5 **CHAPTER 5: Introduction to programming**

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                    │          Setup          │
                    │  Fixtures DMX Addresses  │
                    │     and Stage Plan       │
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Adjust Fixture Control channels		Adjust Effect Generator channels

Make Pan/Tilt, Gobo, Color and Effect Generator Presets

Make Memories

Timings

Make Cues with Cue-Memories	Make Cues with Playbacks	Make Cues with Sequences (chasers)

Run the Show

Make Time-Code Show
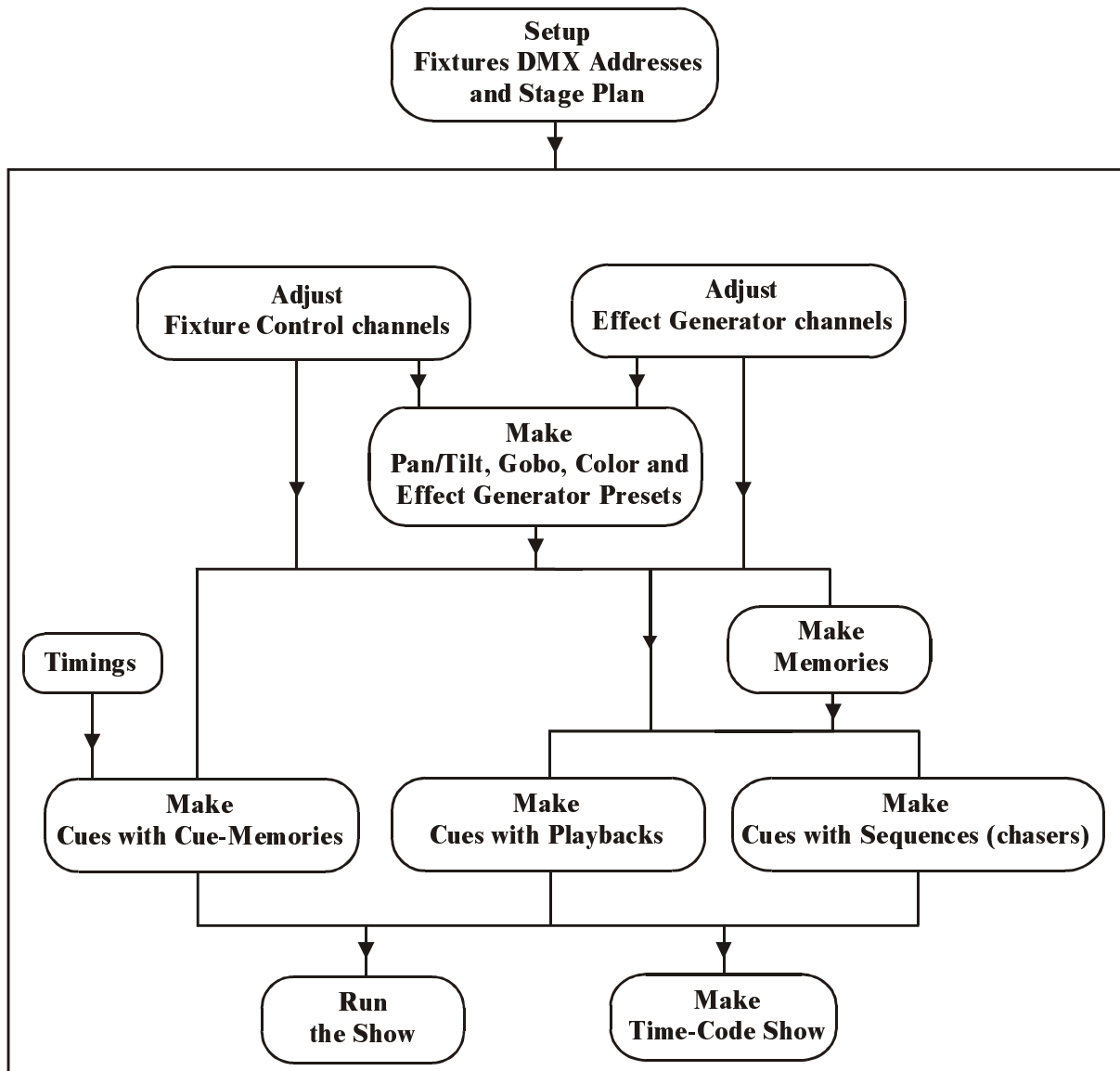
This chapter gives a short description of the working of the Martin Case controller. Also some frequently used terms will be explained.

5.1. Philosophy

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        │           Changes in light scene            │
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                    │  │  MEMORIES    │   │
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        │  │ CUE MEMORY   │ │ │SEQUENCE(chaser)│ │  PLAYBACK   │
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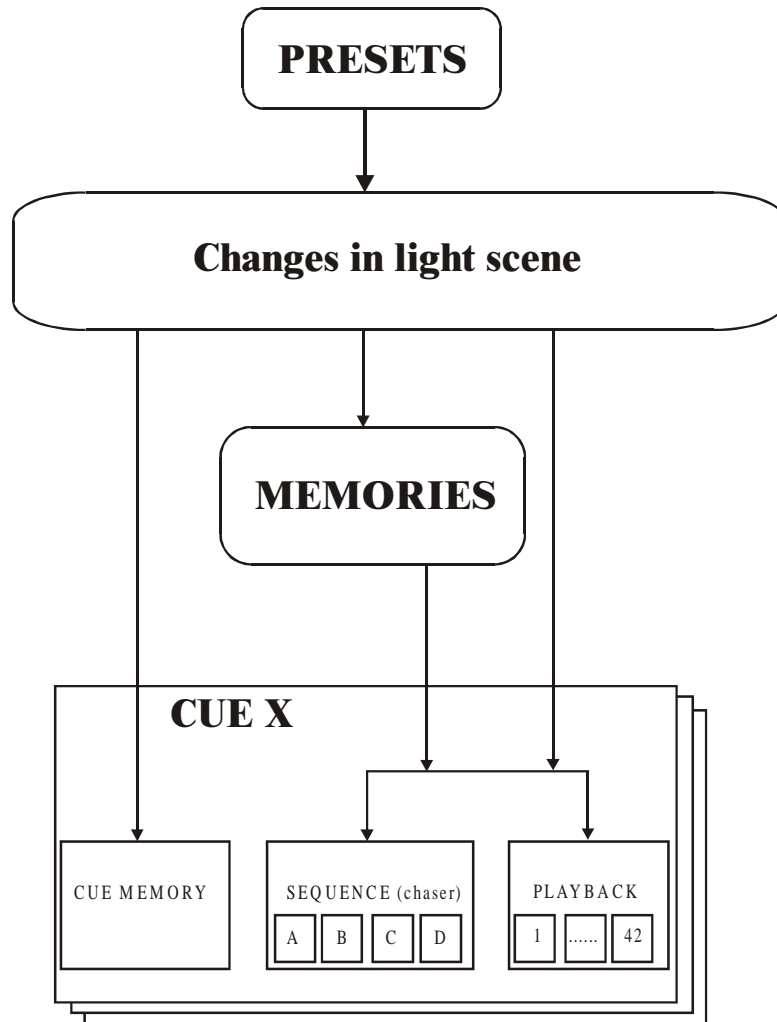
Martin Case controllers have many possibilities to control light. Every light engineer will develop his own method to create a fluent program style.

Martin Case controller's philosophy is very simple:
– First **PRESETS** have to be created, to make programming easier in a later stage.
– With those presets and with the fixture control channels, **changes in light scenes** are made.
– Those changes can be saved in **memories, in playbacks or sequences** (memories will be created automatically) or stored immediately in a **cue memory.**
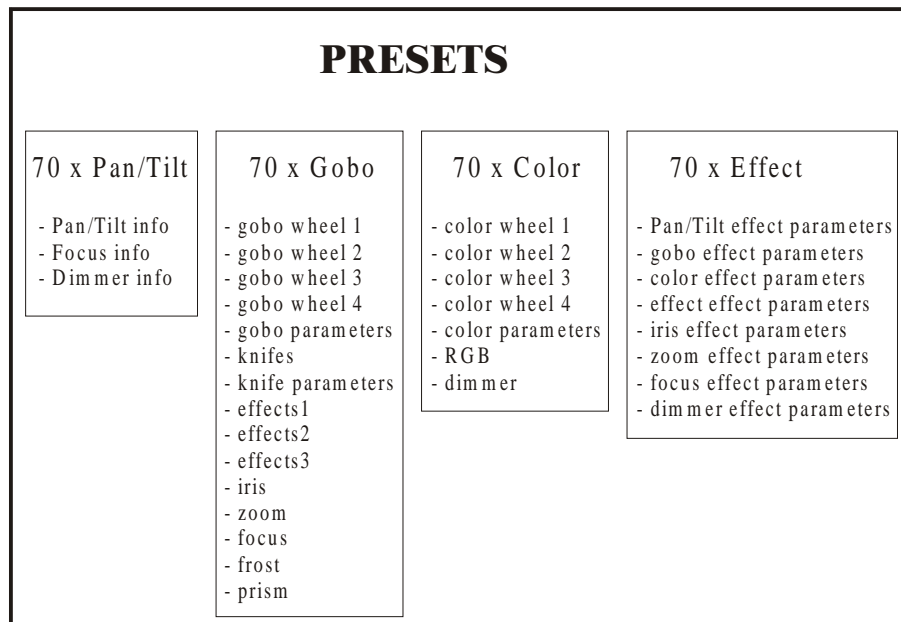
5.2. PRESETS

Presets have one purpose: saving frequently used Pan/Tilt positions, colors, gobos and effects in some kind of a user library, to avoid that those values have to be adjusted again and again. Those preset-values can be used in a later stage, to make memories or light scenes. If a preset, already in use in a memory, playback or sequence, is changed, the changes will be forwarded immediately to them.

When presets are used in a show 'on tour', it becomes very easy to adapt the show to a new hall, by changing some of the presets.

Presets are user definable combined settings of a main function of more fixtures together. Also, every main function has a number of sub-functions that can be toggled on or off.

The main functions of the fixtures are: Pan/Tilt, color, gobo and effect. In every preset, the user can also adjust some of their sub-functions like, for example, the focus or dimmer in case of a Pan/Tilt preset. Those settings are stored for all fixtures together.

The user can store 70 presets in every main function.

PRESETS

70 x Pan/Tilt	70 x Gobo	70 x Color	70 x Effect
- Pan/Tilt info - Focus info - Dimmer info	- gobo wheel 1 - gobo wheel 2 - gobo wheel 3 - gobo wheel 4 - gobo parameters - knifes - knife parameters - effects1 - effects2 - effects3 - iris - zoom - focus - frost - prism	- color wheel 1 - color wheel 2 - color wheel 3 - color wheel 4 - color parameters - RGB - dimmer	- Pan/Tilt effect parameters - gobo effect parameters - color effect parameters - effect effect parameters - iris effect parameters - zoom effect parameters - focus effect parameters - dimmer effect parameters

Every preset has a number of sub functions, which can be toggled, on or off: ex. When loading Pan/Tilt presets, the focus and dimmer info can be loaded too or not.

Gobo presets can hold info of 4 gobo wheels, gobo parameters like speed..., knifes (on the PAL1200), certain effect wheels, iris, zoom, focus, frost and prism.

Example: When we work with the stage layout of the setup, we can make Pan/Tilt combinations with all fixtures. Suppose, we take the home position of all spots and this position is stored in Pan/Tilt preset 1 (home). Then we make a preset where they all focus 1 spot. We save this to Pan/Tilt preset 2. Then we can make color combinations with all fixtures and we save them in one of the 70 color presets. For example white, yellow and blue. This is important to gain programming time, because the color channel is not always on the same channel position for different fixture types. Also the color values change depending on the fixture type.

When shows have to be done at different locations with the same programmed show, then the programmed Pan/Tilt positions will certainly not be correct at each location. It will be easier now to change 70 Pan/Tilt presets than to check all the memories that hold Pan/Tilt info. Pay attention, the memories have to be programmed with presets, otherwise it won't help.

5.3. Changes in light scene

Martin Case controllers use the principle: only the changes is light scenes have to be stored in the memories. This means **that it is not necessary to store all parameters of all channels of all fixtures in the successive memories.** It is sufficient to store only once all parameters of all fixtures and then, only those parameters that change in the next memories.

Changes in light scenes

Light scene 1	All channels of all fixtures

Light scene 2	Only the channels of the fixtures that change to scene 1
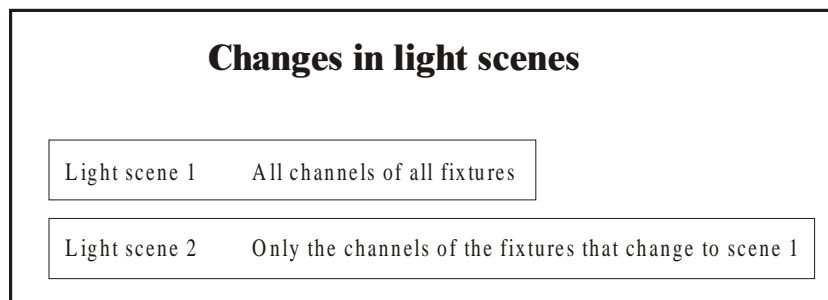
Example: Light scene 1: Let's take Pan/Tilt preset 1 (all spots home) and we program: no gobo, color white, no strobo,...

Light scene 2:   Only the color has to change. It is not necessary to program the Pan/Tilt, gobo and strobo info again, only the color change compared to light scene 1, has to be stored.

5.4. Dimmer functions

In chapter 'SETUP' was explained that dimmer channels could be stored into a list of dimmers where special dimmer commands can be applied on. Those dimmer commands can be things like:
- Dimmer 1 to 20 at 50%
- Decrease 5% on dimmer 5
- Increase all dimmers with 20%
- …

5.5. Cues

A cue is can have:
- – a cue memory
- – 4 sequences (chasers)
- – 42 playbacks
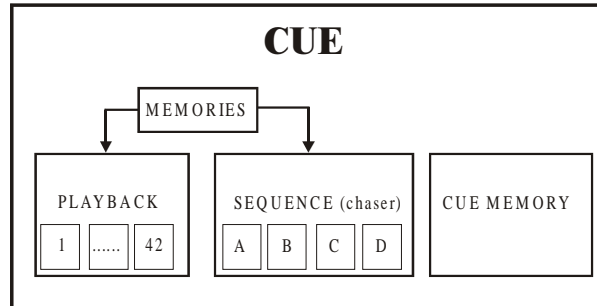
The system can hold up to 11,200 cues (16 pages of 70 cues + 9 point cues between every cue). This means that it can have 11,200 cue memories, 44,800 sequences and 470,000 playbacks.

5.5.1 Cue-memory

A cue-memory can be compared to a light scene. The light scenes we've made can be stored in cue-memories and we have the possibility to add **fade-times to them. Up to 2,000 cue-memories can be stored in the system.**

The cue memories **can** hold next parameters:
- – all channel parameters (up to 32 per fixture) of all fixtures (up to 700 fixtures).
- – all effect parameters (7 to 10) per channel, per fixture.
- – delay-in time equal for all channels, or different per fixture channel
- – fade-in time equal for all channels, or different per fixture channel
- – delay-out time equal for all channels, or different per fixture channel
- – fade-out time equal for all channels, or different per fixture channel
- – hold time equal for all channels, or different per fixture channel

On every channel of every fixture, an effect can be set. This way it is possible to create enormously fast a color effect together with a Pan/Tilt motion in one single memory. (see chapter effects generator).

Cue memories are handled the same way as light scenes. **Also here, only the changes to the previous memories have to be stored.** Moreover, fade times can be put on every single channel.
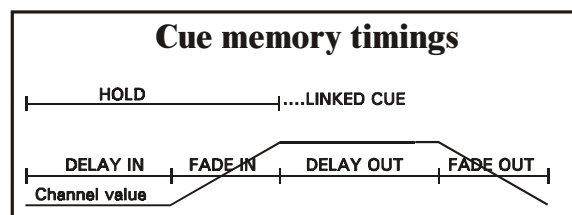
- Delay-in: the wait time before the channel fading starts
- Fade-in: the time needed to fade-in the channel
- Delay-out: the wait time before the channel starts fading-out
- Fade-out: the time needed to fade back to its start value
- Hold: the wait time before calling another cue (link)

The **cue fading** can be **stopped, accelerated or decelerated at any time** during the performance. This function is often used in live performances where the timings depend on the speed of the actors.

It is also important that cue-memories make use of the presets as much as possible. It is easier to change 70 presets than having to scroll through 2,000 cue-memories.

Multi-select cues: This is a function, which makes it possible to pre-select multiple cues and start them at the same moment. For example, starting a Pan/Tilt cue-memory, together with a color-memory and a gobo-memory. Important here is that the different cue-memories don't hold values for the same channels.

Auto-prepare: When the dimmer is closed in one cue and opened again in one of the next cues, the controller will look ahead and execute all non-dimmer channels between those 2 cues, the cue where the dimmer opens included.

Auto-trace: This function is useful if the cues are programmed in successive order of performance. When those cue-memories are programmed on the 'only changes' principle, it can happen that a light scene is not reproduced correctly when going back a few cue-memories. At this point, the auto-trace function will gather all channels in descending cue-order, starting from the last activated cue, until he has found a value for all channels.
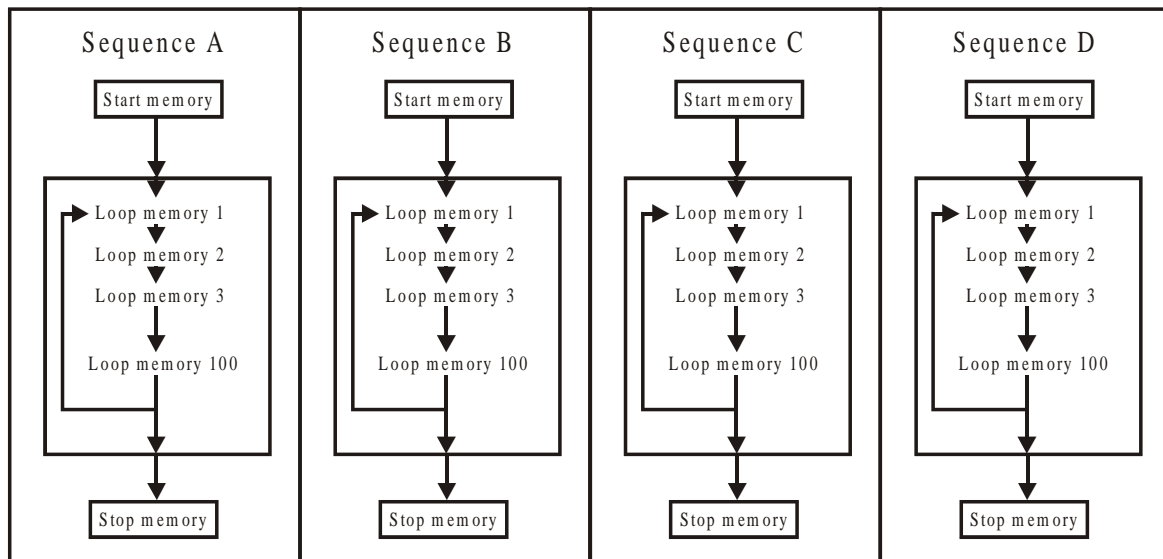
5.5.2 Sequences

A sequence can be compared with a chaser. The light scenes can be placed in a user definable order and in an endless loop so that they can be called automatically.

Sequences are built with memories (see paragraph memories). Starting from this software version, those memories are created automatically when light scenes are added to a sequence.

Memories in the sequence:
- start memory: this is a memory executed only ones when the sequence is started or when the sequence is linked.
- loop memories: these memories are executed in an ending or endless loop. 100 loop memories can be added.
- stop memory: this memory is also executed only once when the sequence is stopped or linked.

C u e x x

Sequence A	Sequence B	Sequence C	Sequence D
Start memory	Start memory	Start memory	Start memory
Loop memory 1	Loop memory 1	Loop memory 1	Loop memory 1
Loop memory 2	Loop memory 2	Loop memory 2	Loop memory 2
Loop memory 3	Loop memory 3	Loop memory 3	Loop memory 3
Loop memory 100	Loop memory 100	Loop memory 100	Loop memory 100
Stop memory	Stop memory	Stop memory	Stop memory

In every cue, up to 4 sequences can be used. Every sequence:
-   has his own fade and wait times for the loop memories
-   has a start/stop key
-   has loop memories that can run forwards, backwards, in bounce or at random
-   can be synchronized with other sequences
-   can run in automatic mode, in manual trigger mode or in 'learn the beat' mode
-   can be linked with another cue to call other sequences automatically

5.5.3 <u>Playbacks</u>

A playback is **one light scene that can be faded in by a slider or by a switch (flash key)**. There are 42 playbacks available per cue. **A playback holds 1 memory** (see paragraph memories). Starting from this software version, those memories are created automatically when light scenes are added to a playback.

When a flash key activates the playbacks, **a fade-in and fade-out time** can be added **per playback.** When used by a flash key, there are 3 possible modes:

- Flash: The memory is faded-in (with fade-in time) when the key is pressed. Releasing the key results in fading-out (with fade-out time).
- Toggle: The memory is faded-in (with fade-in time) when the key is pressed. When the key is pressed again, the memory fades-out (with fade-out time).
- Kill: Two playbacks **of the same cue** in kill mode: pressing the key of the first playback results in fading-in the memory (with fade-in time). Pressing the key of the second results in fading-out the fist one (with fade-out time) and at the same time fading-in the second (with fade-in time) = (radio button mode). When the last flash key is pressed again, a fade-out will happen.

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┌─────────────────────────────────────────────────────────┐
│                      CUE xx                             │
│                                                         │
│   Playback 1   Playback 2   Playback 3  ..........  Playback 42  │
│                                                         │
│   ┌──────┐    ┌──────┐    ┌──────┐         ┌──────┐   │
│   │Memory│    │Memory│    │Memory│         │Memory│   │
│   └──────┘    └──────┘    └──────┘         └──────┘   │
│                                                         │
│   Fade-in time  Fade-in time  Fade-in time    Fade-in time  │
│   Fade-out time Fade-out time Fade-out time   Fade-out time │
└─────────────────────────────────────────────────────────┘
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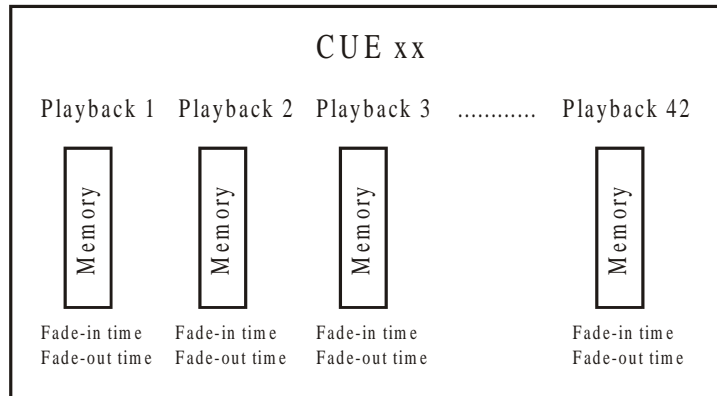
5.5.4 <u>Memories</u>

The memories we've mentioned in the sequences and playbacks paragraphs, are in fact light scenes. They are comparable to cue-memories, only the fade-timings are missing. From software version 7.0, there are **4,000 memories available to program.** This means that 4,000 different light scenes can be programmed.

The memories **can** hold next parameters:
- All channel parameters (up to 32 per fixture) of all fixtures (up to 700 fixtures).
- All effect parameters (7 to 10) per channel, per fixture.

Like mentioned in previous paragraph, it is not necessary to save the values of all channels in the memories. If only the color has to change, only the color channel has to be filled in. The other parameters will **remain empty.**

On all channels of all fixtures, an effect can be run. It is very simple to create a color chase together with a Pan/Tilt motion in only one memory (see: effect generator).

It is very important that the presets are used as much as possible in the memories. It's faster to change 70 presets than 4,000 memories.

5.5.5 <u>Priorities within a cue</u>

This is the most important paragraph from this chapter.

General: **HTP** (highest takes precedence) **is used for DIMMER channels.** I.e. the highest active value for a dimmer channel will take precedence over the rest.

LTP with priorities is used for all other channels. I.e. the active function (cue mem, sequence, playback) with the highest priority for the same channel, takes precedence over the rest. **The cue memory has the lowest priority, followed by sequence D, C, B, A and playbacks 41, 40, ..., 1. There is also the MANUAL mode. It has the highest priority.**
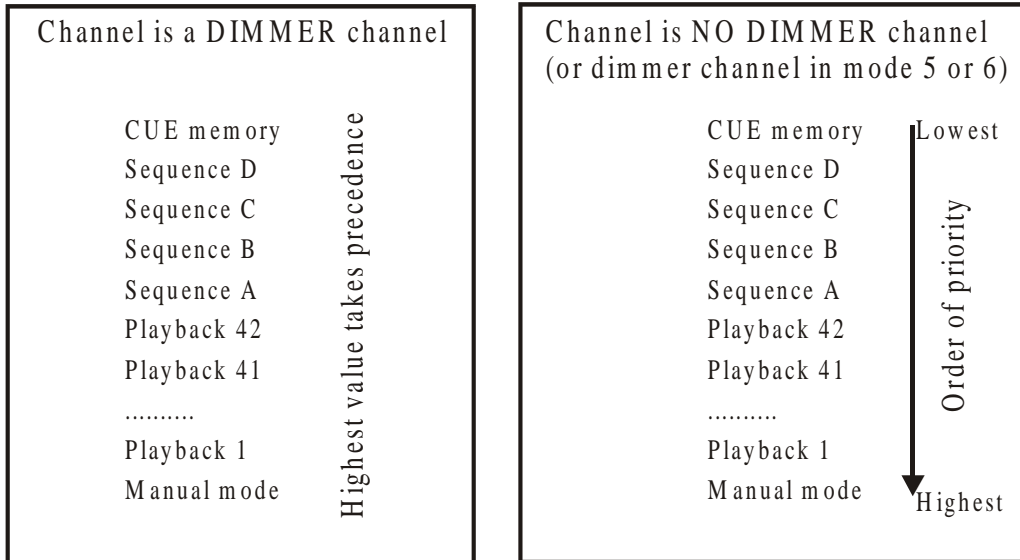
These rules are only valid IF THE SAME FIXTURE CHANNEL IS USED IN THE CUE MEM, SEQUENCES, PLAYBACKS OR MANUAL MODE.

Memory modes can change the priority.

-

Priorities within the CUE

ONLY IF THE SAME CHANNEL IS USED IN THE DIFFERENT FUNCTIONS (cue mem, sequence, playback, manual)

Channel is a DIMMER channel	Channel is NO DIMMER channel (or dimmer channel in mode 5 or 6)
CUE memory	CUE memory Lowest
Sequence D	Sequence D
Sequence C	Sequence C
Sequence B	Sequence B
Sequence A	Sequence A
Playback 42	Playback 42
Playback 41	Playback 41
....	....
Playback 1	Playback 1
Manual mode	Manual mode Highest

Highest value takes precedence (dimmer column)

Order of priority (no dimmer column)

Note for HTP on the dimmer channels: The HTP for dimmers can be disabled by applying MODE 5 or MODE 6 on the memory (see: memory modes)

5.5.6 Transparent mode

Sequences, playbacks or the entire show can be used in 2 modes:
- Transparent mode on
- Transparent mode off

Transparent mode on: **When changing cues, only the programmed sequences/playbacks of the called cue will replace** the functions of the previous one.

Suppose, there are 2 cues:
- Cue 1: playbacks 1 to 10 and sequences B, C, D in use
- Cue 2: playbacks 5 to 15 and sequences A, B in use

- Calling Cue 1: playbacks 1 to 10 and sequences B, C, D are active
- Calling Cue 2: playbacks 1 to 4 are still active and belong to cue 1, playbacks 5 to 15 are those of cue 2, sequences C and D belong to cue 1, sequences A and B belong to cue 2

In transparent mode ON, it is possible to make combinations of different cues.

Transparent mode off: **Changing cues will result in replacing ALL sequences/playbacks** (also those who are not programmed) **of the old cue by those of the new one. = Replace all mode.** When certain sequences/playbacks were not programmed in the new cue, they will remain empty.

When in the previous example, cue 2 is called, the result will be:

- Calling Cue 1: playbacks 1 to 10 and sequences B, C, D are active
- Calling Cue 2: playbacks 1 to 4 become empty, playbacks 5 to15 are those of cue 2, sequences C en D become empty, sequences A and B are those of cue 2.

The choice can be made between transparent mode ON or OFF for the entire show, or for playbacks and sequences apart.

5.6. Manual mode

Manual mode is the HIGHEST PRIORITY mode. No matter what cue, what sequence or what playback is activated, **it is always possible to select manual mode and do other things with the fixtures on all channels.**

Even when only the setup stage has been built and some presets are programmed, big shows can be performed by taking all fixtures in manual mode and working with the direct access function and the effect generator.

When sequences are running or playbacks are opened, it is always possible to take our one or more fixtures in manual mode and do other things with them.

If manual mode is deactivated again, then all fixtures that were taken manually will remain in manual mode until the manual changed channels are called again in a playback, sequence or cue-memory.

Note for users of older software versions: In the older versions, the channels jumped immediately back to the values they had before the manual mode was activated.

5.7. Direct access

There are 4 ways to adjust fixture channels:
- or the channel is adjusted with the trackerball
- or the channel value is typed in on the keypad
- or the channel value is selected by the direct access function of the controller
- or the channel value is adjusted with the digital fader belts of the P2 or P2+ controller.

Some fixture channels like color, gobo, prism... are divided into areas in the library. Those areas are given a name like yellow, green, star gobo, square gobo... Just a simple press on a key is needed to access those area's. This is called **direct access.**

Using this method, it's easy to program blind, because you see what you select.

Certain functions of some fixtures are protected against accidental use; this means that they can be called only using the direct access function. **Functions like RESET, LAMP OFF and**

LAMP ON are only accessible using the direct access and can't be selected using the trackerball or the digital fader belts.

On the Pro 2 Martin Case controllers, there is a second direct access possibility. The channels of the selected fixtures are sent immediately to the Pro 2s 16 digital fader belts, which can be adjusted at any time. With those belts, you have an overview over 16 channels and for fixtures with more than 16 channels; you can select the next bank of 16 channels

5.8. Thresholds

A threshold is a table with percentages indicating when a channel has to be activated if this channel is involved in a fading.

Thresholds are mainly used when many actions have to happen in one single memory (!!! Not cue-memory), but those actions have to happen at different times.

Suppose we have 2 memories:

Memory 1: dimmer closed, no gobo
Memory 2: dimmer open, laser gobo

When we fade from memory 1 to memory 2, the dimmer will open slowly, but the gobo will begin changing also at the same speed.
Suppose we want the gobo to change if the dimmer is open for 90%, so in 90% of the fading, then we'll have to give the gobo channel a threshold of 90%. The result will be that the dimmer opens slowly and when he's open for 90%, the gobo will start changing.

Thresholds can only be applied on memories (playbacks and sequences) and not on cue-memories, since a threshold can be simulated using the delay-in timings from the channels in a cue-memory.

5.9. Effects generator

There have been many discussions already about creativity and the use of effects generators in shows. Of course a self-made chaser will always give more satisfaction, but for some things like Pan/Tilt motions in perfect circles and if time-pressure increases, the effects generator is and will always be a handy tool.

On every fixture channel, the effect generator can be launched. Using the effect generator saves lots of memory space, because an effect on all channels of all fixtures can be stored in 1 single memory.

5.9.1 Effects generator on Pan/Tilt channels

If the effect generator is used on Pan/Tilt channels, 10 extra channels will be added to the fixture channels:

- x-swing: adjusts the motion width
- y-swing: adjusts the motion height
- speed: adjusts the speed of the motion
- mode: choice between forward or backward motion
- figure1: polygonal motion selections
- figure2: circle and elliptical motion selection
- rotate: rotate the motion axis
- delay: to create a phase shift between more fixtures
- shift: to create a phase shift of 360° between more fixtures (used together with wait).
- wait: to adjust the wait time between the effect cycles

5.9.2 Effects generator on non-Pan/Tilt channels

7 channels are added to each non-Pan/Tilt channel of a fixture:

- Function: The center-point of the selected channel
- swing: The size of the effect around the center-point
- speed: The speed of the effect
- mode: Selection of forward or backward effect, fade, not fade, under or above the center-point.
- delay: The phase shift
- shift: to create a phase shift of 360° between more fixtures (used together with wait).
- wait: to adjust the wait time between the effect cycles

5.9.3 Synchronization of effects

Effects on different channels can be synchronized if **the speed and the wait of the different effects are equal.**

It is possible to create a Pan/Tilt fall motion together with a dimmer On/Off effect and synchronize both, and this over more fixtures. The entire effect can be stored into one single memory.

5.9.4 Effect macros

Effect macros are pre-defined, synchronized effects available by a simple key press. There are effect macros only meant to be used with CMY (RGB) fixtures like the rainbow effect, which creates a running color mix over several fixtures.

There are also typical combined effects like the previous explained Pan/Tilt + dimmer open-/dimmer closed effect. There can be 70 different effect macros in the system.

5.10. <u>Time code</u>

Calling cue memories, starting sequences or activating playbacks, in short the recording and the playback of a show can be done using the time code. There are some possibilities:
 – On the internal controller clock
 – by using SMPTE (24, 25, 30, 30 drop) internal or controlled by any external SMPTE controller.
 – MTC or Midi Time Code
 – by using the built-in CD-ROM, this means the music time-code of a music CD.
 – manual (last/next step by manual triggering)

Internal: The controller has a built-in clock that can be used to record or playback a show

SMPTE: Standard on Pro 2 controllers, optional on Pro 1 controllers. With the SMPTE time-code, controlled internal or external, a show can be recorded or reproduced.

MTC: Midi Time Code can be applied by connecting an external midi time-code source to the MIDI input of the controller.

CD-ROM: Standard on Pro 2 controllers, optional on Pro 1 controllers. A music CD in the controller sends also a time-code signal. This signal can be used to record or reproduce the show on the frame exact. The controller has an analogue and digital music output.

Manual: Cue actions can be recorded in manual mode. Those actions can be called by pressing the last/next keys.

5.11. <u>Midi</u>

By connecting a midi keyboard or midi sequencer to the controller, cues, sequences and playbacks are triggered by sending midi codes (note on/off, beat, program change) to the controller.

Using the controller this way, the 32 extra playback flash keys (not faders) can be used on Pro 1 or Pro 2 controllers without the need of an extra playback wing.

For simple shows, a musician can control the lights by just playing a song on his midi keyboard.

5.12. <u>Summary</u>

This chapter explained the philosophy of the Martin Case controller. Starting from a preset, we can program a memory, a cue-memory, sequences or playbacks.
Important is that **only the changes in light scenes** have to be stored into the memories.

The priorities (cue memory = lowest, manual = highest) were explained and we saw how it is possible to combine cues.

6. CHAPTER 6: Fixtures and Control channels

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                    │          Setup          │
                    │  Fixtures DMX Addresses  │
                    │     and Stage Plan       │
                    └─────────────────────────┘
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                                 ▼
┌───────────────────────────────────────────────────────────────────────┐
│                                                                         │
│   ┌───────────────────┐            ┌───────────────────┐                │
│   │      Adjust        │            │      Adjust        │               │
│   │ Fixture Control    │            │ Effect Generator   │               │
│   │    channels        │            │    channels        │               │
│   └───────────────────┘            └───────────────────┘                │
│           │               ┌──────────────┐      │                        │
│           │               │    Make       │      │                       │
│           │               │ Pan/Tilt,Gobo,│      │                       │
│           │               │Color and Effect│     │                       │
│           │               │Generator Presets│    │                       │
│           │               └──────────────┘      │                        │
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│           │                      │        ┌──────────────┐                │
│  ┌────────┐                      ▼        │    Make       │               │
│  │Timings │              ┌──────────────┐ │  Memories     │               │
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│     │                    ▼               │        │                       │
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│ │    Make       │  │    Make       │  │        Make           │           │
│ │ Cues with     │  │ Cues with     │  │ Cues with Sequences   │           │
│ │ Cue-Memories  │  │ Playbacks     │  │     (chasers)         │           │
│ └──────────────┘  └──────────────┘  └──────────────────────┘             │
│          │              │                    │                            │
│          ▼              ▼                    ▼                            │
│   ┌──────────────┐  ┌──────────────┐                                     │
│   │     Run       │  │    Make       │                                    │
│   │   the Show    │  │ Time-Code Show│                                    │
│   └──────────────┘  └──────────────┘                                     │
│                                                                         │
└───────────────────────────────────────────────────────────────────────┘
```

Select Fixture(s)

Select Control Channel

Adjust Control Channel

Adjust Control Channel

This chapter explains how to select fixtures, how to group fixture types and how to set the control channels.

When using the example show 'MANUAL72', then first select the *[MAN]* key. The explanation for this is explained in the paragraph 'manual mode' in this chapter.

6.1. The trackerball

The trackerball will be used to set channel values and to control Pan/Tilt positions.

On the trackerball, there are 4 keys and an LED.
.
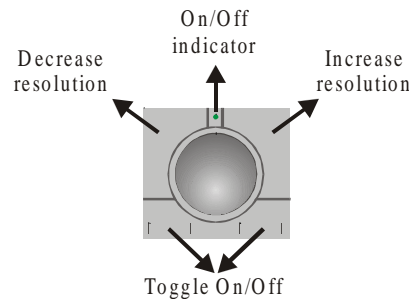
Toggle On/Off: The trackerball can be toggled ON or OFF with both keys. When the trackerball is active, the **On/Off indicator** LED will be green (only on new controllers).

Decrease resolution: This function will only work on 16 bit channels of some fixtures like Pan/Tilt channels, which have fine channels. By means of **Decrease resolution**, the resolution will go to 8 bit. The resolution setting is shown in a window left on the monitor. An 8 bit resolution means: when Pan/Tilt is selected on the trackerball and it is moved, the fixtures mirror or head will move fast, but its position is not accurate.

Increase resolution: This is the opposite of the previous function. The position can be set precise, but the movement will be slow. Depending of the fixture type, the resolution can be increased to 16 bit.

6.2. Screen selections

On the monitor, different windows can be opened.

[STAGE]

Opens the stage layout window, as we know it from the setup. The 4 sequences will be displayed too.
When the *[STAGE]* key is selected again, the analogue fader window will open.

Rem.: For users of older software versions, the second function of the *[VALUES]* key is now moved to the *[STAGE]* key.
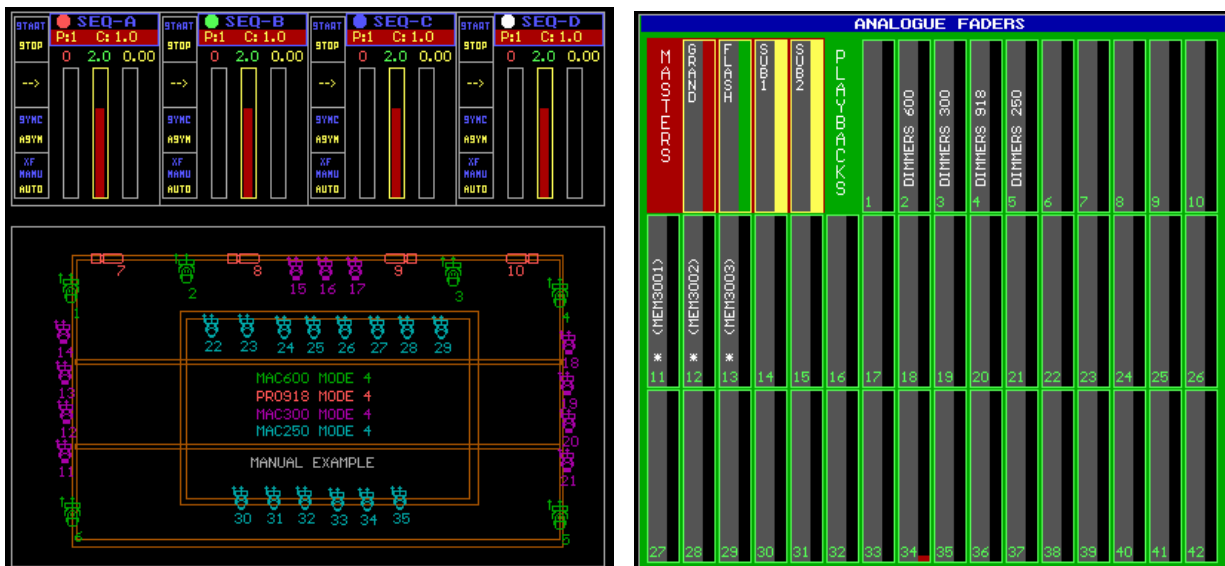
[TEXT]

Opens the names screen:

    In fixture mode: displays the memory names given by the user.

    In cue mode: displays the cue names given by the user.

    In preset mode: displays the preset names given by the user.

[VALUES]

> **Opens the channel value screen. There are 2 modes:**
> - Digital Memory-Values
> - Digital Output-Values (select *[VALUES]* again)
>
> The **Digital Memory values** screen represents the values, recorded in the memories or cue-memories.
>
> The **Digital Output values** screen represents the value, send to the fixtures through the DMX interface. These are the values of what you see on the stage.

> **Note: When the combination *[SHIFT] + [VALUES]* is used, the values will be in % instead of digital.**

6.3. Grand master
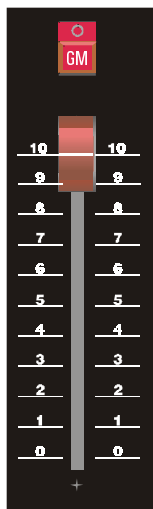
> The grand master controls the light intensity of **all fixtures.** When it is closed, some functions on some fixture types like reset, lamp-on... will not function.
>
> Before starting, better check first the level of this fader.
>
> The flash key *[GM]* is used to flash to the maximum value of the master fader when the fader is closed or not at maximum level.
>
> LED off:　　　Grand master not active
> LED green:　　Grand master active but not at full level
> LED red:　　　Grand master at full level

6.4. Selecting fixtures
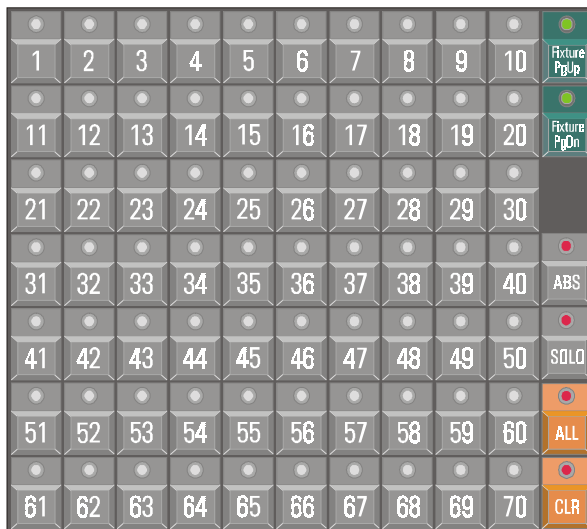
Playback Wing
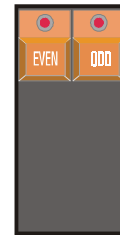
[Fixture PgUp]
[Fixture PgDn]

Like mentioned in the SETUP, there can be 10 stages of 70 fixtures. With these keys, the stage page can be chosen.

When fixtures have to be selected to set their control channels, first a page has to be chosen. This mode is called FIXTURE MODE.

[Fixture PgUp]

Fixture Page up.

[Fixture PgDn]

Fixture Page down.

[Fixture PgUp] + [Fixture PgDn]

When both keys are selected together, the keys [1]...[10] will flash. Those keys represent the pages to select.

[ALL]

Select all fixtures on all pages.

[CLR]

Deselect all fixtures on all pages.

[EVEN]

Select only the even numbered fixtures from the present selection.

[ODD]

Select only the odd numbered fixtures from the present selection.

Remark: To work with the keys *[EVEN] and [ODD],* first a number of fixtures have to be selected. Then the even or odd numbered fixtures can be chosen out of this selection.

[1]…[70]
To select one or more fixtures

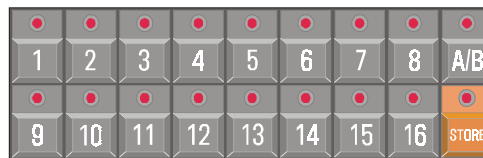*[1]*
Selection of fixture number 1

[x]   (x represents a number from 1 to 70)
Selection of fixture number X

[x] + [y]   (x and y represent a number from 1 to 70)
When both numbers are selected together, all fixtures between those 2 numbers will be selected.

6.5. Group fixtures

Fixtures can be grouped. There can be 32 groups (A and B each 16 groups) created.

[A/B]
To select group page A or B. Each group page can hold 16 groups of fixtures.

[STORE] + [1…16]
To save a group of fixtures in group x. Select first the fixtures, like only the MAC600 or only the MAC250 and press *[STORE]* together with a group number.

Note: To erase a previously stored group: Deselect all fixtures and store this in the group number to erase.

[1…16]
To select/deselect a stored group. The called group will be selected or deselected **to the existing selection.**

[TXT EDIT (keypad)*] + [1…16] [give a name using the keyboard] [RET]*
Groups that have been stored can be named. The group-names will appear at the left of the screen.
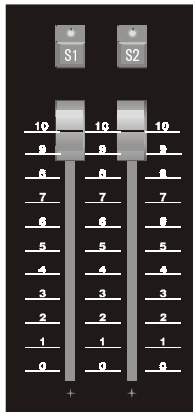
6.6. Sub-masters

2 groups of fixtures can have each their own dimming fader. This can be useful when intelligent light (scans) is used together with conventional light (pars).

In the example we can store all scans (fixture page 1) in sub-master 1, and all dimmers (fixture page 2) in sub-master 2.

LED off: Sub-master closed or not programmed
LED green: Sub master active but not at maximum level.
LED red: Sub master at maximum level.

[S1]
[S2]
Sub-master flash keys

[EDIT] + [S1] [select fixtures or groups] [S1]
Program sub masters

When the *[EDIT* (CUE keys)*]* is selected together with *[S1] or [S2]*, the sub master will be in edit mode. Fixtures or fixture groups have to be selected. Save the selection by selecting the *[S1] or [S2]* key again.

Both fixture groups can be dimmed with the fader or flashed with the *[S1] or [S2]* keys.

6.7. Control channels
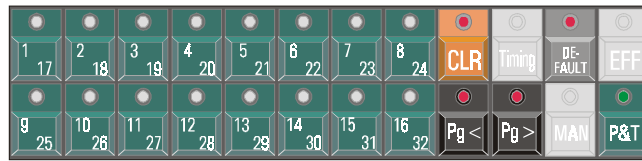
6.7.1 Selecting and adjusting channels
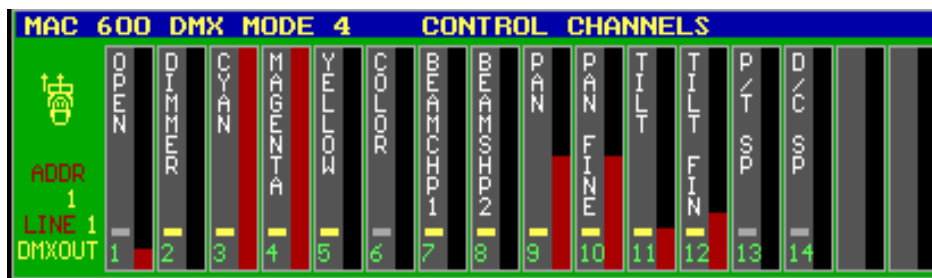
[1/17]…[16/32]

Each fixture has 1 to 32 control channels. **Keys *[1/17] to [16/32]* represent the fixtures control channels**, if a fixture has been selected.

[Pg<]
[Pg>]

View control channels 1 to 16 or 17 to 32. When the *[Pg<]* LED is lit, keys *[1/17]...[16/32]* represent control channels 1 to 16.

The name of the control channel can be found on the monitor:

> **Note1:** **When more fixtures of different types are selected together, the control channels window represents the channels of the last selected fixture.** For example, if both MAC600 and MAC250 are selected together and the MAC600 was the last selected one (like this example), the window will show the MAC600.
>
> **Note2:** **When different types of fixtures are selected together, and a certain control channel is changed then the software will filter out the same control channel in the other selected fixtures,** if the control channel exists on the other types.
> Example: When the dimmer channel is changed and different types of fixtures are selected together, then the dimmer channel will change on all selected fixtures, even if the dimmer is patched on another control channel number.

To set a channel value, select the channel number with keys *[1/17]...[16/32].* The selected channel is now on the trackerball.

[@] [*value* (keypad)] [RET]

**It is also possible to give in the value manually:**
 – Select the control channel
 – Select *[@] and give-in the value on the keypad. Press [RET]*.

[SHIFT] + [VALUES]

This combination sets the values, in the value screen, in digital or % view (see also Screen selections).

When the values are represented as % values, they cannot exceed 100%. For digital values, the maximum is 255.

Pro 2 controllers have always direct access on the 16 control channels by means of the digital fader belts:
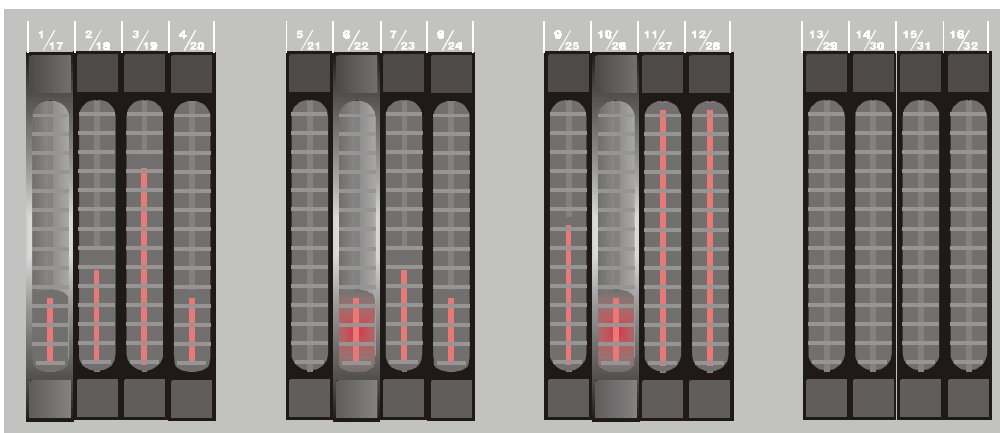
On the **Pro 2 controller**, changing the fader belt without selecting the channel first sets the channel value. Remember, with the *[Pg<] and [Pg>]* keys, the channels are shifted.

[P&T]

Pan/Tilt control.

When *[P&T]* is selected, Pan and Tilt will be on the trackerball at the same time.

Note:	As mentioned before, the speed and the precision of the movement when using fixtures with a resolution higher than 8 bit on Pan/Tilt (pan and tilt fine available), depend on the resolution setting of the trackerball.

6.7.2 {EXP} **Controlling dimmer channels**

In the SETUP, we have seen that dimmer channels can be enabled in a list, to perform special dimmer commands on them. The origin of these commands is the theater world. It is now possible to select dimmer channels and give them a value using the keypad:

Example: On the stage, we've set up 6 MAC600 (fixtures 1 to 6), 4 PRO918 (fixtures 7 to 10) and 11 MAC300 (fixtures 11 to 21). When we want the dimmers of the MAC600s and those of the PRO918s at 40%, we type:
[DIM Chan.] [1] [THRU] [1] [0] [@] [4] [0] [RET]

When the dimmer values of the MAC600s and the PRO918s, except PRO918 number 8, have to be decreased with 15%, we type:
[DIM Chan.] [1] [THRU] [1] [0] [-] [8] [@] [-] [1] [5] [RET]

The command line looks like this (between (brackets) is optional):

[DIM Chan.] [x] ([THRU] [y] [+] [-] [z]) [@] ([+] [-]) [value] [RET]

6.7.3 Clear

We already talked about changes in light scenes. Not all channel values of all fixtures have to be stored into the memories. Therefor it should be possible to store for example only the color in a memory. This is done by erasing all other channels out of the memory table.

Use this function with the **channel value screen on 'digital memory values'** *[VALUES].*

Example: Select all MAC600 and press 2x the *[DEFAULT]* key. All channel values of all MAC600 will be displayed in the channel value window. We want to erase the value for channel 8 (focus). Select *[CLR] + [8/24]*. The field 'channel 8' of all MAC600 will be erased.

Note: **A channel field containing value 0 is not the same as an empty field.** Zero is a value; an empty field means that nothing will change.

[CLR] + [ALL (Fixtures/Cues/Presets)*]*
Erases all fields of all fixtures on all pages, resulting in an empty page

[CLR] [CLR] (double-click)
Erases all fields of the **pre-selected fixtures.** For example: *[ALL] [CLR] [CLR]* will have the same effect as the *[CLR]+[ALL]* function.

[CLR] + [1…70]
Erases all fields of the selected fixture (1...70)

[CLR] + [1…16 (groups/cuepages)*]*
Erases all fields of all fixtures of the selected group of fixtures

[CLR] + [1/17…16/32] or [CLR] + [P&T]

Erases the selected channel (1...32) or the Pan/Tilt channel **of the pre-selected fixtures.** To use this function, the fixtures have to be selected in advance.

[CLR] + [P&T (Presets)**] or [CLR] + [GOBO] or [CLR] + [COLOR] or [CLR] + [EFF** (Presets)**]**

Erases Pan/Tilt or gobo or color or effect generator fields **of the pre-selected fixtures.**

[CLR] + [EFF] + [ALL]

Erases all effect generator functions of all channels of all fixtures, **except Pan/Tilt effects.**

[CLR] + [EFF] + [1…70]

Erases all effect generator functions of all channels of the selected fixture (1...70), **except Pan/Tilt effects.**

[CLR] + [EFF] + [1/17…16/32]

Erases the selected channel (1...32) or the Pan/Tilt channel **of the pre-selected fixtures.** To use this function, the fixtures have to be selected in advance.

[CLR] + [EFF] + [P&T]

Erases all effect generator functions of the selected channel (1...32) **of the pre-selected fixtures.**

6.7.4 Default

Sometimes it can be useful to put fixtures in their defaults. By default, the default setting is white open and no gobo. The fixtures defaults can be changed.

[DEFAULT] [DEFAULT]

Selecting the *[DEFAULT]* key twice will **default the pre-selected fixtures and stops all effects (*)**. It is necessary to select the fixtures first before using the function like this.

[DEFAULT] + [1…70]

Fixtures can be put in their defaults separately by selecting the *[DEFAULT]* key together with a fixture key(s). **The effects keep running (*).**

[DEFAULT] + [ALL]

Defaults all fixtures. **The effects keep running (*).**

[DEFAULT] + [1…16]

Defaults all fixtures of the selected group. **The effects keep running (*).**

[DEFAULT] + [1/17…16/32] or [DEFAULT] + [P&T]

Defaults the selected control channel (1...32) of **the pre-selected fixtures**. Useful to default ex. Only color, or gobo or only Pan/Tilt. **The effects keep running (*).**

[DEFAULT] + [P&T (presets)**] or [DEFAULT] + [GOBO] or [DEFAULT] + [COLOR]**

To default Pan/Tilt, colors or gobos **of the pre-selected fixtures. The effects keep running (*).**

Note: Maybe a little bit confusing, but this function doesn't have to do anything with presets here.

[DEFAULT] + [EFF] + [ALL]

Defaults all effects (except Pan/Tilt) of all fixtures (*).

[DEFAULT] + [EFF] + [1…70]

Defaults all effects of the selected fixtures (1...70) (*).

[DEFAULT] + [EFF] + [1/17…16/32]

To stop effects on single channels. Select the *[DEFAULT] together with the [EFF] and a channel [1/17....16/32]*. The effects **of the pre-selected fixtures** will go to their defaults (effects stop) (*).

[DEFAULT] + [EFF] + [P&T]

Stops all Pan/Tilt effects, **of the pre-selected fixtures (*).**

(*) see chapter effects generator

6.7.5 {EXP} Adjusting Default values

The original fixture default values come with the fixture libraries. The user can adapt the settings to his own needs.

[EDIT] + [DEFAULT]

Will open the default editor window:

The numbers in the left column are the fixture numbers as they appear in the stage-layout.

Select fixture(s) and change the channel settings as needed.

By selecting *[CLR] + [1...70]* the original settiing (library settings) of fixture (1-70) can be recalled.

To save the adapted settings, select the *[DEFAULT]* key again.

6.8. Manual mode

> *[MAN]*

Later we will explain that we can store the control channel values in memories or cue-memories. Those memories or cue-memories will be used to make programs of light-scenes.

But, if changes are needed to those memories while the program is running, or if new (cue-) memories must be created, it is necessary to activate the manual mode.

MANUAL MODE has the highest priority. Every channel that is changed in manual mode will stop in the program (cue). This is why we asked in the beginning of this chapter, to select the manual mode when following the examples explained in the previous paragraphs.

The *[MAN]* key will toggle the manual mode on or off. When changes are made to the fixtures control channels, those channels will follow the manual actions and stop in the cues that use those channels. When the *[MAN]* mode is left by selecting it again, the channels will leave the manual mode and start running again in their program, <u>if the program calls them again.</u>

> [CLR] + [MAN] + [1/17…16/32]

So a control channel that is manually changed will stop following the programmed actions on it. If during manual actions, a channel that is changed manually has to go back to the program, it is possible to clear the manual mode for that channel by selecting the *[CLR] key together with the [MAN] key and the control channel [1/17…16/32]*. This action will clear the manual setting of the channel. **!! Pay attention, the cleared manual channel has to be recalled in the cue-memory or sequence to follow the program again.**

> **The manual mode is very important while programming.**

6.9. Direct access

Some channels like color or gobo or... have pre-defined area's to make them direct accessible to the user.

> *[select fixtures or groups] [DIRECT ACCESS] + [1/17…16/32* (blinking LED's)*]*

First make a selection of fixtures. Then use the *[DIRECT ACCESS]* key together with one of **the blinking control channels** (only those are accessible). The direct access window will open on the monitor:

This example shows the color channel of the PRO918. With keys *[1...70] or with the trackerball* a color like color 3 (red) can be selected.

[select fixtures or groups] [DIRECT ACCESS] [DIRECT ACCESS]

The direct access window can remain opened when the *[DIRECT ACCESS]* key is selected twice. Now you have the possibility to select between the control channels, the window will stay open. To close the window, press *[ESC].*

Remark: Some functions like **reset, lamp-on, lamp-off** can only be accessed by using the direct access function or with the *[RESET], [LAMP ON] or [LAMP OFF]* **keys of the playbackwing** (Pro 1+, Pro 2+ or extra wing)**.**. When the channel holding the reset function, is set by the trackerball or by a digital fader, those functions will not be activated. In the channel window, the text reset, lamp-on, lamp-off... will be colored blue, meaning that it is **only accessible by direct access.** This is a security against accidental use of the special functions.

6.10. Selections on the playbackwing

Pro1+, Pro2+ or the extra wing controllers have some extra possibilities:
Playbackwing
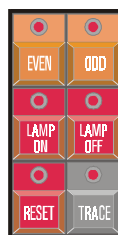
[EVEN] or [ODD]

To select out of a present fixture selection, the even or odd numbered fixtures.

| **[LAMP ON] or [LAMP OFF] + [Select fixtures or [ALL]]** |
To select the lamp-on, or lamp-off commands.

With these keys, it is possible to select a LAMP ON command for all fixtures *([LAMP ON] + [ALL])*. **In this case, the software will send the command to all fixtures, one by one, with a pause of 300 ms between them.**

Remark: These commands can have macro contents, setting more channels on different values in a limited time. Like for a Cyberlight or a MAC600 where during 5 sec the lamp off command has to be given together with the CMY at 141. This even works with the Lamp off=OFF in the display menu of the MAC600.

6.11. {EXP}   Absolute or relative channel adjustment

When channels of different fixtures have to be set at the same time, you have 2 ways of doing this:
 – relative setting to each other
 – absolute setting to each other

When using **relative programming, the changes** of 2 fixtures to each other will always **remain equal.**
 Example: When the first fixture has value 50 for Pan and the other value 100, and the Pan increases with 100, the result will be 150 for the first and 200 for the second.

When using **absolute programming, the channel values of the fixtures will always be the same.** From the moment a channel value is changed in absolute programming when more fixtures are selected at the same time, the channel value will be copied to the other selected fixtures.

| **Remark:** | The channel values of several selected fixtures in relative mode will always change relative to each other until one fixture reaches its limits (0 or 255). This one will stay at this value, the others will continue changing relative to each other. If the value is still increased until all fixtures have reached 255, they all will stop moving. When coming back again to value 0, everything will happen in reversed order. The one that stopped last will start first and the one that stopped first will start last again. |
| | Only in relative mode it is possible to point all fixtures to 1 spot and move the spot around. |

| *[ABS]* |
To select or deselect absolute programming mode. To deselect or to go back to relative programming, press the key again.

6.12. **The SOLO function**

Programming a very big show with many fixtures is not so easy if you can't see the fixtures one by one. The SOLO function will help. It only opens the selected fixtures and dims the other ones.

An active SOLO function will open only the dimmers of the selected fixtures.

[Select fixtures]   [SOLO]

The SOLO function will only be activated when the CUE-FADING and all sequences are deactivated.

6.13. <u>**Example**</u>

In this example we will perform next steps:
- Sub-master 1 will be used for all scans (fixtures of fixture page 1).
- Sub-master 2 will be used for all dimmers (fixtures of fixture page 2)
- All MAC600s will be grouped in group 1
- All PRO918s will be grouped in group 2
- Both groups will be defaulted
- We will select color 3 and move the Pan/Tilt of the MAC600s
- We will change Pan/Tilt in relative and absolute mode for the PRO918s and MAC600s

Select: *[EDIT* (Cue)*] + [S1]*
> To put sub-master 1 in edit mode.

Select: *[1* (1…70)*] + [35*(1…70)*]*
> To select fixtures 1 to 35 (all scans)

Select: *[S1]*
> ***To save sub-master 1***

Select: *[FIXT. PgDn]*
> To go to fixture page 2 (dimmers)

Save all dimmers to sub-master 2

Open both sub-masters. (Pay attention, the grand master has to be open too.)

Select: *[MAN]* to put the controller in manual mode. When the show 'MANUAL72' is loaded, cue-memories can be active in the background. Since manual mode has the highest priority, it is better to switch it on.

Select: *[VALUES]* (until the digital memory-values screen opens)
> To see the adjustments we will make..

Select: *[FIXTURE PgUp]*
> To go back to the scan page.

Select: *[1*(1…70)*] + [6*(1…70)*]*
> To select fixtures 1 to 6 (MAC600).

Select: *[STORE] + [1*(1…16)*]*
> To save the MAC600s in group 1.

Select: *[CLR* (Fixtures/Cues/Presets)*]*
> To deselect all fixtures.

Select: *[7*(1...70)*] + [10*(1...70)*]*
> To select fixtures 7 to 10 (PRO918s)

Select: *[STORE] + [2*(1…16)*]*
    To store the PRO918s to group 2.

Select: *[CLR* (Fixtures/Cues/Presets)*]*
    To deselect all fixtures.

Select: *[1*(1…16)*] [2*(1…16)*]*
    To select both groups.

Select: *[DEFAULT] [DEFAULT]* (2x fast)
    To put all selected fixtures in their defaults. They will be all white open. (In the example show, all dimmers will be closed, because the defaults are changed).

Select: *[CLR* (Fixtures/Cues/Presets)*]*
    To deselect all fixtures.

Select: *[1*(1…16)*]*
    To select all MAC600s

Select: *[DIRECT ACCESS] + [6/22]* (and hold the direct access key)
    To select the direct access function on the color channel.

Select: *[4*(1…70)*]* (and release all keys)
    To select color 3.

The direct access can also be selected by doing this: *[DIRECT ACCESS] [DIRECT ACCESS]* (2x fast) *[6/22]*   *[4] or select using the trackerball, color3   [ESC]* (All keys are selected one by one).

Select: *[P&T* (Control Channels)*] and move the trackerball* (trackerball has to be switched on). To change Pan/Tilt on the MAC600s

Select: *[2*(1…16)*]*
    To select also the PRO918s.

Move the trackerball
    The Pan/Tilt values of the MAC600s and the PRO918s will be different, since we've moved the Pan/Tilt of the MAC600s before, but they will move relative upon each other.

{EXP}   Select: *[ABS]*
    To select absolute mode.

Move the trackerball.
    Watch the Pan/Tilt values, they will now be equal for all fixtures.

7. CHAPTER 7: Effects Generator

```
                        ┌─────────────────────────┐
                        │          Setup          │
                        │  Fixtures DMX Addresses  │
                        │     and Stage Plan       │
                        └─────────────────────────┘
                                     │
                                     ▼
┌──────────────────────────────────────────────────────────────────────┐
│                                                                        │
│    ┌──────────────────────┐        ┌──────────────────────┐           │
│    │        Adjust        │        │        Adjust        │           │
│    │ Fixture Control       │        │ Effect Generator     │           │
│    │     channels          │        │      channels        │           │
│    └──────────────────────┘        └──────────────────────┘           │
│           │         │                    │         │                   │
│           │         ▼                    ▼         │                   │
│           │     ┌──────────────────────────┐      │                   │
│           │     │           Make           │      │                   │
│           │     │  Pan/Tilt, Gobo, Color and│     │                   │
│           │     │  Effect Generator Presets │     │                   │
│           │     └──────────────────────────┘      │                   │
│           │                 │                      │                   │
│           │                 ▼                ┌───────────┐             │
│  ┌──────────┐                               │   Make    │             │
│  │ Timings  │                               │ Memories  │             │
│  └──────────┘                               └───────────┘             │
│       │                                           │                   │
│       ▼                                           │                   │
│  ┌──────────────┐  ┌──────────────┐  ┌───────────────────────┐       │
│  │     Make     │  │     Make     │  │         Make          │       │
│  │ Cues with    │  │ Cues with    │  │ Cues with Sequences   │       │
│  │ Cue-Memories │  │ Playbacks    │  │     (chasers)         │       │
│  └──────────────┘  └──────────────┘  └───────────────────────┘       │
│           │             │                                             │
│           ▼             ▼                                             │
│     ┌──────────┐  ┌──────────────┐                                   │
│     │   Run    │  │     Make     │                                   │
│     │ the Show │  │ Time-Code    │                                   │
│     │          │  │    Show      │                                   │
│     └──────────┘  └──────────────┘                                   │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘
```
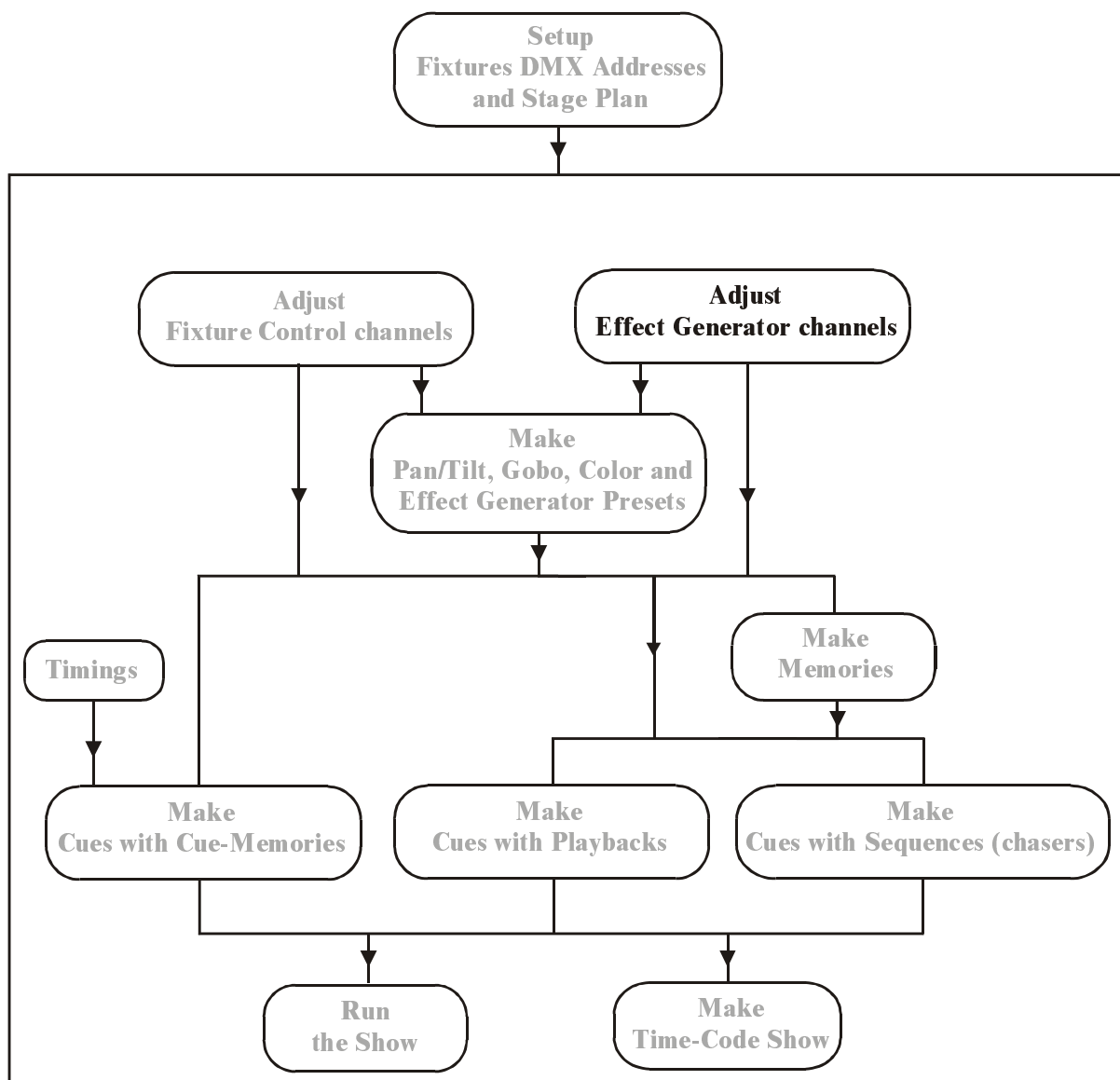
> **When working with the example, the show 'MANUAL72', first go to manual mode *[MAN]*.**

7.1. In general

On every channel of each fixture an effect can be started. Therefor a number of effect generator channels are added to each channel.
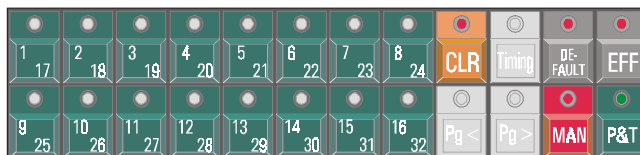
[EFF]

Displays and enters the effect generator channels for a selected control channel.

When a control channel like, for example Gobo is selected and the *[EFF]* key is pressed then the fixture control channels **will be replaced by the effect control channels**. Those **effect control channels are used in the same way as the fixture control channels.** To return to the fixture control channels, the *[EFF]* key has to be selected again.

[1/17]…[10/26]

To select the effect control channels if the effect generator is started. The selected channel is adjusted like a normal control channel.

7.2. Effects generator on non-Pan/Tilt channels.

[Select a non-Pan/Tilt channel] [EFF]

The control channel window will be replaced by the effect control channels.
On **non-Pan/Tilt** channels, 7 parameters will be displayed:

1   The fixture control channel itself: ex. Gobo channel
2   Swing
3   Speed
4   Mode
5   Delay
6   Shift
7   Wait

7.2.1 Channel 1

The first control channel is nothing more than the selected fixture control channel. When for example the effect generator was opened on the gobo channel, then this first channel will represent the gobo channel.

With this channel, **the center point, around which the effect will run, is selected.**

7.2.2 Swing

This channel sets **the size of the effect around the center point of channel 1.**
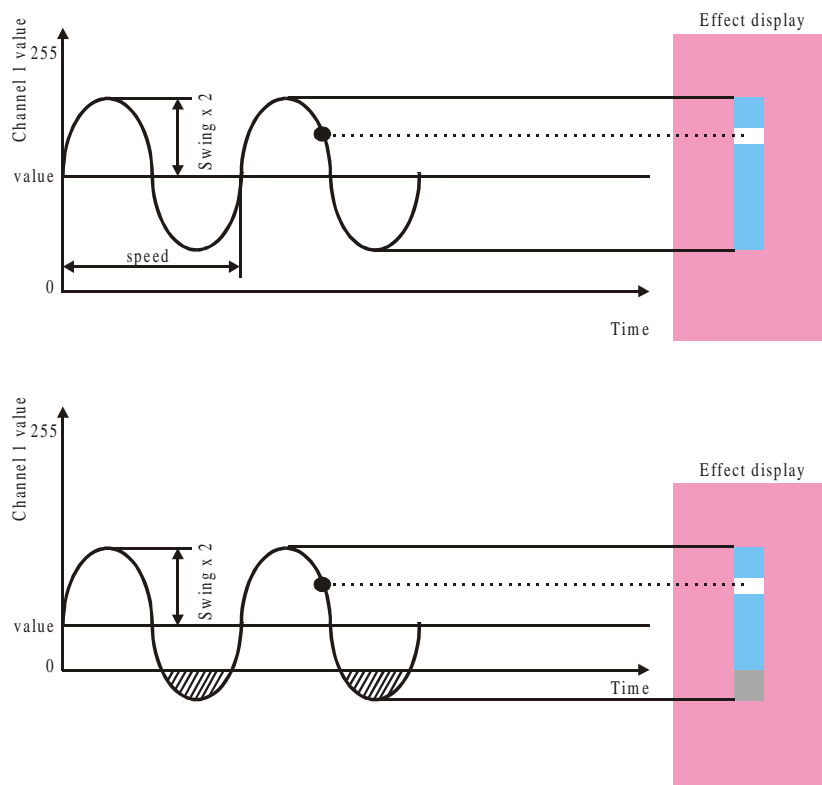
The max. value of the swing depends on the selected value (value on Fig.) of channel 1. When the swing is chosen too big, the channel value will exceed its limits, which are 0 or 255. Those limits are shown on the effect display by a gray area. In reality, channel 1 will stay a certain time (depends on the speed) on the limit values (0 or 255). When the values stay between the limits, the point on the effect display will never leave the blue (white on Fig.) area.

Example: Select a MAC600 and select channel 2 (dimmer). Press *[EFF]* to open the effect generator. With channel 1, the center point is selected. Adjust the swing and give the effect a speed (channel 3). When the swing is too big, the dimmer will stay open (255) or closed (0) for a certain time. This is shown in the effect display by the point hitting the gray area. Experiment now with channel 1 and the swing to keep the point in the blue area.

Sometimes it is the intention that the effect exceeds its limits, to create, for example, an ON/OFF effect. In this case, the channel will stay at its limits for a longer time and will rush through the blue area (depends of the selected effect-speed).

7.2.3 Speed

This channel controls the speed of the effect. **A speed of 0 will stop the effect. To disable the effect completely, the swing has to be set at 0 too**.

7.2.4 {EXP} The delay

When the same effect is launched at more fixtures at the same time then the effect will be in phase on all fixtures or they are all doing the same thing at the same time. **With the delay parameter, a phase shift can be created between more fixtures.** The shift will always be taken in relation to 0.
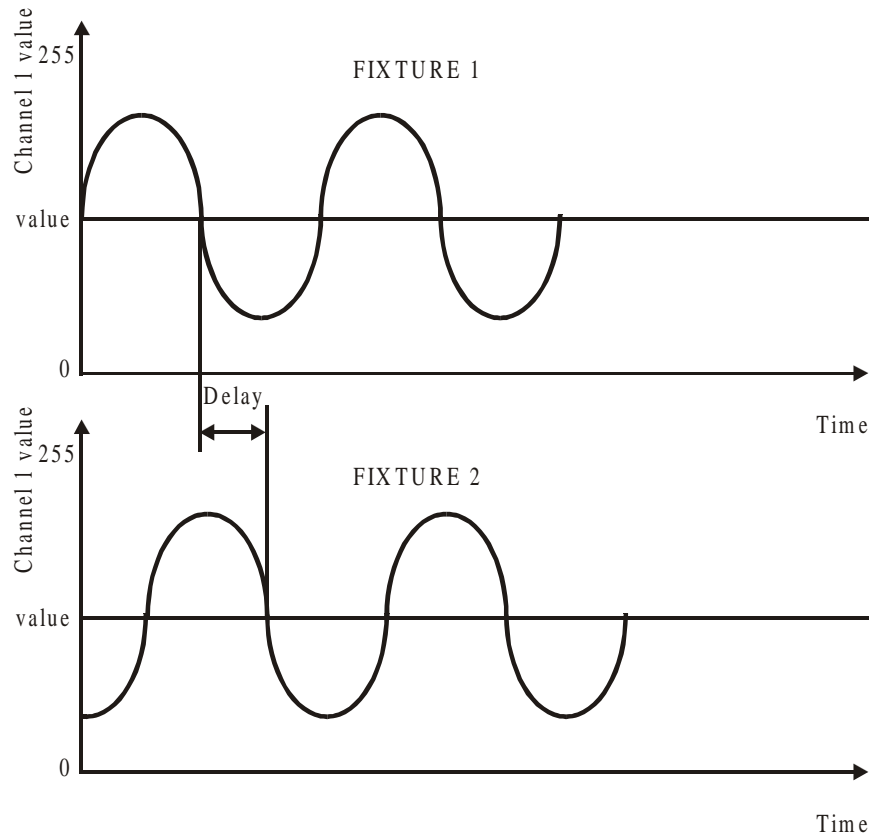
Example: Start an effect on the gobo channel of the 4 PRO918s. Put the delay for the first one at 0, for the second at 45, for the third at 90 and for the fourth at 135.

7.2.5 {EXP} The shift

A shift is a delay or phase shift of 360°. On its own, a shift has no effect because a shift of 360° will shift the start point of the effect to the next cycle, but combined with the WAIT, the shift can create a step function.

7.2.6 {EXP} The wait

The wait is used to stop the effect during a short period. When the effect stops, it will wait on the center point (channel1).

To create a step function over more fixtures, a combination of wait and shift is needed.
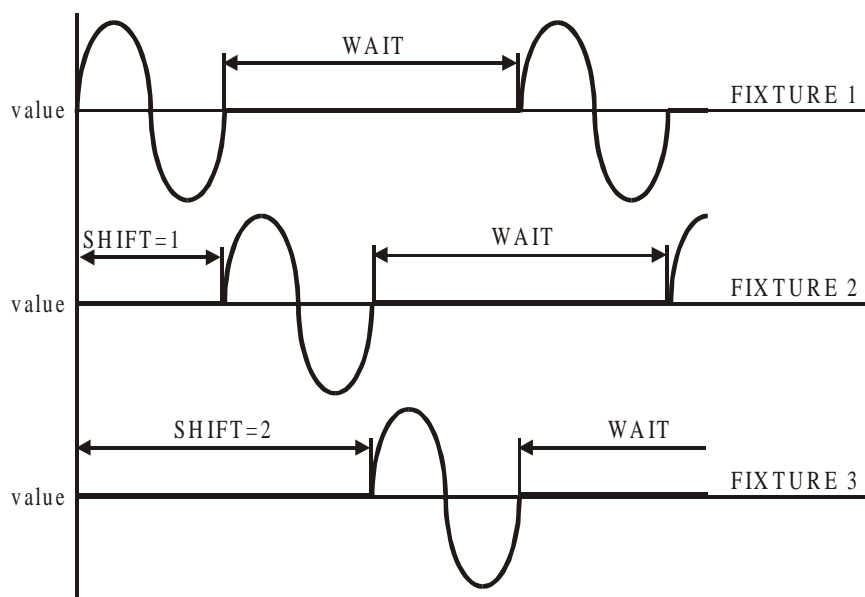
In this example, a step over 3 fixtures will be created.
- Fixture 1: shift = 0 and select a wait.
- Fixture 2: shift = 1 and the same wait as 1.
- Fixture 3: shift = 2 and the same wait as 1.

When on fixture 1 the first fading cycle is finished, fixture 2 will start its fading. Fixtures 1 and 3 will wait at the center point (channel 1 value) while fixture 2 is fading. When the fading on fixture 2 is finished, fixture 3 will start. When this is done, the cycle will start all over again. This is called a step function.

Remark: It will be a lot easier when the delay, shift and wait timings are calculated by the controller. This can be accomplished by using the direct access function on those channels.

7.3. Direct access on effect generator channels.

The direct access function can be used on channels 4 (mode), 5 (delay) and 6 (shift).

7.3.1 Mode

With the mode parameter, the fade mode and the direction of the effect is selected.

| [DIRECT ACCESS] + [4/20] |

Will open next screen:
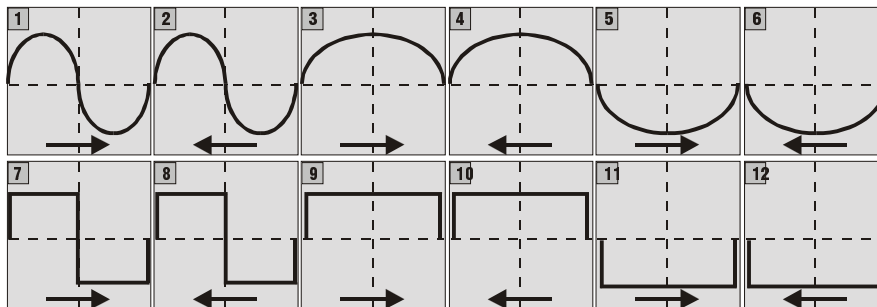
1 Fading above and below the center point on channel 1.
2 Fading above and below the center point on channel 1 (reversed direction)
3 Fading only above the center point on channel 1.
4 Fading only above the center point on channel 1 (reversed direction)
5 Fading only below the center point on channel 1.
6 Fading only below the center point on channel 1 (reversed direction)
7 Step above and below the center point on channel 1.
8 Step above and below the center point on channel 1 (reversed direction)
9 Step only above the center point on channel 1.
10 Step only above the center point on channel 1 (reversed direction)
11 Step only below the center point on channel 1.
12 Step only below the center point on channel 1 (reversed direction)

{EXP}   Note: Functions 9, 10, 11 and 12 are not useful when the wait time is zero.
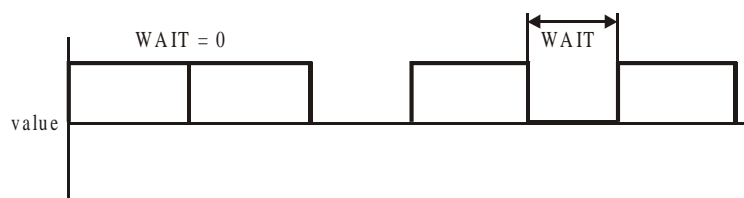
If the wait = 0, the step will happen so fast that it will be invisible.

7.3.2 <u>Delay</u>

To spread out a wave effect over more fixtures, the direct access on the delay channel is used.

[Select some fixtures] [Select a control channel] [EFF] [Adjust swing and speed] [DIRECT ACCES] + [5/21] [select a wave per x]

Example: Suppose we have to make a dimmer wave on next fixtures (6 x MAC600 and 11 x MAC300). Select those fixtures, select the dimmer channel and open the effect generator. Adjust the dimmer value (center point), swing and speed. Select, using the direct access, channel 5/21 and choose wave per 17 (because 17 fixtures were selected). The result will be a fluent dimmer wave over all selected fixtures.

7.3.3 <u>Shift</u>

To spread out a step effect over more fixtures, the direct access on the shift channel is used. On a step effect, the fading of a fixture will wait for the end of the fading of a previous fixture.

Example: We repeat last example, but now with a direct access on channel 6/22. The result will be a dimmer chaser where every fixture waits for the previous one to be finished.

7.4. <u>**Effects generator on Pan/Tilt channels**</u>

On Pan/Tilt channels the effect generator supplies you with a tool to create Pan/Tilt motions like circles, polygons, squares,… in a fast way. 10 channels will be added to each fixture:

1	X-swing
2	Y-swing
3	speed
4	mode
5	figure1
6	figure2
7	rotate
8	delay
9	shift
10	wait

[Select a Pan/Tilt channel or select [P&T]] [EFF]

The speed, delay, shift and wait channels have the same functions as on non-Pan/Tilt channels.

!!! The center point of the motion is selected by the Pan/Tilt setting and here, in contradictory to non-Pan/Tilt channels, its value will not be displayed in the effect control channels window.

7.4.1 X-swing and Y-swing

The X-swing and Y-swing channels adjust the width and length of the motion. When for example a circle motion was selected, the x-swing and y-swing set the width in both directions. When they are equal, the motion will be a circle, when they differ a lot, it will be an ellipse.

Remark: **When moving heads like the MAC600, MAC500, MAC300 or MAC250 are used, it is impossible to make a circle motion when the head is positioned in line with the foot. A circle motion in this position will result in an 8 motion.** This is a result of the mechanical construction of moving heads.

7.4.2 Mode

The mode function on Pan/Tilt channels has only 2 functions:
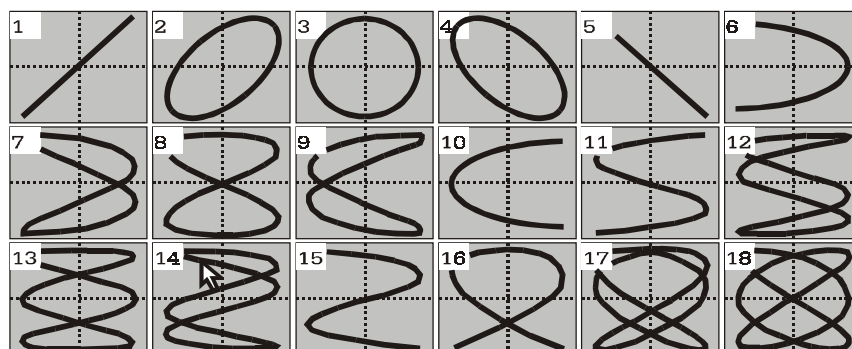- forward motion
- backward motion

7.4.3 Figure1 and Figure2

Those channels are used in **direct access** mode:

Figure1:
This function gives direct access to **lots of lissajous motions** like line motion, circle motion, elliptical motions…

Figure2:
This function accesses to **geometrical motions** like squares, triangles…
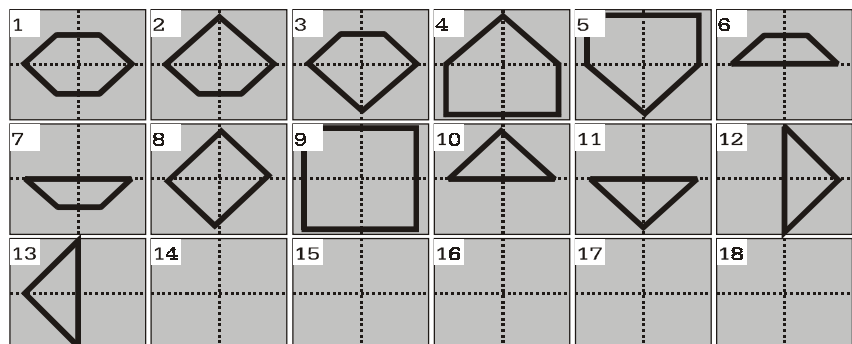
7.4.4 {EXP} <u>Rotate</u>

Using the rotate results in rotating the motion over x degrees. Use this function **with direct access** when the rotation has to be spread over more fixtures.

Example: Take all MAC600s and select a line motion. Adjust x and y swing and the speed. Select channel 7/23 with direct access and use ROTATE PER 6. Next figure shows the result:
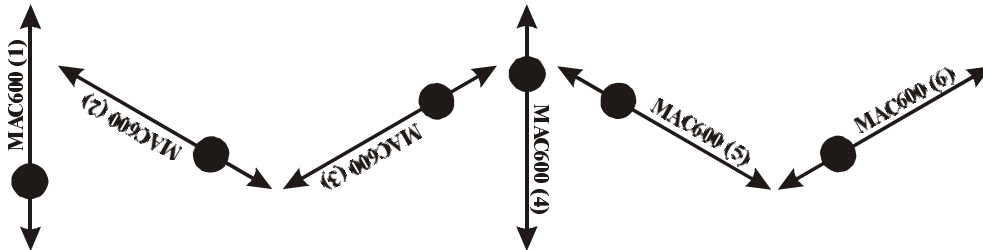
7.5. {EXP} <u>Synchronization of effects</u>

Effects on different channels can be synchronized. There is just one rule: **Speed and wait have to be the same (same value for speed and wait).**

Example: We want to synchronize a dimmer effect with and up and down motion on Pan/Tilt. We have to make the dimmer and the Pan/Tilt effect and we set the values for speed and wait equal on both, the dimmer effect and the Pan/Tilt effect.

7.6. <u>Effect Marcos or Effect Wizard</u>

Effect macros are pre-programmed combined and synchronized effects. Here is also the possibility to spread the effect over more fixtures.

| *[SHIFT] + [EFF]* |

The combination of *[SHIFT] and [EFF] keys* will open the effect macros selection screen. There is a choice between:

- **Effects only applicable on RGB (CMY) fixtures: Effects 1 to 14** are only applicable on RGB fixtures. Color effects like 'Rainbow effect' (runs through the color spectrum), 'Green/Red effect' (red green transitions)…
- **Effect combinations with Pan/Tilt** like 'Pan/Tilt fall-dimmer' (dimming effect combined with Pan/Tilt motion, 'Pan/Tilt fall+dimmer+iris'…
- **Effect combinations with dimmers** like 'Dimmer wave', 'Dimmer bump'…
- **Fixture depending effects,** like for ex. For MAC500 or for PALs.

Example: We wish to create an up/down Pan/Tilt motion and a dimmer effect with the PRO918s. The dimmer has to be open in upper Pan/Tilt position and has to be closed in lower position (snap effect). This effect has to be spread over all fixtures resulting in one fluent wave.

Select all PRO918s and press [SHIFT] + [EFF].
Select function [19] (P/T-FALL DIMMER). All fixtures will make now the up/down motion with the dimmer effect. To spread the effect, just click the *[NEXT]* button and select *Wave per 4 (4 PRO918s).*

When the effect runs, try next steps: Leave the effect macro's by clicking the *[ESC]* button (the effect will keep running), select *[P&T] [EFF]* to adjust the effect generator on the Pan/Tilt. Change the *Rotate* parameter.

7.7. Stopping effects

Like explained, a running effect can be stopped by setting the **speed and swing of the effect at zero.**

When a **fixture is put in his default state**, **all effects will stop, except the Pan/Tilt effect**. **To stop the Pan/Tilt effect,** *select first the fixtures and then [DEFAULT] + [EFF] + [P&T].*

Suppose an effect, including a Pan/Tilt effect, is running on all fixtures. To stop all effect, we select:

[DEFAULT] + [EFF] + [ALL] will stop all effects, except on Pan/Tilt, of all fixtures.
[ALL]   [DEFAULT] + [EFF] + [P/T] will stop all Pan/Tilt effects on all fixtures.

8. CHAPTER 8: Presets

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                            ┌─────────────────────────┐
                            │        Setup            │
                            │ Fixtures DMX Addresses   │
                            │   and Stage Plan         │
                            └─────────────────────────┘
                                       │
  ┌───────────────────────────────────┼─────────────────────────────────────┐
  │                                    │                                     │
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  │   │      Adjust         │     │        Adjust           │               │
  │   │ Fixture Control     │     │  Effect Generator       │               │
  │   │    channels         │     │     channels            │               │
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  │           │      ┌──────────────────────────────┐                       │
  │           │      │          Make                │                       │
  │           │      │ Pan/Tilt, Gobo, Color and    │                       │
  │           │      │ Effect Generator Presets     │                       │
  │           │      └──────────────────────────────┘                       │
  │           │                    │                                        │
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  │           │                    │          │    Make      │              │
  │   ┌──────────┐                 │          │  Memories    │              │
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  │  │     Make       │    │     Make       │    │         Make            │ │
  │  │ Cues with      │    │ Cues with      │    │ Cues with Sequences     │ │
  │  │ Cue-Memories   │    │ Playbacks      │    │ (chasers)               │ │
  │  └────────────────┘    └────────────────┘    └─────────────────────────┘ │
  │            │                   │                                        │
  │      ┌──────────┐        ┌──────────────────┐                           │
  │      │   Run    │        │     Make         │                           │
  │      │ the Show │        │ Time-Code Show   │                           │
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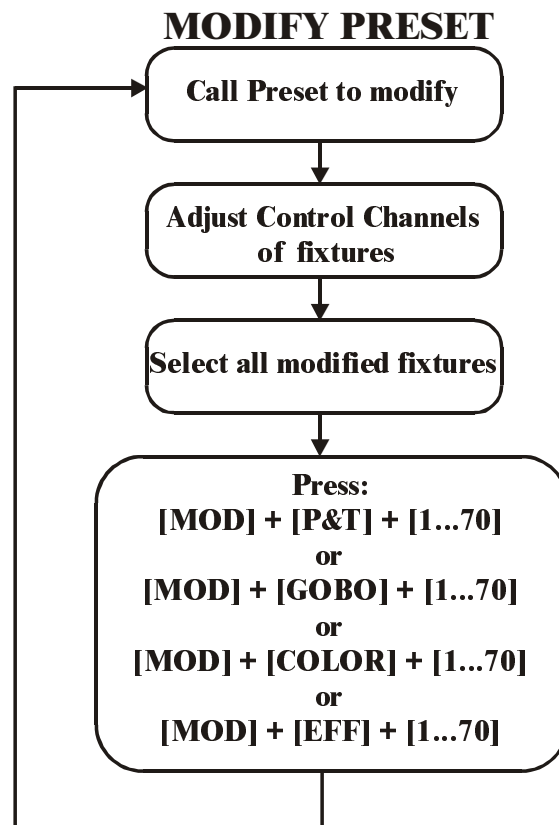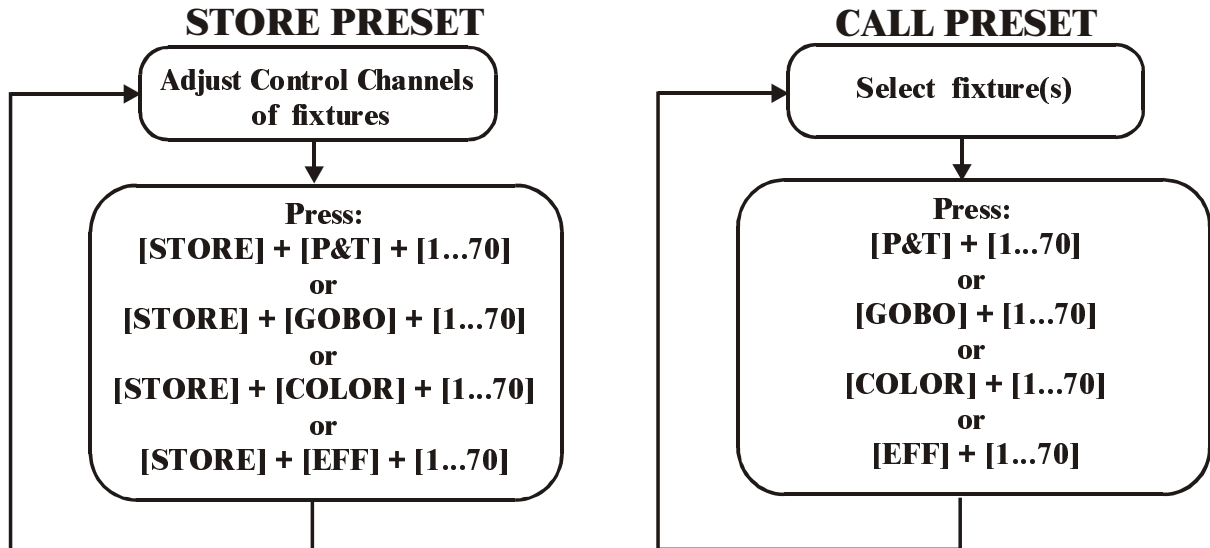
STORE PRESET

Adjust Control Channels
of fixtures

Press:
[STORE] + [P&T] + [1...70]
or
[STORE] + [GOBO] + [1...70]
or
[STORE] + [COLOR] + [1...70]
or
[STORE] + [EFF] + [1...70]

CALL PRESET

Select fixture(s)

Press:
[P&T] + [1...70]
or
[GOBO] + [1...70]
or
[COLOR] + [1...70]
or
[EFF] + [1...70]

MODIFY PRESET

Call Preset to modify

Adjust Control Channels
of fixtures

Select all modified fixtures

Press:
[MOD] + [P&T] + [1...70]
or
[MOD] + [GOBO] + [1...70]
or
[MOD] + [COLOR] + [1...70]
or
[MOD] + [EFF] + [1...70]

Presets are an important part of programming. Of course, a show can be programmed without the use of presets, but taking time to make presets will reduce the rest of the programming a lot.

8.1. Presets, in general

280 presets can be programmed on the controller:
- 70 Pan/Tilt presets
- 70 Gobo presets
- 70 Color presets
- 70 Effect generator presets

Those presets can be called for each fixture separate; this gives the possibility to make combinations of presets. It is possible to combine for example Pan/Tilt preset 1 of the first MAC600 with Pan/Tilt preset 2 of the other MAC600s while both presets were made for all fixtures together.

It is also possible to load some extra sub-functions on each preset. Those sub-functions can be toggled on/off on every preset different. For example, it is possible to load also the focus when a Pan/Tilt preset is called, or only color wheel 1 for fixtures with more color wheels. The sub-functions from:
- Pan/Tilt presets can have:
  - o Pan/Tilt
  - o Focus
  - o Dimmer
- Gobo presets can have:
  - o Gobo-wheel 1
  - o Gobo-wheel 2
  - o Gobo-wheel 3
  - o Gobo-wheel 4
  - o Gobo parameters like speed…
  - o Knifes (PAL)
  - o Knife parameters (PAL)
  - o Effect wheel 1 (Ex. Cyberlight)
  - o Effect wheel 2
  - o Effect wheel 3
  - o Iris
  - o Zoom
  - o Focus
  - o Frost
  - o Prism
- Color presets can have:
  - o Color wheel 1
  - o Color wheel 2
  - o Color wheel 3
  - o Color wheel 4
  - o Color parameters like speed…
  - o RGB
  - o Dimmer

- Effect presets can have:
  - o Pan/Tilt effect parameters
  - o Gobo effect parameters
  - o Color effect parameters
  - o Effect effect parameters
  - o Iris effect parameters

- o Zoom effect parameters
- o Focus effect parameters
- o Dimmer effect parameters

8.2. Storing Presets

Very important:	When <u>saving</u> presets, always <u>the values of all fixtures</u> will be saved whether there is a selection of fixtures or not. In addition, the values of all sub-functions will be stored in the preset. When there was only a correct Pan/Tilt setting for the MAC600s but those of the PRO918s, the values of the PRO918s will be stored too when the preset was saved. Also, the dimmer and focus settings will be stored. **However, when the preset is called, it is possible to decide what to load.**

[Adjust fixture channels] [STORE] + [P&T] + [1…70]   [Enter preset name] [RET]

A preset stores fixture channel values, so the first step will be to adjust them. When for example all fixtures light 1 spot on the stage, the Pan/Tilt values of those fixtures are stored by pressing the *[STORE], [P&T] and a number out of the [1…70] matrix* together. The system will ask to enter a name for the preset. Enter the name and press *[RET]*.

[Adjust fixture channels] [STORE] + [GOBO] + [1…70]   [Enter preset name]   [RET]
[Adjust fixture channels] [STORE] + [COLOR] + [1…70]   [Enter preset name]   [RET]
[Adjust fixture channels] [STORE] + [EFF] + [1…70]   [Enter preset name]   [RET]

The same procedure is used to store gobo, color or effect presets.

Example: We'll make the first 2 presets of the show 'Manual72'; preset 'HOME' (everything facing down) and preset 'CENTER' (everything facing the center of the stage).

- Select all fixtures and start from their default positions. When the dimmers from all fixtures are opened (in the default show, the default values were changed); all dimmers were closed). As we can see now, most of the fixtures are facing the ground already; only the MAC300s have to be adjusted. This preset is stored like this: *[STORE] + [P&T] + [1] [Type preset name 'HOME'] [RET]*
- To create preset 2, it is advised to work with the **SOLO** function (remember to stop all sequences and the cue-fading). All fixtures should face the center of the stage.

8.3. Calling Presets

Presets are called for the selected fixtures only.

[Select fixtures] [P&T] + [1…70]

When *[P&T]* (presets) is selected together with one of the blinking LEDs in the 1…70 matrix, the preset will be called, **but only for the selected fixtures.**

When one of the preset functions (P&T, gobo, color or eff) is selected, the preset names window will open at the screen and the LEDs of matrix 1…70 will blink orange for the programmed presets.

[Select fixtures] [GOBO] + [1…70]
[Select fixtures] [COLOR] + [1…70]
[Select fixtures] [EFF] + [1…70]

To call gobo, color or effect presets.

Example: To show the possibility of combined presets, we will call preset 1 for all MAC600s
        and preset 2 for the PRO918s.
   - *Select the SOLO function and select fixture group 1 (MAC600s). Select Pan/Tilt*
     preset 1.
   - *Deselect group 1 and select group 2 (PRO918s). Select Pan/Tilt preset 2.*
   - *Deactivate SOLO.*

If the value screen *[VALUES]* (digital memory values) is opened, you can see that the preset numbers replace the digital values.

Color preset 2 is represented by:

In general: C xx : Color preset
            P xx: Pan/Tilt preset
            G xx: Gobo preset
            F xx: Effect preset

8.4. Erasing and changing presets

[CLR] (presets) + [P&T or GOBO or COLOR or EFF] + [1…70]

When the *[CLR]* (presets) key is used together with a preset function (P&T, color or eff), and at the same time, a number (1…70) is selected, the preset will be erased.

Note: When a preset, already used in a memory (see later), is erased, then the preset number will still show up in the memory but it doesn't have any value or function any more. This means that the value of this preset is empty and will not change anything to the channel, when the memory is called.

[Select fixtures] [Adjust fixture channels] [MOD] (presets) + [P&T or GOBO or COLOR or EFF] + [1…70]

When a preset needs to be modified, **first the fixtures have to be selected and their channels have to be adjusted** before saving the preset in modify mode.

Only the altered values of <u>the selected fixtures</u> will be stored in modify mode. This makes sense otherwise all fixtures will be changed and the preset has to be re-adjusted.

Suppose that the same show has to be performed on different locations, it will always be necessary to adjust the Pan/Tilt values of the fixtures. When everything is programmed with presets, it is a lot easier to change those 70 Pan/Tilt presets than having to check all cue-memories (up to 2,000) or all memories (up to 4,000). You just call all 70 presets and change their settings. If the Pan/Tilt presets of all fixtures have to change, you can use STORE or MOD. Is it only necessary to change the settings of some fixtures, you can use MOD.

The **MOD (modify)** function is designed **to change differences during performance of the show.** This is to avoid that you have to call the preset during show performance. When you see that the preset is wrong during the show, just change the settings when you see it and use the MOD key to store those changes.
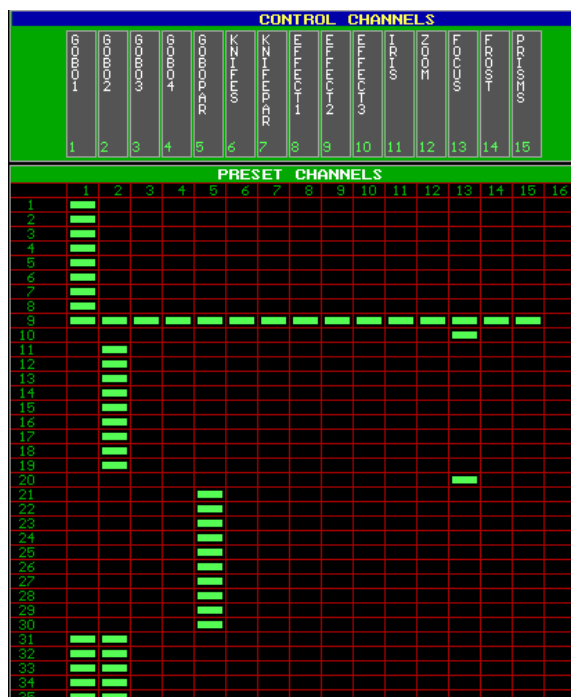
8.5. Preset load-selection

We already mentioned that the presets can hold more than Pan/Tilt, gobo, color or affect values, but also zoom, iris, focus etc…

You can decide what to load for every preset.

[EDIT] (cues) + *[P&T or GOBO or COLOR or EFF]* (presets)

When the *[EDIT]* (key from CUES) is selected together with one of the preset functions, next window will open:

The numbers on the left represent the preset numbers. With the *[PgUp] or [PgDn]* keys, presets 1 – 35 or 36 – 70 will be shown.

The numbers on the top represent the sub-function. Which sub-function belongs to which value can be found in the window on top (control channels).

In this example, only gobo-wheel 1 is taken when **calling one of those presets**. Presets 9 loads everything, and in preset 10 and 20, only the focus is called (the gobo-preset becomes a focus-preset in this case).

On saving a preset, the values of all sub-functions are stored, on calling them however, only the values, activated in the table, are called.

When this window is open, LEDs (1…70) of the programmed presets will be RED.

[Select preset(s) (1…70)] [Toggle sub-function(s) on/off (1…16)]

Select the preset(s) that needs to have another load selection (just select the numbers in the matrix (1…70) until their LEDs are off), and toggle their sub-functions on or off with the keys (1…16 control channels).

[Select opened preset function, to save, P&T or GOBO or COLOR or EFF]

When the changes are made, we can store the whole setting by selecting the *[preset function]*, the one we've used to open it, again.

8.6. Summary

In this chapter we've explained the advantage of using presets. Many users skip this step for little shows that have to be performed only once, but once the presets are programmed, you will regain lots of time when programming the rest.

Presets storing (**of all fixtures**):

> *[Adjust fixture control channels] [STORE] + [Preset function] + [1…70]*

Presets calling (**of the selected fixtures**):

> *[Select fixtures] [Preset function] + [1…70]*

Presets deleting (**of all fixtures**):

> *[CLR] + [Preset function] + [1…70]*

Presets changing **of the selected fixtures**):

> *[Select fixtures] [Adjust fixture control channels] [MOD] + [Preset function] + [1…70]*

Preset load selection change:

> *[EDIT] + [Preset function1] [Select preset(s) (1…70)] [toggle sub-function(s) on/off (1…16)] [Preset function1]*