



**ELEKTRALITE**  
division of group one

# CP20 Operator's Manual

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70 Sea Lane • Farmingdale NY 11735

[www.myelektralite.com](http://www.myelektralite.com)

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# INTRODUCTION

The Elektralite CP20 is a small but powerful moving light controller designed to control up to twenty-four moving light fixtures. It is quick and easy to program and will do many of the things that up until now could only have been done with much more expensive lighting consoles.

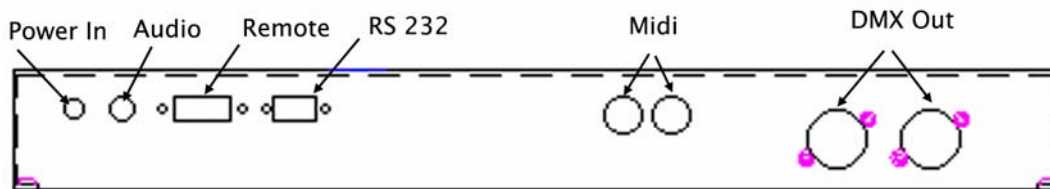
## Features

- 19 inch rack mount, 4 rack space chassis.
- Battery backed RAM for 960 cues, 96 chases, and 96 macros.
- Color, Gobo, Special and Preset (focus) Palettes.
- 32 character Blue LCD display for easy programming.
- Simple panel layout with dedicated switches for ease of use.
- High quality 60mm faders for fixture feature control.
- Separate faders for crossfade and chase speed control.
- High quality joystick for pan and tilt control.
- 12 digit keypad for data entry.
- **24 Direct Access Keys**
- Audio input for chase speed control.
- Midi in and out for automation.
- DMX512 output.
- Extensive library of fixture types.
- RS 232 Port for memory backup and use of trackball or mouse.

**Please note** throughout this manual you will see references to the following "**←**" and "**→**+" keys/buttons. On the LCD display you will sometimes get a display which will read NO - or YES+. This means you need to make a decision using either the "**←**" and "**→**" keys. Just remember "**←**" is the - (minus) **NO** key and "**→**" is the + (plus) **YES** key.

## SYSTEM SETUP

After unpacking the CP20, plug in the external power supply and turn on the power switch on the front panel. The display should light up and display the product name along with the current software revision. If the display does not light up consult the troubleshooting chapter in this manual.



### DMX512

The moving light fixtures are connected to the CP20 via the DMX512 jacks on the rear panel. A standard 5 pin jack and a 3 pin jack is provided. The two jacks are wired in parallel with pin 1 to ground, pin 2 to data minus and pin 3 to data plus.

The CP20 is designed to control a variety of fixture types, which accept up to 24 channels of control per fixture. Fixtures requiring more than 24 channels can be controlled by using 2 or more consecutive fixture addresses. The CP20 outputs 512 DMX512 channels. You can connect more than 24 fixtures but some will have to share channels and will operate in unison. There is a soft patch feature in the CP20, which also allows you to set or change the DMX starting addresses for each fixture. You should also consult your fixtures' manual for specific instructions on setting and changing the DMX address.

After the fixtures are connected and the start addresses set, you must next tell the CP20 what type of fixture is connected at a particular address by making a selection from the fixture library. Consult the "System Programming" chapter of this manual for further instructions.

When using fixtures that require more than 24 channels, you will have to control the fixture by using more than one fixture number. For example, a fixture that uses 36 channels will use fixture 1 on the CP20 to control channels 1-24 and fixture 2 on the CP20 to control channels 25-36.

Once selected, you must then set the starting addresses of the CP20 fixture numbers to align with the DMX512 channels that are controlling the fixture. For example, if you are using fixture 1 to control channels 1-24 on the moving light and fixture 2 to control channels 25-48, you must soft patch the starting addresses of fixtures 1 and 2 to be 25 channels apart. If this moving light's start address is set to channel 1 then you would patch fixture 1 to channel 1 and fixture 2 to channel 25. There is also an in-built auto softpatch to help you. Consult the "System Programming" chapter for more information on soft patching.

## AUDIO IN

Connect the audio input to a line level output from a mixing console or an audio preamp. Do not connect this to a power amp or any speaker level source. Consult the chapter on chases as to how this input is used.

## MIDI IN/OUT

If you are using MIDI with the CP20, connect the MIDI out on the CP20 to the MIDI in on your computer interface, sequencer, or data storage device. Connect the MIDI out on the CP20 to the MIDI in on the other device. Read the chapter on MIDI for more information.

## RS 232 Port

The RS232 can be used to plug in a mouse, trackball or any similar device. The device used must be PC compatible and must use a RS232 connector.

# CUES

The CP20 allows you to store up to 960 cues in memory, which can later be recalled directly using the numbered keyswitches, the Direct Access buttons and Go switch or recalled in automatic sequences using chases and macros. Please use the CP20 front panel drawing shown at the beginning of Chapter 10 to help you through the rest of the manual.

## Programming Cues

Working your fixtures.

So finally we are here! You can work the fixtures. This is simplicity itself. Press Fixture then any of the 24 numbered buttons. The numbers obviously refer each of the 24 fixtures. If you want to control multiple fixtures together then just press their respective numbers. The LEDs will light up and you will be in control of those fixtures. Having turned on the fixtures you want to control, just use the faders to access the features of the fixtures. The Pan and Tilt can also be controlled using the joystick if you don't want to use the faders.

To turn off a fixture just press the number a second time (also called toggling the button on and off).

Useful tip: If you have several fixtures that are all the same you and you want to record them in the same color and gobo for example but have different positions then

First: turn on the fixtures together and use the faders to set up your colors and gobos together.

Second: turn off all the fixtures except one and use the joystick to place the first fixture in the correct position. If needed you can also use the fine button to get accurate fine positioning. [If you find yourself with the joystick right over to one side and you want to re-center the joystick without moving the fixture. Just turn off the fixture and then move the joystick into the middle. Then turn the fixture back on again].

Saving you work as a Cue.

Once you have got everything in position with the right color, gobo, dimmer, and so on to save it as a cue just do the following steps.

Press Enter Cue

You will now have the following screen display

```
ENTER CUE
XFADE 00.0
```

Enter in a number for example 123, and then use the Fade Time fader to put in any cross-fade time you may want. Then press Enter again and the cue will be saved. A screen will now tell you that it's been saved.

```
CUE 123 SAVED
```

Could this be easier? You're finished. Now before you go off for a coffee break you may want to make a lot more cues. It makes you look good and whoever's paying you to do this will also feel like he's spending his money well!!!

[One point to bear in mind the special crossfade feature inbuilt to your CP-20 called X-fade mode. It is detailed on page 32 and page 33. There are defaults for every channel of a fixture and they are detailed on page

Now you can also use the Direct Access keys if you don't want to use the keypad. First just choose the page of cues you want to enter the cue into by pressing cue and holding the button for 2 to 3 seconds. The display will read

SELECT CUE PAGE

You now have a choice of 24 pages. Let's use page 3, so press the number 3 button. The display will now read

SELECT CUE PAGE  
CUE PAGE 3

Now press enter cue, then any one of the 24 buttons (for example button number 6), then press enter again. The result will be, you will get the following display

ENTER CUE 054  
XFADE 00.0 SEC.

Of course you can enter in any fade time before you press the enter button for the second time.

## Recalling Cues

Once cues have been stored in memory they can be directly recalled by pressing "Cue". The display will read:

SELECT CUE \_

Select the desired cue number (1 - 960) using either the numerical keypad or the Direct Access keypad. Once you have pressed the desired cue number just press "Go" to call the cue. The next consecutive cue number will automatically be displayed. This will allow you to press "Go" again without having to select the next cue number in sequence. You can also use the "←" and "→+" key to increment or decrement the next cue number. You can of course jump to any cue using the numerical keypad or the direct access buttons.

**NOTE:** In the CP20 you have the ability to choose what features of a fixture will cross-fade or snap in a cue. We call cross-fade features continuous type controls. Common continuous type controls are dimming, pan and tilt. With these features if they are in a cue and the cue has a cross-fade time then those features will cross-fade gently from one location to another.

Other features can be non-continuous type controls, for example, color and gobos. These can be made to snap to their new position at the end of the cross-fade or snap to their new position before the cross-fade. At anytime you can reprogram each feature to cross-fade, snap before or snap after fade to suit your application. Consult the "System Programming" chapter in this manual on how to do this.

## Editing Cues

To edit an existing cue, first recall the cue as described in the previous paragraphs. Make any changes as needed using the control faders or joystick. You may need to turn on or off fixtures when you are editing. Once finished doing your editing Press "Enter", "Cue", then adjust the "Xfade" if desired. Select a cue number to store the edited cue by using either the numerical keypad or the Direct Access Keypad. You can write over the original cue number or you can select a different one if you are copying this cue to another location. Finally press "Enter" again to store the edited cue. If you are writing over the original cue just press "Enter" again to overwrite without changing the cue number.

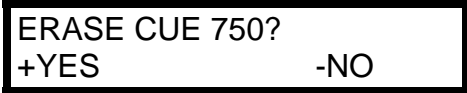
## Deleting a Cue

Okay, so you screw it up and you want to “terminate it”! This is pretty easy to do. First press enter cue and the cue number you want to delete. For example cue 750. So the display will read:



ENTER CUE 750

Then press the Delete keyswitch. The display will now read:



ERASE CUE 750?  
+YES -NO

If you press the + keyswitch then the display will read



CUE 750  
ERASE D

The cue has been terminated!

## Fine Pan and Tilt

The joystick has a "fine" mode for pan and tilt control. To enable fine mode, press the fine button. Pressing “fine” again will toggle fine mode on and off.

With the joystick in fine mode, the pan and tilt will move in small increments making it easier for exact positioning. It uses the fine channels for pan and tilt in the fixtures attributes. So if the fixture does not have Pan Fine and Tilt Fine then fine control will not work.

## Pile-On

[Normal Default and recommended running mode is for Pile-On to be **Disengaged (Off)**].

To access “PILE ON”, press the Menu button and then use the “-←” and “→+” keypads to get you to the following display screen

PRESS “ENTER” TO  
SET PILE ON MODE

Then press “Enter” and the display will change to

PILE ON DISABLED  
USE +/- TO SET

Use the “-←” and “→+” keypads to toggle “PILE ON” either on or off (Enabled or Disabled). Once you have enabled or Disabled Pile One do not forget to press “Enter”. If you don’t press enter your change in the Pile On function will not be recorded. Once you have pressed “Enter” the screen will display

DONE

Pile On allows cues or chases to be piled on top of one another. So, for example, you can record a cue that has **only** has fixtures from the front truss. Then another cue may only have fixtures from the back truss. Piling on both cues together will be fine but remember if you accidentally or intentionally have the same fixture(s) in both cues then the result will be a ‘combination’ of the output which will probably result in a “garbage cue” on the stage.

Now alternatively instead of one cue being a “group of fixtures” and the second cue being “a different group of fixtures”, you may want to make one cue only contain iris information and a second cue contain only dimmer information and so on. Then you could combined that information because you have Pile On turned on. Obviously, once again remember if you recorded iris information only, in a cue then you have to make sure that in the dimmer cue absolutely no iris information is recorded.

The important point to remember at all times is to be careful that you realize that if you pile one cue with iris values on top of another cue with iris values then the fixture(s) iris will change. Okay that may seem obvious but there are many time when you have a complex cue with many fixtures all doing different things and when you move to the next cue all you wanted was an iris change and instead you seem to get complete chaos! That chaos is because you have piled on information you **thought** was **not** there. [One piece of advise from an actual user, if you write a cue that you recorded a feature which in fact you did not want to record, then **don’t** bother trying to edit it. Just over write it].

Alright we have now labored that point to death, so how do we create cues that could be piled on top of each other without screwing everything? First, we will make a few palettes and then use them to create special cues. The special cues will be cues holding only color or gobo or only positional information, for example. It should be noted that having created these special cues, we could turn them into chases. Thus we would have only color chases, gobo chases and positional chases, for example. When we create these cues with just color or gobo, for example, we are creating cues, which have features that are **transparent**. A **transparent** feature is a feature of

the fixture that is not stored in a cue. So in a color cue, we store values for the color features but all other features are **not** recorded. The other features are therefore **transparent**.

Great care must be taken with Pile On active. Remember that every time you playback a cue, chase or macro, it will be Piled On top of any other active cue, chase or macro. So the default setting for Pile On is normally Disabled.

## Color, Gobo, Special & Preset

To speed up programming we introduce the Direct Access keys to create Palettes of Color, Gobo, Special effects and Presets (more commonly called preset focus which has fixture position information).

Having created our palettes of Colors and so on, we can call these up to enter them in a cue at any time. No need to 'remake' the palette of color a second time.

Let's create Color palettes. To do this, first choose the fixture or fixtures we want to create our first color.

Press "Fixture" then anyone or more of the 24 Direct Access keys to turn on the fixture(s) we will be working with. [The fixtures have to be the same type]. Then use the faders to turn on the fixture(s) and to move them into a position where you can see them. Now press "Enter Color" followed by anyone of the 24 Direct Access Keys, for example number 1. The screen will now display.

ENTER COLOR 01

You now must use the faders corresponding to the color wheels or color mixing of your fixture(s) to create the color you want to save. The screen will now display the last fader you touched and its dmx value. Once you have created the color palette you want to save, press "Enter" a second time and the palette is saved. It's that easy!

Now then **point of order, people! Listen Up!** After you pressed "Enter Color 1", the CP-20 looked for **any** changes you made in the fader positions and then when you pressed "Enter" the second time it recorded those changes. So if you move the wrong fader, there is **no turning back** that change **would be recorded**. If you make an error, start again by pressing "Color" a second time. This will turn off the recording process. Second point: in case you haven't noticed, even though we are meant to be recording just color, the CP-20 will record **any** fader change after pressing "Enter Color 01". So if you want to add more than just color to the Color palette number 1, you can. Third point the reason why you can only record values of faders after you have pressed "Enter Color 1", is because you initially moved the fixture into a position and turned on the dimmer and probably opened the shutter. Those values (pan, tilt, dimmer and shutter etc.) you don't want to record into your color palette. Otherwise when you played back Color 1 not only would it go to the color but also to the position and dimmer and shutter values. The way round this potential problem was for us software geeks to ignore those fader movements and changes until you pressed "enter color 1". Pretty smart eh? Ok, damn obvious then!!!!!!!

To check your color palette number 1, first press fixture(s) and then Direct Access keys to turn on the fixture(s). Note: at this stage, the fixtures are probably already on. If they are not, then use the faders to dim the fixtures up and move them into a viewable position again. Then press "Color 1". The fixtures will go to that color. It is now recommended that before you create your next color palette press "Clear" to make sure you start from a "clean

sheet”. [Clear resets everything to zero and empties out what we call, the buffer memory. This is what we call ***Good Housekeeping***].

Now go and make five of your own color palettes and check them as you do each one. Doing this, in this somewhat pedantic fashion to begin with, will build up your confidence in how you and the board can work together.

Okay here’s a little helpful aid to remember. Say you are working with a color-mixing fixture, which has three channels for Cyan, Magenta and Yellow. If you make color 1 Cyan, make sure that you physically move the Magenta and Yellow faders to make white light (which is probably dmx 255) and the Cyan fader to full Cyan (which is probably dmx 0). **Remember** the CP-20 **must see the complete change** for it to record Cyan. If you do not move the Magenta or Yellow faders, then these faders will remain transparent\*\*. . .in other words, their values are **not** recorded. So now when you are running through your cues and you have a look on stage such that Magenta is at 126 and Yellow is also at 126, when you press “Color 1” for your Cyan, Cyan will come straight in perfectly **but** the Magenta and Yellow will also remain in the look. That is not what you wanted. So don’t go blaming the board, remember it does **exactly what you tell it to do!**

[\*\* It is real important to understand the concept of **transparent** features of a fixture. A transparent feature is a feature of a fixture that is **not** recorded in a cue. In the good old days of dimmers and Par Cans, a light was either on or off. Off was 0 and on was any value above 0. The problem with moving fixtures is that 0 is **not** off. It has a value. For example 255 maybe iris closed while 0 maybe iris fully open. So having a fader down at 0 does not necessarily mean that feature is off. If you want a feature to be off and thus be **transparent**, use the clear button **before** start setting up your ‘look’ on stage. As we referred to it on the previous page this is just plain old ***Good Housekeeping***].

Okay back to our palettes. Now repeat the same process to create Gobo Palettes. Press “Fixture” then anyone or more of the Direct Access keys to turn on the fixture(s) you will be working with. The fixtures have to be the same type. Then use the faders to turn on the fixture(s) and to move them into a position where you can see them. Now press “Enter Gobo” followed by anyone of the 24 Direct Access Keys. Let’s start with gobo 01. The screen will now display.

ENTER GOBO 01

You now must use the faders corresponding to the gobo wheels of your fixture(s). Once again as you are moving any of the faders, the screen will display the last fader you touched and its dmx value. Having created the gobo palette you want to save, press “Enter” a second time and the palette is saved. Now remember, after you pressed “Enter Gobo 1”, the CP-20 looks for **any** changes you make in the fader positions and then when you press “Enter” the second time it records all of those changes. So don’t go kidding yourself, if you move the wrong fader, there is **no turning back** that change will be recorded. If you make an error, start again by pressing “Gobo” a second time. This will turn off the recording process. Second point: once again, in case you haven’t noticed, even though we are meant to be recording just gobo, the CP-20 will record any fader change after pressing “Enter Gobo 01”. So, you can record the zoom or focus with the gobo, so it’s the right size and in focus when you play it back.

To check your gobo palette number 1, first press fixture(s) and then the Direct Access keys to turn on the fixtures. Note: the fixtures are probably already on. If not then use the faders to dim the fixtures up and to move them into a viewable position. Then press “Gobo 1”. The fixtures will go to that gobo. Remember, it is now

recommended that before you create your next color palette, press “Clear” to make sure you start from a “clean sheet”. [Clear resets everything to zero and empties out what we call, the buffer memory. Pressing “Clear” is just ***Good Housekeeping***].

Repeat the process to create 6 different Gobo palettes. Okay I know this is being very pedantic and anal but people why screw up a show because you want to be lazy! Of course you could blame the board but trust me **that** line only works for so long before evenb the dumbest of manager starts to question your competence.

Okay the Special Palette is next. Here ‘special’ real refers to any feature of the fixture other than color, gobo and position. It could be an effects wheel or a prism wheel or a variable frost channel or an iris. Just like Color and Gobo, create several palettes and check them afterwards, just to build up your confidence.....and **PLEASE** don’t forget the ***Good Housekeeping***!!

Finally, we come to Preset palettes. Preset palettes refer to positional information. This is created in the same way as a Color Palette only here you will record pan and tilt (both coarse and fine if the fixture(s) has them both!) and depending on the fixture perhaps Focus and Zoom should be recorded with the Pan and Tilt values as well. That’s up to you, of course. In the same manner as Color Palettes, record up to 6 preset palettes just to get the feel for it. Again, don’t forget the ***Good Housekeeping***!!

So now you have :

6 Color Palettes, 6 Gobo Palettes, 6 Special Palettes and 6 Preset Palettes. These Palettes can be recalled at any time for any fixture in the group that you originally recorded the palette with. You can even run a cue and then pile on Palettes to create a new different look and then record that new look into a different cue number. Now you can see that once created, Palettes are the fast way to program.

But how do you create cues of only Color Palettes or Gobo Palettes, for example? To do this, first press “Clear”. ***Good Housekeeping***, remember. Make sure the fixture(s) you want to work with are on by pressing “fixture” and then the Direct Access keys. Then press “Color 1”. That activates the Color Palette 1. Store this as Cue 1 by pressing “Enter Cue 1 Enter”. Repeat the process for Colors 2 through 6. Make sure you press “Clear” after you have stored the cue, it just ***Good housekeeping*** and we don’t want any other feature/channel being recorded in the cue.

Once you have created cues 1 through 6 repeat the process for Gobo, Special and Preset Palettes.

By the way, we can also create Palettes that are fixture dependent. This means for example Color Palettes 1 through 6 could be created using fixtures 1 through 4. Then Color Palettes 7 through 12 could be made using fixtures 5 through 8 and so on.

You can make up to 96 Palettes of Color, Gobo, Special and Preset. There are 24 Direct Access keys. To get to Direct Access keys numbers 25 to 48, you must go to page 2. To get to page 2 of the Color Palette, for example, press and hold the color key. Initially the display screen will read

SELECT COLOR

but after three seconds this screen will change to

SELECT COLOR PG

The Direct Access key 1 will be lit and you can now choose keys 1 through 4 for pages 1 through 4. For Color Palettes 25 through 48, you would choose Direct Access key 2. The screen will now display

SELECT COLOR PG  
COLOR PAGE 02

Pressing “Color” for a second time will turn off the page function and return you to the normal Select Color display. Now when you press “Color 1” the screen will display

SELECT COLOR 25  
NOTHING THERE

At this stage you probably have nothing in this Color Palette no hence the display above.

Gobo, Special and Preset Palettes behave in exactly the same manner.

Jump to the end of Chapter 4: Chases, to learn about using Pile On and transparent cues in chases. However if you skipped the section on the function Pile On please go to page 9 and read it now!!

## Deleting a Color, Gobo, Special & Preset

Okay, so you want to delete it. It done similar to cues . First, press enter and then either Color, Gobo, Special or Preset. Then press the number of the Color, Gobo, Special or Preset you want to delete. For example let’s delete Gobo 21. So the display will read:

ENTER GOBO 21

Then press the Delete keyswitch. The display will now read:

ERASE GOBO 21?  
+YES                      -NO

If you press the + keyswitch then the display will read

GOBO 21  
ERASE D

You’re done! It’s that easy.

# CHASES

The CP20 can store up to 96 chases each with up to 99 steps. A chase is a series of cues, which are called one at a time in order. Each cue in the chase is referred to as a step. The chase will loop continuously as it steps through each cue at a pre-programmed speed. In addition you can set the cross-fade speed that the chase will use from one step to the next. If there is an audio signal at the audio input on the CP20, you can sync the chase to the beat by enabling audio.

## Programming Chases

The cues in the chase are accessed from the cue memory so you must first create and store some cues as described in the previous chapter. Once you have done so you can then program a chase. To begin, press "Enter" then "Chase". The display will read:

```
CHASE _  BPM 000
STEP 01  CUE
```

Use the numerical keypad buttons "-<" and ">+" to move the underline cursor on the display to the lower right corner of the display next to the word "CUE". Select the number for the first cue of the chase using the numerical keypad buttons. Press "Enter". The display will automatically increment to the next step and the number next to "CUE" will go blank allowing you to enter the cue for the next step of the chase. Repeat this process until you have entered all of the cues for this chase.

After entering the cues, adjust the "Chase Speed" fader until the display shows the desired BPM (beats per minute). There are 128 different BPMs available from 0 (stopped) up to 999. Next adjust the "Xfade Speed" fader to the desired cross-fade time. The display will switch from "BPM" to "XF" and show the selected crossfade as a percentage. There is only one cross-fade speed for the entire chase, the cross-fades that are stored with the cues are not used.

Cross-fades are presented as a percentage for chases rather than in seconds as in cues. Setting the cross-fade rate to 100% gives a smooth glide from step to step and 0% gives a quick snap from step to step. Only the channels, which are programmed to cross-fade, are affected. The crossfade time will automatically adjust itself to the chase speed and will always be a percentage of the time between chase steps. Cross-fade will always revert to 0% when a chase is controlled by audio.

After the chase is programmed, move the underline cursor back to the top line of the display next to the word "Chase" by pressing "Enter" once more or by using the cursor keyswitches. Select a number to assign the chase from 1-99 using the numerical keypad. Press "Enter" again to store the chase at that number. As when storing a cue, if there is already a chase at that number the display will read:

```
CHASE 01 EXISTS,
ENTER OR CHANGE
```

Press "Enter" to write over the chase at that number or select a new number to store your chase. Then press "Enter" again to store the chase. The display will then read

CHASE 02 SAVED

## Recalling Chases

Once a chase has been stored in memory it can be recalled by pressing "Chase". The display will read:

SELECT CHASE \_

Select the desired chase number with the numerical keypad then press "Go". You can also use the Direct Access keypad. The display will then read:

CHASE 02	BPM 30
STEP 01	CUE 001

The top line displays the chase that is active and at what BPM rate while the second line displays the chase step and what cue is in that step of the chase. This information is invaluable when you want to find out what cues are recorded in a chase for editing purposes.

You can adjust the speed and cross-fade rate while the chase is running using the fade time fader or the chase speed fader. Pressing "Go" while the chase is running will advance the chase one step.

## Audio Sync

If there is an audio signal present at the audio input jack on the rear panel, you can sync any currently running chase to it by enabling audio. The chase will try to derive a beat from the bass frequencies and trigger the steps from it. When the chase is using the audio signal for its speed, the display will show the message "AUD" next to BPM instead of a number.

Consult the chapter "System Programming" for information on how to enable audio and how to adjust the audio input level.

## Editing Chases

Once a chase is programmed and stored in memory it can be edited and re-stored at any time. You can change the cue number at a step, you can remove steps, you can add or insert steps, you can change the speed and you can change the cross-fade rate. You can also modify a chase and copy it to a different chase number while keeping the original.

**NOTE:** Whenever you edit a chase you must always store it again, either at the same chase number or to a new one.

To edit a chase, press "Enter" then "Chase". The display will read:

```
CHASE _ BPM 120
STEP 01 CUE
```

Use the numerical keypad to select the number of the chase you want to edit. That chase will be copied into an edit buffer where you can make changes to it without affecting the original, which is stored in battery-backed memory.

After the chase has been selected, use the cursor keys " $\leftarrow$ " and " $\rightarrow$ " to move the underline cursor until it is underneath the step number. Select the step that you want to edit using the numerical keypad. After a step is selected the display will show the cue that is stored at that step. If you want to change the cue number at that step, move the cursor until it is underneath the cue number then use the numerical keypad to enter a new cue. Press "Enter". The step number will automatically increment to the next step. If you don't need to edit that step, press "Enter" again and the cursor will return to the chase number on the top line. To store the edited chase as the same chase number then press "Enter" again. If you are copying the chase to a different chase number, then select a different chase number before pressing "Enter". If you are storing to the same chase number, the display will read:

```
CHASE 01 EXISTS,
ENTER OR CHANGE
```

Press "Enter" to store the new edited chase over the old one.

**To add more cues** to the end of a chase, first load the chase into the edit buffer as explained earlier. Move the cursor to the step number on the display and select the step number that is one higher than the last step in the chase. The cue number will be blank for that step. Move the cursor to the blank cue field and select a cue number. Press "Enter". The display will automatically increment allowing you to enter more steps to the end of the chase. When you are finished press "Enter" and the cursor will return to the chase number. Press "Enter" again to overwrite the old chase or select a new chase number, then press "Enter".

**To delete steps** from a chase, load the chase into the edit buffer as explained earlier. Select the step number that you want to delete by moving the cursor under the step number in the display and selecting it. Press "Delete". That step will be deleted from the chase and any steps above that one will move down to the next lower step number. The display will show that the cue that was at the next step has now moved down to the step that you just deleted. If the step you deleted was the last step of the chase, the cue field will go blank showing that there is now no cue at this step. Finally you must store the chase after you have edited it.

**To insert a chase step** into the middle of an existing chase, first load the chase into the edit buffer as explained earlier. Call the step number where you want to insert the new step by moving the cursor under the step number and selecting it. Press "Insert". A blank step will be inserted at this step number and any steps above this one will be moved up one step number. Move the cursor over to the cue number, which will be blank. Select the cue number to insert at this location, then press "Enter". The step number will automatically increment and you can insert another step by moving the cursor back to the step number and repeating the previous operation. Finally you must store the chase once you are finished editing.

To erase an entire chase from the memory, press "Enter" then "Chase". Select the chase number then press "Delete". The display will read:

```
ERASE CHASE 01?  
+ = YES, - = NO
```

Press the "→+" key to confirm the erase or press "-←" to escape.

## Deleting a Chase

Okay, so you screw it up and you want to "terminate it"! This is pretty easy to do. First press enter chase and the chase number you want to delete. For example chase 50. So the display will read:

```
ENTER CHASE 50
```

Then press the Delete keyswitch. The display will now read:

```
ERASE CHASE 50?  
+YES -NO
```

If you press the + keyswitch then the display will read

```
CHASE 50  
ERASE D
```

The chase has been terminated!

## Pile-On

**Programming & Operation of chases with "Pile On" enabled.** First, enable the Pile On function via the Menu display. See page 9 on how to do this. Then we need to create cues that are just Color Palettes, Gobo Palettes, or Presets Palettes (also called Preset Focuses). To do this check out pages 11 and 12.

Okay now you have made Color and Preset Cues. Turn these cues into chases 1 and 2 respectively in the normal way as already described above. So now Chase 1 is a color only chase and chase 2 is a positional chase only. Now press "Chase 2 go". The fixture(s) move but there is no output of course. Press "Chase 1 go". The colors now change but of course you still cannot see it because you need to turn on the fixture(s) dimmer(s) and shutter(s). To do this press "Fixture" and then the Direct Access keys for the required fixture(s). Finally use the faders to open the shutter(s) and dim up the dimmer(s). Viola.

Remember that "PILE ON" is active so the only way to disengage the chases is to press "Clear" to clear out the buffer and start again.

# MACROS

The CP20 can store up to 96 macros each with up to 99 steps. A macro is a list of cues, chases and blackouts, which are automatically called one at a time in order. Each item on the macro list is referred to as a step. A hold time is also stored with each macro step, which determines the amount of time that will elapse until the next macro step is automatically called. This allows you to pre-program an entire show that will loop continuously.

## Programming Macros

To program a macro first press "Enter" then "Macro". The display will read:

```
MACRO _ STEP 01
CUE HOLD 000
```

Use the cursor keys " $\leftarrow$ " and " $\rightarrow$ " to move the underline cursor on the display to the lower left corner of the display underneath the word "CUE". If the first step is to be a cue, press "Enter" and the cursor will move to the cue number. If instead you want to put a chase at this step press any number on the numerical keypad to toggle the selection from "CUE" to "CHS". If you want to put a blackout at this step first set the "Xfade Speed" fader to the desired cross-fade speed for the blackout then press "Black". After selecting "CUE", "CHS" or "CUE BLK" press "Enter". The cursor will move to the next field, which selects the cue or chase number. Use the numerical keypad to select the desired cue or chase for this step. If you have selected a blackout for this step "BLK" will be displayed next to "CUE" and no additional selection is necessary. Press "Enter". The cursor will now move to the next field, which selects the hold time for this step. Use the numerical keypad to enter the hold time in seconds (0-999). Press "Enter". The cursor will return to the left of the display and will automatically increment to the next step number allowing you to repeat the previous operation for the next macro step.

Once all steps have been programmed, press "Enter" repeatedly or use the cursor keys until the underline cursor moves back to the top line of the display next to the word "Macro". Select a number to assign the macro from 1-96 using the numerical keypad. Press "Enter" again to store the macro at that number. If there is already a macro at that location the display will read:

```
MACRO 01 EXISTS,
ENTER OR CHANGE
```

Press "Enter" to write over that macro number or select a new macro number and press "Enter".

**Programming with "Pile on" enabled.** The CP-20 has the ability to run up to three chases simultaneously, by setting the "Hold" time of the first two chases to 000 and then setting the overall "Hold" time for the three chases on the third chase entered. A "Black" step in the macro is used to turn the chases off. The "Black" step can have a hold time of 000 if the next macro step needs to be an instantaneous change to a cue or another chase/chases. Not entering a "Black" step will allow the three chases to continue running. (This is similar to activating three chases manually and then trying to activate a fourth). Specific key commands are as follows;

Press "Enter Macro #". Then use the "-←" and "→+" keys to move the cursor to the cue field. Press any number to toggle from "Cues" to "Chs" and the press "Enter". Type in the chase number for the first chase. Press "Enter" two times to leave the Hold time at 000. Repeat the above for the other two chases but with the last chase, when it comes to the Hold time, type in a value other than 000. After typing in a Hold time press "Enter". Use the "+" key to move the cursor to the cue number field and press "Black" to enter a black-out command. Press "Enter" to set the Hold time. This can be left at 000 to turn off the previous chases and immediately proceed to the next step. Continue to write the rest of the macro as normal.

## Recalling Macros

Once a macro has been stored in memory it can be recalled by pressing "Macro". The display will read:

```
SELECT MACRO _
```

Select the desired macro with the keyswitches then press "Go". The display will read:

```
MACRO 01 STEP 01  
CUE 001 HOLD 010
```

The display will change as the macro runs with each step of the macro showing the current step and what is stored there. The hold time will also count down on the display showing the time remaining until the next step is called. While it is running, you can pause the macro by pressing the "-←" key then continue by pressing "→+". "Go" will advance the macro to the next step.

## Editing Macros

Once a macro is programmed and stored in memory it can be edited and re-stored at any time. You can change the cue or chase number as well as the hold time at any step. You can remove steps, add or insert steps. You can also modify a macro and copy it to a different location, keeping the original while creating a new one. To edit a macro, press "Enter" then "Macro". The display will read:

```
MACRO _ STEP 01  
CUE HOLD 000
```

Use the keyswitches to select the macro that you want to edit. The selected macro will be copied into an edit buffer where you can make changes to it without affecting the original which will still be stored in battery backed memory.

After the macro has been selected, use the cursor keys to move the underline cursor underneath the step number. Select the step that you want to edit using the keyswitches. When a step is selected the display will show the information that is stored at that step. If you want to change anything at that step, move the cursor until it is underneath the item you wish to change then use the keyswitches to enter a new value. Press "Enter" after each new entry. If you continue to press "Enter" the cursor will move to each item on the step display. If you do not want to change that item, press "Enter" and the cursor will move on then automatically increment to the next step. If you don't need to edit the next step keep pressing "Enter" until the cursor returns to the macro number on the top line. To store the edited macro at the same location press "Enter" again. If you are copying the macro to another location, select a different macro number before pressing "Enter".

**To add more steps** to the end of a macro, first load the macro into the edit buffer as explained above. Move the cursor to the step number on the display and select the step number that is one higher than the last step in the macro. The cue and hold numbers will be blank for that step. Move the cursor under "CUE" if you want to change it to "CHS". Press "Enter". The cursor will automatically move to the next field so that you can enter the cue or chase number and finally the hold time for the new step. After entering a hold time and pressing "Enter" the display will automatically increment allowing you to enter more steps to the end of the macro. When you are finished continue to press "Enter" or use the cursor keys to return the cursor to the macro number. Press "Enter" again to overwrite the old macro or select a new location then press "Enter".

**To delete steps** from a macro, load the macro into the edit buffer as explained above. Select the step number that you want to delete by putting the cursor under the step number in the display and selecting the desired one. Press "Delete". That step will be deleted from the macro and any steps above that one will move down to the next lower step number. The display will show that the values that were at the next step have now moved down to the step that you have just deleted. If the step you deleted was the last step of the macro, the cue and hold field will go blank showing that there is now nothing at this step. Finally you must store the edited macro as explained previously.

**To insert a macro step** into the middle of an existing macro, first load the macro into the edit buffer as explained. Call the step number where you want to insert the new step by moving the cursor under the step number in the display and selecting the desired step. Press "Insert". A blank step will be inserted at this step number and any steps above this one will be moved up one step number. Move the cursor over to the cue field which will be blank. Select the cue, chase or blackout to insert at this location then press "Enter". Enter a new hold time and press "Enter". The step number will automatically increment and you can insert another step by moving the cursor back to the step number and repeating the previous operation. Finally you must store the edited macro.

**To erase an entire macro** from memory press "Enter" then "Macro". Select the macro to erase then press "Delete". The display will read:

ERASE	MACRO	01?
+ = YES, - = NO		

Press the "→+" key to confirm the erase or press "-←" to escape.

## Fast Hold Time

Programming a macro step with a hold time of 0 seconds will give you an actual hold time of .25 seconds. This allows you to program macro steps which quickly refocus a fixture with the lamp off to achieve a dramatic effect. To do this, program a cue which focuses the beam on the desired subject. Copy this cue to another cue number but with the lamp turned off. In your macro call the cue with the lamp off with a hold time of 0. With the next step of the macro call the cue with the lamp turned on giving it a longer hold time. This will create the effect of a beam, which appears rather than moves across the stage.

# SUBMASTERS

## How Submasters function

The CP20 has 8 submaster faders that allow the operator to record banks of fixture dimmers into them or a cue or a chase. There are 24 pages of submasters, which is enough to keep the most ambitious of designers happy. The submasters are the bottom row of 8 faders. Those 8 faders toggle between being channels 17 through 24 of a fixture and our 8 submasters. To turn the faders into submasters just press the SUB button to the right of the last row of faders. The LED will come on and now those channel faders have been converted to submasters. Each submaster has its own flash button, located immediately below the submaster, so you can flash the submaster instantly to full. In program mode the flash button is the way we choose the submaster we want to save our fixture dimmers or a cue or chase.

There are a lot of very cool things you can do with the submasters.

You can save a bunch of fixtures dimmer channel to a submaster. Then execute a cue to move the fixtures into position in black out and with the submaster, dim up the fixtures. Thus you can move cues, chases or macros into position first before dimming up the fixtures. In normal operation (not using the submasters) unless you memorized a 'black out movement cue', the fixtures would automatically be on (i.e. dimmed up).

You can save one chase for the back truss on submaster one while a second submaster could have a front truss chase. Both of those chases could be just movement chases and on yet other submasters you could have iris and gobo chases going and yet another submaster could have the dimmers for those fixtures. The potential is there. It just how far do you want to take it?

# Programming Submasters

[At this stage of learning let's make life easier for all of us and make sure the Pile On feature is OFF].  
As a submaster can record Fixtures dimmers, a cue or a chase let's deal with them one by one.

## Recording Fixture Dimmers (for individual or groups of fixture(s)).

Entering into a submaster a fixture's dimmer (channel), is very easy. First choose the submaster page. To do this press and hold down the submaster button. The led should come on and after 3 seconds the display screen will read

**SELECT SUB PAGE**

Make life easy on yourself and choose Direct Access key number one. The display screen will now read

**SELECT SUB PAGE  
SUB PAGE 01**

Now just do the following commands by pressing the corresponding buttons.

“Enter, Sub, Sub n, Fixture n, Enter”.

Alright that's confused you!! So here's the command is normal English where we shall store fixture number 1 through 4's dimmer channel into submaster 5. [Remember, to choose submaster number 5, you must press the flash button below that submaster]. So now press:

“Enter”, followed by the submaster button. The LED right beside the submaster button will now be flashing because it is in record mode. Then press the flash button below submaster 5. The display screen will now read:

**ENTER SUB 5  
SELECT SUB FIXT.**

Now you have to chose which of the 24 fixtures' dimmers you want stored in that submaster. To do that, go to the 24 Direct Access keys and press numbers 1, 2, 3 and 4. Their LEDs will come on. Finally press “Enter” to store this into Submaster 5. That's it. The display screen will now read.

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To see that it is recorded correctly, choose a cue with those fixtures in it. It doesn't matter that the cue has the dimmers “on” because once you fade up the submaster, you will have control of the dimmers. If you have no light output, first make sure you turned the submaster button on, so that the faders are working as submasters and not as channel faders. If you still have no light output, go and check that in your cue the color mixing is “on” and that the shutters are “open”. Just because the dimmer is up, doesn't mean that there's light!!

## Recording a Cue.

Now when you record a cue into a submaster you can decide which fixtures from that cue you want to record into the submaster. For example say cue 5 has fixtures 1, 2 and 3 in it. But you want cue 1 recorded on the submaster 3 with only fixture 2 not 1 and 3, then you can do so.

Here's how it works. Press the following buttons

“Enter, **Sub**, **Sub #3**, Fixture 2, Cue 5, Enter”

(The first **Sub** is the button right above the audio button. The second **Sub#3** is the button directly under the third submaster fader).

In more detail, first press, “enter” followed by the “Sub” button. The Sub button's led will start to flash informing you that you are now in record mode. Then press the flash button below submaster 3. The display screen will now read

```
ENTER SUB 3
SELECT SUB FIXT.
```

The fixture button led should be lit and so there is no reason to press the fixture button. Now press the Direct Access keys for the fixtures, number 2. Now press the cue button. Immediately the cue button's led will come on and the display screen will read

```
ENTER SUB 3
CUE__
```

Now press either the Direct Access keys for the correct cue or use the numerical keypad to type in the correct cue number. So now the display should read

```
ENTER SUB 3
CUE 005
```

You should now press “Enter”. The display screen will momentarily display the word “DONE” and then you'll be back at the last display

```
ENTER SUB 3
CUE 005
```

At this stage you are actually finished but normally you may want to continue programming other submasters, so the sub led is still flashing. It's waiting for you to program more submasters. As we are finished right now, just press the sub button to turn off record mode. To check your work, press the Sub button on again. This time the led is on but not flashing, so you are in playback mode. Now raise submaster 3. And guess what? Nothing happens! Well that's because you were just looking at cue 005 and as a result it is still on. So go to another cue and then use submaster 3 to bring up cue 5. It's amazing what science can do!

Okay, one small point of interest. If you raise your submaster 3 slowly when it gets to DMX value 10 it will display the cue that is stored in the submaster. So you know what you've got it there!

## Recording a cue when the fixture type is DIMMER.

(and if the fixture type chosen is a dimmer then all channels of this fixture are therefore dimmers)

Now programming a submaster with a cue when the fixture type is DIMMER is slightly different. Read the following example to get the idea of how to do it.

Let's say the first 3 fixtures are dimmers. So you have 72 channels of dimming. (Nice, I wish I had your rig!). We have made a cue #6 which has the dimmer channels at different levels. We now want to record this into submaster 5.

In more detail, first press, "enter" followed by the "Sub" button. The Sub button's led will start to flash informing you that you are now in record mode. Then press the flash button below submaster 5. The display screen will now read.

```
ENTER SUB 5
SELECT SUB FIXT.
```

Now press either the Direct Access keys for the correct cue or use the numerical keypad to type in the correct cue number. So now the display should read

```
ENTER SUB 5
CUE 006
```

You should now press "Enter". The display screen will momentarily display the word "DONE" and then you'll be back at the last display

```
ENTER SUB 5
CUE 006
```

Now you will note that here you do **not** select which fixtures are not used in the cue. All fixtures in the cue are present. If you need to make an alteration, then go to the cue itself and edit it.

On playback the submaster works on the principle of LTP (Last Takes Precedence). So when you raise the submaster the cue is played back. Pulling the fader to zero will not effect the output.

In order to get a gentle fade up the cue must have some fade time recorded in the cue.

In order to get a gentle fade down just record a second cue with those channels at 0 and with a time fade.

So in our example submaster #6 could have a Zero cue (cue #7), this way you just use adjacent submasters to create dimmer time fades.

## Recording a Chase.

Recording a chase is like an extension of the commands we just used for recording a cue. The commands will be as follows:

“Enter, Sub, Sub n, (Fixture) n, Chase n, Enter”

Don't you just love gibberish!! Now it is actually making sense. Frightening isn't it!

Okay so now here's a practical example where we shall store chase 7 which has fixtures 12 through 16 in it on submaster 6. The button presses will therefore be:

Enter, Sub, Sub flash button 6, (Fixture) 12, 13, 14, 15, 16, Chase, 7, Enter.

In more detail, first press “enter” followed by the “Sub” button. The Sub button's led will start to flash informing you that you are now in record mode. Then press the flash button below submaster 6. The display screen will now read

```
ENTER SUB 6
SELECT SUB FIXT.
```

The fixture button led should be lit and so there is no reason to press this button. Now press the Direct Access keys for the fixtures, numbers 12, 13, 14, 15, and 16. Now press the chase button. Immediately the chase button's led will come on and the display screen will read

```
ENTER SUB 6
CHASE__
```

Now press either the Direct Access keys for the correct chase or use the numerical keypad to type in the correct chase number. So now the display should read

```
ENTER SUB 6
CHASE 007
```

At this stage again you are actually finished but normally you may want to continue programming other submasters, so the sub led is still flashing. It's waiting for you to program more submasters. As we are finished right now, just press the sub button to turn off record mode. To check your work, press the Sub button on again. This time the led is on but not flashing, so you are in playback mode. Now raise submaster 6. And guess what again? Nothing happens! Well that's because you were just looking at chase 7 and as a result it is still on. So go to another cue or chase and then use submaster 6 to bring up chase 7. Unbelievable eh? Amazing the things you can do.....but wait it doesn't end there. [Careful now we're beginning to sound like a commercial]..... Okay, one small point of interest. If you raise your submaster 6 slowly when it gets to DMX value 10 it will display the chase that is stored in the submaster. So you know what you've got it there!

### Recording a Cue or Chase without dimmer values.

Okay you've just read the title above and you're thinking that's nuts! I don't blame you because I thought it was nuts too, when I first thought about it! But here's the scenario. First create cues for a chase without including the dimmer channels. [In other words make the dimmer channels, for the fixtures you are using, transparent. Remember that word?]. Turn the cues into a chase. Store the chase onto a submaster. Using another submaster record the dimmers for the fixtures used in the chase you just created. Now when you fade up the submaster for the chase, there is no output. Fade up the submaster with the fixtures' dimmers.

So as you can see you can have the chase running and then bring up the dimmers on a separate 'handle' (fader). Obviously you can do this for cues as well. This means you can move the fixtures into position and then fade them up.

### Submasters and Pile On Operational together.

Of course, it makes perfect sense in certain instances to have Pile On active with the submasters. For example, one submaster could have an iris chase for a group of fixtures while another submaster has a tilt chase for the same fixtures and yet another has a shutter chase....and so on. With Pile On active you can run these chase together or separately. The important point to remember when working with Pile On active, is knowing how exactly Pile On works. It is initially explained on pages 9 and 10 of this manual in the Cue chapter. Then it is explained in the Chase and Macro chapters. Please if you have any doubts about its operation, give each of these sections another read.

### Editing a submaster

So you've made a mistake. What can I say "it" happens!!! Or maybe you just want to make a change in your submaster. We got the solution baby. What we have is the awesome ability to edit the submaster. Okay, sarcasm to one side, here's the deal! Editing a cue or a chase is done pretty much in the same way as a cue, chase, or macro. Let's edit submaster 1, which let's say has cue 9 in it. So press the following:

"Enter, Sub, **Sub\* 1**"

[\*Now remember the second **Sub** listed above, refers to the flash button directly below the submaster we are going to edit. You see you have to tell the CP20, which submaster you want to edit! Make sense, right!].

Okay so now the display will read

```
ENTER SUB1  
CUE 009
```

So now press "Cue Delete". The display changes to read

```
ENTER SUB 1  
CUE
```

[By the way, the sub led will still be flashing and the cue led will be on, but not flashing].

Now then, you have a number of options, you can

1. Press "Enter" and now the submaster will have stored just the dimmer channels for those fixtures you saved to the sub in the beginning.
2. You can store a different cue to the submaster. To do that, just type in the cue number and press "Enter" to store it. The display will read "done" to confirm it is stored.
3. You can store a chase to the submaster. To do that, press "Chase" followed by the chase number and then press "Enter". Again the display will read "done" to confirm it is stored.

4. Delete the entire contents of the submaster. That means remove the dimmer channels for those fixtures previously stored in the submaster. This will in effect empty the submaster. To do this, press “Fixture” and then turn off all the fixture button leds that are lit. Then press “enter”. You’ll get the display confirming the change, by display “done” momentarily.

At this stage, you are actually finished, but maybe you may want to continue editing or programming other submasters, so the sub led is still flashing. It’s waiting for you to program more submasters. As we are finished right now, just press the sub button to turn off record mode. To check your work, press the Sub button on again. This time the led is on but not flashing, so you are in playback mode. Now raise submaster 1.

## PERFORMANCE

Live performance of the CP20 for the most part involves calling cues, chases, and macros. The easiest method of performance which doesn't require an operator, is to call a macro or chase and let it loop continuously. The macro or chase will continue to run until it is interrupted by a call to another macro, chase, or cue, or by pressing "Black". A macro can be paused by pressing the "←" key. Pressing "→+" will continue the macro, and "Go" will advance the macro to the next step.

You can also call cues directly by pressing "Cue", then the desired cue number, then "Go". The next cue number will automatically be displayed so that you can continue to press "Go" to call one cue after another in ascending order. The "→+" and "←" keys can also be used to select the next cue.

### Direct Control of Fixtures

During performance you can take direct control of any fixture or group of fixtures using the joystick and control faders. The current fixture selection is saved in battery-backed memory so that when the CP20 is turned off, it will always power up as you left it.

Any fixtures that are enabled will respond to movement of the joystick or control faders. This gives the operator the option of live performance control even if a macro or chase is running. Further, when there is a chase running, any channel settings that are adjusted using the faders or joystick will temporarily override the chase control of those channels. The chase memory will not be affected. *[Okay what's that mean in plain English! Well, if you've got a chase running and you want to INSTANTLY grab a fixture (or fixtures) and move it (or them) somewhere else to light up a different area then you can. No messing around with buttons and faders and turning off the chase...just go grab them and do it! This is great when someone decides to grab a microphone and become an impromptu "wedding singer", if you get my drift!!!!!! Try it out now cause it will save you someday when you least expect it.]*

Use the joystick in fine mode when you want to manually follow with a focus on stage. Fine mode moves a focus relative to its previous position.

### Black

Pressing the "Black" switch sets the dimmer feature for all fixtures to 0. It also turns off any currently running chases or macros. The blackout will crossfade at whatever speed the "Xfade Speed" fader is currently set to. To get out of "Black", press any cue, chase, or macro. The other alternative is to turn on an individual or group of fixtures and start to move them manually.

### Xfade Speed

If a crossfade is in progress it can be overridden by moving this fader. If the "select cue" or "black" displays are active, a bar graph is displayed showing the progress of the crossfade. If a chase is running, the crossfade affects the amount of glide between chase steps.

## Chase Speed

If a chase is running, its speed can be adjusted by moving this fader. If audio is controlling the speed of the chase, this fader will have no effect.

## Audio

With audio enabled, chases will try to sync to the beat of the audio signal. Consult the "System Programming" chapter on how to enable audio

## Auto Start

When the CP20 is switched off it will keep track of any chase or macro that was running. When switched on it will restart the chase or macro from the beginning.

## Clear

The clear button should be used to clear out the board's memory buffer. It is like doing a "soft" reset and starting again. Using the clear button is all part of what we call *Good Housekeeping*.

The normal default operation for clear is to take all features or all fixtures to 0 (zero) and then to immediately clear the buffer memory. Clearing the buffer memory sets all features to transparent.

It is absolutely imperative to understand the concept of transparent features of a fixture. A transparent channel feature is a feature of a fixture that is not recorded in a cue. In the good old days of dimmers and Par Cans a light was either on or off. Off was 0 and on was any value above 0. Life was so easy. Anyone remember medium and long wave radios!!!! Sorry we digress...

The problem with moving fixtures is that 0 is not off. It has a value. For example 255 maybe iris closed while 0 maybe iris fully open. So having a fader down at 0 does not necessarily mean that feature is off. If you want a feature to be off and thus be transparent, use the clear button before start setting up your 'look' on stage. Doing this is *Good Housekeeping*.

Now in the CP20 we do give you the option to customize the clear function to give you a different home position for the fixtures. Cue 961.

## Cue 961 (Customized Home Position)

Creating your own Home Position for the fixtures.

The normal default setting is to send all features of the fixtures to 0 (zero) and then clear the buffer memory. You can create your own setting by setting up each fixture the exact way you want it and then recording it to cue 961. Then every time you press the clear button, the board will execute cue 961 setting all features to their appropriate values and then it will automatically clear the buffer memory. Thus making all the feature values **transparent**.

So if you want to have all pan and tilt channels set to 50/50 (126/126), you can. If you want the dimmer to always turn on, you can. It is particularly useful to use Cue 961 if you have a control channel in any of your fixtures that does not have a default of 0. Martin fixtures, for example, usually have channel 1 as a control channel. This channel has a lot of useful features on it. and 0 value is definitely **NOT** the **DEFAULT** value for this channel.

The main point to remember is that once clear has been pressed the end result is that all features will be transparent. So if you start building a cue from your custom home position, remember that pan, tilt, dimmer, and anything else you may have had 'on' actually is not! All features are transparent.

# SYSTEM PROGRAMMING

There are a number of features and settings for the CP20 that are to be programmed during installation that seldom if ever need to be set again. They are generally used by the installer to customize the system to the particular installation. These are all accessed using the "Menu" switch. Any menu selection that involves setting a value will be stored in battery backed memory.

Press "Menu" and you will be in the Menu directory. The menu has many different items for example:

**PRESS "ENTER" TO  
CHOOSE FIXTURES**

Use the "-←" and "→+" keys to select from the different menu items. In the display below, audio enable is the current selection. To select that item press "Enter". The display will go to the audio enable menu where you can then set the audio enable to the desired value. You do not need to press "Enter" once a menu item is programmed. You can press any other switch to continue. The various menu items are explained in the following paragraphs.

To exit out of the menu press the menu button a second time to get back to the root directory...which is, of course:

**ELEKTRALITE CP20  
REVISION 1.1**

## Audio On/Off

The audio enable display reads:

**AUDIO IN SENSE 9  
0-LEAST, 9-MOST**

When audio is on, chases will attempt to sync to the beat of the audio signal. If there is no signal present the chase will not run. "AUD" will appear in the chase display next to "BPM". Xfade is automatically set to 0 when a chase is controlled by audio. The audio sensitivity can be adjusted using the numerical keypad numbers 0 through 9.

## Fixture Library

The fixture library is under the menu :

**PRESS "ENTER" TO  
CHOOSE FIXTURES**

Press "Enter" and you will be presented with the screen below.

```
FIXTURE 01  
NO FIXTURE
```

You will need to decide which fixture you wish and to do so use the "-<" and "→+" keys to scroll through the library. Once you have chosen the fixture you want from the library you **must** press enter to save it. Failure to do this will result in the fixture number having **NO** fixture. Press any other number up to 24 to select the next fixture you want to use from the library.

## Soft Patching

The soft patching display reads:

```
PRESS "ENTER" TO  
PATCH FIXTURES
```

After pressing "Enter" the display will now read:

```
AUTO PATCH ON  
FIXT 01CHNL 001
```

You can have the CP20 automatically softpatch the board according to the channel configurations of the fixtures chosen. So for example, if fixture 1 is a 10 channel fixture and fixture 2 is a 12 channel fixture, then the auto patch will set fixture 1 to channel 1 and fixture 2 to 11. To turn of the Auto Patch just use the "-<" and "→+" to get the cursor over the "ON" sign and then press any of the numerical keypads to toggle the patch between "ON" and "OFF". Once the auto patch is turned off, you can assign the fixtures to whatever dmx address you want. Remember to use the enter key to enter in the patch change. If you don't the change in the address will **not** be recorded.

## Customizing (Modifying) a fixture .

So you've got a fixture that's not in the library!...Or you want to modify an existing fixture. Don't panic the solution is here. Press the "Menu" button again. You'll be back at the following display screen

```
PRESS "ENTER" TO  
CHOOSE FIXTURES
```

Use the "-<" and "→+" buttons to get to display below.

```
PRESS "ENTER" TO  
MODIFY FIXTURE
```

You've probably figured this out already. You are going to modify an existing fixture to create your new fixture. If you press Enter you will now have this display

```
NUMBER OF CHNLS  
FIXTURE 01-24
```

Now use the "**→+**" button to position the cursor (the flashing line under a number or letter) under **FIXT 01 - 24**. You now must choose the fixture number that you want this new fixture to be or choose the number of fixture you want to modify. [If you are just going to modify an existing fixture **not** create an entirely new fixture jump to page 33 and the section called "Modifying a fixture"].....Okay, continuing on for you pioneers with an entirely new unheard of fixture.....Just use the numbered keypad to choose the fixture number; for example 05. Once you have done this, use the "**←**" and "**→+**" buttons to move the cursor to the right.

You now must tell the CP-20 how many channels this fixture has. Use the numbered keypad to enter in the correct value. [Remember whole numbers only. No letters or fractions. All "smarty pants" will be forced to miss the fabulous dinner that catering are just about to provide. Let me guess Chicken or Lasagna?].

Once you have chosen the number of channels the fixture has, press Enter. The board will display the word DONE before returning to the "number of chnls" display.

**Press the number 2** from the keypad, and the display screen changes to :

```
DIMMER CHANNEL
FIXT 05 - NONE
```

Using the "**→+**" button, move the cursor over to NONE and type in the correct channel number for the dimmer. Obviously if it doesn't have a dimmer, then leave the entry as NONE. When finished, just press Enter and the word DONE will appear to confirm that the change has been done. The display will then return to the "dimmer channel" display.

**Press the number 3** from the keypad and the display screen changes to :

```
PAN CHANNEL
FIXT 05 - 17
```

Again using the "**→+**" button move the cursor over to the number 17. [There is always the possibility that the number to the right of the fixture number (05) is not 17! It doesn't have to be. It could be anything from 1 to 24].With the numerical keypad put in the correct channel for the Pan and then press Enter. Once more, the word DONE will appear to confirm the change and the display will then return to the "pan channel" display.

**Press the number 4** from the keypad and the display screen changes to :

```
PANFINE CHANNEL
FIXT 05 - NONE
```

If the fixture has two channels for Pan, then this is for the fine channel. Using the "**→+**" button move the cursor over to NONE and using the numerical keypad enter in the correct channel number for Pan Fine, then press Enter. The word DONE will appear to confirm the change.

**Press the number 5** from the keypad and the display screen changes to :

TILTCHANNEL  
FIXT 05 - NONE

Again using the "→+" button move the cursor over to the word NONE. With the numerical keypad put in the correct channel for the Tilt and then press Enter. Once more, the word DONE will appear to confirm the change. The display will then return to the "Tilt channel" display.

**Press the number 6** from the keypad and the display screen changes to

TILTFINE CHNL.  
FIXT 05 - NONE

If the fixture has two channels for Tilt, then this is for the fine channel. Using the "→+" button move the cursor over to NONE and using the numerical keypad enter in the correct channel number for Tilt Fine, then press Enter. The word DONE will appear to confirm the change.

**Press the number 7** from the keypad and the display screen changes to

XFADE CHANNEL 01  
FIXT 05 -

Okay listen up people.....This is important to understand. So wake up. For every channel in a fixture, you can chose when the channel changes in a timed cue. You've got three choices.

**Snap Before.** An example of this would be if you want the colors to change before the fixture moves in a cue, then that is called Snap Before.

**Snap After.** An example of this would be if you want the colors to change after the fixture moves in a cue then, that is called Snap After.

**Xfade (Cross fade).** An example of this would be if you want the colors to change as the fixture is moving in a cue, then that is called Xfade.

To make your choice, move the cursor to the right of the fixture number by using the "←" and "→+" button.

Then press **0 for XFADE, 1 for SNAP B, or 2 for SNAP A.**

Remember that you can do this for all channels in the fixture.

**Press the number 8** from the keypad and the display screen changes to

MAX DIMMER VALUE  
FIXT 01 - 127

Here you can change the maximum value of dimmer output on the submaster fader. This is very useful when you have a dimmer channel, which does more than control just the dimmer. For example, you can have dimmer channels that also control the lamp being struck On or Off.

There would be nothing more annoying than raising the submaster and watching you fixtures dim up and then suddenly plunge into darkness as the correct dmx value to turn off the lamp was reached! Then of course, with some fixtures, you can be sitting around for 10 minutes waiting for them to cool down before you can restrike

the lamp. A double hit!!! So to overcome this you can use this submenu to change the maximum dmx value the submaster fader will reach when it is at the top of the fade. Using the "**←**" and "**→+**" buttons move the cursor to the fixture number and choose the correct number. Then use the "**←**" and "**→+**" again to move to the DMX value and choose the correct value using the numerical keypad for the fixture you have.

### **Modifying a fixture (in other words, not creating an entirely new fixture).**

Once you are in the Modify Fixture menu, you will have a screen like below:

```
NUMBER OF CHNLS.  
FIXT
```

Pressing the numerical keypad as follows will get you to the following sub menus.

- the number 1 will always get you to the “number of chnls.” display.
- the number 2 will always get you to the “dimmer channel” display.
- the number 3 will always get you to the “pan channel” display.
- the number 4 will always get you to the “pan fine channel” display.
- the number 5 will always get you to the “tilt channel” display.
- the number 6 will always get you to the “tilt fine chnl” display.
- the number 7 will always get you to the “Xfade channel” display.
- the number 8 will always get you to the “Max dimmer value”.

If you want to modify a particular channel, then use the numerical keypad to jump to the sub menu you want to modify.

**Modifying the number of channels the fixture has**, press the number 1 from the keypad, then use the numerical keypad to choose the fixture number; for example 05. Once you have done this, use the "**←**" and "**→+**" buttons to move the cursor to the right. You now must tell the CP-20 how many channels this fixture has. Use the numbered keypad to enter in the correct value. Once you have chosen the number of channels the fixture has, press Enter. The board will display the word DONE before returning to the “number of chnls” display. [Modifying the number of channels a fixture has is particularly useful when the fixture chosen is a “dimmer”. Normally, the default number of channels the “dimmer” fixture entry has is 24. But what if you’re working with only a 12 channel dimmer pack. You’re wasting 12 channels doing “squat-diddly” (nothing)! So you can reclaim those channels by setting the number of channels to 12].

**Modifying the dimmer channel**, press the number 2 from the keypad, and the display screen changes to :

```
DIMMER CHANNEL  
FIXT 05 - NONE
```

Using the "**→+**" button, move the cursor over to NONE and type in the correct channel number for the dimmer. Obviously if it doesn’t have a dimmer, then leave the entry as NONE. When finished, just press Enter and the word DONE will appear to confirm that the change has been done. The display will then return to the “dimmer channel” display.

**Modifying the Pan (Coarse) channel**, press the number 3 from the keypad and the display screen changes to :

```
PAN CHANNEL  
FIXT 05 - 17
```

Again using the "→+" button move the cursor over to the number 17. [There is always the possibility that the number to the right of the fixture number (05) is not 17! It doesn't have to be. It could be anything from 1 to 24].With the numerical keypad put in the correct channel for the Pan and then press Enter. Once more, the word DONE will appear to confirm the change and the display will then return to the "pan channel" display.

**Modifying the Pan (Fine) channel,** press the number 4 from the keypad and the display screen changes to :

```
PANFINE CHANNEL
FIXT 05 - NONE
```

If the fixture has two channels for Pan, then this is for the fine channel.

Using the "→+" button move the cursor over to NONE and using the numerical keypad enter in the correct channel number for Pan Fine, then press Enter. The word DONE will appear to confirm the change.

**Modifying the Tilt (Coarse) channel,** press the number 5 from the keypad and the display screen changes to:

```
TILTCHANNEL
FIXT 05 - NONE
```

Again using the "→+" button move the cursor over to the word NONE. With the numerical keypad put in the correct channel for the Tilt and then press Enter. Once more, the word DONE will appear to confirm the change. The display will then return to the "Tilt channel" display.

**Modifying the Tilt (Fine) channel,** press the number 6 from the keypad and the display screen changes to

```
TILTFINE CHNL.
FIXT 05 - NONE
```

If the fixture has two channels for Tilt, then this is for the fine channel.

Using the "→+" button move the cursor over to NONE and using the numerical keypad enter in the correct channel number for Tilt Fine, then press Enter The word DONE will appear to confirm the change. Press the number 7 from the keypad and the display screen changes to

```
XFADE CHANNEL 01
FIXT 05 -
```

**Modifying the Xfade mode,** press the number 7 from the keypad and the display screen changes to

```
XFADE CHANNEL 01
FIXT 05 -
```

For every channel in a fixture, you can chose when the channel changes in a timed cue. You've got three choices.

**Snap Before.** An example of this would be if you want the colors to change before the fixture moves in a cue, then that is called Snap Before.

**Snap After.** An example of this would be if you want the colors to change after the fixture moves in a cue then, that is called Snap After.

**Xfade (Cross fade).** An example of this would be if you want the colors to change as the fixture is moving in a cue, then that is called Xfade.

**To make your choice, move the cursor to the right of the fixture number by using the "-←" and "→+" button.**

Then press **0 for XFADE, 1 for SNAP B, or 2 for SNAP A.**

Remember that you can do this for all channels in the fixture.

**Modifying the Submaster faders dimmer output level,** press the number 8 from the keypad and the display screen changes to

```
MAX DIMMER VALUE
FIXT 01 - 127
```

Here you can change the maximum value of dimmer output on the submaster fader. This is very useful when you have a dimmer channel, which does more than control just the dimmer. For example, you can have dimmer channels that also control the lamp being struck On or Off.

There would be nothing more annoying than raising the submaster and watching you fixtures dim up and then suddenly plunge into darkness as the correct dmx value to turn off the lamp was reached! Then of course, with some fixtures, you can be sitting around for 10 minutes waiting for them to cool down before you can restrike the lamp. A double hit!!! So to overcome this you can use this submenu to change the maximum dmx value the submaster fader will reach when it is at the top of the fade. Using the "-←" and "→+" buttons move the cursor to the fixture number and choose the correct number. Then use the "-←" and "→+" again to move to the DMX value and choose the correct value using the numerical keypad for the fixture you have.

## Copy Fixture.

This allows you to copy fixture entries. It is quicker to use this than to say go back and forth to the library to enter the same fixture 10 times. It is also great when you have custom fixtures. The display screen read:

```
COPY FIXTURE 01
TO FIXTURE 02
```

The "-←" and "→+" buttons can be used to navigate the cursor to change the fixture numbers. So that, for example the display could read:

```
COPY FIXTURE 15
TO FIXTURE 18
```

Once chosen the Enter button must be pressed and a confirmation of "DONE" is given.

## Joystick On/Off.

The joystick can be turned on and off from this menu. So if you are the type that prefer to program your pan and tilt using the faders then turning off the joystick will avoid that accidental nudge with the elbow and that “all lights are pointing at the ceiling effect”!! Believe me you do it once and then never again!!

To turn the joystick off. Press Enter and use the "**←**" and "**→**+" buttons to set the joystick “on” or “off”. Press Enter once you have made your decision and the word “DONE” will appear and disappear from the display.

For a more detailed explanation of Joystick control check out page 9.

## Set Pile On Mode.

This sets the pile on “on” or “off”. The default is “off” and we would strongly recommend you keep it “off”. This is a very powerful tool which can run havoc on the playback of cues, chases and macros. Great care has to be exercised for this.

To change this attribute press Enter and then use the "**←**" and "**→**+" buttons to turn “on” or back “off” the Pile On mode. Press Enter once you have made your decision and the word “DONE” will appear and disappear from the display.

For a more detailed explanation of Pile On Mode check out page 10.

## Pan Invert

The pan for a fixture can be inverted. The pan invert display reads:

```
FIXTURE 01 PAN
NORMAL
```

Use the number keyswitches to select the fixture number then use the "**←**" and "**→**+" keys to toggle between inverted or normal.

## Tilt Invert

The tilt for a fixture can be inverted. The tilt invert display reads:

```
FIXTURE 01 TILT
NORMAL
```

Use the number keyswitches to select the fixture number then use the "**←**" and "**→**+" keys to toggle between inverted or normal.

## MIDI Channel

The MIDI Menu display will read:

PRESS "ENTER" TO  
SET MIDI CHANNEL

Press enter .

MIDI CHANNEL 01

Use the keyswitches to select the MIDI channel (1-16) that the CP20 will send and receive on.

## Setting Up RS232 Port

You can use the CP-20's RS232 port to save the board's memory to a P.C. [This is therefore saving your show]. You can also load in a previously stored show from your P.C. into the board. Finally, you can use the RS232 to update your CP-20 software when enhancement become available. Follow the instructions in this section and the next five sections (Setting up Windows, Creating an Empty Memory file, Send a memory file, Load a memory file and Updating software) which explains how to connect, configure and use a P.C. computer running Windows 95, 98, ME and 2000 to your CP-20.

**[Note: if your CP20 comes with a disk drive then setting up your RS232 port is somewhat redundant as you will use the drive to save and load a show plus do any software updates. Please go to Page 43 which details how to use the disk drive].**

The RS232 port on the back of the CP-20 can be used for connecting to a computer using a serial lap link cable. The cable can be purchased at any computer store. A lap link cable is normally used to connect a laptop computer to a desktop computer or to connect 2 computers together. It is also sometimes also called a Null Modem Cable. A standard RS232 cable will **not** work. The reason for this is that in a normal RS232 cable the pins connections from one end of the cable to the other are identical. In other words, pin one to pin one and pin two to pin two. This maybe great for a one directional hook up for a printer, for example, but it is useless for us with CP-20. The reason being that in an RS232 connector say pin 2 is data "in" and say pin 3 is data "out". Using a standard RS232 cable will send data "in" to the data "in" connector....so both ends are "looking" for data coming in!!!! That isn't going to work! In a lap link cable, the pins are connected so that data "out" from one end, goes to data "in" at the other. So be careful to purchase the correct cable. Then connect the RS232 port on the CP20 to one of the serial "COM" ports on your PC. Some COM ports use a 25 pin connector and some use a 9 pin. Most lap link cables come with both types of connectors. So that makes life a darn sight easier. Now you may have to work out which COM port the RSR232 is using on your computer. As a general rule, COM 1 is used for the mouse on your PC, so you will probably be using COM 2. Once connected, you can use a PC running Windows 95, 98 or ME to backup or restore the memory (your show) and also to update the operating software on the CP-20. This allows you to update your controller with the latest features.

## Setting Up Windows

So, from the section above “Setting Up the RS232 Port”, you have got the hardware hooked up. It is time to get the software working correctly between the computer and the CP20. We are going to use a neat little accessory program on your P.C. called HyperTerminal. You are then going to either grab the file to run this program (called CP20.ht) from our website or you are going to create it yourself. So please read EITHER

**Setting up Windows using the CP20.ht file downloaded from the website.**           OR  
**Setting up Windows by manually creating your very own CP20.ht file.**

### **Setting up Windows using the CP20.ht file downloaded from the website.**

You can save yourself a lot of time and hassle if you go to our website [www.myelektralite.com](http://www.myelektralite.com) and download CP20.ht file. This file is located on the CP-20 page in the Product Section of the website. Save the CP20.ht file to a new directory on your P.C. A suitable directory name might be C:\program files\CP20. Having done that, now let’s find HyperTerminal and load CP20.ht into this program. So go to “Start”, “Programs”, “Accessories”, “Communications”, “HyperTerminal”. The route to HyperTerminal maybe different from one Windows version to another and of course from one language version to another, so you may have to search for it. If for some reason HyperTerminal is not installed on your version of Windows, go grab your Windows CD and install it.

Once the HyperTerminal folder is open, double click on “Hypertrm.exe” or “Hypertrm” or in the case of Windows ME just wait five seconds or so and the program will automatically start for you! You should then be asked to choose an icon and enter a name. If you are asked to choose an icon and enter a name, don’t bother, just click on cancel. If you don’t get to choose an icon and name screen, you will probably find yourself in the following situation. If your PC does not have a modem attached (or has never had a modem attached) chances are that Windows will ask you to enter "location information" such as "What country /region are you in now" and "The phone system at this location uses". This information is necessary for dialing out when connected to a modem but is of no consequence to our use of HyperTerminal. If this is the case, when Windows asks for "Location Information" select the “CANCEL” button. Windows will then ask you to "Confirm Cancel", select “YES”. Windows will then tell you that "before HyperTerminal can dial or make connections, you must provide information about your location" - just select “OK”.

So now finally Windows will open HyperTerminal – now you are ready to go to the top left hand side of your screen and click on “File”, then “Open”, then find where you put the CP20.ht file and click on “Open”. You now done setting up Windows.

Okay so what if you haven’t got access to the internet and our website? Well, Don’t Panic. Following is how to set up your own CP20.ht file.

### **Setting up Windows by manually creating your very own CP20.ht file.**

First go to HyperTerminal by clicking on “Start”, “Programs”, “Accessories”, “Communications”, “HyperTerminal”. The route to HyperTerminal maybe different from one Windows version to another and of course from one language version to another, so you may have to search for it. If for some reason HyperTerminal is not installed on your version of Windows, go grab your Windows CD and install it. Once the HyperTerminal folder is open, double click on “Hypertrm.exe” or “Hypertrm” or in the case of Windows ME just wait five seconds or so and the program will automatically start for you! **One point to bear in mind:** If your P.C. does not have a modem attached (or has never had a modem attached) chances are that Windows will ask you to enter "location information" such as "What country /region are you in now" and "The phone system at this location uses". This information is necessary for dialing out

when connected to a modem but is of no consequence to our use of HyperTerminal. If this is the case, when Windows asks for "Location Information" select the "CANCEL" button. Windows will then ask you to "Confirm Cancel", select "YES". Windows will then tell you that "before HyperTerminal can dial or make connections, you must provide information about your location" - just select "OK", Windows will then open HyperTerminal - ready for you to configure yourself.

You will then be asked to choose a name (for example CP20) and an icon. Name it CP20 and pick any icon you like and click on "OK". When the next window pops up, look down at the bottom and you will see a box marked "connect using:" Now to the right of this it may have the words "LT Win Modem". Use the drop down arrow to the right of this and choose "Direct to COM 2". Then click on "OK". [By the way, ignore the telephone information such as country/region and area code etc., this is irrelevant to us here]. Immediately you click on "OK", the next window pops up called Port Settings. You will now have the following displayed

**Bits per second**

**Data bits**

**Parity**

**Stop bits**

**Flow control**

Do not panic....you will not self destruct your computer or the CP20! This is easy just use the arrows at the right of each of the headings above and change the settings to the following:

**Bits per second : 19200**

**Data bits : 8**

**Parity : none**

**Stop bits : 1**

**Flow control : none**

**Then click on "OK"**

Now you have one last item which needs to be set. In your blank HyperTerminal screen go to the top left hand side and click on "File", then "Properties", then select the "Settings" tab. From the "Settings" tab click on the box that says "ASCII Setup". From that dialog box make sure the box labeled "send line ends with line feeds" is checked. [In other words, it has a tick in it]. You can also leave the box labeled "wrap lines" checked, but leave all of the other boxes unchecked. Click "OK" and you are done with setup. You now must save the changes that you made. To do this go to the top left hand side of the window and click on "File" and "Save". If you want to save the file somewhere else than in the HyperTerminal folder click on "File" then "Save as".

Now you can close your HyperTerminal file. You can click on "File" and then "Exit" or just click on the cross at the top right hand side. You will now be prompted with a window saying "You are currently connected. Are you sure you want to disconnect now?" Just answer "Yes".

Now when you open HyperTerminal, when prompted to enter a name and choose an icon, click cancel and then go to "File", then "Open"...the open dialog box should display the file "CP20.ht". You just need to click on "Open" to open it. Congratulations.

## Creating an Empty Memory File

Before you can send a Memory file from a CP20 to your computer, you have to have a file already on your computer in which you will 'dump' the CP20 memory. Once you have created the memory file, you can use HyperTerminal to back up your memory into this file and save it on your hard disk or onto a floppy disk. We are therefore going to create an empty text file on your computer to write the memory data into. To do this go to the drive and or folder, on your computer, where you want to store your memory files. For example C:\CP20. Click on "File" in the upper left of the window then select "New" followed by "Text Document". A new empty text document will be created in the window. With it currently hi-lighted, you have the opportunity to type in a name for the new document such as "CP20 Memory 1". Remember to leave the extension name (.txt) exactly as is. Do not change it. Having typed in the name you want, press return to save it. The hi-lighting will turn off and the file will be saved with its new name.

Please remember that when creating memory backup files, always start with an empty text file. Hyper Terminal will not write over an old file that has data in it but will add the new data to the end of it giving you multiple memory dumps in one file. This is not what you want to have happen believe me, it isn't pretty!

## Send Memory File [saving your show into the computer]

**Please read the preceding sections before trying to send a Memory File.**

**Setting Up the RS232 port**

**Setting Up Windows**

**Creating an Empty Memory File**

First we are going to set up the computer to receive the memory file then we will get the CP20 to send the file.

Go to HyperTerminal program in your computer and open the file CP20.ht which you previously created. {Check out the Setting Up Windows section on page 30, if you have not created CP20.ht}. Click on "Transfer" on the top menu bar and select "Capture Text". The Capture text dialog box will appear and click on the Browse button to find your file CP20 Memory 1.txt. Select the file and a window will appear saying that your text file already exists. Do you want to replace it? Answer "Yes". Then click on "Start". HyperTerminal is now ready to receive the file from the CP20.

Now we have to set up the CP20 to transmit the contents of its memory to the computer. To do this, turn on the CP20 and press "Menu" then using the "←" and "→" keys go to the menu selection on the CP20 labeled

**PRESS "ENTER" TO  
SEND MEMORY FILE**

Immediately you Press "Enter" you initiate a memory dump of the board's file through the Com Port. A series of numbers will be displayed in the HyperTerminal window as the file is being copied to your "CP20 memory 1" file. The time to send the file will vary depending on the amount of memory currently in use by your computer. It will vary only a small amount by how much you have stored in the CP20. The time variation can be as little as a couple of minutes to several minutes (anything up to 8 minutes has been seen with a very old computer doing too much work!). When the file is finished being sent, the CP20 will display:

**MEMORY FILE SENT**

and the numbers will stop scrolling in the HyperTerminal window. Close HyperTerminal and the file will automatically be saved. It is always recommended that you make at least two copies of a memory file, just in

case!!! And remember, when creating memory backup files, always start with an empty text file. HyperTerminal will not write over an old file that has data in it but will add the new data to the end of it, giving you multiple memory dumps in one file. This is not what you want to have happen. So go create a new empty memory file and do another download from the CP20.

## Load Memory File [loading your saved show back into the CP-20]

**Please read the preceding sections before trying to receiving a Memory File.**

**Setting Up the RS232 port  
Setting Up Windows  
Creating an Empty Memory File**

To copy a memory file from your PC back to the CP20, press "Menu" then using the "←" and "→" keys go through the menu until you reach the screen display

**PRESS "ENTER" TO  
LOAD MEMORY FILE**

Press "Enter" the display will read

**WAITING FOR FILE  
FROM COM PORT**

Next call the file CP20.ht which you created in HyperTerminal. See the section on page 29 entitled Setting Up Windows. Then click on "Transfer" on the top menu bar and select "Send Text File". Be careful that you chose the "Send Text file" and not just the "Send File" choice. A dialog box will appear allowing you to select the text file that you created previously. [See the section on Page 31 "send a Memory file" if you have not already created a file already]. If you have already created a file then go to the top of this window (send text file window) and using the "Look in" drop down menu, go to the drive and the folder where you saved your file which, for example, (from the previous section) was called "CP20 memory 1". Now select the file and click on "Open". HyperTerminal will begin to transmit the file. The display on the CP20 will read

**RECEIVING FILE**

When the file has been received, the CP20 will restart and show its startup display. If any errors have been detected, the CP20 will prompt you to retry. Check your connections and try again. Once again, just like when you sent a memory file to your computer, the time variation can be as little as a couple of minutes to several minutes for the transmission (anything up to 8 minutes has been seen).

## Updating Software

The software that runs the CP20 can be updated with new versions that will be available from our web site at [myelektralite.com](http://myelektralite.com). To set up the CP20 ready to receive a software update, press "Menu" then using the "←" and "→" keys go to the menu selection on the CP20 labeled

**PRESS "ENTER" TO  
UPDATE SOFTWARE**

Now go to your computer and open the HyperTerminal program. Then open the file CP20.ht which you previously created. {Check out the Setting Up Windows section on page 30, if you have not created CP20.ht}.

Then click on "Transfer" on the top menu bar and select "Send Text File". Be careful that you chose the "Send Text file" and not just the "Send File" choice. Now go to the top of this window (send text file window) and using the "Look in" drop down menu, go to the drive and the folder where you saved the software file that you downloaded from our website. Please make sure that the software file has been unzipped. You cannot send the file zipped into the CP20. Select the software file and click on "Open". HyperTerminal will begin to transmit the file. The screen will display

**RECEIVING  
NEW PROGRAM**

When the file has been received, the CP20 will restart and show its startup display. If any errors have been detected, the CP20 will prompt you to retry. Check your connections and try again. It will take several minutes for the software file to transmit into the CP20.

By the way if you inadvertently press "Enter", to update the software and you have not connected the CP20 to your computer then you must turn off the CP-20 to reset it back to normal. It keeps hunting for a file it cannot find!

## CP-20 Fitted with disk drive

If the CP-20 is fitted with the disk drive or you have upgraded it with the drive then loading and saving shows is very simple to do.

### Saving a show to a disk

First, press "Menu" then using the "←" and "→" keys go to the menu selection on the CP20 labeled

PRESS "ENTER" TO  
SAVE MEMORY FILE

At this point make sure a blank disk is in the disk drive then press "Enter". The screen will now display the following message:

SAVING FILE TO DISK  
0000

The four zeros at the bottom right of the screen will go up in value as the show is downloaded onto the disk. Once completed the screen will display:

FILES HAS BEEN SAVED  
TO DISK

If the screen displays the error message:

DISK EJECTED

then a disk has not been put into the drive. Any other error message refers to disk errors and a new disk must be inserted. **Note:** the CP20 automatically names the show. Do **NOT** insert a disk with a show already stored on it that you want to keep. If you save over it, you will lose the previous show file. The saved file is a **.txt** file which can be saved on your computer. Please do not rely on the disk as your ultimate backup. Save the disk onto a computer's hard drive.

## Loading a show into the CP20 from a disk

First, press "Menu" then using the "←" and "→" keys go to the menu selection on the CP20 labeled

**PRESS "ENTER" TO  
LOAD MEMORY FILE**

At this point make sure the disk with the correct show file is loaded in the disk drive then press "Enter". The screen will now display the following message:

**RECEIVING FILE  
FROM DISK**

The upload time will depend on the size of the show file. So don't remove the disk after a few seconds. Once the file has been uploaded the screen display will read.

**ELEKTRALITE CP-20 V x.xx**

## Updating Software

To update the software, first press "Menu", then using the "←" and "→" keys go to the menu selection on the CP20 labeled

**PRESS "ENTER" TO  
UPDATE SOFTWARE**

At this point make sure the disk with the correct software version is loaded in the disk drive, then press "Enter". The screen will now display the following message:

**RECEIVING  
NEW PROGRAM**

Once the program has successfully loaded the screen will display the following message:

**ELEKTRALITE  
CP 20 (V x.xx)**

This display shows the latest software now loaded into the CP-20.

## Control Lock

The front panel controls including all switches, faders and joystick can be disabled to protect an installation from any tampering. To disable the controls, power up the CP20 while holding the “Delete” switch, to re-enable the controls, power up while holding the “Insert” switch.

## Memory Lock

This feature is hidden from the other system programming features in order to protect the memory. To access memory lock you must be in the menu directory. So, first press the Menu button to get into the Menu directory. The first screen in the Menu directory is usually the “choose a fixture”. When in the Menu directory, press "INSERT" and hold it down while stepping through the hidden menu options with the "-←" and "→+" buttons. Once you've got to the display below then PRESS "ENTER" TO LOCK/UNLOCK MEM. You will then use the "-←" and "→+" buttons to toggle between MEM LOCKED and MEM UNLOCKED. Once you have locked or unlocked the memory then press "ENTER" to confirm and save your selection. The display will momentarily read "DONE" to confirm the action.


The memory lock display initially reads:



PRESS "ENTER" TO  
LOCK/UNLOCK MEM.

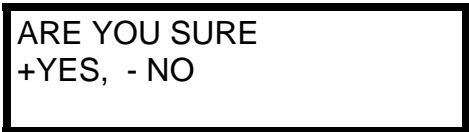
## Erase Memory

This feature is also hidden from the other system programming features. To erase the memory press “INSERT” while you are in the Menu. The erase memory display reads:



PRESS "ENTER" TO  
ERASE ALL MEMORY

You will then get a display as below.



ARE YOU SURE  
+YES, - NO

## MIDI

The CP10xt has an extensive MIDI implementation which will allow you to automate performances as well as backup cue, chase, macro and system memory to disk.

**NOTE:** This manual does not attempt to explain how MIDI works or how to sequence a lighting show.

### MIDI Channel

The MIDI channel is set from the menu switch. Consult the "System Programming" chapter on how to do this. The MIDI channel will affect continuous controller messages and program changes which are sent and received by the CP10xt. If you are only concerned with backing up the memory with MIDI, the MIDI channel need not be changed.

### Continuous Controllers

The chase speed and crossfade controls will send and receive MIDI continuous controller messages. Continuous controller 1 is used for the "Xfade Speed" fader and continuous controller 2 for the "Chase Speed" fader. Each of these controls send or receive a 7 bit control value from 0-127 (00H-7FH).

Continuous controller 0 is used as a bank select for the MIDI program change commands. Banks 0 through 5 select cues, bank 6 selects chases and bank 7 selects macros. The MIDI controllers with their corresponding CP10xt controls are shown in the MIDI implementation chart which follows.

### Program Changes

The CP10xt sends and receives MIDI program changes when selecting cues, chases, macros and blackouts. Because MIDI only allows for 127 program numbers, bank switching is used with continuous controller 0 selecting the bank (0-7). Whenever a cue, chase or macro is called from the CP10xt panel, a bank number (as explained in the previous paragraph) is sent followed by a program change. The first 6 banks (0-5) are for cues with 100 cues per bank. Bank 0 is used for cues 1-100, bank 1 selects cues 101-200 and so forth. Bank 6 is used for chases 1-99 and bank 7 is used for macros 1-50. The MIDI program change number is equal to the cue, chase or macro number. A program change value of 0 is sent when "Black" is pressed with no bank select message needed. Instead of sending a bank number, "Black" first sends a crossfade value using controller 1 before sending a program 0 message.

### System Exclusive

MIDI system exclusive messages are used by the CP10xt to encode the memory contents of the cues, chases, macros and system parameters. A memory dump can be initiated from the front panel of the CP10xt or requested through the MIDI in port using a system exclusive message. To back up or restore the CP10xt's memory using a computer or MIDI data storage device first consult the instructions for your particular storage device. To start the dump from the CP10xt, go to the memory dump menu item. Consult the "System Programming" chapter on how to do this.

When your receiver is ready, press "Go" to start the memory dump. The message "SENDING" will appear on the CP10xt display. After the dump is complete the display will return to its previous state. The memory dump will require approx. 244K of disk space. When sending a memory dump back to the CP10xt the message "RECEIVING MEMORY" will appear in the CP10xt display. After the memory dump has been received the message "MEMORY RECEIVED" will appear in the display. If the "received" message does not appear, then the memory dump was improperly received. The memory dump takes several minutes. The CP10xt must not be in enter cue, chase or macro mode when receiving a memory dump. The contents of the memory messages are shown in the MIDI implementation chart which follows.

## MIDI Implementation Chart

**NOTE:** All numbers are in hexadecimal unless stated otherwise.

### Continuous Controllers (sent and received)

Bn 00 bb	Bank select
Bn 01 vv	Xfade Speed
Bn 02 vv	Chase Speed

n=MIDI channel (0-F)

bb=bank (0-7)

vv=7 bit value (0-7F)

### Program Changes (sent and received)

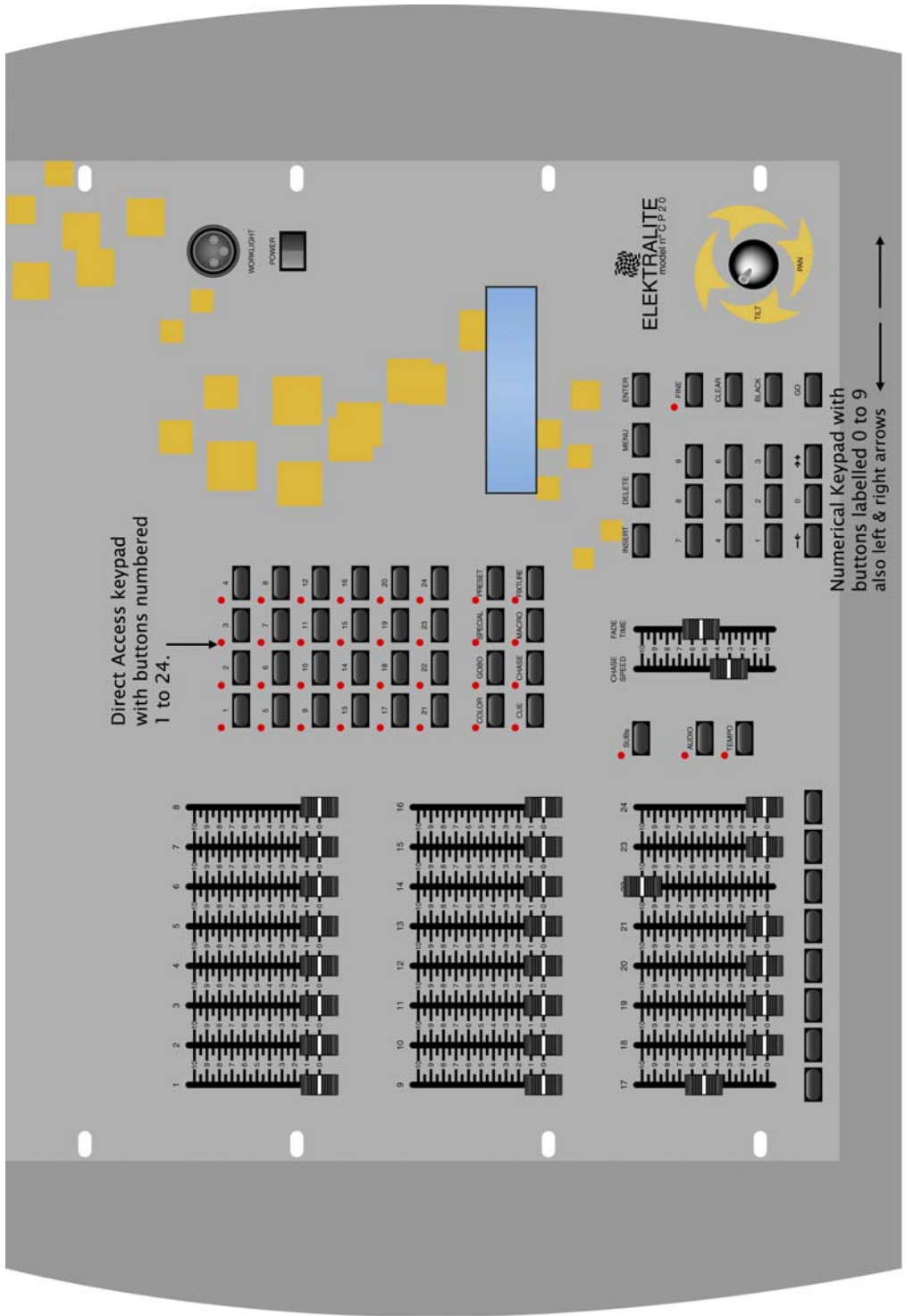
Cn 00	Blackout
Cn vv	Cues, Chases and Macros

**Note:** cues, chases and macros are always preceded by a bank select message.

### System Exclusive Messages

F0 00 00 19 06 01 dd ... F7	Memory dump
F0 00 00 19 06 00 F7	Memory dump request

dd=approx. 244K data bytes.



# TROUBLESHOOTING & SERVICE

## Chapter

# 11

There are no user-serviceable parts inside the CP20. Any internal problem should be referred to a qualified service technician.

## Cleaning and Maintenance

As with any type of control console, keep drinks away from the CP20. If you need to clean the front panel use a soft cloth. If necessary you can spray a small amount of glass cleaner on the cloth. Do not spray directly on the CP20. Do not spray electronic cleaners into the faders. Refer fader and switch maintenance to a service technician.

## Power Supply

If the CP10xt will not turn on, check the external power supply. There is no fuse inside the CP20. If the power supply should ever fail or become lost, only replace it with a U.L. or CE approved one with the same voltage and power rating. The supply must provide 9 volts DC at minimum 1.25 Amp. The plug has a 2.1mm hole with + voltage at the center.

## Battery

The CP20 uses a battery to maintain its memory. On power up the battery voltage is always checked and the following message will be displayed if the battery voltage gets low.

**WARNING, BATTERY  
VOLTAGE BELOW 2V**

If this happens, take the CP20 to a qualified service center to have the battery replaced. The battery can be replaced without losing the memory as long as it is carefully removed and replaced with the power on. Nevertheless it is always a good idea to back up your memory to disk in case of any possible memory loss.

## DMX512

If your fixtures are not responding to the CP20 check the dipswitches on the fixtures and refer to their instructions to make sure they are set properly. Also check your cabling and connectors for opens or shorts. Never connect the shield of your DMX cable to the shell of the connector. If you are running long lines you need to terminate the last fixture in your DMX512 chain with a special termination plug. If you don't have one you can make one by taking a 5 pin male XLR plug and soldering a 120-ohm resistor between pins 2 and 3. Plug this into the unused signal thru connector on the last fixture in your DMX512 chain. Check also pin two and three which pin is "hot" (+) and which pin is negative (-). I have seen fixtures flash leds to say they have a good DMX signal and found that pins two and three are reversed compared to the CP20's output!! Remember pin 2 to data (-) minus and pin 3 to data (+) plus.

## Website

Please go to [www.myelektralite.com](http://www.myelektralite.com) for the latest software updates and a complete list of the fixtures stored in the CP20 library.

## RADIO AND TV INTERFERENCE

**WARNING:** This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class "A" digital device pursuant to Subpart B of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Changes or modifications not expressly approved by Group One Ltd. Could void the user's authority to operate the equipment.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been verified to comply with the limits for a class A computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and Television reception.

## ELEKTRALITE WARRANTY

Elektralite products are warranted to be free from defects of material and workmanship for a period of two years from the date of delivery to the original user. Repair will be made at no cost for labor or materials within this time period. This warranty is void if the product has been modified without prior authorization or subjected to abuse. It is very important that you register your CP10xt so that you can receive any updates and have your warranty in operation. To register please fill in the warranty form which can be found at [www.myelektralite.com](http://www.myelektralite.com)

All warranty repairs should be returned prepaid to:

Group One Ltd.  
70 Sea Lane  
Farmingdale, NY 11735  
[WWW.MYELEKTRALITE.COM](http://WWW.MYELEKTRALITE.COM)

# Fixture Default Settings

Every fixture in the CP20 library has each channel (feature) set to one of three different modes. The modes are **Crossfade (0)**, **Snap Before (1)**, or **Snap After (2)**. Listed below is the feature name and it's default setting. If you want to change these settings you can. Just check out pages 34 and 35 to learn how to change them.

Feature/Channel	Default Setting	Feature/Channel	Default Setting
Pan	Crossfade	Color wheel	Snap After
Tilt	Crossfade	Frost	Snap After
Dimmer	Crossfade	Prism	Snap After
RGB/CYM	Crossfade	Wash	Snap After
Zoom	Crossfade	Hue	Snap After
Focus	Crossfade	Color Rotate	Snap After
Iris	Crossfade	Beam Shaping	Snap After
Lamp On	Snap After	Prism Rotate	Snap After
Speed	Snap After	Shake	Snap After
Shutter	Snap After	Size	Snap After
Strobe	Snap After	Gobo wheel	Snap After
Control	Snap After	Effects wheel	Snap After
Mirror Forward	Snap After	Saturation	Snap After
Mirror Reverse	Snap After	Gobo Rotation	Snap After
Type	Snap After	Effects Rotation	Snap After
Home	Snap After		
Cmode	Snap After		
Gmode	Snap After		
Color FX	Snap After		
Color Function	Snap After		
Gobo Function	Snap After		
Macro	Snap After		
Gobo Rotate Function	Snap After		
Reset	Snap After		
Pan Frequency	Snap After		
Pan Amplitude	Snap After		
Tilt Frequency	Snap After		
Tilt Amplitude	Snap After		
Pan & Tilt Frequency	Snap After		
Null	Snap After		
Function	Snap After		
Shape	Snap After		
Macro	Snap After		
Movement type	Snap After		
Program Selection	Snap After		
Step Selection	Snap After		
Enter	Snap After		

# GENERAL PURPOSE FIXTURES

General Purpose fixtures overcome the problem of not having the fixture you want to program in the library. The CP-20 has the ability to customize a fixture (see page 31) but a quick “down-&-dirty” way of solving this problem is to use a General Purpose Fixture from the library.

Here we bypass the channel information like which channel is the color or which channel is the dimmer and instead just concentrate on **only** channels in a fixture that are **Pan** and **Tilt**. The Pan and Tilt need to be assigned to the joystick. For all other channels, they are assigned to a fader.....and which fader is going to be considered irrelevant to the CP-20’s general fixture entries!

To find which **General Purpose** fixture you should use, consult your fixture manual and find out which channel is pan and which is tilt. Then use the chart below to use the correct **General Purpose** fixture.

General Purpose Fixture	Pan Channel	Tilt Channel	General Purpose Fixture	Pan Channel	Tilt Channel
1	1	2	33	7	9
2	2	3	34	8	10
3	3	4	35	9	11
4	4	5	36	10	12
5	5	6	37	11	13
6	6	7	38	12	14
7	7	8	39	13	15
8	1	3	40	14	16
9	2	4	41	15	17
10	3	5	42	16	18
11	4	6	43	17	19
12	5	7	44	18	20
13	6	8	45	19	21
14	7	1	46	20	22
15	8	2	47	21	23
16	8	9	48	22	24
17	9	10	49	23	1
18	10	11	50	24	2
19	11	12			
20	12	13			
21	13	14			
22	14	15			
23	15	16			
24	16	17			
25	17	18			
26	18	19			
27	19	20			
28	20	21			
29	21	22			
30	22	23			
31	23	24			
32	24	1			