EXP8000
EXP6000
EXP5000
EXP4000

MOVING LIGHT CONTROLLER

Users Manual

VER: 4.3

Net.DO LIGHTING CONTROL EQUIPMENT CO., LTD

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Contents

1. Summary

1.1 Functions

EXP series moving light controller, with microcomputer as core, in adoption of new technology, has more powerful and more humanized functions.

- Four innovation design

  1. 100 Scene-snapshots can be directly called, can output at the same time, output with playback, flash or latch.

  2. With a display for playback list, users can write and view playback title.

  3. With 5 shortcut faders of attribute (including dimmer, shutter, magenta, yellow and cyan), can control the LED fixture or mix color quickly.

  4. SHAPE is provided and can be directly called.

- DMX512/1990 standard, photoelectric isolation signal output.

- The type for each channel of the fixture can be set as HTP or LTP.

- Use Library Setup Mode.

- Input control mode of command line makes operation more convenient.

- Shape effect is convenient for users to control these many effects to intelligent fixture as circle, shape like 8 and rainbow etc. Parameters (speed, size, spread offset and direction) can be set independently and also outputt in superimposed mode.

- Music synchronization, automatic speed control, intelligent manual-run beat control (SWING) and MIDI control is selectable while Multi-Step-Program program is running.

- VGA interface is provided to connect with color CRT or LCD, detailed and visualized human-computer interface is easier to control.

- Adoption of independent photoelectric isolation DMX output port can protect the operation of the controller.

- USB port is provided for software upgrade and data backup.

- Data hold after shutdown.

1.2   Specification Parameters

	EXP4000	EXP5000	EXP6000	EXP8000
DMX512 Total Channels	2048	2048	2048	2048
Total Dimmer Channels	2048	2048	2048	2048
MAX Intelligent Fixtures	150	240	300	300
MAX Playback Programs	600	600	600	600
MAX Preset Focus	210	210	210	210
MAX Groups	200	200	200	200
Scene-snapshots	100	100	100	100
Shape-Generator	135 (15 Pages)	180 (20 Pages)	180 (20 Pages)	225 (25 Pages)
CUE Mode	YES	YES	YES	YES
VGA Display Interface	YES	YES	YES	TWO
LCD Display Screen	YES (Chinese/English)			
Synchronous Trigger Mode	Auto, Music, Intelligent Beat, MIDI			
Library Format	R20			
USB Interface	YES			
Music Control Signal Input	Unbalanced line level input (1/4 " Monophonic socker) / MIC input			
Power Supply	Switch Power Supply, AC 100~240V, 50/60Hz			
Power	25W			
Size	820mm x 540mm x 175mm			

2. Installation

2.1 Packing List

Packing List of the EXP series moving light controller includes the items as follows:

- One EXP series moving light controller
  TIPS: To confirm model of controller, please view model and software version number displayed on LCD when turn on the controller.
- One power supply cable, one users manual.

  Optional Parts
  USB Disk, VGA Display, 12V Gooseneck Lamp.

2.2 Safety Caution

- The controller must be connected with the protective groundwire to ensure safety.
- No liquid into the controller.
- Intelligent fixture controller is sophisticated electronics. Please mind dust and moist.

2.3 Interface and Connection of Controller

Backboard Plot:
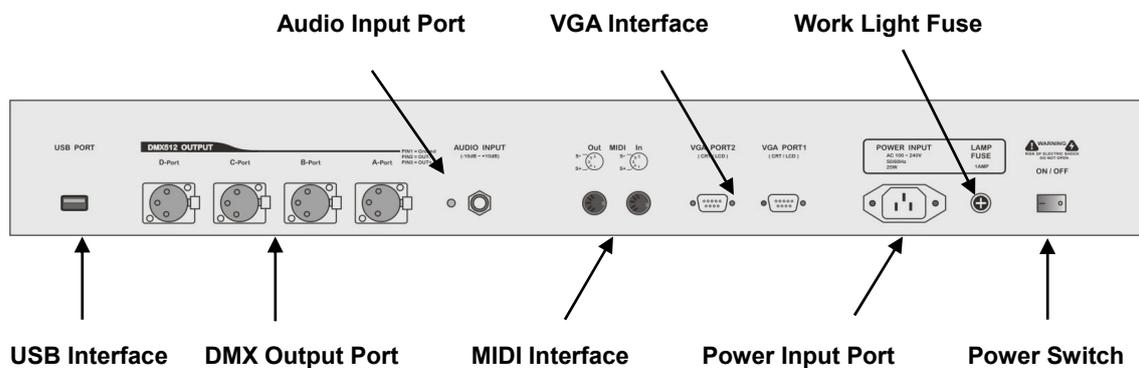
2.3.1 USB Interface

Controller provides a standard USB interface for data backup, renewal of library files and software upgrade.

2.3.2 MIDI Interface

Controller provides MIDI interface. MIDI note signal that is triggered externally can be received through the interface to control the operation of Multi-Step-Program.
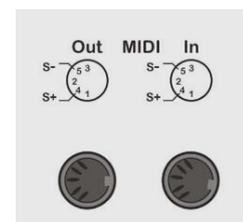
2.3.3 Audio Signal Source

AUDIO INPUT
(-10dB ~ +10dB)
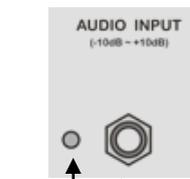
Audio Input Port

MIC head

● Audio signal can be taken from mixer controller, line level output of other audio equipments, or MIC input. Controller automatically extracts low-frequency component from music as music trigger synchronous signal for Multi-Step-Program program.

One 6.35 mm unbalanced mono audio input socket (Audio input) locates on the rear panel of controller, the accommodation of input level of audio signal covers -10dB ~ +10db. When audio device is plugged in, source of sound is line level input, when nothing is plugged in, source of sound is MIC selection.

2.3.4 VGA Interface

VGA-2
(CRT / LCD)
VGA-1
(CRT / LCD)
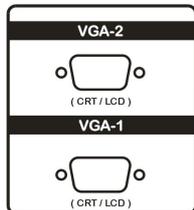
Controller provides VGA interface, which can be externally connected with LCD or CRT monitor.
Note: EXP4000/5000/6000 can only connected with one VGA, EXP8000 can connected with two VGA.

2.3.5 DMX Signal Interface & Connection of Fixture
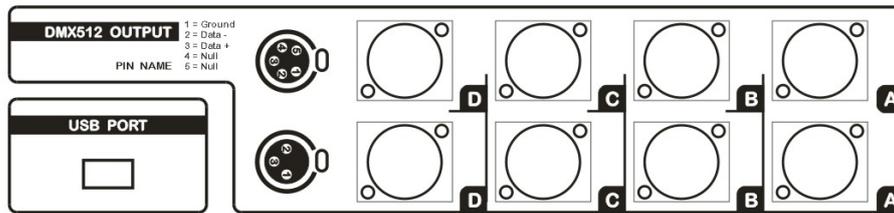
There are 4 groups (A,B,C,D) of DMX512 output sockets (shown as the above), each group contains a 3-pin XLR and a 5-pin XLR, pin one for signal ground, pin 2 for negative, and pin 3 for positive, for 5-pin XLR, pin 4 and pin 5 are blank.

   DMX512 cable is screened twist line.   Each end of the cable should be joined to XLR plug by user.   Pin 1of XLR plug is connected to screen net. Two lines of twist line (distinguished by different colors) are connected to pin 2 and pin 3 of the plug respectively. Please do not confuse. The schematic diagram for connection is shown as follows:
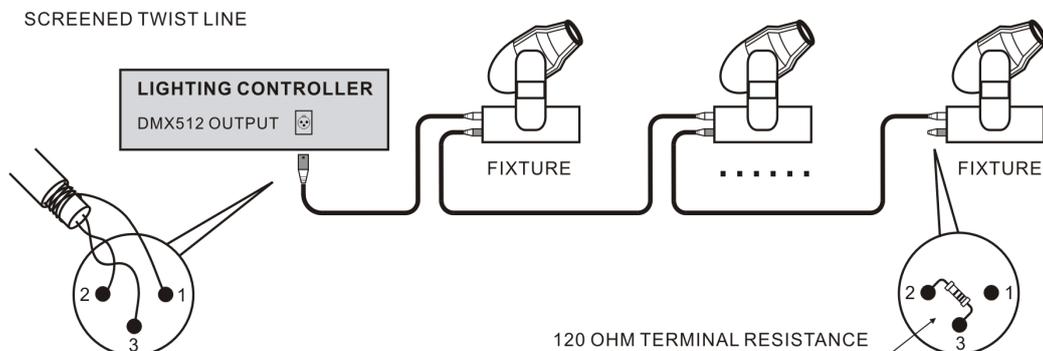
Pin number	Cable conductor
1	Shield
2	Negative
3	Positive

2.3.6 Power Interface
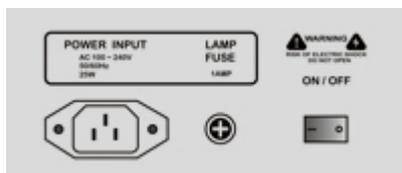
Controller adopts wide range switch power supply (AC100-240V/50-60HZ). Please confirm voltage is suitable to controller before connection. Power socket must be connected with protective groundwire to ensure safety. If to replace fuse, please disconnect power firstly and then operate to ensure safety.

2.3.7 Gooseneck Light Interface

The controller has two gooseneck interface (3 cores XLR structure) at top left/right corner of the controller panel, able to connect gooseneck work light (working voltage 12V/5W).

3. Operation Guide

3.1　Panel plot
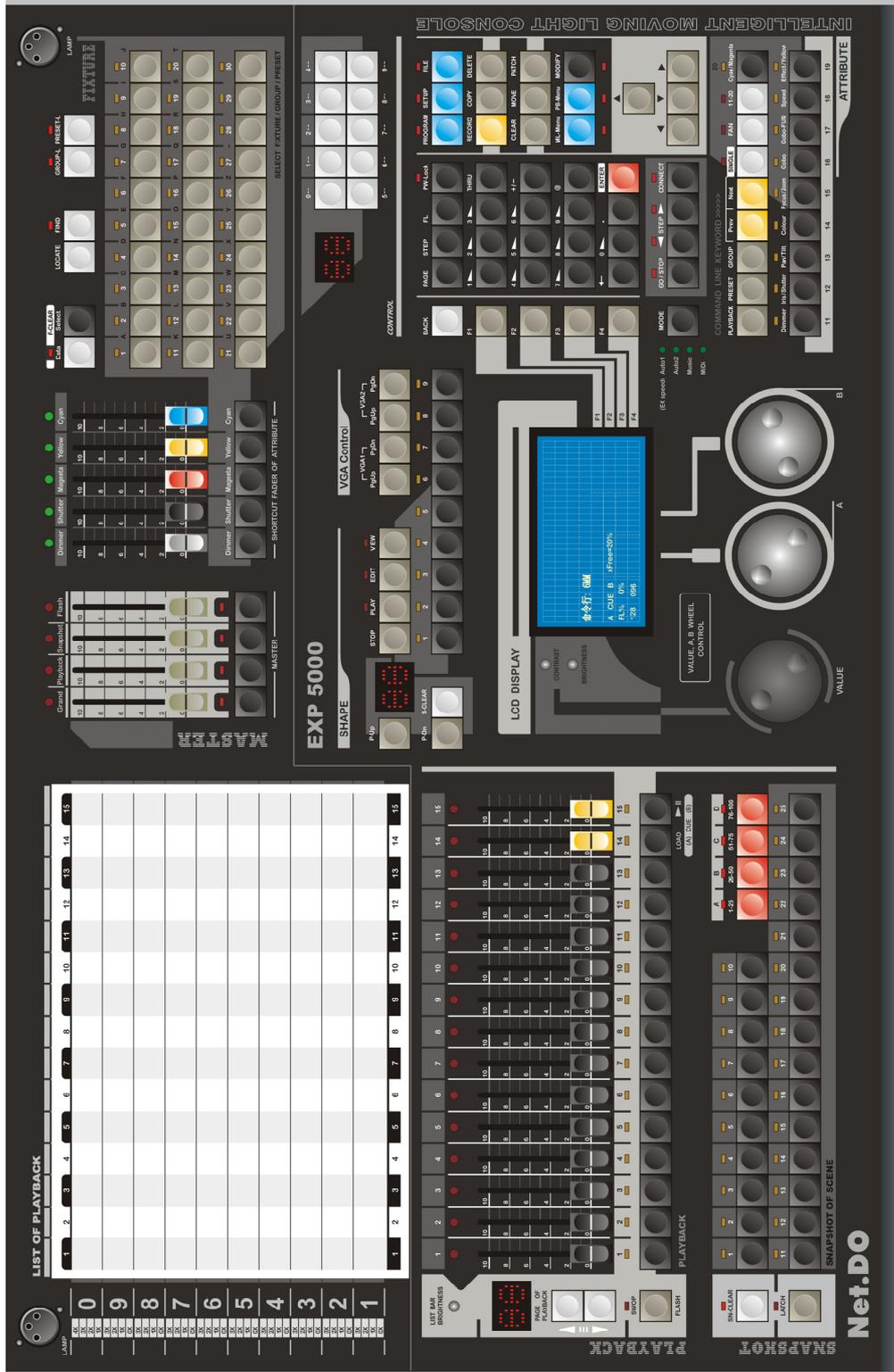
3.2 Shortcut Fader of Attribute, Manual-run Light Area (Manual-run Area)

- **Fixture Select Key (1~30)**

   The controller has 30 fixture select key, can select up to 300 fixtures by Page Turning Key 0~9.
   When the indicator light of **GROUP** or **PRESET** is on, the fixture select key is used to quickly select a group or preset, no matter which page it is.

- **Preset Faders**

   Controller provides 30 Preset Faders, each of which can control dimmer or dimmer of intelligent fixture independently (Manual-run is unnecessary). When fader is pushed up or pulled down, the light equipment connected with the fader changes dimmer correspondingly. One Preset Faders corresponds to one fixture number. Overall dimmer of branch controller is controlled by **Fixture Master Fader**.

- **Page Turning Key**
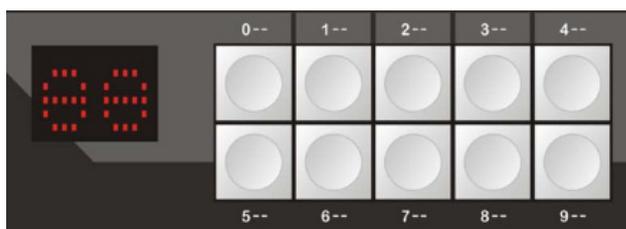
   Page Turning Key locates on the right of Preset Faders. Fixture number 1~30 is in Page 0, 101~130 in Page 1, 201~230 in Page 2, 301~330 in Page 3, the rest may be deduced by analogy. Controller can also allocate the selected fixture to Group, which is very useful to run Manual-run rapidly. (The relevant content is introduced in Group.)

● **Function Key**

F-CLEAR (Data) ---- Used to cancel the selected fixtures and all the manually numeral value of Manual-run Area.

F-CLEAR (Select) --- Used to cancel the selected fixtures without clearing the manually numeral value.

LOCATE ----- Used to locate and light the selected fixtures (With numeral value).

FIND ----- Used to locate and light the selected fixtures (Without numeral value).

GROUP-L ----- Group select state key.

PRESET-L ----- Preset select state key.

● **Shortcut Fader Of Attribute**

The controller has 5 shortcut fader of attribute (including dimmer, shutter, magenta, yellow and cyan), users can linearlly adjust the attribute of selected fixtures quickly, and this make it very convenient to mix color for LED or CMY fixtures.

● **SELECT Key**

SELECT is used to set work mode for Select Fixture key. Press this key, the corresponding indicator light is on, meanwhile Select Fixture Key is for choosing fixture manually; when indicator light is off, the Select Fixture key is for dimmer flash.

● **Select Fixture Key**

Each Preset Fader is with a Select Fixtures key. Under different states, Select Fixture Key functions are differently as follows:

1. Used to select fixture (when SELECT indicator light is on);
   Press two Selecte Fixture Keys simultaneously so as to make fixtures between them selected.
2. Used to dimmer flash (when SELECT indicator light is off, meanwhilw Select Fixture Key serves as flash).
3. Under File Management menu, used to input English letters (each key is marked with the corresponding English letter).
4. Key for choosing preset focus: when press **PRESET-L** key and hold it on, Select Fixture Key is used to directly select preset.

● **F-CLEAR**
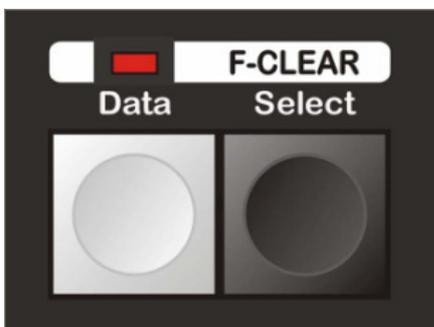
A total of two keys for clearing Manual-run are on manual-run light area (shown as the right).

The left key (white key) is used to cancel the selected fixture and all the manually numeral value of Manual-run.

The right key (grey key) is only used to cancel the selected fixture while not to clear the manually numeral value of Manual-run (for data hold).

NOTE：Flashing of indicator light of F-CLEAR key reminds you of having selected fixture or having Manual-run value. When indicator light above select fixture key flash slowly, it indicates that the attribute values of the fixture is being adjusted.

3.3   SHAPE Control Area

Controller provides control area to SHAPE which can be easily called by users.

- **P-Up/P-Dn---**   Page Turning key for SHAPE (**NOTE:** press this key and hold it on, page can be turned up and down rapidly, each page contains 9 Shape-Generators).
- **S-CLEAR ---**   To clear the current called SHAPE by Manual-run.
- **STOP   ---**   Suspend the current called SHAPE.
- **PLAY   ---**   To run the current called SHAPE.
- **EDIT   ---**   Enter Edit Menu to set various parameters for Shape-Generator.
- **VIEW   ---**   To list the being called SHAPE.
- **1~9   ---**   Used for choosing SHAPE at current page.

3.4   VGA Control

Through keys on VGA Control, to view page by page on externally connected VGA monitor can be realized. Under different menus, VGA1 outputs differently. Screen can be turned up and down through the corresponding PgUp/PgDn key. VGA2 displays the numerical value outputted by DMX and also screen can be turned up and down through the corresponding PgUp/PgDn key.

3.5   PLAYBACK Area

Playback area contains List Of Playback, Playback Fader, Playback Select Key and Playback Page-turning Key.

- **LIST OF PLAYBACK**

    Put the playback title paper (users can print their own) on the backlight screen with numbered alignment, fix it with the magnetic blocks, then users can write the playback down and view them. The brightness of the backlight screen can be adjusted with the LIST BAR BRIGHTNESS knob.

    TIPS: For each show, users can record 150 (15*10) playback in one piece of playback title paper and backup the data with a USB disk, this is very convenient for each show.
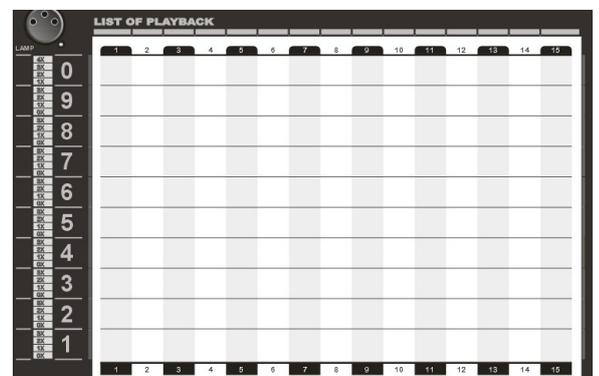
- **PLAYBACK FADER**: The controller has 15 playback faders, 40 pages, so 600 programs can be recorded through page turning. Playback fader is simple to use, the corresponding program can be playbacked just push the playback fader up. When CUE is on, the Fader 14 & 15 are used to LOAD & PLAY.

- **PLAYBACK SELECT KEY**: Below each playback fader there is a corresponding playback select key, mode SWOP or FLASH can be set.

   1. Press **SWOP** key, the corresponding indicator light is on, meanwhile playback select key controls playback in the **SWOP** mode. Only one playback is as the effective choice and output.

   2. Press **SWOP** key again to make the corresponding indicator light off, meanwhile the playback select key is for **PLAYBACK FLASH**. At this time, press these keys, the corresponding Multi-Step-Program will playback immediately, after release these keys, Multi-Step-Program will stop immediately.

- **PLAYBACK Page-Turning Key**: Users can turn pages in playback area by the page-turning key, the cooresponding lighting bar will lighten. (Keep the page-turning key pressed to turn pages rapidly.)

   TIPS：Users can input command to realize rapid page-turning.
   For example, to turn to Page 30, directly input: **PAGE 30 ENTER.**

3.6   MASTER

Master area contains a total of 4 Master Faders.

Playback － MASTER of PLAYBACK Area.

Flash － MASTER of FLASH and SWOP.

Fixture － MASTER of Preset Faders.

Grand － MASTER of all output of controller.

TIPS: Press the corresponding Master key, indicator light is on. Then the value of fader will be locked at max so as to avoid pushing the Master Faders by mistake. Press the key again will cancle the lock.

3.7 Scene-Snapshot Area

- **Scene-Snapshot Key (1~25)**

  The controller has 4 scene-snapshot section (A, B, C and D), each section contains 25 scene-snapshots, up to 100 scene-snapshots can be recorded and output.

- **Scene-Snapshot Section Select Key**

  In total Section A, B, C and D, when the indicator light is on, the cooresponding section is activate, when the indicator flashes, some scene in the coorespongding section are running.

- **Scene-Snapshot Cancel Key (SN-CLEAR)**

  * Press **SN-CLEAR**, cancel the output scene in activated section.

  * Keep **SN-CLEAR** pressed for 2 seconds, cancel the output scene in all sections.

  * When the indicator light of **SN-CLEAR** flashes, some scene are running.

- **Function Switch Key**

  * Press **LATCH** (the indicator light is on), the activated section is in SWOP mode.

  * Press **LATCH** again (the indicator light is off), the activated section is in FLASH mode.

  NOTE: In SWOP mode, up to 25 scene can be output in Section A & B, while only one scene can be output in Section C & D. (Users can set different mode for each section to achieve different operation.)

3.8 Function Control Key Area

Major function keys here are introduced respectively as follows:

BACK －Used for returning to the last layer menu.

F1 , **F2** , **F3** , **F4** － Soft Key (The controllable contents depend on the current menu page, different menu pages different function.)

PAGE －Key for Playback Page-turning, rapid playback page-turning can be realized through this key.

For example: If to turn to playback Page 38, directly input: **PAGE   38   ENTER.**

STEP －Key for step of program.

FL －To set full dimmer value .

THRU —Key for inputting consecutive numbers in command lines.
        For example, to input 1,2,3,4,5.
        Just Input: 1 **THRU** 5.

@   —Key for Assignment: used for assigning dimmer value to fixture in command lines.

+/−   —Plus/Minus key
        For example: To select Fixture 1, 6 and 8,
        Just input 1 + 6 + 8 **ENTER**.
        Minus key equals to removal.
        For example: To select Fixture 1~10,
        exclude fixture 4,
        Just input: 1 **THUR** 10 - 4 **ENTER**;

ENTER   —To confirm command, equal to Enter key.

←   — Used to delete the inputted command.

·   — Dot mark in command lines.

0 ~ **9**   — Used to input numbers in command lines.
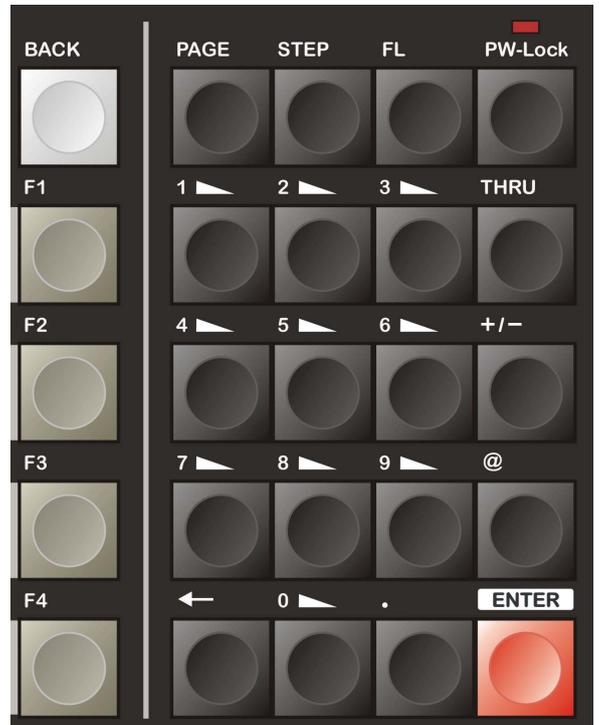
RECORD   — Used to record the commands such as Multi-Step-Program, snapshot and group etc.

COPY   — Used to copy program.

DELETE   — Used to delete program, group and snapshot etc.

CLEAR   — Used to clear the numerical value of manual-run.

PATCH   — Patch Command, used for dimmer patch.

CURSUR KEY — (shown as the right).

1. Left/Right key is used to select the items on the left or on the right of the menu.
2. Up/Down Key is used to modify the numerical values of the items on the current menu.
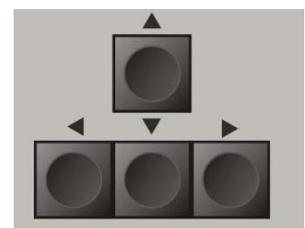
● **"MULTI-STEP-PROGRAM" CONTROL KEY**

CONNECT － Used to connect one Multi-Step-Program to the control area of
Multi-Step-Program.

Operation: Firstly press **CONNECT** key and hold it on, and then press the playback key
to be connected.

GO/STOP － To run or suspend the current
connected Multi-Step-Program.
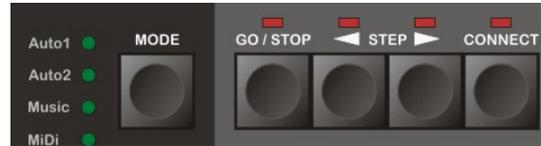
◄ SETP ► － To change the running direction of the current Multi-Step-Program, or
manual-run Multi-Step-Program forward or backward step by step.

MODE － Used to set synchronous trigger mode for the current Multi-Step-Program, in
total 4 modes are provided.

> ***Auto 1*** Auto Mode 1: the running speed of Multi-Step-Program is controlled by
> the speed of external auto1.

> ***Auto 2*** Auto Mode 2: the running speed of Multi-Step-Program is controlled by
> the internal speed set in each step.

> ***Music*** Music Mode: Multi-Step-Program is synchronously triggered
> with musical rhythm.

> ***MIDI*** MIDI Mode: Multi-Step-Program is synchronously triggered with the
> externally connected MIDI Signal.

● **Main Menu Key**

Controller has 3 main menu keys including **PROGRAM**, **SETUP** and **FILE**.

PROGRAM － Used to enter the edit menu and
edit the relevant parameters.

SETUP － Used to enter SETUP menu where
Fixrture, Library and MIDI may be set
and language may be chosen etc.

FILE － Used to enter File Management Menu to create or delete files as well as to
save or restore data.

PW-LOCK － Password Management key: through it, users can set power-on password
and protect data, which frees you from worrying about any modification to
the data in controller by others.
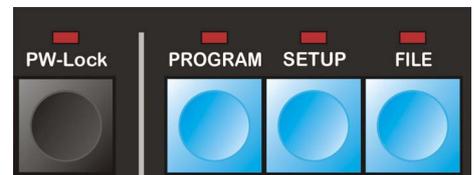
● **Shortcut Menu Key**

Two Shortcut Menu Keys are provided here including **ML- Menu** and **PB- Menu**.

ML-Menu － Used to enter ML-Menu where the operations to the current Manual-run such as "To Light", "Align" etc. can be done.

PB-Menu － Used to enter Program Menu where the external speed (Auto1), and mode of starting and ending of program can be set.
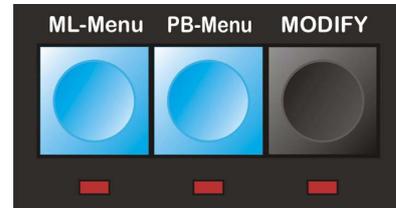
PRESET-L － Used to select preset focus. Press this key and hold it on (indicator light is on) after choosing fixture, meanwhile Select Fixture Key is used to select preset focus, and then press SELECT key, the preset focus is called immediately, releas this key to quit.

● **Command Line Keyword**

PLAYBACK －Used to enter command lines related to playback.

PRESET －Used to enter command lines related to preset focus.

GROUP －Used to enter command lines related to group.

CUE － Used to enter command lines related to CUE.

SNAPSHOT － Used to enter command lines related to snapshot.

DIM － Used to enter command lines related to dimmer channels.

● **Fixture Control Key**

MODIFY －Relative alteration of fixture's attribute.
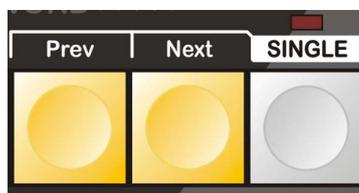
SINGLE －Press this key, the indicator light is on, entering the **Single-Fixture Control Mode**(control the selected fixtures one by one), press again to quit the **Single-Fixture Control Mode.**

Prev －To the previous fixture.

Next －To the next fixture.

● **Fixture Attribute Key**
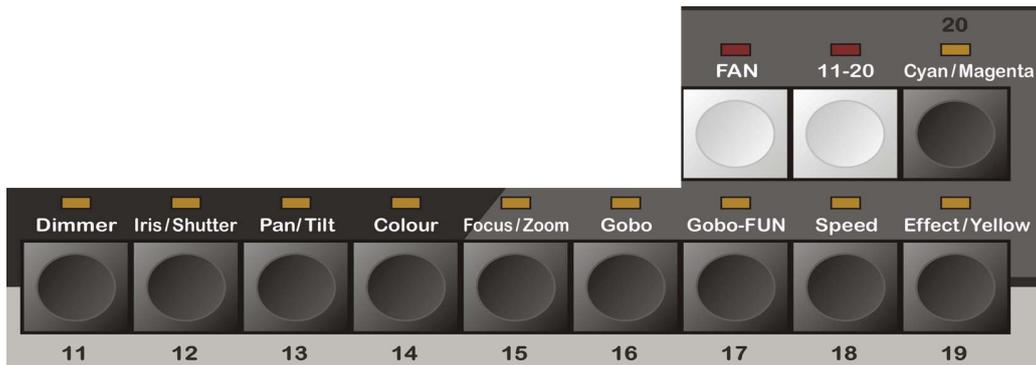
ATTRIBUTE contains 10 attribute keys, a FAN key and an "11-20" attribute switch key.

Channel attribute of intelligent fixture includes Dimmer, Color and GOBO etc. Users firstly selects the attribute to be modified through attribute key and then modify the corresponding attribute through A/B wheel.

10 attribute keys correspond to the attribute labeled above respectively. Pressing "11-20" Attribute Switch key (indicator light is on) means switched to 11-20 attribute key. One attribute key includes two attributes, which means a total of 40 attributes of intelligent fixture can be controlled through Attribute Switch key.

FAN — To spread the attribute value of the selected fixtures,attribute value of the first and the last fixture varies most while that of the middle one varies least so as to gain gradual change effect of attribute value among fixtures. Two attributes can be spreaded simultaneously in one time for an attribute key can hold two attributes. (See 5.7 for details)

● **LCD and Data Wheel**

Main LCD Screen: To display controller's information under each menu. 2 knobs are on the left side of screen, of which, CONTRAST knob adjusts contrast of display screen, and DIMMER knob adjusts dimmer of display screen.

Data Wheel: Controller totally has 3 wheels.

1）VALUE Wheel is used to set various parameter values in various menus (for telling conveniently, hereinafter shortened for V Wheel).

2）A/B Wheel is primarily used to set various attribute values of fixture.

4. Quick Start

4.1   Examples

In order to make users learn operation mode of the controller quickly, a simple example is listed below. By it, we hope users to get familiar with the operation fast. Now, we take creating wave with 10 Martin intelligent fixtures as example (Model: MT2000PR, intelligent fixtures are lined as shape "straight line".) Flow chart is as follows:

Load Library	⇒	Patch Fixture	⇒	Shape Setup	⇒	Program Editing	⇒	Program Playback

1) **Load Library:** Open the attached USB disk (with library file) through PC, then copy the **MT2000PR.R20** file under **Martin** directory to root directory of USB disk, and insert USB disk into the controller's port for USB disk, and then enter Library Setup menu. (Press:**SETUP**→**Library**) to access USB disk, select **MT2000PR** library file and confirm it, and then quit**.**

2) **Patch Fixture:** enter **Fix-Patch** menu (Press: **SETUP**→ **Fixture** → **FixPatch**).
   Press **Select Fixture Key 1** and hold it on and press **Select Fixture Key 10** so as to select Fixture 1~10, then set fixture model as **001-MT2000PR,** and finally press **SetAddr** soft key to automatically allocate DMX address for these 10 intelligent fixtures (users can set address for the intelligent fixture on lamp hanger according to the allocated DMX address).

3）**Shape Setup:** In SHAPE area, press **EDIT** key and then key 1 to set the parameters for Shape-Generator 1 as: type=wave, speed=20%, size=25%, spread=10%;

4）**Program Edit:** enter **Edit Step** menu (Press: **PROGRAM** → **Edit Step**)

   ● Press **PLAYBACK Key 1** (1st program in Page 1), select the current editing Program No.1.01.
   ● Select Fixture 1~10.
   ● Press **LOCATE** to light the selected fixtures.
   ● Press **Key 1** in SHAPE area to call the preset Shape-Generator before, Press **PROGRAM** key to quit, and controller will automatically save the program steps.

5）**Playback Program:** Push up the No.1 playback fader in the 1st playback page, the programs recorded in this playback-number is playbacked to live show immediately.

☆ The above is just a simple example, only for users' initial understanding to controller. For further understanding of its various functions, users are required to read the users manual carefully.

5. Setup Main Menu

Main Content:
- Menu Operation.
- Library Setup: Library Import, Create Library by Users.
- Fixture Setup: Patch of Dimmer and Intelligent Fixture.
- MIDI Setup: CUE Setup, Language Selection.
- Initialization.

5.1 Menu Operation

Controller adopts the operation mode of combining menu with soft key, simple and convenient for usage.

Controller provides four soft keys as **F1**, **F2**, **F3**, **F4**, corresponded to the four function menus on the bottom-right of major display screen one-to-one. Press the corresponding soft key to enter submenu, the current path will be shown on the above of major display screen (shown as the right). To return last layer of menu, press **BACK** key, to return Scene menu, press the current Main Menu Key once again till the flickering indicator light is off, which means returning to live show menu.
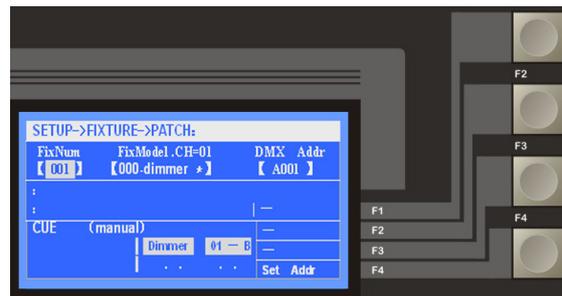
After entering one menu, users can select various setup items through Left/Right Cursor key, the selected setting item displays as grey background (shown as the **FixNum** on the right graph), and then modify the numerical value of the current item through Value Wheel or Up/Down Cursor key, after modification, controller will automatically record the modified data when quit the operational interface, simple and convenient for usage.

Controller has 3 Main Control Menus. Setup Menu Function is introduced in this section. Press **SETUP** key (indicator light flashes) to enter SETUP Menu. The following is Menu Tree for SETUP Menu.
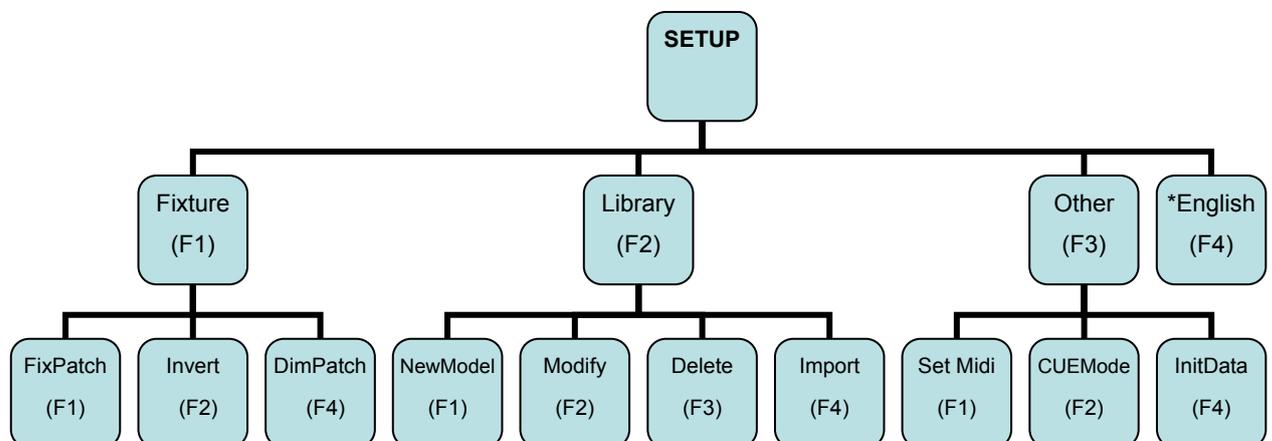
5.2 Setup of Library

Channel attribute of intelligent fixture varies from different models and different manufacturers. Therefore, it's necessary for us to introduce the concept of Library in order to enable controller to distinguish various attributes of intelligent fixtures.

Library: includes information of each channel attribute of various intelligent fixtures.

Only library file corresponding to fixture is provided, varieties of attributes of fixtures can be controlled through attribute key and A/B Wheel by users, unnecessary to be annoyed by remembering the attribute corresponds to a very channel. Controller can store a maximum of 150 types of library file (1 library file corresponds to 1 type of fixture).

System Library: 1 DVD disk is attached with each controller package. There are more than 3000 library files of major manufacturers (R20 format).
Library file can be used directly after imported from the USB disk and then saved to controller.
(Users may make your own Library in PC with NetDO Library Maker.)

Users Library: If fixture model needed is not in System Library, a Library model can be created by users (see below for detailed steps).

● Press **Library** soft key to enter Setup Menu. Setup Menu Tree is as follows:

```
                    library
                     (F2)
    ┌──────────┬──────────┬──────────┐
 NewModel    Modify     Delete     Import
  (F1)        (F2)       (F3)       (F4)
```
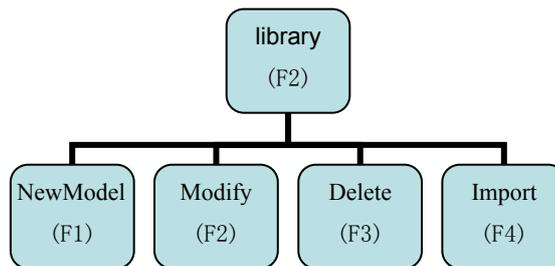
New Model: If fixture model needed is not in Library System, a new fixture model can be created by users. Under **Library** menu,

```
SETUP ->LIBRARY->NEW（USER          ）
Total-CH      CH   <———Attribute    (I/F)
   【 S 】      【02】   【 dimmer 】【••••】
```

Press **F1** soft-key, enter the **New Model** menu (shown as the graph), according to the channel information of intelligent fixture provided by manufacturer, firstly set channels of the new fixture model, and then the corresponding channel attributes. HTP and LTP channels can be set as Fadeable mode, LTP channels can be set as Instant mode.

1. **HTP Mode:** In HTP mode, the channels run as the HTP principle, that is Highest Takes Precedence. This function is adapted to the fixtures that with several dimmer channels or several channels affect its dimmer. When set as HTP, the channels will be proportionally controlled by Grand fader or Playback fader.

2. **LTP Fadeable:** Enabling LTP channel to execute fadeable effect as program playbacks. (including fade-in/fade-out effect of playback, mid-step of program and fadeble effect between steps etc.).

3. **LTP Instant**: Enabling LTP channel not to execute fadeable effect as program runs. (some

channels are fixedly set as gradient type, LTP (I/S) of which displays as "****").

TIPS: 1. If the fixture has no Dimmer channel, its channel with shading function (for example, Strobe or GOBO channel) must be set as **"Dimmer"** so that the light can be closed by playback fader.

       2. Please see 9.1 Section for detailed introduction to HTP/LTP channel type.

M

Modify: If contents of current fixture model need modification, enter **Modify** menu to modify various channels and attributes. After modification, press **BACK** key to quit, and controller will automatically save the modifications.

```
SETUP →LIBRARY：
     Fixture Model…………. MaxCH
   【001-MT250KR】          14
```
Model NO. **Model Name** **Max. Channel**

Delete: Used to delete current fixture model. Under **Library** menu, select the fixture model to be deleted, and then press **Delete** soft key, the current fixture model can be removed from controller.

Read USB disk: Library file can be imported through USB disk which contains more than 3000 library files. For to many files in library, controller can only read the files under root directory of USB disk. Therefore, users shall copy the library files to be used (suffixed as .R20) to root directory of USB disk through PC. For example, if to use Martin fixture, users shall copy the corresponding library files under **Martin** directory in to root directory of USB disk, and import them to controller through reading USB disk.

Specific steps are as follows:

1）Insert USB disk, press **Import** soft key, and then use **Value Wheel** to browse library files in USB disk until the necessary fixture model is found by.

```
SETUP->LIBRARY->IMPORT：
  USB-Disk    Library File List
    001    【 / MT250KR.R20 】
```
NUMBER   **Library File List**

2）Press **Select** soft key to import library files into controller. While patch fixture, the type of fixture model can be called.

5.3   Fixture Setup

In order to enable controller to control your fixtures, the fixture is required to patch, select the corresponding fixture model and allocate DMX address. One Preset Faders corresponds to one fixture number, and one fixture number can patch one intelligent fixture or one dimmer channels. Through **Set Addr** soft key, DMX address can be provided to users through automatic allocation or manually setup. SETUP Menu Tree of Fixture is as follows:

```
                              ┌─────────────┐
                              │   Fixture   │
                              │    (F1)     │
                              └──────┬──────┘
         ┌───────────────┬──────────┼──────────────┐
   ┌──────────┐   ┌──────────┐  ┌──────────┐  ┌──────────┐
   │ FixPatch │   │  Invert  │  │  ─────   │  │ Dim Patch│
   │   (F1)   │   │   (F2)   │  │          │  │   (F4)   │
   └────┬─────┘   └──────────┘  └──────────┘  └──────────┘
  ┌──────────┬──────────┐
┌──────────┐  ┌──────────┐
│ R-Preset │  │ Set Addr │
│   (F3)   │  │   (F4)   │
└──────────┘  └──────────┘
```
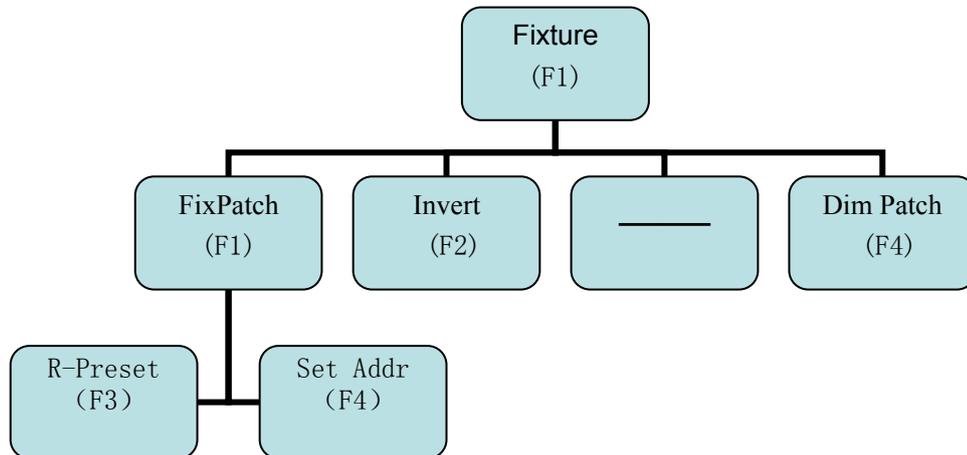
5.3.1 Patch of Dimmer and Intelligent Fixture

Enter fixture-patching menu (shown as graph), under **Fix Patch Menu**, dimmer and intelligent fixture can be patched to set fixture model and DMX address.

```
SETUP->FIXTURE->PATCH:
FixNum        FixModel.CH=01        DMX  Addr
【 001 】      【000-dimmer ✳】       【 A001 】
```
x
t
ure No.   Fixture   Model Channel   Address
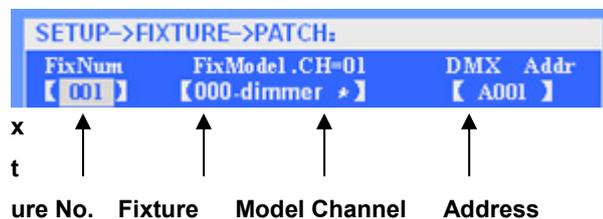
1）**Patch Dimmer**: Set fixture model corresponding to fixture number as " **000-dimmer✳** "

2）**Patch Fixture**: Set fixture model corresponding to fixture number as the very model of intelligent fixture.

3）**SET DMX Address**: DMX address items can be modified independently by users, and also automatically allocated through **Set Addr** soft key in one time after completing patch. By this, overlapping of DMX address can be avoided. (**NOTE:** "?" indicates overlapping of address). Users can enter DMX address directly instead of turning the black VALUE wheel, for example, set DMX address as A123, shift the cursor to DmxAddr, just press **1 2 3** then **ENTER**. Set to other ports, just enter a port code (0=A, 1=B, 2=C, 3=D) before entering the number, press **1 1 2 3** then **ENTER** to set the DMX address as B123.

TIPS

*1. When setting DMX address, you may need to distribute the select fixtures to the appointed address range. For example, distribute 1~10 fixture to after B1 address. Steps are as follows:

   (1) Select Fixture 1~10, at this time on the LCD will show "***".
   (2) Set "DMX address" as B1.

Then Fixture 1~10 will begin from B1 address, distribute addresses automatically as the order. If the fixtures are 16-channel, then the Fixture 1 address is B1, Fixture 2 is B17, Fixture 3 is B33, and so on.

*2. Multiple fixtures can be rapidly patched simultaneously, users just need to select many fixtures at the same time (when two Select Fixture Keys are pressed simultaneously, fixtures between the two keys are selected), meanwhile the item of Light No. is displayed as "***" on LCD, and then patch could be done.

*3. **Del Fix** --- Press this key to unpatch the selected fixtures and release the DMX channels they took up.

*4. **Set Addr** soft key--- automatically allocates DMX address for all fixtures.

*5. **R-Preset** soft key--- according to library, automatically reset **preset focus** data.

*6. The controller has 4 DMX output ports, which respectively corresponds to different DMX address: A Port: A1~A512, B Port: B1~B512, C Port: C1~C512, D Port: D1~D512.

*7. Under Patch Status, clear the selecting of fixtures. After that, if the indicator of fixture Select Key flashes slowly, it means that the DMX address of this fixture is not correct, may probably overlap with other fixtures'.

5.3.2 Invert Channel of Fixture

Enter **Invert** menu, Invert Dimmer, Pan, Tilt and Pan/Tilt swap etc can be realized. So controlling fixture is more convenient. After entering **Invert** menu, users just

need to select the fixture to be set and then set its corresponding item INV. Press **CLR All** to uninvert all the fixtures.

5.3.3 Check Patch

When controller is in fixture-patching state, VGA1 displays as below. Users can check patch of various fixtures. Upper screen displays patch contents of fixture while lower screen current fixture model and parameters information of various channels. Users can turn page up and down through VGA1 Control and rapidly view the patch of all fixtures so as to confirm the right patch.

*NOTE: Lower screen displays channel attributes of current fixture model, of which,（**I**）indicates the channel is LTP Instant channel,（**F**）LTP Fadeable channel, and（**H**）HTP channel.

5.3.4 Patch Dimmer Channel

Patch Dimmer Channel is to realize the patch between Fixture number and Dimmer Channel, through which, one Fixture number can be comprise of one or more DMX address.

1) **One Dimmer Channel Patch To One DMX Address**

Under **Fix Patch** menu, controller automatically allocates one DMX address for the current Fixture number after setting fixture model as "**000-dimmer＊**", which means **One Fixture Number --- One DMX Address** can be realized.

2) **One Dimmer Channel Patch To Multiple DMX Address**
   ● One Dimmer Channel comprise of multiple DMX addresses, when you change the level of a dimmer channel, dimmers of the DMX address controlled by the channel

will get the same dimmer value.

● Users can make dimmer channel patch through Patch command. (**NOTE:** Dimmer channel patch can only be made by users on vacant DMX address. So users are suggested to make multiple DMX address patch only after allocating DMX address for intelligent fixtures.)

DMX Patch Port :

Enter **Dim patch** menu, there are 4 keys to Port A, B, C and D, just press the key to enter corresponding port.

Through checking patch screen, usage of DMX address can be clearly seen, of which, the DMX address marked with "x" is used and multiple DMX address patch can't be made to.

DMX Address Patch Command:

For example: To make 1, 2, 512 DMX address patch at Port B to fixtunre number 501.

Enter the screen corresponding to Port B,

Input command: **1+ 2 + 512   PATCH   501   ENTER** ;

NOTE: Command is only effective to the current corresponding DMX port on VGA screen.

Clear Patch:

For example: To clear 1, 2, 512 multiple DMX addresses patch at Port B.

Enter the screen corresponding to Port B,

and then input command: **1 + 2 + 512   PATCH   CLEAR   ENTER**

5.4   Other Setup

5.4.1 CUE Setup

Under **OTHER** menu, press CUE SETUP soft key to enter **CUE SETUP** menu, users can set CUE Mode (see CUE chapter for details).

5.4.2 MIDI Setup

MIDI note signal can be used to trigger Multi-Step-Program to run. After entering MIDI Setup Menu, users can choose MIDI channel as trigger source according to needs.

```
SETUP ->MIDI:
   MiDi      Channel
              【08】
```

5.4.3 Data Initialization

Under **OTHER** menu, Press InitData soft key to enter Initialization Menu, users can initialize the data such as program, preset and snapshot etc., and even the whole controller. Before initialization, users had better backup the useful data.

5.5   Language Setup

Controller provides Chinese/English interface, under Setup Menu, users can switch language through soft key.

6. Manual-Run

Main Content
● Manual-run Fixture
● Introduction to Intelligent Fixture Menu
● Record, Call and Delete of Group
● FAN

After completing fixture patch, fixture can be manual-run. Under **PLAYBACK** menu, fixture's dimmer value, various attribute values, MASTER value and playback state etc. can be clearly displayed on VGA1 monitor (shown as below).

EXP8000 Intelligent Fixture Controller is displayed on VGA1 monitor and also on VGA2 monitor, through which, output value of channels of DMX singal from controller can be displayed. (Shown as graph)

6.1   Manual Branch Controller Light

Controller provides 30 Preset Faders which can independently control dimmer (to select fixture is unnecessary). Dimmer of the fixture patched to fader changes with fader pushed up or down. One Preset Faders corresponds to one fixture number. Overall dimmer of branch controller is controlled by Master Fader of **Fixture**.

Flash Operation: Press **SELECT** function key till indicator light is off, meanwhile Select Fixture Key is served as flash of branch controller dimmer. Maximum dimmer value of flash is controlled by Master Fader of **Flash.**

NOTE: 1) Before Preset Faders is used, to confirm that Master Fader of **Fixture** and **Grand** is pushed up respectively so as to avoid no dimmer output.
2) Dimmer according to the principle of "HIGHEST TAKES PRECEDENCE".

6.2   Manual-Run Fixture (Manual-run)

Users can modify attribute value (such as Dimmer, IRIS, Pan/Tilt, Color and GOBO etc.) of the selected fixtures through **Fixture Attribute Key** and **A/B Wheel**, this operation is usually called as **Manual-run (control fixtures manually).** Manual-run is available both in running and programming state.

NOTE: When some fixtures are selected or have numeral value the indicator light of **Data** flashes, when the attribute of a fixture is being modified the indicator light above it will flash slowly.

☆**Important TIPS:** Manual-run is an operation given highest priority to. The attribute value after manual modification will shield the running playback program value and outputs to live show in a most preferential mode. Till the Manual-run is cleared, output of program playback is restored.

Operation Steps of Manual-run:

1）Select Fixture

Through Select Fixture key, to select the fixture needed control, able to select a single fixture or multiple fixtures simultaneously (press two Select Fixture keys simultaneously to make the fixtures between be selected, fixture can also be selected rapidly through the mode of **GROUP** or **COMMAND LINE**).
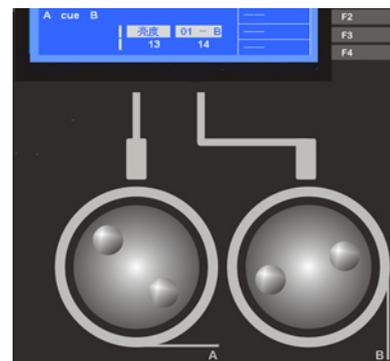
2）Modify Attribute

Use attribute key to modify the attributes of intelligent fixture such as Dimmer, Pan/Tilt, Color and Strobe etc. Controller has 20 attribute keys, one attribute key corresponds to 2 attributes. Users can modify the corresponding attribute value through A/B Wheel after Attribute key is pressed. (Continued next page)

Corresponding List of Channel Attribute & A/B Wheel of Intelligent Fixture

Attribute Key	A Wheel	B Wheel	Attribute Key	A Wheel	B Wheel
1	Dimmer	01-B	11	11-A	11-B
2	IRIS	Shutter	12	12-A	12-B
3	Pan	Tilt	13	13-A	13-B
4	Color A	Color B	14	14-A	14-B
5	Focus	Zoom	15	15-A	15-B
6	GOBO A	GOBO B	16	16-A	16-B
7	Rotation A	Rotation B	17	17-A	17-B
8	XY Speed	FX Speed	18	18-A	18-B
9	Effect	Yellow	19	19-A	19-B
10	Cyan	Magenta	20	20-A	20-B

Command Line Format

Users can directly input command lines through number keyboard to select fixture or assign dimmer value. Examples are as follows:

Command line: 1 + 5 + 102   **ENTER**   ----to select 1,5,102 fixtures

Command line: 1 + 5 + 102 @ 80 **ENTER**   ----to select 1,5,102 fixtures and assign them 80% dimmer value

3）Quick Adjustment to the Attribute of Selected Fixtures Linearlly

The controller has 5 shortcut fader of attribute (including dimmer, shutter, magenta, yellow and cyan), after selecting fixtures, just push up the faders to adjust the corresponding attribute.

Do as the following examples,

1. Light Fixture 001 ---- Select Fixture 1 on Page 0, then the brightness of Fixture 001 can be adjusted by the dimmer fader.

2. Mix color to LED fixtures ---- Select fixtures, then push up the corresponding faders to mix color quickly.

NOTE: The attribute of a fixture can only be adjusted by a shortcut attribute fader when the existing numeral value is exceeded. This can prevent instantaneous numeral value change by manual run when some playback or scene are running.

6.3 Clear Manual-Run

Date can be pressed to clear the selected fixture and values of Manual-run.
TIPS: Before Manual-run is used, users had better clear the numerical values of Manual-run
       first to avoid outputing the unnecessary numerical value.

Controller has a total of 2 clear keys (shown as the right):
- The **Date** key is used to cancel the selected fixtures and all manual-run values of Manual-run.
- The **Select** key is only used to cancel the selected fixtures while not to clear manual-run value of Manual-run (as data hold of Manual-run).

Clear key can only clear all values of Manual-run while unable to clear the designated value of Manual-run, when the designated fixture is to be cleared by users, the commands such as follows can be used:

Command Line Format
Command Line: CLEAR   ENTER ---To clear value of current selected fixture.
Command Line: 1+5+102   CLEAR   ENTER ---To clear Manual-run value of 1,5,102 fixtures.
Command Line: 1 THRU 10   CLEAR   ENTER ---To clear Manual-run value of 1~10 fixtures.

6.4 Find Function

Users can light fixtures by find function for quickly search and edition. (This function need support from related data in library file.)

Press **FIND** key to enter find state, its indicator light flashes, press **FIND** again to quit.
In find state, the selected fixtures will be located (without numeral value), the fixtures will be full light and won't be affected by master faders. When quit, only date by manual-run will be saved.

TIPS: When edit preset focus or record scene, to avoid saving the data like dimmer and location while fixtures must be found, this find function can be used.

6.5 Locate Function

Fixtures can be quickly located (with numeral value) with this function, just select the fixtures then press **LOCATE**. (This function need support from related data in library file.) Keep **LOCATE** pressed for 2 seconds to make the lamp on.
NOTE: This function will assign an initial value to all channels of selected fixtures.

6.6   Shortcut Menu of Intelligent Fixture

Shortcut Menu of Intelligent Fixture is specially used to control intelligent fixtures. Press **ML-Meru** key to enter FIXTURE MENU (shown as below).

Locate (soft key) The same as **LOCATE** key.

This function can realize quick positioning of intelligent fixture. Select the fixture to be light up and then press **Locate** soft key, Pan/Tilt of fixture can be placed in the middle and the selected fixture is light.

(Locate has an important function that various attributes of selected fixtures are assigned a value, which is of great significance for enforcement of the Rule of LTP (LATEST TAKES PRECEDENCE).

Align (soft key)
This function is to copy attribute of one fixture (reference fixture) to other multiple fixtures. Firstly define reference fixture, select the fixture required copying attribute through Fixture Select Key, press **Align** soft key, and then attribute is copied. This function is very useful, simply to operate.

Find (soft key) The same as **FIND key.**
Find function can find fixture fast. Press **Find** soft key, then select the fixture, they will move to center and the lights will be on. Dimmer keeps full and won't affectd by Master Faders. This operation won't affect the data of the Manual run .Quit Find state,and the data won't be kept.

TIPS: In Preset focus's editing, to avoid recording the dimmer and Location data, but need to show the fixture, use Find soft key to locate fixture is conveniet.

Refere (soft key)
Used to define reference fixture. Press **Refere** soft key and then select the fixture to be set as reference fixture (the corresponding indicator light will flicker rapidly).

6.7 Lamp On、Lamp Off、Reset

Lamp On:

This function is used to make lamp of fixture on.(**NOTE:** Some fixtures, in order to light up the internal lamp bulbs the corresponding attribute channel need to make some value.)

There are two ways to realize this:

1. Select fixture, enter "fixture menu", keep **Locate** soft key pressed for 2 second, then run the "Lamp On".

2. Keep **ML-Meru** key pressed for 2 seconds, enter **Fixture initiallize** menu, then press **Lamp on** soft key to run the "Lamp On".

Lamp Off:

Select fixture,enter **Fixture initialize** menu，press the **Lamp Off** soft key，then run the"Lamp off".

Reset:

Select fixture,enter **Fixture initialize** menu，press the **Reset** soft key，then run the"Reset"。

Tips: To use the function, Library need to include the MACRO message of lamp on, lamp off ,reset,etc. Users may make your own Library in PC by NetDO Library Maker.

6.8 Group

Group function is to organize some fixtures usually selected together as a group so as to rapidly select them and be free of the trouble of repeatedly selecting them. This series of controller can record 200 groups.

- **Record of Group:** Select fixtures → Press and hold RECORD → press **GROUP-L** → select a group number (fixture select key 1~30). (**NOTE:** This way can only be used to record Group 1~30.)

- **Call of Group:** Press **GROUP-L** key, the indicator light flashes, then select a group number (fixture select key 1~30), press **GROUP-L** again to quit. (**NOTE:** This way can only be used to call Group 1~30.)

- **Delete of Group:** Press and hold **Delete** key → press **GROUP-L** key → select a group number (fixture select key 1~30).

Command Line Format

- **Record of Group:** Firstly select the fixture to be grouped, and then input command: **GROUP xx RECORD ENTER** (xx is group number);

- **Assignment of Group:** To assign dimmer value for all fixtures in one group, Input:**GROUP xx @ yy ENTER** (xx is group number, yy is dimmer value%);

    For example: **GROUP 1 @ 50 ENTER**---assign 50% dimmer value for the fixtures n Group 1.

- **Call of Group:** Command for call of group: **GROUP xx ENTER**, then the fixtures in this group are selected simultaneously.

- **Delete of Group:** command for delete of group: GROUP xx DELETE ENTER .

6.9   Parity Selecting and Single Control of Fixtures

When multiple fixtures are selected, users can fast control the fixtures of odd number / even number or one by one.

- **SINGLE** key: Press it to enter single control mode (the indicator light flashes), press it again to quit.
- **Prev** key: Press it to the previous fixture.
- **Next** key: Press it to the next fixture.
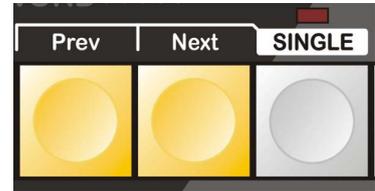
TIPS: Multiple fixtures can be controlled one by one after entering **SINGLE control mode**. This function is useful in programming Pan/Tilt location.

Select parity fixtures:
1）Select multiple fixtures;
2）Press ⏐ **Prev** ⏐ **Next** ⏐ together at the same time to switch to odd number fixtures.
3）Press the above two keys again to switch to even number fixtures.
4）Press **SINGLE** key to quit.

6.10   FAN

FAN is to spread attribute values of the selected fixtures. Of those spread fixtures, attribute value of the first and the last fixture varies most, with gradual decrease to middle, while that of the middle one varies least so as to achieve gradual change effect of attribute value. If FAN is used to spread Pan/Tilt attribute of fixture, beam will be displayed as "rays" shape.

FAN effect is usually used for Pan/Tilt attribute, but also for any other attributes such as dimmer etc.

Usage Steps of FAN
1）Select the fixtures to be spreaded.
2）Select the attribute.
3）Press **FAN** key (indicator light flashes, displayed as the right).
4）Turn **A/B Wheel** to set the spread value (spread scope: -127~ +127, spread effect is connected with current attribute).
5）Press **FAN** key (indicator light is off) to quit.

TIPS: To restore fixture (for example: Pan/Tilt) to the original position from the spread position, users just need to quit, select Pan/Tilt attribute, and then slightly turn A/B Wheel to modify value, and then the fixtures can restore to array in order.

6.11   Modify

MODIFY: Press this key to enter modify mode. In this mode, when users adjust the attribute values to the selected fixtures, the values will change on the basis of original values, won't be the same values.

---

7. Preset Focus

When programming, users may frequently use some colors or position values etc. Preset focus can record the specific attribute values which can be rapidly called when necessary (for example, rapid call of various color values as red, yellow or blue etc., so unnecessary to select through A/B Wheel). This function is of great significance for program editing and live performance. This controller can record a maximum of 210 **preset focus**.

7.1   Usage of Preset Focus

1~30 **preset focus** is automatically set by controller after loading library, which is just distributed to 30 Select Fixture keys. **Preset focus** after 30 is recorded by users.
1~ 30 preset focus is listed respectively as follows:
  1 ~ 10： Color Preset
  11~20： Gobo Preset.
  21~30： Positions Preset
NOTE: The above-defined preset focus requires support from library file with preset focus information, if the library file corresponding to fixture has no the information of preset focus, the above **preset focus** can't be called out while can be recorded by users themselves.

Call of Preset Focus
● **Direct Call of Preset Focus**
Select the fixture required calling preset focus. Press **PRESET-L** key (the indicator light is on), meanwhile 1~30 Select Fixture keys are used to directly select 1~30 preset focus. Press **PRESET-L** key again to quit (the indicator light is off).

NOTE: Since unaffected from fixture page as direct selection, the preset focus after 30 can only be called through command lines.

● **Call Preset Focus Through Command Line**
Firstly select the fixtures required calling preset focus, and then input command:
PRESET-L xx **ENTER** (xx is preset focus number).

7.2   Self-defined Preset Focus

Users can self-define preset focus for usage.
Steps of Preset Focus Recording:
NOTE: Before recording, press **Date** key to clear Manual-run area so as not to affect the following records.
1）Select the fixtures required setting preset focus and then modify attribute of the fixture so as to achieve the necessary effect.
(Preset focus only records the modified attribute of the current selected fixture)

2）**Shortcut:** Press and hold **RECORD** key → (select single or multiple attribute by pressing Attribute Key → select fixtures) → Press **PRESET-L** key → select Preset No. (1~30 Numeric Key) to finish;

*TIPS1: Steps in the brackets （） can be skipped. If skip, the console will record all modified attribute and fixtures.

*TIPS2: PRESET only records modified attribute of the current selected fixtures.

Or input command: **PRESET xx RECORD ENTER**

(xx is the number of preset focus)

Delete Preset Focus:

Preset focus not used any more can be deleted.

Shortcut: Press and hold **DELETE** key → Press **PRESET-L** Key → select Preset No. (1~30 Numeric Key); Finish.

Or input command: **PRESET xx DELETE ENTER**

(xx is number of preset focus).

8 .SHAPE

Main Content
- Edit of SHAPE
- Call of SHAPE
- View of SHAPE
- Usage Skills of SHAPE

Shape-Generator (SHAPE) can bring great convenience for users to control track and effect of intelligent fixture, such as Circle, Rainbow and Wave etc. Moreover, SHAPE enables many intelligent fixtures to produce various dynamic effects which are composed of different shapes. The above can hardly be achieved through general Multi-Step-Program (Multi-Step-Program). Take making a round for example, if Multi-Step-Program program is used for making a round, each point of the round needs an individual step, and the resolution is limited. Besides, the size of the round could not be changed any time. But with SHAPE, controller can run the operation automatically. Just with parameters such as speed, size and direction etc., it will have the effect, free of many fussy editing.

There are many Shape-Generators on controller (EXP8000 has 225 Generators, in 25 Pages, 9 Generators each page). Each Shape-Generator can be set the different effects such as Circle, Rainbow or Wave etc., and individually set the parameters such as size, speed, direction and spread value etc. Effect-Generator can be run simultaneously and 4 shapes can be superposed to each fixture simultaneously.

Important TIPS: Editing a Shape (such as adjusting the parameters of speed and size etc.) will affect all programs that have called this shape.

8.1   Edit of SHAPE

The corresponding shape, type of which is set firstly by users, can be called normally.
Basic Effect Types:
Swing-line, Swing-fade, Swing-sine ,Circle, Ciecle-fade, Rainbow, Like 8, X-line shape, Y-line , Relay-flash, Relay-skip, Wave, Wave fade and Wave color etc.

TIPS: For the above three Swing types, amplitude modulation can be adjusted according to different attribute channels of fixture. With multiple fixtures and adding effect spread control, many types of effect such as dimmer wave modification and twinkling light ring etc. can be produced.

Steps of Edit are as follows:

1） Press **EDIT** key to enter edit state of shape, main display screen displays as right.

2） Use 1~9 keys to select the shapes required edit.

3） **Type**: Users can select the type for current shape according to their own need, different effects can be produced by selecting different types.

4） **Speed/Direction**：

Press **Speed** soft key to switch to Speed menu, according to need, to set Speed and Direction for effect (the greater the value is, the faster the speed is, conversely the slower.)

5） **Size/Distortion**：

Press **Size** soft key to switch to Size menu. Set size of effect according to need (such as how big a circle can be made), also set transformation of effect (such as round effect, light's motion track on ground tends to be an ellipse due to the angle of fixture, which can be revised through function of Transformation.)

6） **Spread**:

Press **Spread** soft key to switch to Spread menu. Spread function enables multiple fixtures to locate at different positions within a same shape (for example, enabling all fixtures that are making circles to locate at different positions of a circle and move one by one, the greater the spread value is, the greater the positional deviation is, conversely the smaller.)

8.2 Call of Shape

NOTE: Shape type must be set in advance, and the indicator light of **PLAY** key must be on, then, Shape can be normally called.

TIPS: Some shapes are to run based on the position of Pan/Tilt of current fixtures, for example, circle effect rounds with Pan/Tilt of current fixture as center, which means the whole shape also moves when value of Pan/Tilt is modified by users. Whereas, some graphs are only fitted for some intelligent fixtures with special function. For example, rainbow effect is only for the intelligent fixture with tricolor channel.

Call Steps of Shape

1） Select fixtures and light them with **Locate**, and then set original position for it (such as the centre of a circle).

2） Use 1~9 Select keys to select shape on current graphics page (the corresponding indicator light is on) and the shape effect is shown on live show immediately. Also, users can realize superposed operation through selecting multiple shapes simultaneously. (One fixture can be superposed a maximum of 4 shapes)

3）When necessary, press **EDIT** key to enter Edit menu where the parameters of the current shape of type, speed, size and spread can be modified.

8.3   Clear of Shape

To clear shape is so simple that users just need to press **S-CLEAR** key, then all called shape of current Manual-run can be cleared.

8.4   View of Shape

Through **VIEW** key, the current running shape can be viewed.

- When shape is run by Manual-run or playback, indicator light of **VIEW** key is on.

- When **VIEW** key is pressed, number of the shape being called is displayed on major screen of LCD.

For example: "**1.01   1. 05   2.08**" means the shape that No. 01 and 05 in Page 1 and No.08 in Page 2 are being called.

8.5   Usage Skills of Shape

Example 1: Make a circle with 4 intelligent fixtures

1）Select 4 intelligent fixtures and set their Pan/Tilt so as to make facula of various fixtures match together (position for centre of a circle)

2）Select shape 1.01 (No.01 shape in graphics page 1)

3）Press **EDIT** key to enter Edit menu to set parameters as type=circle, speed=40%, size=20%, spread value（offset）=25% for this graphics. To make a circle together with 4 intelligent fixtures can be displayed on live show.

4）Press **EDIT** key to quit.
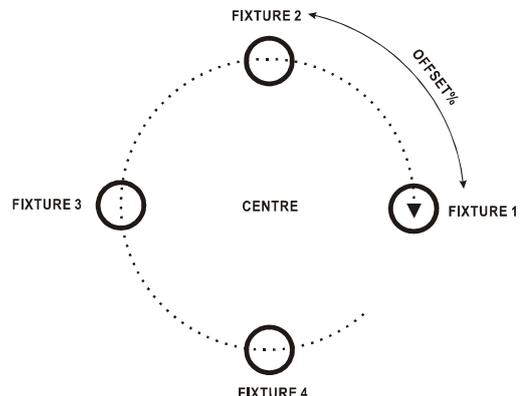
Example 2:   Superposition of Shape

A selected fixture can be superposed with 4 shapes simultaneously so as to achieve the graphics effect of multi-fold. Through superposition of shapes, users can create unexpected lighting effects with their creativity.

For example: 1）To simultaneously call Rainbow + circle shape enables light of fixture to show a circle track flashing like Rainbow.

2）To simultaneously call line + circle shape enables light of fixture to show a Circle moving along a line.

Example *3*： OFF Type Application of Shape

OFF may be used to mutually close shapes when programs playback each other, which can ensure 1 static scene is forcefully outputted when shape is running.

For example: A No.2 fixture in No.1.03 program uses a circle shape, while a No.2 fixture in No.1.04 program uses an OFF shape. Then, a circle running in No. 1.03 playback program will be forcefully stopped by No.1.04 program to be outputted afterwards.

Example 4: Using Fan in Shape

In order to realize more effects, FAN can be used in combination with shape by users. Use **FAN** key to spread attribute of fixture, and then run shape, you will find unexpected effects.

9. PROGRAM

Main Content
- Noun Analysis: HTP, LTP
- Record and Modify of Program
- Playback Program

Through the above introduction, users know how to use Manual-run and Shape. In this chapter, we will introduce various functions of Multi-Step-Program and guide users how to edit program and playback program. The controller can record 600 programs (including one-step-program and Multi-Step-Program) in 40 pages, 15 programs in each page, which are run by 15 faders. The EXP series is equipped with a backlight screen for playback list, with the playback title paper users can write the playback down and view them.

Program No. (**xx.xx**), decimal point before is page number while decimal point after is sequence number in page (corresponding to fader one-to-one).

Edit menu of Program is as follows:

```
                            ┌─────────┐
                            │ Program │
                            └────┬────┘
        ┌────────────────────────┼──────────────┬──────────────┐
   ┌─────────┐              ┌─────────┐    ┌─────────┐    ┌──────────┐
   │Eidt Step│              │HTP Time │    │LTP Time │    │FadeMode  │
   │ （F1）   │              │  (F2)   │    │  (F3)   │    │  (F4)    │
   └────┬────┘              └────┬────┘    └────┬────┘    └──────────┘
 ┌──────┬──────┬──────┐         │              │
┌────────┐┌────────┐┌────────┐┌────────┐   ┌──────┐      ┌──────┐
│Last Step││Last Step││Del Step││New Step│  │ CLR  │      │ CLR  │
│  (F1)  ││  (F2)  ││  (F3)  ││  (F4)  │   │（F4）│      │（F4）│
└────────┘└────────┘└────────┘└────────┘   └──────┘      └──────┘
```
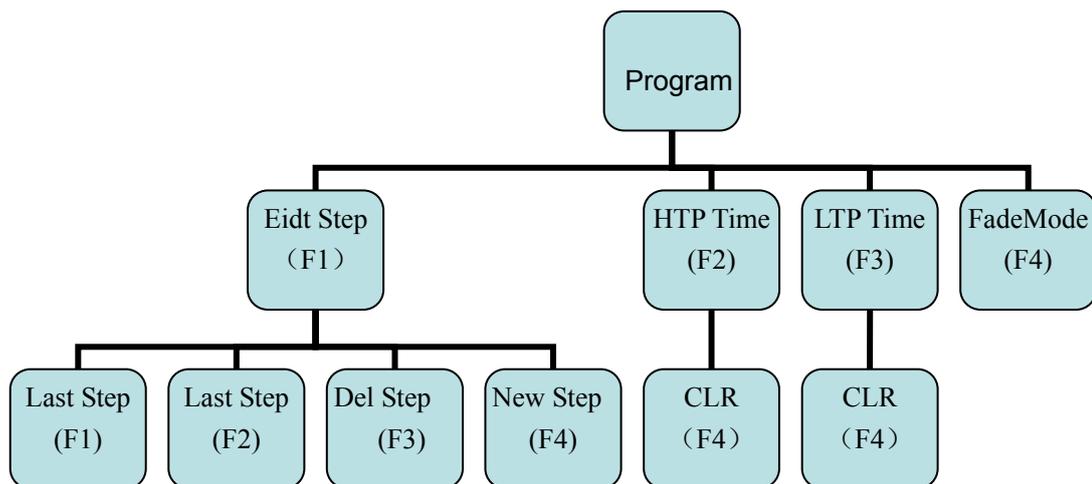
9.1 HTP Channel and LTP Channel

HTP Channel（HIGHEST TAKES PRECEDENCE）
Under HTP channel mode, the highest value takes precedence, which means that when multiple playbacks control HTP channel simultaneously, maximum level is output. DIMMER channel must be defined as HTP channel.

LTP Channel（LATEST TAKES PRECEDENCE）
Under LTP Channel mode，the latest value takes precedence, which means that when multiple playbacks control LTP channel simultaneously, only the playback last pushed up or actuated is outputt, and is retained till next playback command. Other attribute channels (such as PAN, TILT, GOBO, SHUTTER etc.) shall be defined as LTP channel.

9.2   Null Value of LTP Channel

When one LTP channel is of null value, control to this channel will be ignored while in playback.

For example: Program 1.01 only records Pan/Tilt attribute channel value of fixtures while other LTP channels are null, and program 1.02 only records color attribute channel value of fixtures while other LTP channels are null, when playback is running under the above situations, program 1.01 controls movement of fixtures while program 1.02 controls color of fixtures, unaffected from each other.

NOTE: When edit a program, value of the attribute that not be set through A/B Wheel is null, then "·" is displayed on LCD. Manual-run value can be cleared through **Date** key.

9.3   Record of Program

9.3.1 One-Step-Program and Multi-Step-Program
PROGRAM is classified as One-step-program (SCENE) and Multi-Step-Program (CHASE).
- The program that has only one step is called as one-step-program, which is used for scene.
- The program that has multiple steps is called as Multi-Step-Program, which is used for chase (number of program steps is unlimited, and is allocated according to the storage space in controller).

9.3.2 Create Program
In running, users can create programs quickly.
1) Edit the necessary light scene through Manual-Run.
2) Press and hold **RECORD** key → (select fixtures) → Press the **Playback Select Key**(1~15) to finish recording.
   *TIPS: Steps in the brackets （） can be skipped; If skip, the console will record all fixtures.

Users can also choose attribute to record:

   Press and hold **RECORD** Key → （select single or multiple attribute by Attribute Key）
      → Press **Playback Select Key** to finish.

   *TIPS: If attribute is selected, the console will only record manually modified data of the
           selected attribute, other attribute will be empty.
   SCENE can be created by this way and used for Program Superimposing.

Note1: Press a Playback Select Key, one program step will be added to the existing steps. (Usually used to record Multi-Step-Program)
Note2: Keep a **Playback Select Key** pressed for 2 seconds, the existing program steps will be deleted first and then one program step will be recorded to this playback. (Usually used to record One-Step-Program)
Note3: Users must release the Playback Select Key first and then the RECORD key.

3) Under general conditions for Manual-run, the **Locate** function is suggested to assign an initial value for all attributes of fixtures so as not to be a null value. Then, when in

playback, it will not be affected by other playbacks. (Unnecessary when an effect mixed by several playbacks is needed.)

9.4   Delete of Program

Keep **DELETE** key pressed → Press the **Playback Select Key**.

9.5   Copy of Program

Keep **COPY** key pressed → Press **Playback Select Key** (source) → Press **Playback Select Key** (destination).
Can copy between different playback-page.

9.6   Move of Program

Keep **MOVE** key pressed → Press **Playback Select Key** (source) → Press **Playback Select Key** (destination).
Can move between different playback-page.

9.7   Edit of Program

Under program edit state, user can modify and create programs, and set the speed of program-step.

1) Press **PROGRAM** key to enter the edit of program (shown as the graph), use **Playback Select Key** to select a program.
(The indicator light of the **Playback Select Key** will be on if the playback has steps.)
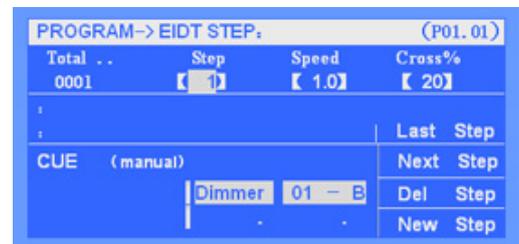
2) If the program is empty,   1 step will be added automatically.

3) Edit the necessary light effect through Manual-run.

4) Set speed and Cross% of current step (called in trigger mode of **Auto2** when in playback)
- **Speed:** Define the time from current program step to next program step (range: 0.1''~180''), the less time is set, the faster Multi-Step-Program program runs, conversely the slower.
- **Cross%:** Refine time speed rate of cross fadeble between program steps (range: 0~100%), 0% the slowest, 100% the fastest. For example: Cross=60% indicates 40% time is used for gradient from 1 step before to current step, and then 60% time for stay.

TIPS: 1. For one-step-program, quit after only one program step is edited. For multi-step-program, program step(s) can be added and then edited continuously as the above steps. When one program step is added, controller automatically copies contents in a step before to new program step so as to edit them to consecutive multi-step-program. Users can also use **Date** key to clear data of current program step.
    2. Through **Last Step** and **Next Step** soft key, contents of various program steps can

be viewed and modified, and the modified contents will be automatically saved by controller.

3. To insert one step after current step can be realized through pressing **New Step** soft key at current step.

4. To delete current step can be realized through **Del Step** soft key.

Relevant Command Line Format

1）Under Program Step menu, users can edit program through command line.

- Copy of Program—users can copy a program to after current program step.
  For example, copy the whole program 1.01 after step 3 of program 1.02,
  Enter the edit of step 3 of program 1.02,
  Input command: **PLAYBACK   1.01   COPY   ENTER**

- Copy of Program Step—users can copy a program step to current program step.
  For example, copy step 2 of program 1.01 after step 3 of program 1.02,
  Enter the edit of step 3 of program 1.02,
  Input command: **PLAYBACK   1.01   STEP   2   COPY   ENTER**

- Copy of Step within a Program—users can copy step(s) within a program.
  For example, in the edit of program 1.02, copy step 8 to step 10,
  Enter the edit of step 10 of program 1.02,
  Input command: **STEP   8   COPY   ENTER**

- Rapid Skip Step—when in program edit, to rapidly skip to one step can be realized through command line.
  For example, to skip to step 38 of current program,
  Input command: **STEP   38   ENTER**

- Delete Program Step
  For example, delete step 3 of program 1.08,
  Input command: **PLAYBACK   1.08   STEP   3   DELETE   ENTER**

- Delete Program
  For example, delete program 3.01,
  Input command: **PLAYBACK   3.01   DELETE   ENTER**

9.8   LIST OF PLAYBACK

When a playback is recorded, users can write its title on at the corresponding position of the playback title paper, this is very convenient to call a recorded playback.

The EXP series is equipped with a backlight screen for playback list, put the playback title paper (users can print their own) on the backlight screen with numbered alignment, fix it with the magnetic blocks, then users can write the playback down and view them. Turn to a page, the correspongding list backlight bar will light, push up
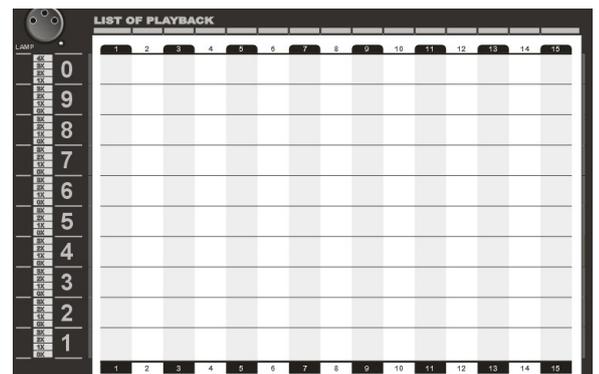
the playback fader to run the corresponding playback.

The brightness of the backlight screen can be adjusted with the LIST BAR BRIGHTNESS knob.

TIPS: For each show, users can record 150 (15*10) playback in one piece of playback title paper and backup the data with a USB disk, this is very convenient for each show.

9.9   Running PLAYBACK

Corresponding program can be playbacked through pushing up playback fader or flashing playback key.

NOTE: 1. Press Date key to ensure no data is in Manual-run area for anything in Manual-run area can affect normal run of playback.

2. Before playback, ensure that **Playback** Dimmer Master Fader and **Grand** Dimmer Master Fader are pushed up already so as to avoid no dimmer output when playback.

● Controller can playback 15 programs simultaneously.

● All HTP channels of program will be fade-in and fade-out with fader. When fader is pushed up from 0 LTP channel is actuated rapidly. Besides, LTP channel can also be set to synchronize with fader.

Total Steps   **Running State**

Program No.   **Fade-in/-out Progress Value**

9.9.1 Playback Page Turning

Page turning can be realized through Page Turning Key. Users can also realize this rapidly through inputting command.

For example: To turn to playback Page 30, directly input PAGE   30   ENTER**.**

NOTE: The pushed up playback fader can still remain the original output after page turning, while a new playback will be actuated till fader is pulled down to 0 and then pulled up.

9.9.2 Playback Flash

Before using this function, ensure that Flash Master Dimmer Fader is pushed up so as to avoid no dimmer output. Playback flash has two modes as follows:

1) **Swop** Mode: Press SWOP key (till indicator light is on), meanwhile press PLAYBACK Select Key to permit only one playback flash to output simultaneously.

2) **Flash** Mode: Press SWOP key (till indicator light is off), meanwhile press multiple PLAYBACK Select Keys to flash multiple playbacks simultaneously. Close automatically after releasing keys.

Important TIPS: Pre-run LTP channel can be realized through flash function. Push down Flash Dimmer Master Fader to flash playback, which enables LTP channel to reach preset position under no flash state. Then, push up playback fader to output dimmer.

9.9.3 CHASE Menu

CHASE menu is used to set playback parameters of Multi-Step-Program, where external speed (Auto 1), actuation mode and ending mode of program can be set.

Press **PB-Menu** key to enter Program menu to set parameters to currently connected programs. (shown as right)

- ● **EX Speed**

    (external speed of Multi-Step-Program)

    Multi-Step-Program includes external speed and cross% etc. This speed is used to trigger synchronization under Auto 1 mode (under Auto 1 mode, internal speed of the corresponding program step will be ignored, while external speed is used unanimously). According to need, users can set external speed of current Multi-Step-Program.

- ● **Sta-Mode**

    When Multi-Step-Program playbacks, there are two actuation modes.

    1）**Fader up**：

        When playback fader is pushed up from 0, Multi-Step-Program starts to run.

    2）**GO start**：

        Press down **GO/STOP** key to actuate the Multi-Step-Program connected at current control area, or press the corresponding Playback Select Key to actuate corresponding Multi-Step-Program. At this time, playback fader has no actuation function of Multi-Step-Program.

- ● **End-Mode**

    When Multi-Step-Program playbacks, there are two end modes.

    1）**LOOP**：

        To loop Multi-Step-Program when it runs to last step and then automatically returns to 1st step.

    2）**STOP**：

        When Multi-Step-Program runs to last step, it stops there. Till actuated, it restores to run.

9.9.4 Connect Multi-Step-Program

Multi-Step-Program control area is shown as right. Playback program connected to control area (number of this program will be displayed on LCD) can control the program through this control area.

Multi-Step-Program has two connecting methods as follows:

- **1ˢᵗ Method:** To connect corresponding playback program to control area through pushing playback fader or flash playback (indicator light corresponding to playback flashes rapidly).

- **2ⁿᵈ Method:** Keep CONNECT key pressed, and then press Playback Select Keys necessary to be connected so as to connect this playback program to control area. Through this method, influence to playback program when connected can be avoided.

9.9.5 Control Multi-Step-Program

- **Synchronous Trigger Mode:** When program is connected to control area, users can press MODE key to select **Synchronous Trigger Mode** of Multi-Step-Program. A total of 4 modes as follows can be chosen by users.

Auto1 Mode: Multiple-step-program is controlled by external speed (under this mode, internal speed of program step will be ignored, while external speed is used unanimously)

Auto2 Mode: Running speed of Multi-Step-Program is controlled by internal speed of program step.

Music *Mode*:   Multi-Step-Program uses musical rhythm to trigger synchronously.

MiDi *Mode*:   Multi-Step-Program uses MIDI signal externally connected to trigger synchronously.

TIPS: Internal speed and external speed of Multi-Step-Program differs:

   ---Each Multi-Step-Program has its own external speed value (set under **PB-Menu**). When Multi-Step-Program is set as *Auto 1 Mode*, system will use this external speed to trigger program to run at unanimous speed in each step.

   ---Each program step of Multi-Step-Program has its own speed (that is internal speed). Under step edit state, each step speed can be set independently. When Multi-Step-Program is set as *Auto 2 Mode*, system will use internal step speed to trigger program to run at varied step speed.

- **GO/STOP:** After program is connected to control area, GO/STOP key can be used to actuate or suspend this program.
- **◄ STEP►**：After program is connected to control area, ◄ STEP► key can be used to change running direction of program, and under suspension state to manual-run program step to run step by step.

9.10   Playback Time

Each Multi-Step-Program program has its own playback time. Only with the knowledge of playback time can users well control a performance. The following is an introduction of the relevant time of HTP channel and LTP channel respectively.

9.10.1 HTP Time

- **HTP Fade-in Time:** After playback fader is pushed up, the necessary time that level value of HTP channel varies from 0 to 100%.
- **HTP Fade-out Time:** When playback fader is pushed down to 0, the necessary time that level value of HTP channel varies from 100% to 0.
- **HTP Wait-in Time:** Only used at automatic CUE.
- **HTP Wait-out Time:** Only used at automatic CUE.
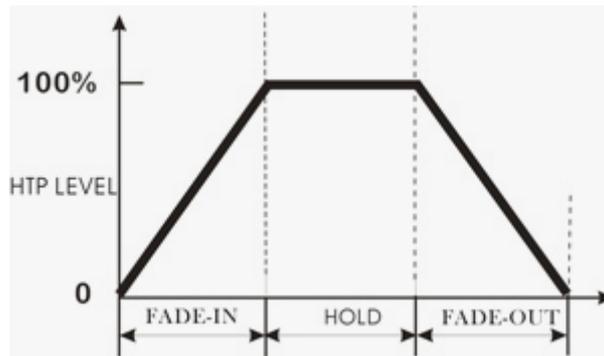
（**HTP Time Chart**）

Edit HTP Time

Under PROGRAM menu, enter HTP Time menu (shown as right).

1） Use PLAYBACK key to select program.

2） Users can set time through **CURSOR KEY** and **Value Wheel.** Time Range: 0.1'' ~ 59'59''

Current Program No.

Fade-in Time
Fade-out Time
Wait-in Time
Fade-out Time
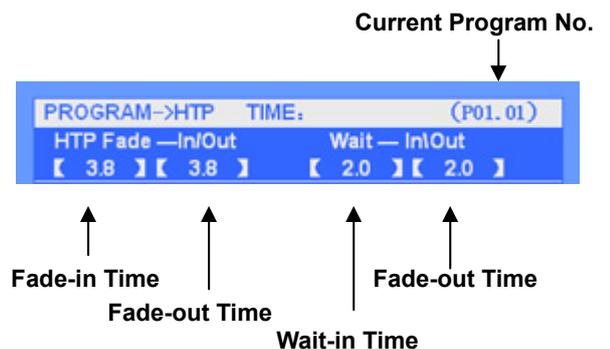
NOTE: Wait-in/Wait-out Time is only used at CUE Theatre Mode.

Users can also rapidly set various time values through command line. Time input format is corresponding to the chart as follows:

Command Input Format	Corresponding Time
1	1''
1.8	1.8''
18	18''
18.8	18.8''
148	1'48''
148.3	1'48.3''
1438.3	14'38.3''
5959	59'59''

For example, users set time as 3.5'', input command: **Time** 3.5 **ENTER** ("**Time**" corresponding to **F1** soft key.)

When playback is running, users can also modify the time to push fader through directly inputting Time command. HTP time and LTP time can be modified simultaneously. This

function is very useful in rapidly modifying time.

Example: When program 1.01 playbacks, modify its fade-in/fade-out time of HTP and fade-in time of LTP as 6.8'' respectively.

1）To link playback of program 1.01.

2）Input command line: **Time 6.8 ENTER**,finished.

NOTE: After time is modified, the running playback will not be affected, a new time will be used after fader is pushed down 0 and then pushed up.

9.10.2 LTP Time

● **LTP Fade-in Time:** After fader is pushed up, the necessary time that LTP channel varies from original value to next value.

● **LTP Wait-in Time:** Only used at automatic CUE.
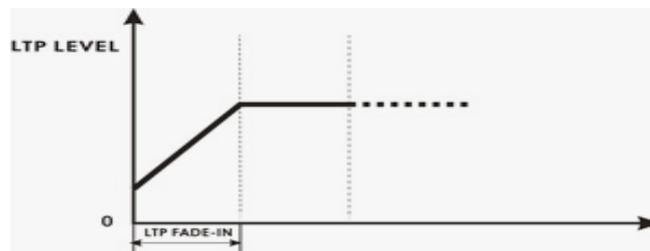
（**LTP Time Chart**）

Edit of LTP Time

Under PROGRAM menu, Enter LTP TIME menu.
(shown as right)

1）Use Playback Select Key to select program.

Fade-in Time

Wait-in Time

Current Program No.

2）Users can set time through **CURSOR KEY** and **Value Wheel.** Time Range: 0.1''~ 59'59''
Users can also rapidly set various time values through command line with similar methods of HTP.

NOTE: Wait-in Time is only used for CUE Theatre Mode.

9.11 Playback Fader Synchronization

Enter **FADER MODE** menu (shown as right), use Playback Select Key to select program, under this menu, users can set Speed/Size of SHAPE and LTP channel to synchronize with that of playback fader.

● **LTP Synchronization**

When synchronization is effective, LTP channel value of this program will change with playback fader from fade-out to fade-in.

● **Shape Speed-Synchronization**

When synchronization is effective, playback fader can control speed of shape

simultaneously so as to realize direct control to shape.

- **Shape Size-Synchronization**

  When synchronization is effective, playback fader can simultaneously control size of shape so as to realize fade-out/fade-out control to shape.

10. SCENE-SNAPSHOT

The EXP series can record up to 100 scene-snapshots. The scene-snapshot area contains 4 sections as A, B, C and D, each section can record 25 scene-snapshots. It is very convenient for users to make different effects with the conjunction of playbacks and scene-snapshots.

10.1 Edit Of Scene-Snapshot

- **Record Of Scene-Snapshot**

  1) Edit the scene effects by manual-run (can also just overlap the running scene or playback).

  2) Press and hold **RECORD** Key → (Select fixtures) → Press **Scene-Snapshot Key** (1~25) to finish recording.

  *TIPS: Steps in the brackets () can be skipped; if skip, all fixtures will be recorded.

  Users can also choose attribute to record:

  Press and hold **RECORD** Key → (Select single or multiple attribute by Attribute Key) → Press **Scene-Snapshot Key** to finish recording.

  *TIPS: If attribute is selected, the console will only record manually modified data of the selected attribute, other attribute will be empty.

  SCENE can be created by this way and used for Program Superimposing.

- **Delete Of Scene-Snapshot**

  Keep **DELETE** pressed and then press the scene-snapshot key to delete.

- **Copy Of Scene-Snapshot** (Can operate among different sections)

  Keep **COPY** pressed → Press the source scene-snapshot key → Press the destination scene-snapshot key.

- **Move Of Scene-Snapshot** (Can operate among different sections)

  Keep **MOVE** pressed → Press the source scene-snapshot key → Press the destination scene-snapshot key.

  NOTE: The copy and move of scene-snapshot can only be operated between scene-snapshots, can not from/to playbacks. To copy the effects of a playback to a scene-snapshot, just run the playback to copy only and then record as a scene-snapshot.

10.2   Run Of Scene-Snapshot

● **Scene-Snapshot Key (1~25)**

The controller has 4 scene-snapshot section (A, B, C and D), each contains 25

scene-snapshot   key, up to 100 scene-snapshots can be recorded and output.

● **Scene-Snapshot Section**

In total Section A, B, C and D, when the indicator light is on, the cooresponding section is

activate, when the indicator flashes, some scene in the cooorespongding section are running.

● **Scene-Snapshot Cancel Key (SN-CLEAR)**

* Press **SN-CLEAR**, cancel the output scene in activated section.

* Keep **SN-CLEAR** pressed for 2 seconds, cancel the output scene in all sections.

* When the indicator light of **SN-CLEAR** flashes, some scene are running.

● **Function Switch Key**

* Press **LATCH** (the indicator light is on), the activated section is in SWOP mode.

* Press **LATCH** again (the indicator light is off), the activated section is in FLASH mode.

NOTE: In SWOP mode, up to 25 scene can be output in Section A & B, while only one scene

can be output in Section C & D. (Users can set different mode for each section to achieve

different operation.)

11. THEATRE STACK

Main Content
- Time
- Load CUE
- Run CUE

Controller provides Theatre Stack mode. Users can use A/B Fader at CUE control area (manual-run/automation mode) to playback all programs in order or according to the set time (including one-step-program and Multi-Step-Program). Starting from the number of the loaded program, programs will playback in order, one by one. The program without content recorded will be ignored.

11.1 Time

After corresponding HTP/LTP time is set, program can be normally called by CUE.

HTP Time:
- **HTP Fade-in Time:**   After playback fader is pushed up, the necessary time that level value of HTP channel varies from 0 to 100%.

- **HTP Fade-out Time:** When playback fader is pushed down to 0, the necessary time that level value of HTP channel varies from 100% to 0.

- **HTP Wait-in Time:**   Time delay before fade-in (only used at automatic CUE).

- **HTP Wait-out Time:** Time delay before fade-out (only used at automatic CUE, when value is set as 0, fade-out is not allowed till ▶‖ key of CUE is pressed, and next scene is run).
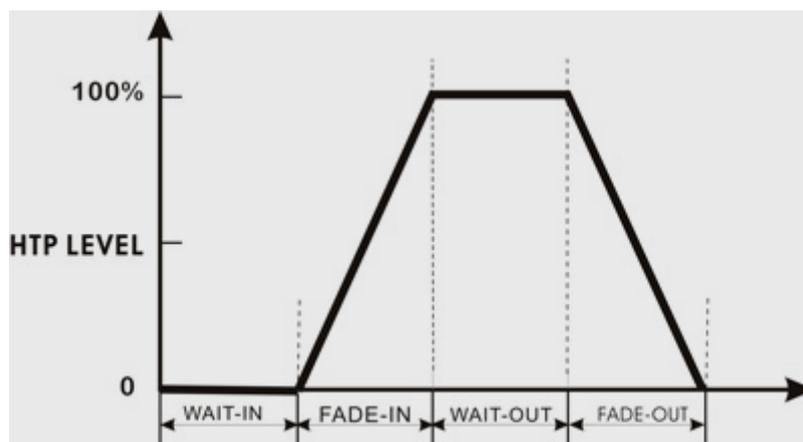
（**HTP Time Chart**）

LTP Time:

● **LTP Fade-in Time:** After playback fader is pushed up, the necessary time that LTP channel varies from original value to next value;

● **LTP Wait-in Time:** Time delay before fade-in (only used at automatic CUE).
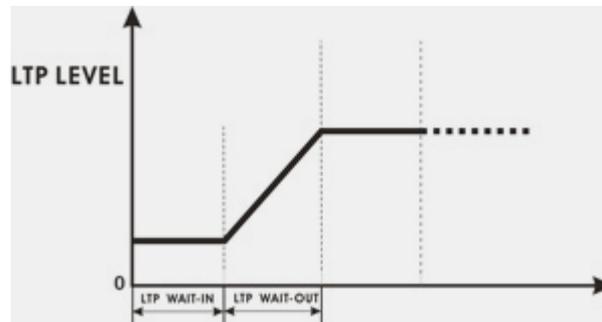
（**LTP Time Chart**）

Record of Time

Time used at CUE can be set in program edit menu. See section **"Playback Time"** for detailed steps.

11.2   Load CUE

To run program, CUE starts from the program set to run first (that is to load), and then runs programs in order, one by one (program without being recorded is skipped) till the completion of running all programs, and stops at last one (program 40.15).

Load Program to CUE: Directly input command **CUE   xx.xx   LOAD** (xx.xx is program number.)

TIPS: After completion of loading, when CUE-A fader is pushed up, **xx.xx** program can be run, while CUE-B fader is to run **xx.xx +1** program when CUE-B fader is pushed up

11.3   Run CUE

In **SETUP** menu, set CUE Mode as **on** (Path: **SETUP→CUE MODE**), meanwhile the 14 and 15 playback fader is as A/B fader of CUE, not used for playback any more (page turning keys are also unaffected).

CUE has the following two running modes: manual-run and automatic-run.

● **Manual-run**

When in manual-run mode, users can manual-run CUE through A/B fader.

A/B Fader: For A Fader, pushed to top is the maximum value while pushed to bottom is 0 value, contrary to B Fader, for B Fader, pushed to top is 0 value while pushed to bottom is the maximum value. Thus, push **A/B Fader** up and down simultaneously, programs can be playbacked one by one.
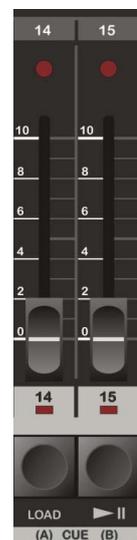
NOTE: When CUE is in manual-run, wait-in time and wait-out time etc. will be ignored while only **A/B Fader** can be pushed up and down to control scene.

● **Automatic-run**

Under automatic-run mode(Path: **SETUP→CUE MODE**), after program is loaded to CUE by users, users only need to press ▶‖ key, CUE can automatically run program according to the set time

TIPS: 1. When running to the program with fade-out time with 0, CUE suspends firstly (not for fade-out), till ▶‖ key is pressed by users, and then runs the next one.

2. When CUE is running, users can press ▶‖ key to skip current program at any time, and then CUE will directly run next one.

3. To suspend CUE only need to press **LOAD** key, and then press ▶‖ to restore run.

Wait Progress before HTP Fade-in/-out   **Wait Progress before LTP Fade-in**
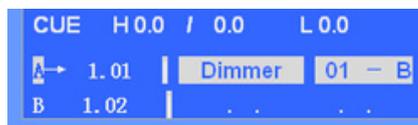
11.4   Load Blackout-scene

Controlle acquiesces Program 40.15 (the last program) as Blackout-scene. After controller is initialized, 40.15 program is as blackout-scene (users are suggested not to use this program to record any light effects). Users can also set fade-in time for 40.15 program so as to achieve the effect of fade-in blackout-scene.

Purpose of blackout-scene: When users want to quit light output of CUE, they can load blackout-scene and then run it.

Input command: **CUE   LOAD,**   to load blackout-scene (program 40.15), and then:
● When manual-run, push A/B Fader simultaneously, and then blackout-scene can be called out.
● When automatic-run, press ▶‖ key, then blackout-scene can be called out.

12. Priority Levels Of Different Operations

Priority levels of different operations are as follows:

Manual-run > **Scene-snapshot** > **Playback & CUE**   (> means have priority over.)

● **Between Playbacks**
Between playbacks, for HTP channels, highest takes precedence, for LTP channels，latest takes precedence.

● **Between Scene-snapshots**
Between scene-snapshots, all channels according to the principle of HTP, this makes the superposition of scenes very convenient.

● **Between Scene-snapshot and Playback**
Between scene-snapshot and playback, for HTP channels, highest takes precedence, for LTP channels, scene-snapshot takes precedence.

13. File Management

For different users, under different occasions, it is necessary to use different data. Meanwhile, in order to prevent the compiled data from modifying by others, backup data through USB disk is a best method. Through file management menu, you can easily manage the data in controller. Controller provides a USB disk interface to conveniently backup and call data for users. System supports the file formats: FAT16 and FAT32.

File Management Menu Tree is as follows

```
                        ┌──────────┐
                        │   FILE   │
                        └────┬─────┘
        ┌──────────┬─────────┼─────────┬──────────┐
   ┌────┴─────┐┌────┴─────┐┌────┴─────┐┌────┴─────┐
   │Save File ││Read File ││    -     ││ Del Data │
   │  (F1)    ││  (F2)    ││  (F3)    ││  (F4)    │
   └──────────┘└──────────┘└──────────┘└──────────┘
```
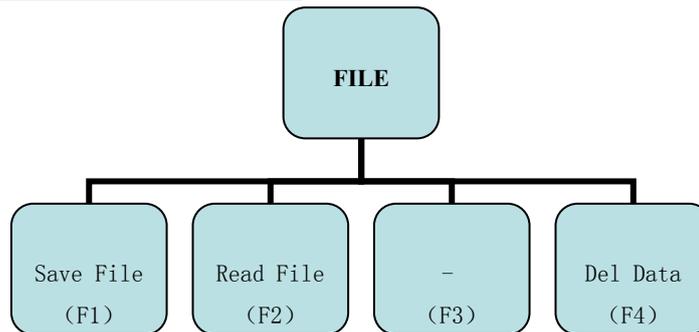
13.1   Save File

Users can save data in controller to the USB disk. Insert the USB disk, press **FILE** to enter File Management Menu, then press **Save File** soft key, the LCD will displays "Input file name", input a file name(no more than 8 letters) with the Select Fixture Key 1~26 (A~Z) or the number keys 0~9, press **ENTER** and the data will be saved.
NOTE: If you input a file name that already existing in the USB disk, the original data in the USB disk will be covered by the new data!

13.2   Read File

Users can import the data or files in USB disk to controller. Insert USB disk with data and files, enter File Management Menu, select the file to import through the Value Wheel, and then press **Read File** soft key, the file will be imported to the controller.

NOTE: Before data is imported, users should backup the data in controller to avoid being covered by the imported data.

13.3   Delete File

Users can delete data or files in a USB disk. In File Management Menu, select the file to delete through the Value Wheel, press **Del File** soft key, and then press **ENTER**, the file will be deleted.

14. Password Management

In order to conveniently manage data in controller, users can set data protection and power-on password.

● **Users Password:** To enter password management interface, users are required to input password. Original password of controller is "**88888888**". After entering password menu, password can be modified through **New PW** soft key.

Steps: press **New PW** (LCD displays *Enter New Password*). Enter new password and then press **ENTER** key (only number can be for password and also be as power-on password).

● **Date Protection:** Under starting-up state, if users don't want the data in their own controller to be modified by others, set **Save Data** as On. After that, various menus such as Program, Setup and File etc. are under protection and not to be accessed. To cancel data protection, enter Password menu, and then set **Data lock** Off.

● **Power-on password:** Power-on password can be set by users so that password is required inputting to enter controller when starting up each time. Set **Login Password** as On (**NOTE:** Power-on password is identifiable with user's password).

● **System Password:** If controller can't be accessed for users forgetting password, system still has a system password "**12369874**". When forgot, users can input the above password to enter Password Management to reset users' password.

15. Software Upgrade

Users can enter our website to download software upgrade files to upgrade your controller.
Steps for upgrade are as follows:

1) Copy upgrading files to the root directory of a USB disk.

2) Shut down power source of controller and insert the USB disk.

3) Hold down **SETUP** key, switch on power source of controller and then LCD will hint you to upgrade.

4) Press **ENTER** key and hold it on for two seconds, controller will be upgraded automatically.

NOTE: Please press **ENTER** key as soon as possible when LCD hints you to upgrade, otherwise, upgrade will not be run.

5) After upgrade finished, the controller will restarts automatically.

16. Appendix

SHORTCUT KEY LIST:

Preset Focus:	
RECORD key (hold down) → Press "**PRESET-L**" Key → Press 1~30 select Fixture key	Record preset focus.
DELETE key (hold down) → Press "**PRESET-L**" Key → Press 1~30 select Fixture key	Delete preset focus.
Program:	
RECORD key (hold down) → Press PLAYBACK key	Add one step to a program.
RECORD key (hold down) → Keep PLAYBACK key pressed for 2s	Delete the steps first and then record a step.
DELETR key (hold down) → Press PLAYBACK key → ENTER	Delete program.
COPY key (hold down) → Press PLAYBACK key (source) → Press PLAYBACK key (destination)	Copy program.
MOVE key (hold down) → Press PLAYBACK key (source) → Press PLAYBACK key (destination)	Move program.

COMMAND LINE LIST:

✧ Related matters of Manual-run ("N" below is fixture number)	
N + N + N +··· ENTER；	to choose multiple fixtures
N THRU N ENTER；	to choose consecutive fixtures from N to N
N + N + N +··· @ XX ENTER；	to choose multiple fixtures and assign them dimmer value
N + N + N CLEAR ENTER；	to clear Manual-run of fixture
CLEAR ENTER；	to clear current selected Manual-run
✧ **Related matters of DImmer Patch** ("N" below is fixture number, X is dimmer channel) **Ps:** command is effective on under the screen of patch.	
DIM @ Y ENTER ；	turn to the screen corresponding to DMX Port （@1 isA Port、@2 is B Port、 @3 is C Port、 @4 is D Port）
X + X + X PATCH N ENTER ；	To assign dimmer channel patch at current DMX Port to N fixture number
X+X+X PATCH CLEAR ENTER；	To clear dimmer patch at current DMX Port
✧ **Related matters of Group** ("xx" below is group number)	
GROUP xx ENTER；	to choose group
GROUP xx RECORD ENTER ；	to record group
GROUP xx DELETE ENTER；	to delete group
GROUP xx @ yy ENTER ；	assign y% dimmer value to xx group
✧ **Related matters of Preset focus** ("xx" below is the number for preset focus)	
PRESET xx RECORD ENTER ；	to record preset focus

PRESET xx ENTER；	to choose preset focus
PRESET xx DELETE；	to delete preset focus

◇ **Related matters of Snapshot** ("xx" below is Snapshot number)

SNAPSHOT xx ENTER ；	Snapshot playback (Ps: this command is effective under program step menu)
SNAPSHOT xx RECORD ENTER ；	to record snapshot
SNAPSHOT xx DELETE ENTER ；	to delete snapshot

◇ **Related matters of Program** ("xx" below is number)

PAGE xx ENTER；	to playback page turning rapidly, XX is number of playback page
PLAYBACK xx.xx RECORD ENTER；	to record effect on live show to xx.xx one-step-program
PLAYBACK xx.xx TIME yy RECORD ENTER；	to record effect on live show to one-step-program, and set fader time as yy.
PLAYBACK xx.xx STEP yy RECORD ENTER；	to record effect on live show to yy step of Multi-Step-Program
PLAYBACK xx.xx DELETE ENTER；	to delete xx.xx program
PLAYBAK xx.xx STEP yy DELETE ENTER；	to delete yy step of xx.xx program
PLAYBACK xx.xx @ yy.yy COPY ENTER；	Copy xx.xx program to yy.yy
PLAYBACK xx.xx @ yy.yy MOVE ENTER；	Move xx.xx program to yy.yy
PLAYBACK xx.xx COPY ENTER；	when in programedit, to copy xx.xx program to after current step
PLAYBACK xx.xx STEP yy COPY ENTER；	When in program edit, copy yy step of xx.xx program to after current step
STEP yy COPY ENTER ；	When in program edit, copy yy step of current program to after current step
STEP yy ENTER ；	When in program edit, to rapidly skip to yy step of program
Time YY ENTER ； （*Time Soft Key* **F1**）	1. Under playback screen, to rapidly modify time to push fader for current playback; 2. under HTP or LTP time menu, to set time of item;

◇ **Related matters of CUE** ("xx" below is playback number)

PROGRAM xx.xx LOAD ；	to load xx.xx program to CUE fader
PROGRAM LOAD ；	to load blackout-scene (that is to load 40.15program)