the global version of this command, it could contaminate your preset focus groups with the *Home* and or *Clear* group data. Because of this, I recommend NEVER using the global version of this command. Be selective. It will serve you better in the long run.

Shape Generator

The Shape Generator will create shapes of movement for automated fixtures. The shape generator adds additional attributes to the chosen fixtures. These new attributes allow you to apply values to the fixtures that enable them to move in prebuilt patterns. The attributes that are added are…

PProfile (.91) – assigns a profile to pan. See profile display for specific profiles.
TProfile (.92) – assigns a profile to tilt. See profile display for specific profiles.
PSize (.93) – determines the size of the pan movement in a percentage value.
TSize (.94) – determines the size of the tilt movement in a percentage value.
PSpeed (.95) – determines the speed of the pan movement.
TSpeed (.96) – determines the speed of the tilt movement.
PPhase (.97) – multiple fixtures can act on a different point for pan while running a shape.
TPhase (.98) - multiple fixtures can act on a different point for tilt while running a shape.
PTRotate (.99) – rotates the current movement clockwise from 0 (12 o'clock) to Full (clockwise to 12 o'clock)

Now for a little explanation…

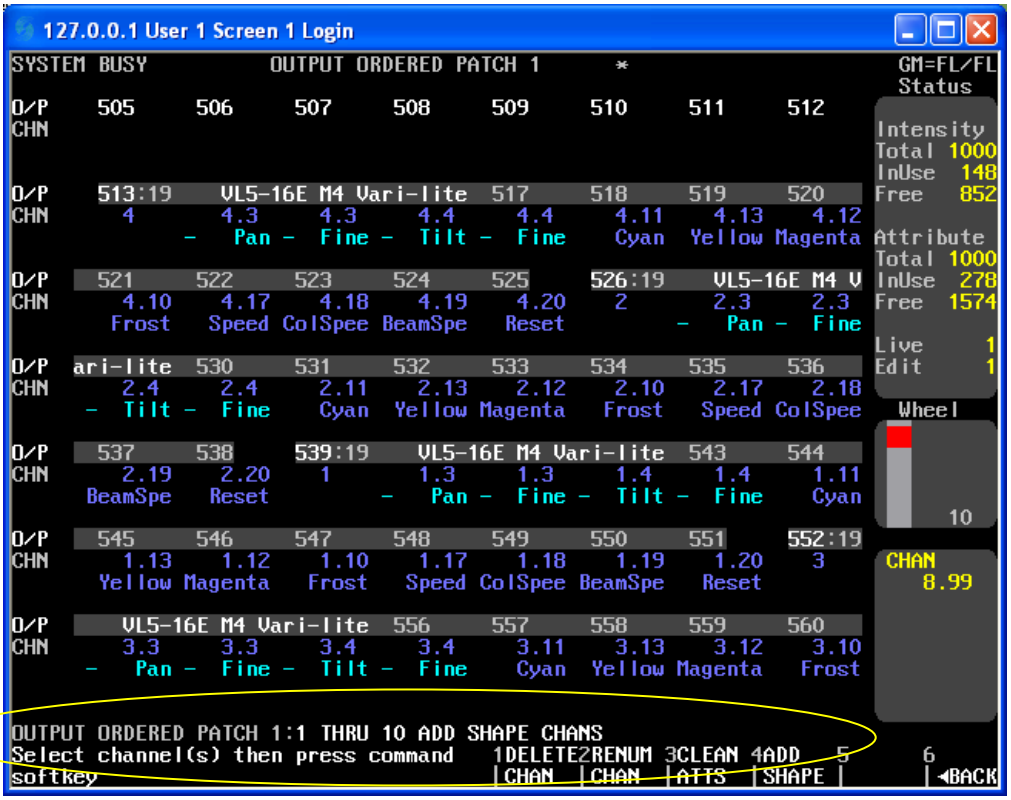
Profile – assigns a specific profile to either pan or tilt. Just look at your profile display to see what each profile is. If a shape like circle assigns pan and tile the profile 96, then the light is assigning the sine wave profile to pan and tilt.
Size – changes the range of the movement. 0 is no movement while Full is maximum movement.
Speed – how fast the fixture moves.
Phase – fixtures can act differently while they all are running the same shape. One example would be, if 2 fixtures are doing a circle and both are moving clockwise, one of the fixtures could take its tilt out of phase by 50% and then it would be doing the same circle counterclockwise or mirroring the other unit.
Rotate - a value of 25 would rotate the movement to 3 o'clock and 75 would be 9 o'clock.

Add Shape Channels in Patch

The first step is to add the shape channels to the fixtures that need them.

{PATCH} (CHAN>)

1 THRU 10 (ADD SHAPE)

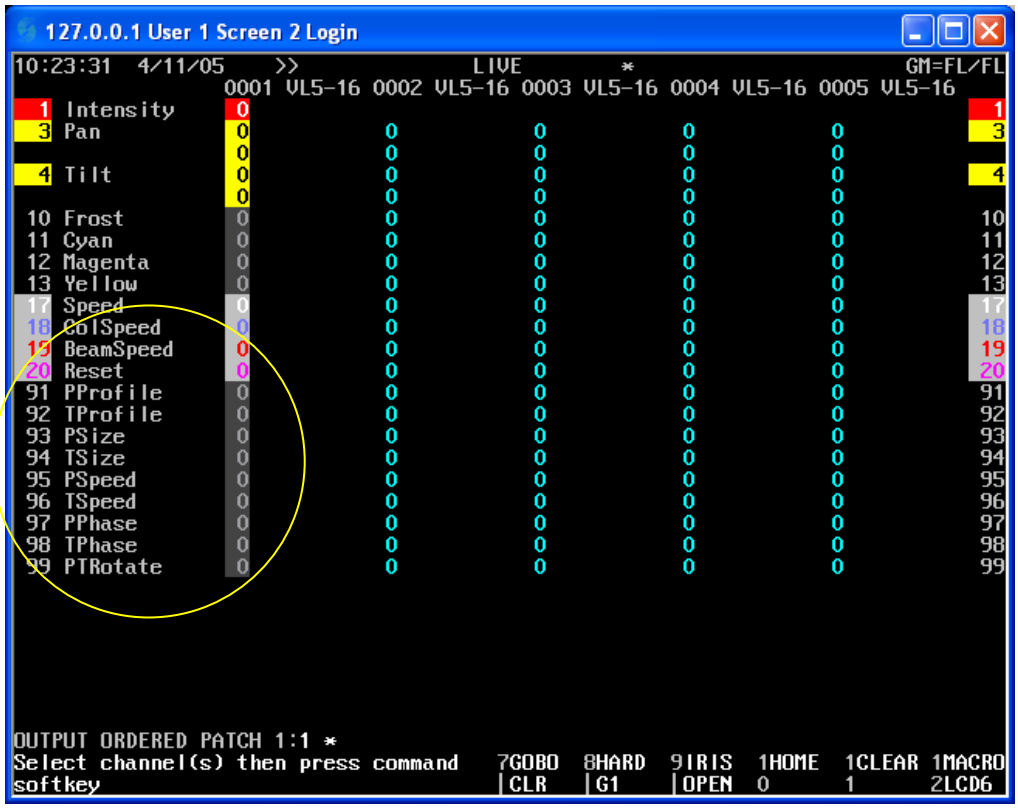


Note: the bottom right hand window is showing the progress of the shape channel that it is currently adding.

Don't worry about seeing the attributes listed in patch, the software keeps this hidden since it's something that the fixtures don't have.

Just go back to Live and let's refresh the screen to show the new attributes.

{LIVE} CLR
1 ENTER

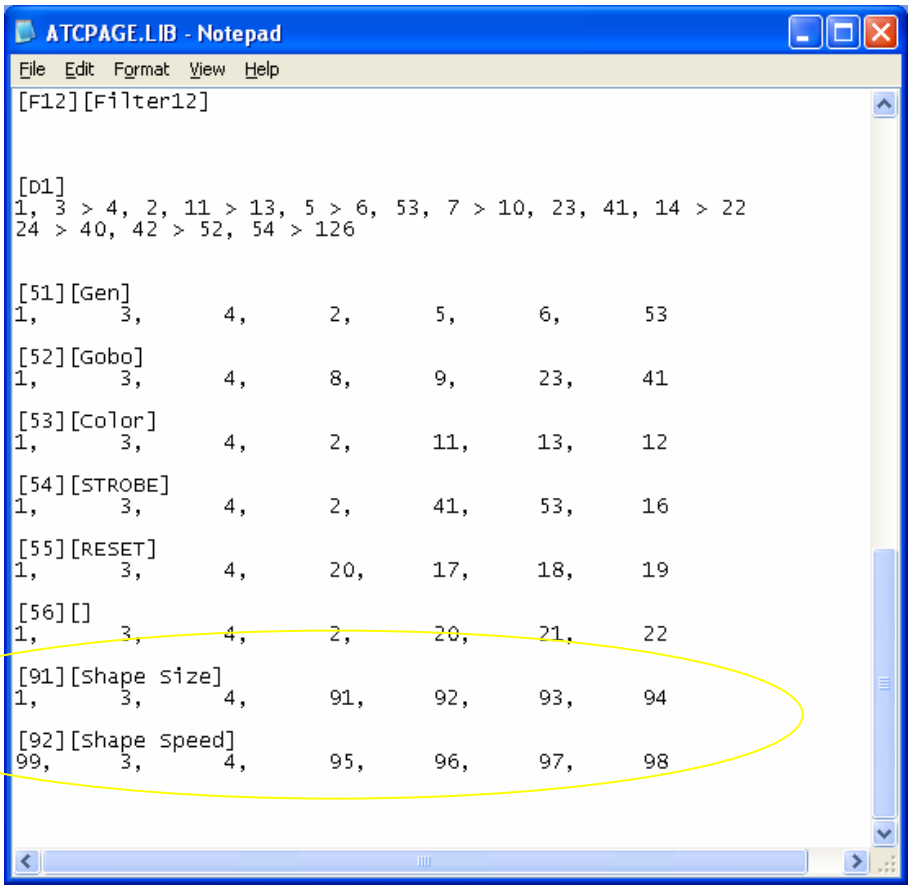


Now that we have the attributes patched, let's see about controlling these new attributes.

Add Shape Channels to ATC Pages

There is a very good chance that the ATC Page is already setup for the shape attributes, but let's just make sure.

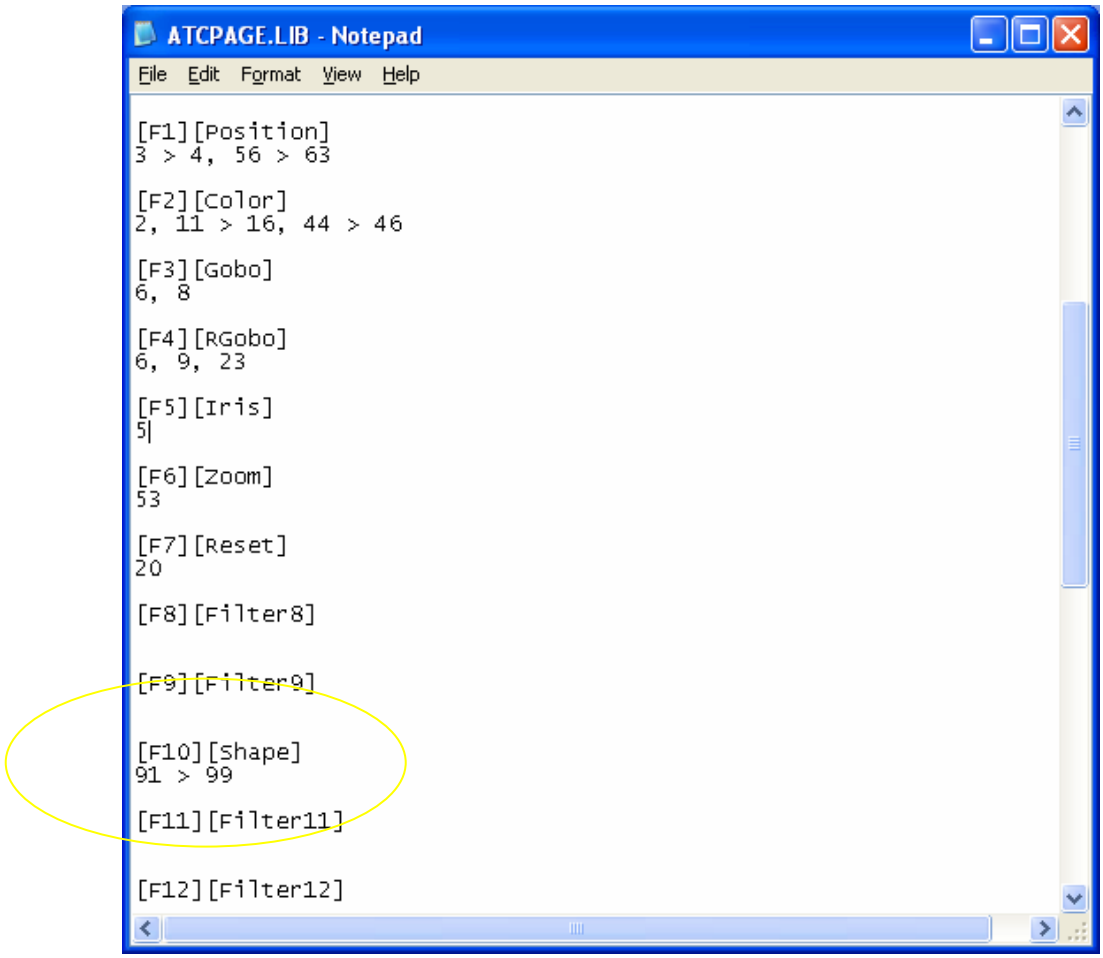
{MORE} (NOTES DISPLAY) (LOAD FILE) (ATCPAGE)



If not there, just set up 2 ATC pages for shapes. This example shows page numbers 91 and 92 but use what you want. There are 9 attributes for shapes and only 4 encoder wheels. Instead of setting up an additional atc page for just one encoder, I put attribute 99 (PTRotate) on the wheel. This keeps my atc pages to a minimum without losing functionality.

Add Shape Channels to Attribute Filters

While here in the ATC Page, let's make sure that there is an attribute filter setup for the shape channels. Just scroll up from here to the filter keys.



This ATC Page has the Shape filter setup as F10. This would be the far right of the four teal macros on the 520i. The screen menus will show you the filters after you press @ATT. Again, place this on any filter that you choose.

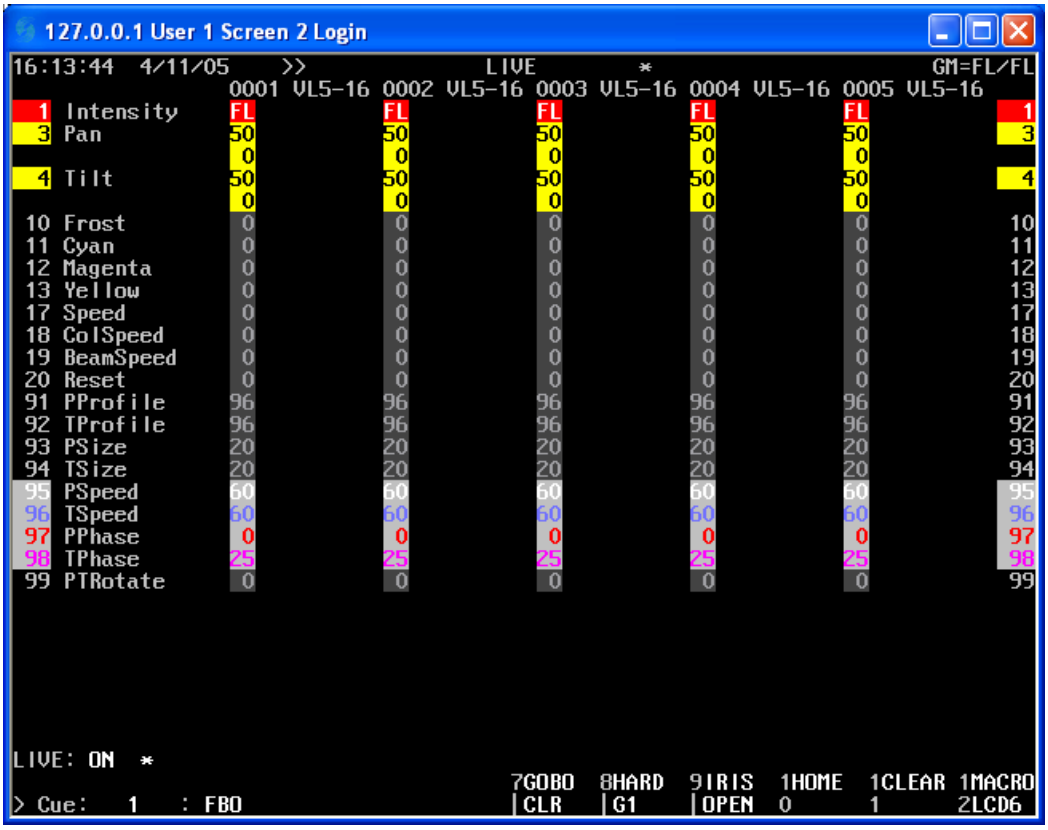
Access the Shape Groups

As to assessing the shapes groups, all prebuilt shapes are groups. The groups are as follows…

Group 992.1 – Circle
Group 992.2 – Can Can
Group 992.3 – Triangle
Group 992.4 – Square
Group 992.8 – Figure of Eight

To apply them to the fixtures, just treat them like any other group.

1 THRU 5 @ GROUP 992.1 ENTER



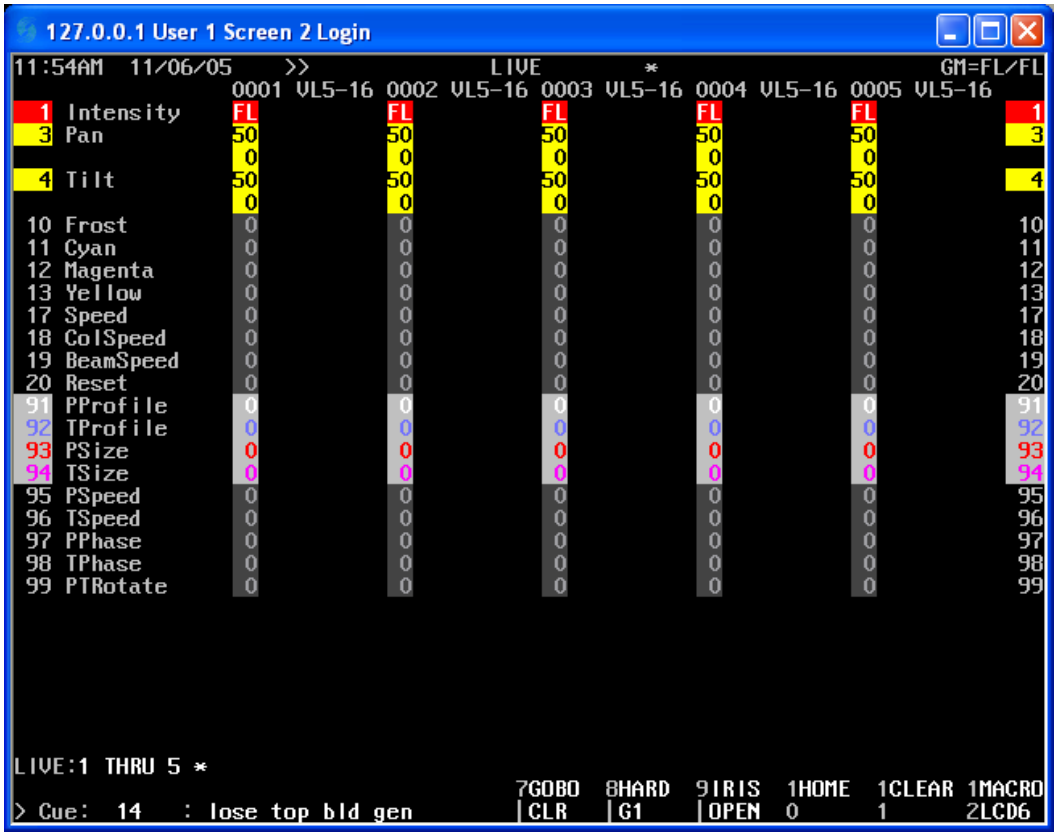
If you have the fixtures as do I, then you have them at their *Home* position with the *Circle* shape. But the fixtures are not doing a circle. Let me explain as there is physics involved here. In order for a yoke based fixture to do a circle, both the pan and the tilt must be able to move freely and when the light is pointed straight down only the tilt moves freely. In order for a yoke based fixture to do a circle, the head of the unit must be perpendicular to the yoke. Basically, it must be pointed straight out…not down. Just use the trackball and tilt the fixtures straight up until the head is perpendicular to the yoke and you will see what I mean.

Let me point something out here. You have the ability for the fixtures to do their shape around any center point. That means that you can still move the fixture live or using your position preset focus groups. Feel free to experiment with this until you get the hang of it.

Clearing Shapes from Fixtures Live

To have any fixture or combination of fixtures stop their movement. Just type…

1 THRU 5 @ATT (SHAPE) .



Just to confirm…that was 1 THRU 5 @ATT (SHAPE) . or POINT. Using any attribute filter, you can clear out any attribute set by typing Channel List @ATT (Filter) Point.

Example: Can Can Offset

Let's say that VL5s 1 thru 5 are in a straight line on the same electric and that you want them doing the Can Can which is simply a shape that tilts the units back and forth from point a to point b based on the size. But you don't want the fixtures all doing the same shape in unison. You want them offset so that each fixture goes after the previous. Here's where the @RANGE command and the following table can help.

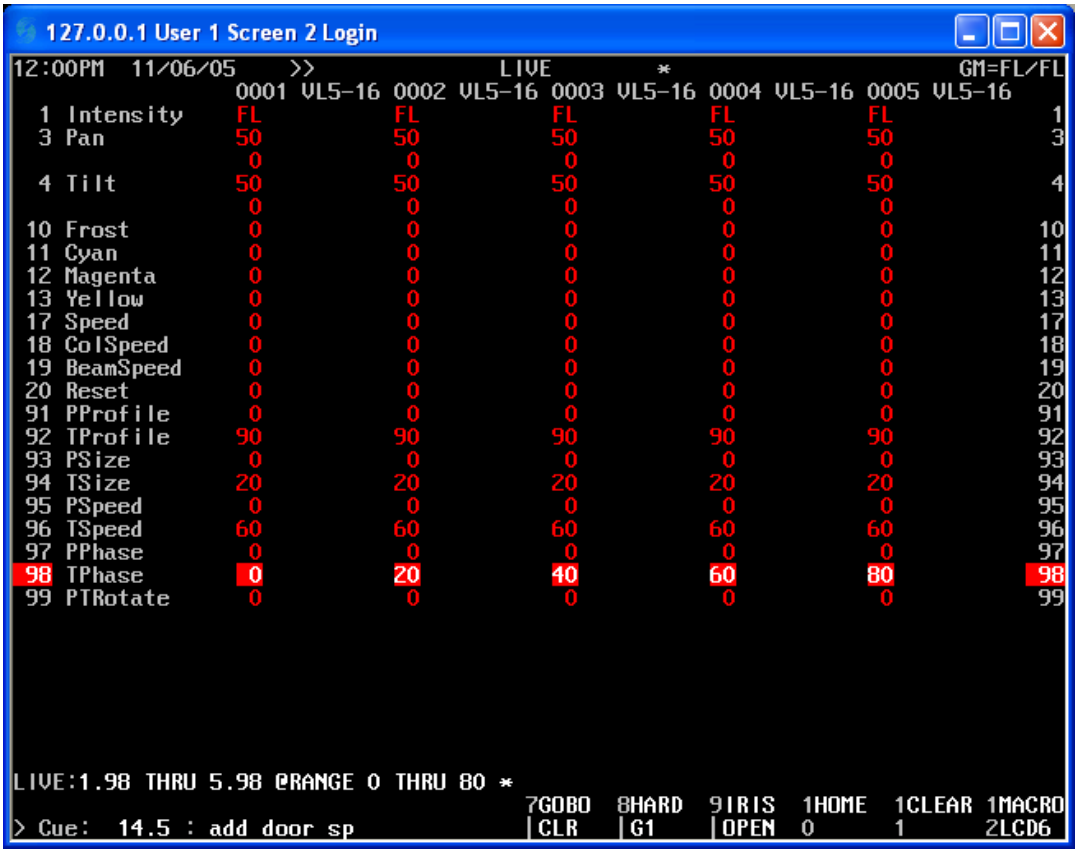
First, let's have the fixtures doing the Can Can.

1 THRU 5 @ GROUP 992.2

Now let's offset the tilt phase using the table below and the @RANGE command. Basically, the table tells us that if you have 5 lights that you want to offset the phase

Steps / No of Lights	2	3	4	5	6	7	8	9	10
1	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	50%	33%	25%	20%	17%	14%	13%	11%	10%
3		67%	50%	40%	33%	29%	25%	22%	20%
4			75%	60%	50%	43%	38%	33%	30%
5				80%	67%	57%	50%	44%	40%
6					83%	71%	63%	56%	50%
7						86%	75%	67%	60%
8							88%	78%	70%
9								89%	80%
10									90%

1.98 THRU 5.98 SHIFT @ 0 THRU 80 ENTER



Note: SHIFT @ will give you the @RANGE command

This will now have them doing the Can Can one at a time going down the line like the Rockettes!

Time to Play

Now that you have learned automated luminaire control on the 500 series console, it's time to play. Just experiment with the shape generator library and using the @RANGE command with the phase attributes.

You'll be amazed at the complex movements that can be programmed quickly.

Good luck and happy programming!