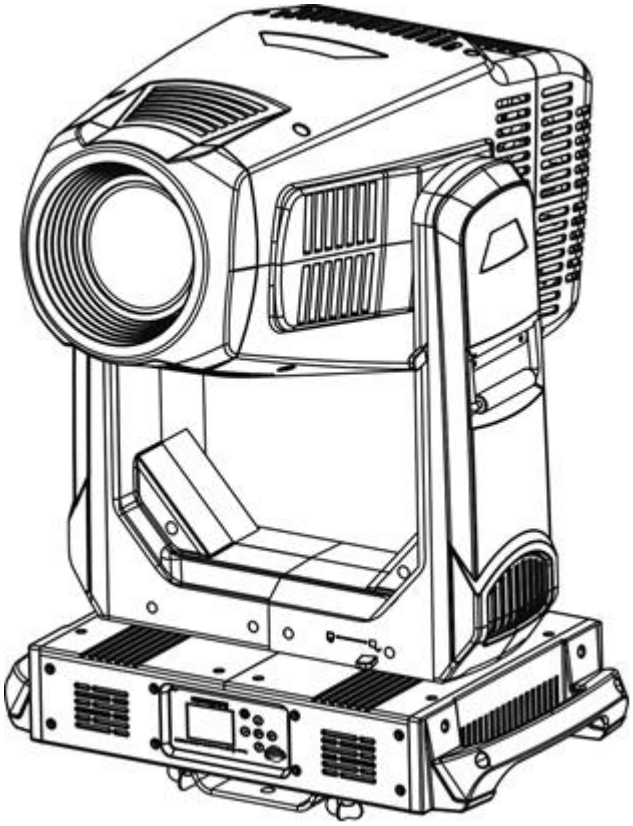
HIGH END SYSTEMS

an ETC Company



# SolaFrame Theatre

## Professional Moving Head User Manual

Version 1.2.3 --- Revision A

# Contents

# Welcome

## Notice



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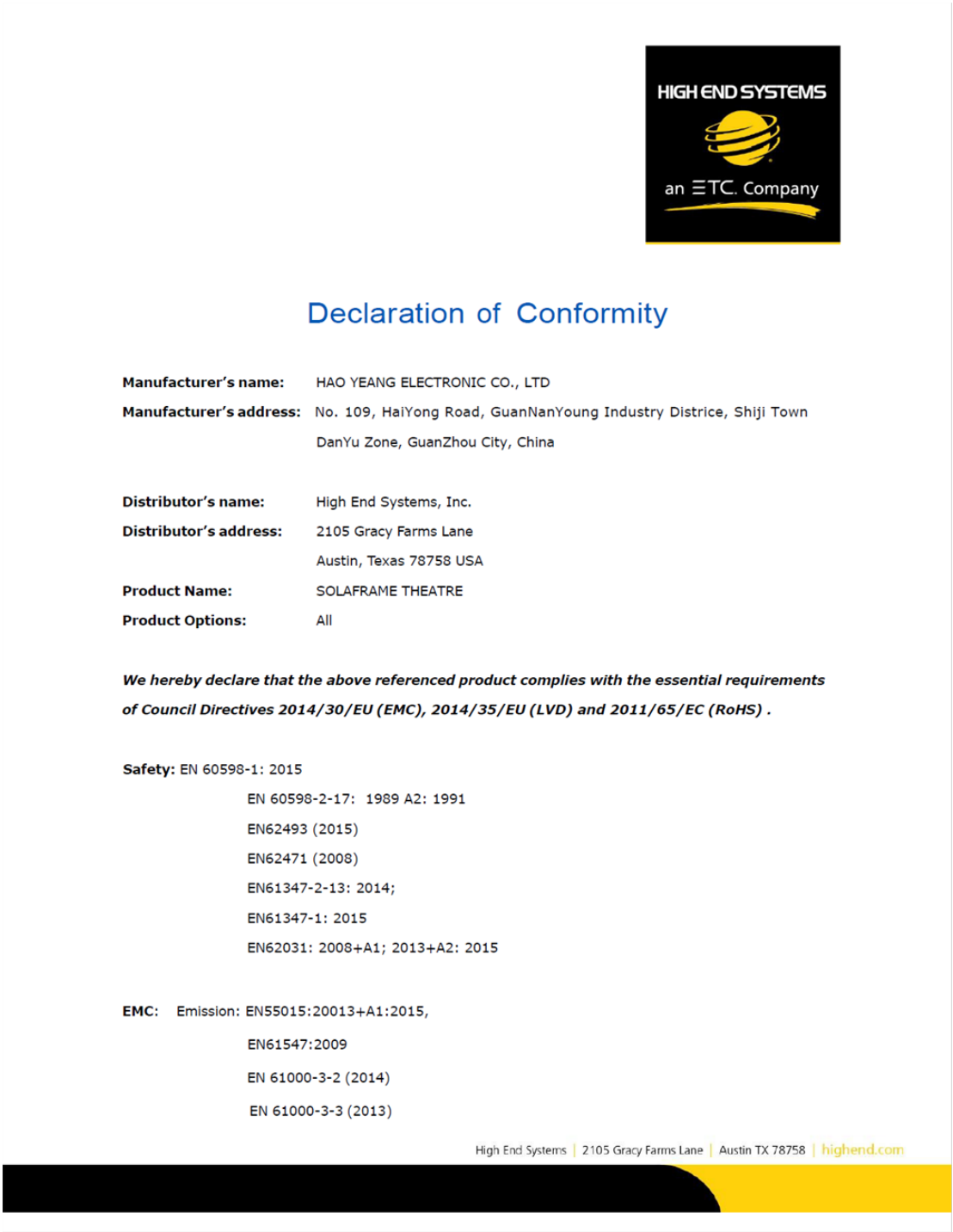
| **World Wide Web** | http://www.highend.com |

# Declaration of Conformity



HIGH END SYSTEMS

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## Declaration of Conformity

**Manufacturer's name:** HAO YEANG ELECTRONIC CO., LTD

**Manufacturer's address:** No. 109, HaiYong Road, GuanNanYoung Industry Districe, Shiji Town DanYu Zone, GuanZhou City, China

**Distributor's name:** High End Systems, Inc.

**Distributor's address:** 2105 Gracy Farms Lane
Austin, Texas 78758 USA

**Product Name:** SOLAFRAME THEATRE

**Product Options:** All

***We hereby declare that the above referenced product complies with the essential requirements of Council Directives 2014/30/EU (EMC), 2014/35/EU (LVD) and 2011/65/EC (RoHS) .***

**Safety:** EN 60598-1: 2015
EN 60598-2-17: 1989 A2: 1991
EN62493 (2015)
EN62471 (2008)
EN61347-2-13: 2014;
EN61347-1: 2015
EN62031: 2008+A1; 2013+A2: 2015

**EMC:** Emission: EN55015:20013+A1:2015,
EN61547:2009
EN 61000-3-2 (2014)
EN 61000-3-3 (2013)

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| ROHS: | Restricted Substances | Maximum Concentration Value (by weight in homogeneous material) |
|---|---|---|
| | Cadmium (Cd) | 0.01% |
| | Lead (PB) | 0.1% |
| | Mercury (Hg) | 0.1% |
| | Hexavalent Chromium (Cr VI) | 0.1% |
| | Polybrominated Biphenyl (PBB) | 0.1% |
| | Polybrominated Diphenyl Ethers (PBDE) | 0.1% |

Kenneth S. Hansen

Compliance Engineer

July 10 2017

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# Patent information

## Notice of intellectual property rights

For a listing of current patents go to the web address:

https://www.highend.com/patents

## FCC Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

## Terms and Conditions and Warranty Information

Complete Terms and Conditions and Warranty information can be found on the High End Systems, Inc. website https://www.highend.com/pub/products/HES-Warranty-Information.pdf.

# Production Modification Warning

## Product Modification Warning

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## Important Safety Information

Instructions pertaining to continued protection against fire, electric shock, and injury to persons are found throughout this manual. Please read all instructions prior to assembling, mounting, and operating this equipment.

The following international caution and warning symbols appear in margins throughout this manual to highlight messages.

**This symbol appears adjacent to Caution messages. Not heeding these messages could result in personal injury and/or damage to equipment.**

**This symbol appears adjacent to high voltage warning messages. Not heeding these messages could result in serious personal injury.**

**This symbol cautions against mounting the fixture on or near a flammable surface.**

**This symbol indicates that, while operating, equipment surfaces may reach very high temperatures. Allow the fixture to cool before handling.**

# Safety Considerations

**CAUTION: The information in this chapter is intended to assist qualified personnel *only*.**

**WARNING: Disconnect power before servicing. Replace fuses with the specified type and rating only.**

This device has left the factory in perfect condition. In order to maintain this condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.

***Important:***

***Damages caused by the disregard of this user manual are not subject to warranty. The dealer will not accept liability for any resulting defects or problems.***

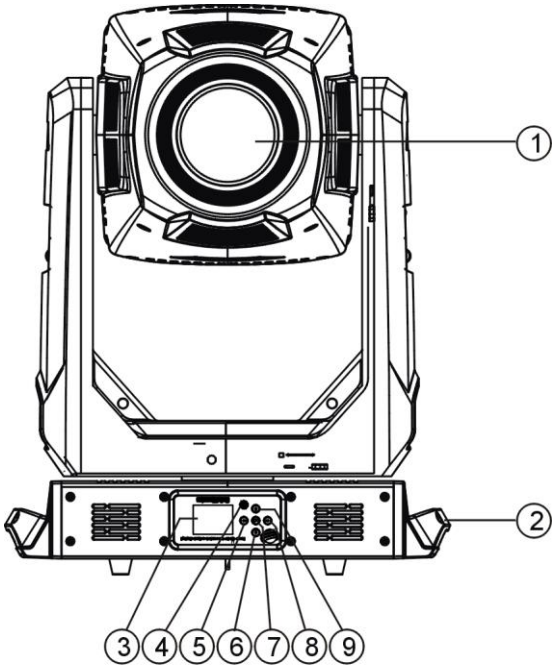
- If the device has been exposed to temperature changes due to environmental changes, do not switch it on immediately. The condensation could cause damage to the device. Leave the device switched off until it has reached room temperature.
- This device falls under protection-class I. Therefore it is essential that the device be earthed.
- If protection screen, lens or ultraviolet screen in the fixture is apparently damaged or is damaged to exceed their own effective degree, such as cracked and gashed, it must be replaced.
- The electrical connection must carry out by a qualified person.
- Make sure that the available voltage is within stated range.
- Make sure the power cord is never crimped or damaged by a sharp edge. Replace cable immediately if damaged, this work must be done by an authorized dealer.
- Always disconnect from power, when the device is not in use or before cleaning it. Only handle the power cord by the plug. Never pull out the plug by tugging the power cord.
- Don't project the beam onto combustible substances, as this causes a safety hazard.
- Please be aware that damages caused by manual modifications will void warranty.
- During initial start-up some smoke or smell may arise. This is a normal process and does not necessarily mean that the device is defective, it should decrease gradually
- If the external flexible cable or cord of this luminaire is damaged, it shall be exclusively replaced by the manufacturer or his service agent or a similar qualified person in order to avoid a hazard. All screws for installing the devices or parts of the device have to be tightly connected and must not be corroded.

- There must not be any deformations on the housing, color lenses, fixations and installation spots (ceiling, suspension, trussing).
- Mechanically moved parts must not show any traces of wearing and must not rotate with unbalances.
- The electric power supply cables must not show any damage, material fatigue or sediments.
- Further instructions depending on the installation spot and usage have to be administered by a skilled installer and any safety problems have to be removed.

## General Guidelines

- This device is a lighting effect for professional use on stages, theaters, or other professional installations, etc., the device was designed for indoor use only.
- This fixture is only allowed to be operated with the max alternating current which stated in the technical specifications printed on the fixture.
- Lighting effects are not designed for permanent operation. Consistent operation breaks may ensure that the device will serve you for a long time without defects.
- Do not shake the device .Avoid brute force when installing or operating the device.
- While choosing the installation-spot, please make sure that the device is not exposed to extreme heat, moisture or dust. Please don't project the beam onto combustible substances. The minimum distance between light-output from the projector and the illuminated surface must be more than 0.5 meter.
- If you use the quick lock cam in hanging up the fixture, please make sure the quick lock fasteners turned in the quick lock holes correctly.
- Operate the device only after having familiarized with its functions. Do not permit operation by persons not qualified for operating the device. Most damages are the result of unprofessional operation.
- Please use the original packaging if the device is to be transported.
- For safety reasons, please be aware that all modifications on the device are forbidden.
- If this device will be operated in any way different to the one described in this manual, the product may suffer damages and the guarantee becomes void. Furthermore, any other operation may lead to short-circuit, burns, electric shock, lamp explosion, crash, etc.
- In order to make the lights in good condition and extend the life time, we suggest a regular cleaning to the lights.

# Fixture Overview




1） Lens

2） Handle

3） Display

4） Mode/Esc-button

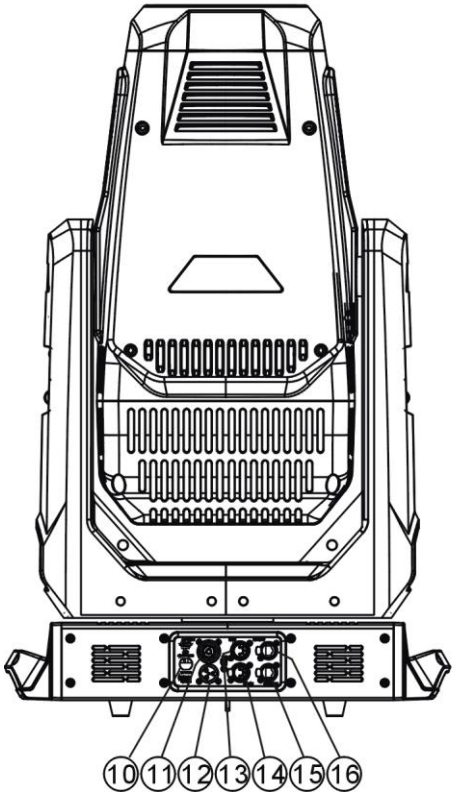
5） Left-button

6） Down-button

7） ENTER-button

8） Right-button

9） Up-button




10） Fuse

11） Power out

12） Power in

13） DMX in

14） DMX out

15） ART-NET out

16） ART-NET in

# Features

### POWER SUPPLY

- AC 100-240V~,  50/60Hz
- Power Consumption: 700W

### OPTICS

- LED: 440W LED
- Extremely long Life: >20,000H

### MOVEMENT

- Pan movement: 540° (16 bit)
- Tilt movement: 265°  (16 bit)
- Advanced moving system: fast, stable and quite,
- Position recover from minor impact

### COLORS

- CMY color mixing, uniform, linear.
- CTO color temperature, uniform, linear.
- 1 Color wheel: 7 dichroic filters + open, indexed, continuous rotation

### GOBOS

- 1 Rotation gobo wheel: 7 interchangeable, rotating, and indexed,  gobo + open
- “Slot in & out” gobo wheel system.
- Static gobo: 8 indexed static gobos + open. Variable speed gobo shake effect

### FEATURES

- Control channel modes: 47 channels
- 2 operations modes: DMX-512, Master / Slave
- Beam angle: zoom from 5.0°  -40.0°
- Strobe effect with 1-25 flashes per second and pulse effect
- Prism and rotating prism
- Motorized focus
- Dimmer: 0%~100% (full range dimming.)
- Step-less iris , 5%~100% (linear change iris, pulse iris effect)
- Step-less frost, 0%~100% (linear change frost)
- Animation wheel: “dynamic flame or shimmering water effect”
- PROFILE:4 system framing blades can be shifted and rotated to create cleverly intricate spot effect

## INTERACE

- Full color LCD touch screen
- Internal rechargeable battery for modifying settings without power
- Automatic locking to unintentional changes; Activates after 3 second press
- Intuitive fixture reset function: hold ⇦ and ⇨ button to activate pan/tilt reset, able to complete reset detection inside flight case

## SOFTWARE

- 7 pre-installed programs for selectable playback
- Upgradable: fast and convenient through DMX cable and Uploader (available separately)
- Reset DMX address, remote lamp switch, reset can all be done by the RDM controller
- Running time of fixture on display for reference

## OTHER SPEC

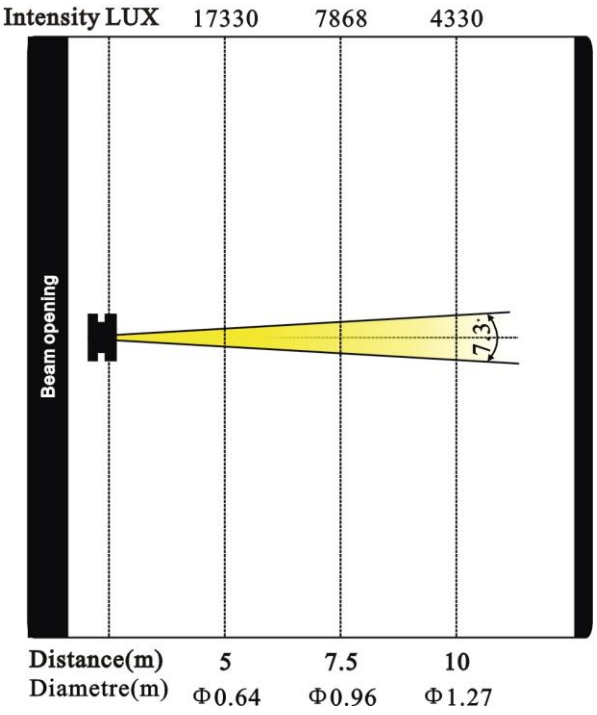
Input signal isolation: allows for stable signal transmission without additional interference
Advanced RDM functions

## WEIGHT

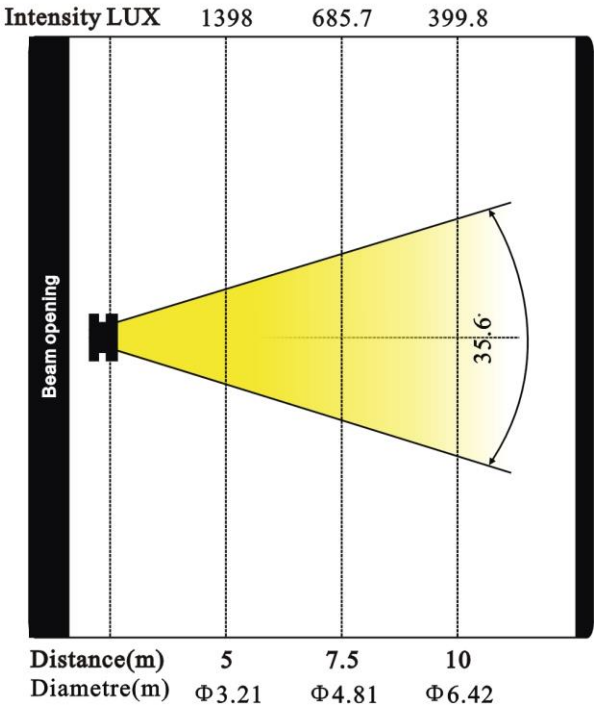
Net weight: 49.8 kg

## Photometric data image

Min. Beam angle




Max. Beam angle

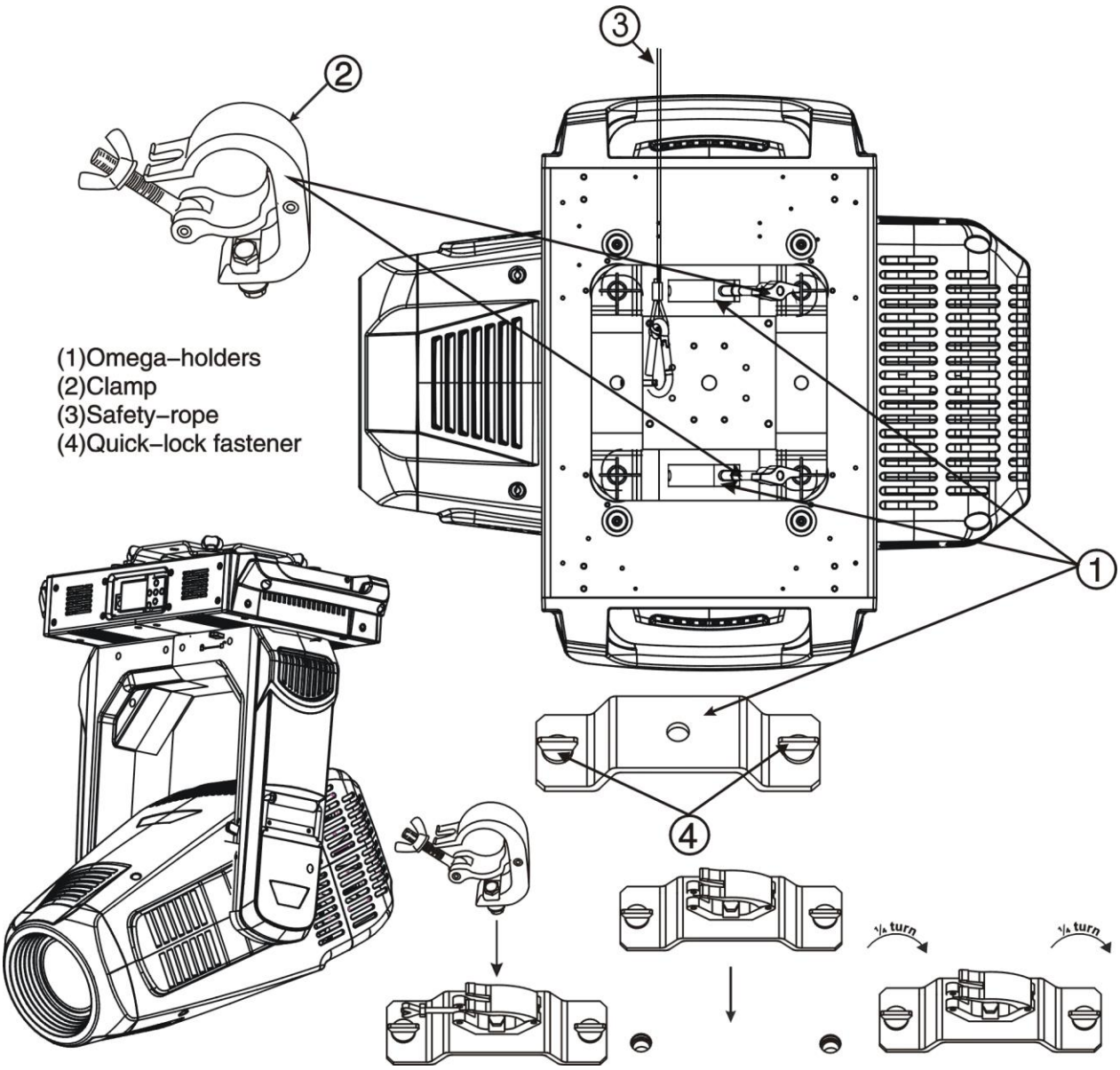


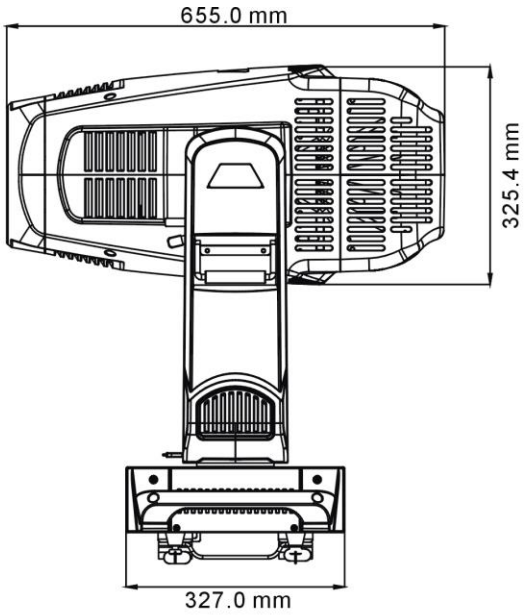
# Installation Instructions

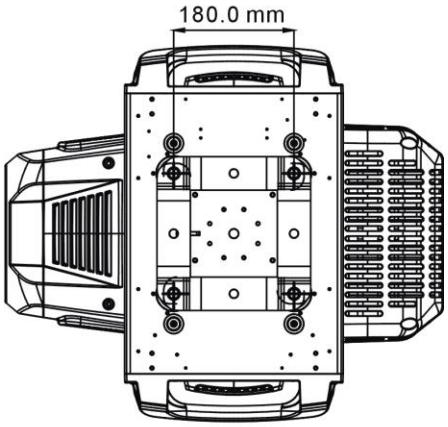
- The installation must always be secured with a secondary safety attachment, e.g. an appropriate safety cable.
- The installation of the fixture has to be built and constructed in a way that it can hold 10 times the weight for 1 hour without any harming deformation.
- The applicable temperature for the lighting is between -10°C to 45°C. Do not use the fixture under or above the temperature.
- Never stand directly below the device when mounting, removing or servicing the fixture.
- The operator has to make sure the safety and technical aspects are approved by an expert before using this fixture for the first time.
- These installations must be inspected by a skilled person at least once a year.
- Overhead mounting requires extensive experience, including amongst others calculating working load limits, installation material being used, and periodic safety inspection of all installation material and the device. If you lack these qualifications, do not attempt the installation yourself. Improper installation can result in serious bodily injury.

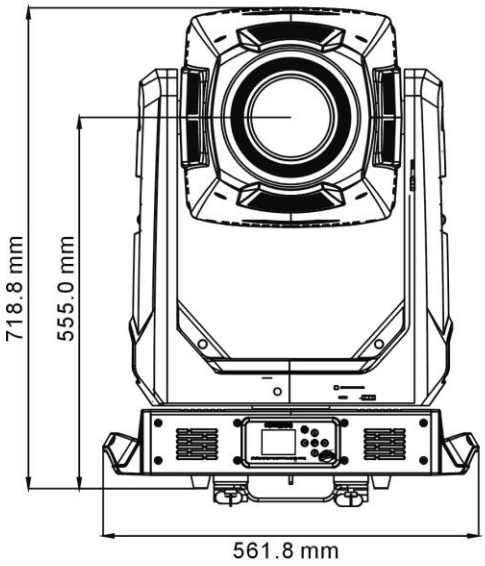
## Attachment Instructions

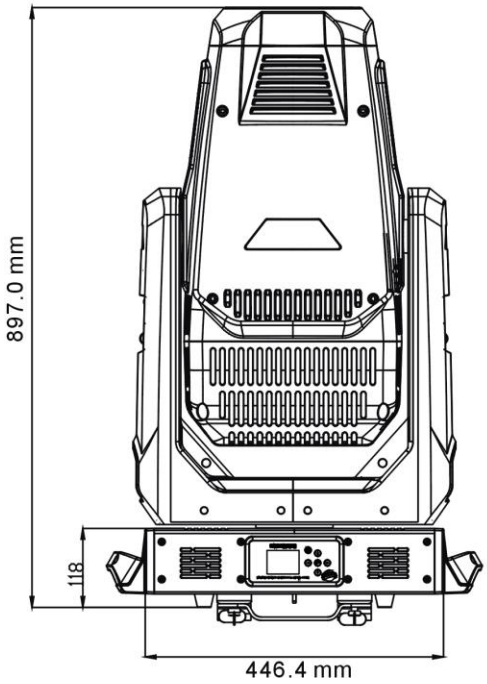
- Attach the Omega clamp on the bracket by tighten the M12 bolt on the bracket to the hole in the middle of the bracket.
- Insert the quick-lock fasteners of the bracket into the respective holes on the bottom of the fixture.
- Tighten the quick-lock fasteners fully clockwise.
- Install the second Omega clamp.
- Attach the safety-cable through the holes on the bottom of the base. Attach to the trussing system or other safe fixation point.
- Be sure the safety is fully looped, the quick-link is attached and fully tighten
- Inspect for complete attachment before lifting over-head




655.0 mm
325.4 mm
327.0 mm


180.0 mm

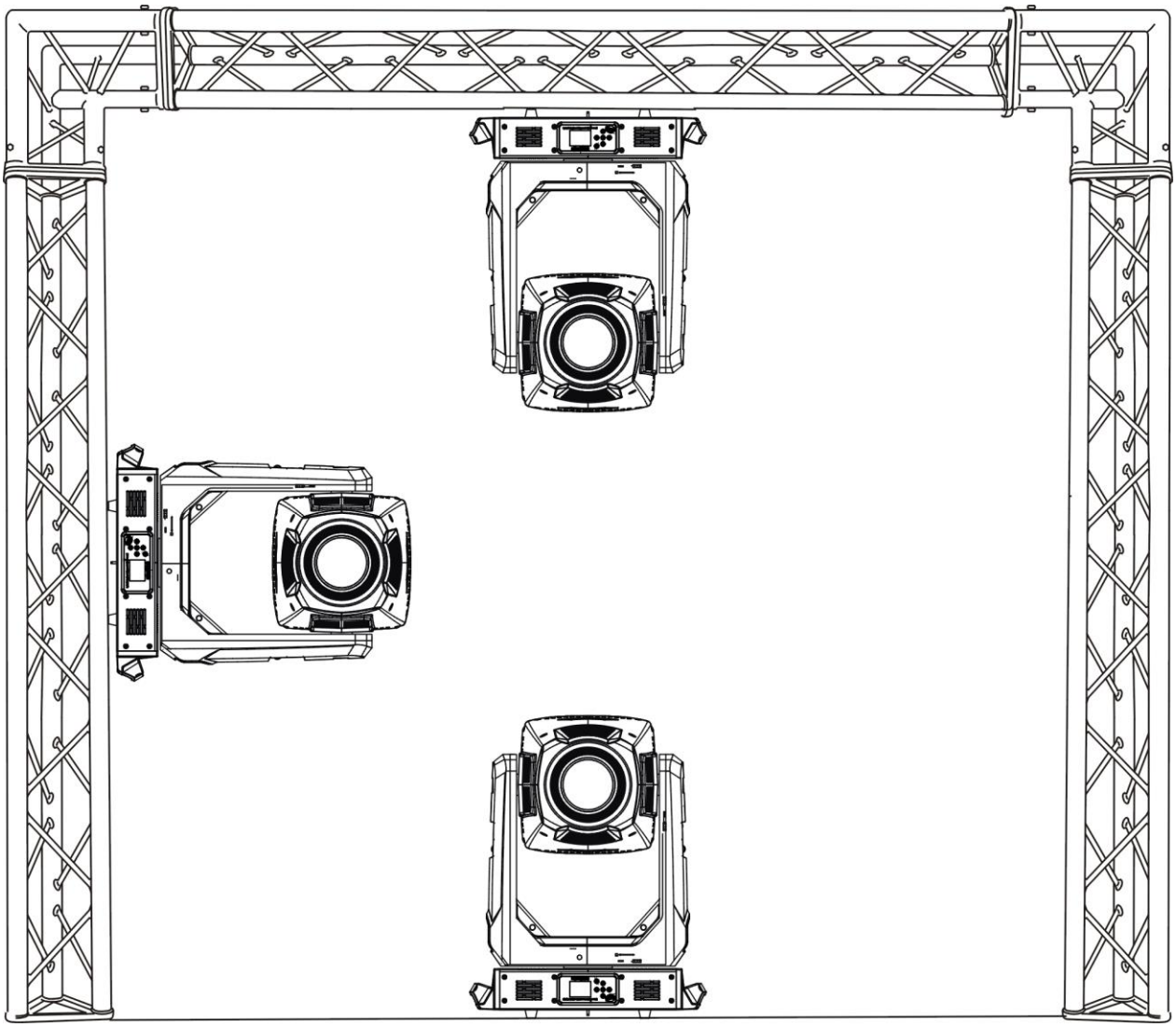

718.8 mm
555.0 mm
561.8 mm


897.0 mm
118
446.4 mm

## Mounting

Be sure this fixture is kept at least 0.5m away from any flammable materials (decoration etc.). Always use and install the supplied safety cable as a safety measure to prevent accidental damage and/or injury in the event the clamp fails.

Overhead mounting requires extensive experience, including amongst others calculating working load limits, a fine knowledge of the installation material being used, and periodic safety inspection of all installation material and the fixture. If you lack these qualifications, do not attempt the installation yourself. Improper installation can result in bodily injury.



## Technical Specifications

Power supply: AC 100-240V~, 50/60Hz

- Power consumption: 700W
- Flight case dimensions: TBC
- Net weight: 49.8 KGS / 109.7LBS
- Gross weight: TBC

## Power Specifications

***Note:*** To ensure maximum safety and stability,

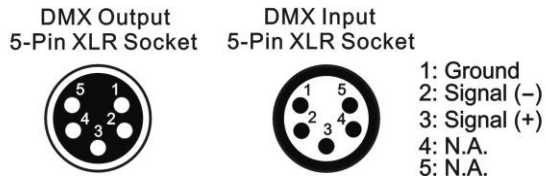
When operating on 100V~120V, a maximum of two devices may be linked together in order to not overload power connector specification. For more than 2 devices, the third device must be connected directly to mains power.

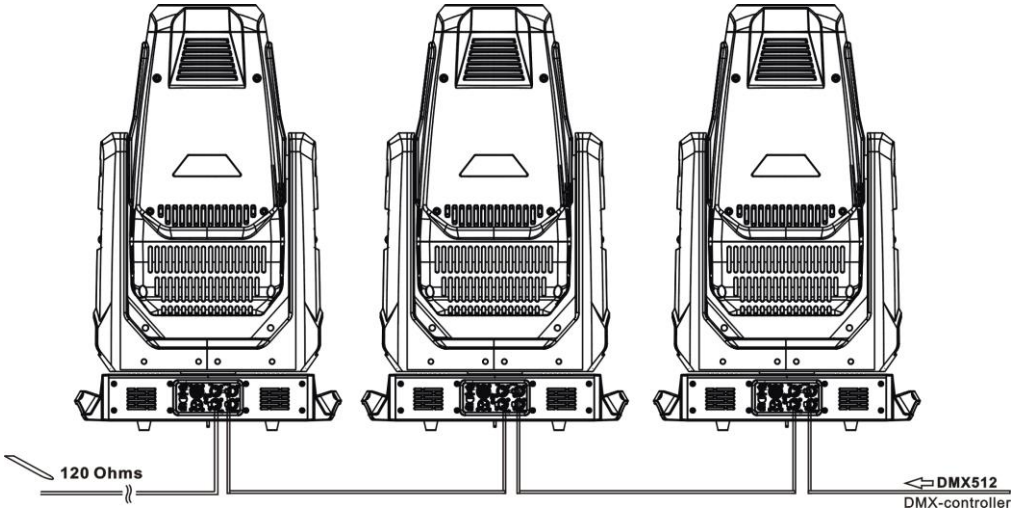
When the voltage is over 200V~240V, a maximum of three devices may be connected together in order to not overload power connector specification. For more than 3 devices, the forth device must be connected directly to mains power.

# DMX Control

## XLR - Connection

Connect the provided XLR cable to the female 5-pin XLR output of your controller and the other side to the male 5-pin XLR input of the moving head. You can chain multiple moving heads together through serial linking. The cable needed should be two core, screened cable with XLR input and output connectors. Please refer to the diagram below:



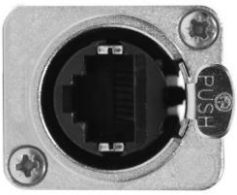
## Ethernet - Connection

Provided for Art-Net control is an Ethernet port, also provided is an Ethernet “out” port for daisy chaining fixtures.

**Note:** When power is applied to the fixture, the data traveling is actively regenerated in the fixture, so a fixture-to-fixture limit is set at 100m. When power is not applied, the data is not regenerated, thus cabling length can easily be over 100m leading to data loss at the end of the chain

**Note:** An exceedingly larger number of fixtures should not be daisy chained together, as this is scenario is untested and potential issues could arise from propagation delay of the Ethernet data traveling through the fixtures. Testing is commonly completed in groups of 20 fixtures, and no significant issues have been seen.

Ethernet Jack in XLR Style connector




## DMX Start Address

All fixtures should be given a DMX starting address when using a DMX signal, so that the correct fixture responds to the correct control signals. This digital starting address is the channel number from which the fixture starts to “listen” to the digital control information sent out from the DMX controller. The allocation of this starting address is achieved by setting the correct number on the display located on the base of the device.

You can set the same starting address for all fixtures or a group of fixtures, or make different address for each fixture individually.

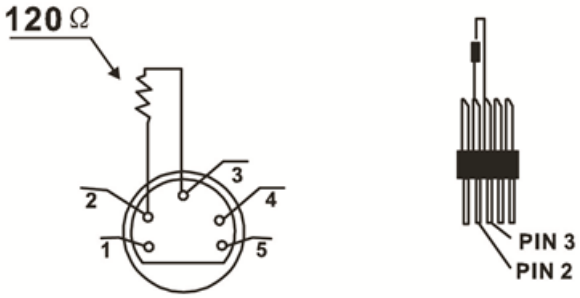
If you set the same address, all the units will start to “listen” to the same control signal from the same channel number. In other words, changing the settings of one channel will affect all the fixtures simultaneously.

If you set a different address, each unit will start to “listen” to the channel number you have set, based on the quantity of control channels of the unit. That means changing the settings of one channel will affect only the selected fixture.

In the case of this LED moving head, which is a 47 channel fixture, you should set the starting address of the first unit to 1, the second unit to 48(47 + 1), the third unit to 95 (48+47), and so on.

## DMX terminator

For installations where the DMX cable has to run a long distance or is in an electrically noisy environment, such as in a clubs, it is recommended to use a DMX terminator. This helps in preventing corruption of the digital control signal by electrical noise. The DMX terminator is simply an XLR plug with a 120 Ω resistor connected between pins 2 and 3,which is then plugged into the output XLR socket of the last fixture in the chain. Please see illustrations below:



# Internal Control Board

## Menu Layout

This chart displays the layout of the control menu structure. See following section for more information and navigation tips.

| | | | | |
|---|---|---|---|---|
| Address | A001~AXXX | | | DMX address setting |
| Info | Time Info. | Current Time | XXXX(Hours) | Power on running time |
| | | Ttl Life Hrs | XXXX(Hours) | Fixture running time |
| | | Last Run Hrs | XXXX(Hours) | Clear Fixture Last time |
| | | LED Hours | XXXX(Hours) | LED time |
| | | Timer PIN | Password=XXX | LED Password |
| | | Clr Last Run | ON/OFF | Clear lamp time |
| | | LED Time PIN | Password=XXX | LED Password |
| | | Clean LED Time | ON/OFF | Clear LED time |
| | Error Info | Pan Coarse<br>Tilt Coarse<br>…… | | Shows current error information |
| | Value Disp. | ALL,<br>Auto Program,<br>PAN…… | | DMX Control<br>DMX value display |
| | Head Temp. | XXX℃/℉ | | Temperature in the head |
| | Ethernet IP | Ethernet IP<br>XXX. XXX. XXX. XXX<br>XXX. XXX. XXX. XXX | | IP information of the control board |
| | Software Ver | Ver X.X.X | | Software version of IC |

| | | | | |
|---|---|---|---|---|
| Set | Status | No DMX Mode | Close Shutter/Hold/ Auto Program/ Music Control | Auto run if no DMX |
| | | Pan Reverse | ON/OFF | Pan Reverse movement |
| | | Tilt Reverse | ON/OFF | Tilt Reverse movement |
| | | Pan Degree | 630/540 | Pan Degree Select |
| | | Encoders | ON/OFF | Movement Feedback |
| | | Pan/Tilt Spd | Speed 1~ 4 | Movement Mode Select |
| | | Hibernation | OFF, 01M~99M, 15M | Standby Mode |
| | | Defogger | Defog OnOp | On when LEDs are above 0% intensity |
| | | | Defog Off | Disabled |
| | | | Defog OnPwr | Always on when powered |
| | | Dimming Mode | Standard /Theatrical | Choose Dimming Mode |
| | | CMY Curve | Linear /Non-Linear | Choose CMY Curve |
| | Select Input | DMX Only<br>Art-Net On IP2<br>Art-Net On IP10<br>sACN | DMX Only<br>Art-Net IP02<br>Art-Net IP10<br>sACN | |
| | Set Universe | 000-255 | Set Art-Net Universe | |
| | Service PIN | Service PIN | XXXXXX | Service Password “ ” |
| | | RDM UID | XXX. XXX. XXX. XXX | RDM PID Code |
| | | Ethernet IP | XXX. XXX. XXX. XXX | Ethernet IP |
| | | Ether Mask IP | ON/OFF | Ether Mask IP |
| | | Clr Err Info | | Clear Err information |
| | Disp. Setting | Shutoff Time | 02~60m 05m | Display shutoff time |
| | | Flip Display | ON/OFF | Display Rev. 180 degree |
| | | Key Lock | ON/OFF | Key Lock |
| | Temp. C/F | Fahrenheit<br>Celsius | | Temperature switch between ℃/℉ |
| | ResetDefault | ON/OFF | | Restore factory set. |
| Test | Home | All<br>Pan&Tilt<br>Colors<br>Gobos<br>Others | | Reset All<br>Reset Pan & Tilt<br>Reset Colors<br>Reset Gobos<br>Reset Others |
| | Test Channel | PAN …… | | Test function |
| | Manual Ctrl. | PAN =XXX<br>: | | Fine adjustment of the lamp |

| | | | | |
|---|---|---|---|---|
| | Calibration | -Password-<br>Pan =XXX<br>: | | Contact Service. |
| Preset | PlayBack | DMX Control<br>Set To Slave<br>Auto Program | <br>Slave1,Slave2,Slave3<br>Master / Alone | DMX Control<br>Slave setting<br>Auto program |
| | Select Prog. | Prog. Part 1 = Program 1 ~ 10 Program 1<br>Prog. Part 2 = Program 1 ~ 10 Program 2<br>Prog. Part 3 = Program 1 ~ 10 Program 3 | | Select programs to be run |
| | Edit Prog. | Program 1<br>:<br>Program 10 | Program Test<br>Step 01=SCxxx<br>Step 64=SCxxx | Testing program<br>Program in loop<br>Save and exit |
| | Edit Scenes | Edit Scene 001<br>~ Edit Scene<br>250 | Pan,Tilt,…<br>--Fade Time--<br>--Scene Time--<br>Input By Outside | Save and automatically<br>return<br>manual scenes edit |
| | Scenes Input | XX~XX | | Automat. scenes rec |

# Control Board Functions

## Address

With this function, you can adjust the desired DMX-address via the Control Board.

1. Access the main menu.
2. Tap the <Up/Down> button until “Set DMX Address” is displayed.
3. Press ENTER, the display will show “Set DMX Address”.
4. Tap the <Up/Down> button, the display will show “A001~AXXX”
5. Press ENTER to confirm or press <MODE/ESC>to return to the main menu.

## Info.

### Time Info

Current Time

With this function, you can display the temporary running time of the device from the last power on. The display shows “XXXX”, “XXXX” stands for the number of hours. The counter is reset after turning the device off.

1. Tap <MODE/ESC> button, access the main menu Tap the <Up/Down> button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press ENTER, the display will show “Time Info.”.
2. Press <Up/Down> the display will show “Current Time”.
3. Press < ENTER> the display will show “Current Time”.
4. The display will show “XXXX” (Hours) ;
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Ttl Life Hrs**

With this function, you can display the running time of the device. The display shows “XXXX”, “XXXX” stands for the number of hours.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press ENTER, the display will show “Time Info.”.
2. Press <Up/Down> the display will show “Ttl Life Hrs”.
3. Press<ENTER> the display will show “Ttl Life Hrs””.
4. The display will show “XXXX” (Hours) ;
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Last Run Hrs**

With this function, you can display last the running time of the lamp. The display shows “XXXX”, “XXXX” stands for the number of hours

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press ENTER, the display will show “Time Info.”.
2. Press <Up/Down> the display will show “Last Run Hrs”.
3. Press<ENTER> the display will show “Last Run Hrs”.
4. The display will show “XXXX” (Hours) ;
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**LED Hour**

With this function, you can display the running time of the LED. The display shows “XXXX”, “XXXX” stands for the number of hours.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press< ENTER>, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press< ENTER>, the display will show “Time Info.”.
2. Press <Up/Down> the display will show “LED Hours”.
3. Press<ENTER> the display will show “LED Hours”.
4. The display will show “XXXX” (Hours) ;
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Timer PIN**

With this function, you can display the timer password. The time password is 038.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press ENTER, the display will show “Time Info.”.
2. Press <Up/Down> the display will show “Timer PIN”.
3. Press <ENTER> the display will show “Timer PIN”, the time password is 038.
4. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Clr Last Run**

With this function, you can clear last run time of the fixture. The display shows “ON” or “OFF”, Press “Enter” to confirm.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press< ENTER>, the display will show “Info”. Tap the <Up/Down>button until the display will show “Time Info.”. Press ENTER, the display will show “Time Info.”.
2. Press <Up/Down>;, the display will show “Clr Last Run”.
3. At” L-Timer Password” menu input right password, Press<ENTER>;, the display will show “Clr Last Run”.
4. The display show “OFF”, Press <Up/Down> the display will show “ON”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**LED Time PIN**

Please contact service to for more information, in general LED time should not be modified.

**Clen LED Time**

Please contact service to for more information, in general LED time should not be reset unless directed by factory rep.

**Error Info**

With this function you can view error code information

1. Tap <MODE/ESC>button, access the main menu
2. Tap the <Up/Down>button until, “Info” is displayed. Press ENTER, the display will show Error Info.”
3. Press <Up/Down>, the display will show “Error Info.”.
4. Press< ENTER>, the display will show “Error Info.”.
5. The display will show “XXXX” ;
6. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Value Disp.**

DMX Value - NONE

With this function, you can choose the DMX channel.

7. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until the display will show “Value Disp”. Press ENTER, the display will show “Value Disp”.
8. Press <Up/Down> the display will show “NONE”.
9. Press<ENTER> the display will show “NONE”.
10. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**DMX Value**

With this function you can display the DMX 512 value of each channel. The display automatically shows the channel with a value changing.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”.
2. Tap the <Up/Down>button until the display will show “Value Disp”. Press ENTER, the display will show “Value Disp”.
3. Tap the <Up/Down>button until “ALL”, “PAN” is displayed.
4. Tap the <Up/Down>button, choose each channel.
5. Press ENTER to confirm or press <MODE/ESC> to return to the main menu

**Ethernet IP**

With this function you can choose display the IP address of the fixture.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed.
2. Press ENTER, the display will show “Info”.
3. Tap the <Up/Down>button until the display will show “Ethernet IP”.
4. Press ENTER, the display will show “Ethernet IP xxx.xxx.xxx.xxx.xxxx”.
5. Press ENTER to confirm or press <MODE/ESC> to return to the main menu

**Head Temperature**

With this function you can display the temperature on the display board of the base (near CMY-filter) in Celsius.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”. Tap the <Up/Down>button until “Head Temp.” is displayed. Press ENTER, the display will show “Head Temp.”.
2. The display show “XXX °C/ °F”.
3. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Software Version**

With this function, you can display the software version of the device.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Info” is displayed. Press ENTER, the display will show “Info”.
2. Press <Up/Down> the display will show “Software Ver”.
3. Press<ENTER> the display will show “Software Ver”.
4. The display show “Ver x.x.x”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

# SET

## Status

No DMX Status

With this function, when the drive is not DMX signal, it runs automatism, close, hold and music, the default is hold.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show “No DMX Status”.
3. Press<ENTER> the display will show ”No DMX Status”.
4. The display show “Hold”, Press <Up/Down> the display will show “Close”, “Auto”,.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Pan Reverse

With this function you can reverse the Pan-movement.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show “Pan Reverse”.
3. Press<ENTER> the display will show ”Pan Reverse”.
4. The display show “OFF”, Press <Up/Down>;the display will show “ON”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Tilt Reverse

With this function you can reverse the Tilt-movement.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Tilt Reverse”.
3. Press<ENTER>the display will show ”Tilt Reverse”.
4. The display show “OFF”, Press <Up/Down> the display will show “ON”.

5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Encoders

With this function, you can feedback switch of pan movement or tilt movement.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down>  the display will show ” Encoders.”.
3. Press<ENTER> the display will show ” Encoders.”.
4. The display show “ON”, Press  <Up/Down> the display will show “OFF”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Pan/Tilt Speed

With this function, you can change the speed of the Pan Tilt Motion.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down>  the display will show ”Pan/Tilt Spd.”.
3. Press<ENTER> the display will show ”Pan/Tilt Spd.”.
4. The display show will show “Speed 1 “, … “Speed 4
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Hibernation —Standby mode

The lamp and step motors will be power off if the fixture stay without DMX signal for 15 mins (Factory default).And the fixture will be reset before working once it receive DMX signal again.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Hibernation”.
3. Press<ENTER> the display will show ”Hibernation”.
4. The display show “15M”,Press <Up/Down> the display will show “01M”,”02M”. “99M” or ”OFF”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Lens Heater

With this function, you can display the Lens Heater settings

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Defogger”.
3. Press<ENTER> the display will show ”Defogger”.
4. The display show “Defog OnOp”, Press <Up/Down> the display will show “Defog OFF”, ”Defog Onprw”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Dimming Mode

With this function, you can change between standard and theatrical dimming mode.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Dimming Mode”.
3. Press<ENTER> the display will show ”Dimming Mode”.
4. The display show “Standard”, Press <Up/Down> the display will show “Theatrical””.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu

CMY Curve

With this function, you change between linear and non-linear operation

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”CMY Curve”.
3. Press<ENTER> the display will show ”CMY Curve”.
4. The display show “Linear”, Press <Up/Down> the display will show “Non-Linear”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Select Input

With this function, you change between ArtNet on IP2., IP on 10. Or DMX

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Select Input”.
3. Press<ENTER> the display will show ”Select Input”.
4. The display show “DMX Only”, Press <Up/Down> the display will show “ArtNet on IP2” - Press <Up/Down> the display will show “ArtNet on IP10”.
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

Set Universe

With this function, you change the ArtNet Universe

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”SET” is displayed. Press ENTER, the display will show “SET”. Tap the <Up/Down>button until the display will show “Status”. Press ENTER, the display will show “Status”.
2. Press <Up/Down> the display will show ”Set Universe”.
3. Press<ENTER> the display will show ” Set Universe”.
4. The display show “000--255”, Press <Up/Down> to select
5. Press <ENTER> to confirm or press <MODE/ESC> to return to the main menu.

**Service PIN**

**Password**——The Password for this function is “50”.

**RDM PID**—— With this function you can call up various submenus via RDM.

This device is RDM ready. RDM stands for "remote device management" and makes remote control of devices connected to the DMX-bus. ANSI E1.20-2006 by ESTA specifies the RDM standard as an extension of the DMX512 protocol.

Manual settings like adjusting the DMX starting address are no longer needed. This is especially useful when the device is installed in a remote area.

RDM ready and conventional DMX devices can be operated in one DMX line. The RDM protocol sends own packages in the DMX512 data feed and does not influence conventional devices.

If DMX splitters are used and RDM control is to be used, these splitters must support RDM.

The number and type of RDM parameters depend on the RDM controller being used.

**Display Settings**

Shut off time

With this function you can shut off the color LCD display after 2 to 60 minutes. Turn the encoder in order to select the desired shut off time. The default is 5 minute.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”Set” is displayed. Press ENTER, the display will show “Set”. Tap the <Up/Down>button until the display will show “Disp.Setting”. Press ENTER, the display will show “Disp.Setting”.
2. Press <Up/Down> the display will show ” Shutoff Time”.
3. Press<ENTER> the display will show ” Shutoff Time”.

Flip Display

With this function you can the entire display to be flipped by 180˚ to allow for better view when the fixture is hung from truss or a ceiling. This function is disabled as default.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”Set” is displayed. Press ENTER, the display will show “Set”. Tap the <Up/Down>button until the display will show “Disp.Setting”. Press ENTER, the display will show “Disp.Setting”.
2. Press <Up/Down> the display will show ”Flip Display”.
3. Press<ENTER> the display will show ”Flip Display”.
4. The display show “OFF”, Press <Up/Down> the display will show “ON”.
5. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu.

Key Lock

With this function you can activate the automatic keylock status. If this function is activated, the keys will be locked automatically after exiting the edit mode for 15 seconds. Continue pressing the [MENU] key for 3seconds if you do not need this function.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Set” is displayed. Press ENTER, the display will show “Set”. Tap the <Up/Down>button until the display will show “Disp.Setting”. Press ENTER, the display will show “Disp.Setting”.
2. Press <Up/Down> the display will show “Key Lock”.
3. Press< ENTER> the display will show “Key Lock”.
4. The display show “OFF”, Press <Up/Down>;, the display will show “ON”.

5. Press <ENTER>; to confirm or press &<MODE/ESC>; to return to the main menu.

**Temperature C/F**

With this function, Display the temperature for Celsius or Fahrenheit.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Set” is displayed. Press ENTER, the display will show “Set”.
2. Press <Up/Down>the display will show “Temp. C/F”.
3. Press<ENTER> the display will show “Temp. C/F”.
4. The display show “Celsius”, Press <Up/Down> the display will show “Fahrenheit”.
5. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu.

**Reset Default**

With this function, you can select restore factory set for ON or OFF, the default is OFF.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Personality” is displayed. Press ENTER, the display will show “Personality”.
2. Press <Up/Down>the display will show “Reset Default”.
3. Press<ENTER> the display will show “Reset Default”.
4. The display show “OFF”, Press <Up/Down> the display will show “ON”.
5. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu.

# Test

### Home

With this function you can reset the device via the Control Board. You can select the different reset functions by turning the encoder.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ” Test” is displayed. Press ENTER, the display will show “Test”.
2. The display show “Reset All”, Press <Up/Down> the display will show “Reset Pan & Tilt”.
3. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu.

### Test channel

With this function you can test each channel on its (correct) function.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”Test” is displayed. Press ENTER, the display will show “Test”.
2. Press <Up/Down> the display will show “Test Channel”.
3. Press<ENTER> the display will show “Test Channel”.
4. The display show “Pan Moving” first channel, Press <Up/Down> can choose other channel.
5. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu

### Manual control

With this function, you can adjust the lamp more easily. All effects will be canceled, the shutter opens and the dimmer intensity will be set to 100 %. With the individual functions, you can focus the light on a flat surface (wall) and perform the fine lamp adjustment.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ” Test” is displayed. Press ENTER, the display will show “Test”.
2. Press <Up/Down> the display will show “Manual Ctrl.”.
3. Press<ENTER> the display will show “Manual Ctrl.”.
4. The display show “PAN=XXX”.
5. Press <ENTER>; to confirm or press <MODE/ESC>; to return to the main menu.

### Calibration

Please contact service to for more information, in general this function should not be used unless directed by factory rep.

# Preset Programming and Playback

## Preset

### Play Back

DMX Control

1. Tap <MODE/ESC>button, access the main menu Tap the&<Up/Down>button until ”Preset” is displayed. Press ENTER, the display will show “Preset”. Tap the <Up/Down>button until the display will show “PlayBack”. Press ENTER, the display will show “PlayBack”.
2. Tap the <Up/Down>button until “DMX Control” is displayed.
3. Press ENTER, the display will show “DMX Control”.
4. Tap the <Up/Down>button, choose DMX modes.
5. Press ENTER to confirm or press <MODE/ESC> to return to the main menu

Set To Slave

With this function, you can define the device as slave.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until ”Preset” is displayed. Press ENTER, the display will show “Preset”. Tap the <Up/Down>button until the display will show “PlayBack”. Press ENTER, the display will show “PlayBack”.
2. Tap the <Up/Down>button until “Set To Slav” is displayed
.3. Press ENTER, the display will show “Set To Slav”.
4. Tap the <Up/Down>button, the display will show “Slave1”, ”Slave2”, ”Slave3”.
5. Press ENTER to confirm or press <MODE/ESC> to return to the main menu

Auto Program

With this function, you can run the internal program. You can select the desired program under “Select prog.”. You can set the number of steps under “Edit prog.”. You can edit the individual scenes under “Edit scenes”. With this function, you can run the individual scenes either automatically, i.e. with the adjusted Step-Time.

1. Tap <MODE/ESC>button, access the main menu Tap the <Up/Down>button until “Preset” is displayed. Press ENTER, the display will show “Preset”. Tap the <Up/Down>button until the display will show “PlayBack”. Press ENTER, the display will show “PlayBack”.
2. Tap the <Up/Down>button until “Auto Program” is displayed.
3. Press ENTER, the display will show “Auto Program”
4. Tap the <Up/Down> button, the display will show “Master1,” ”Alone”.
5. Press ENTER to confirm or press <MODE/ESC> to return to the main menu

**Select programs**

With this function, you can select the program for the Program Run.

**Edit program**

With this function, you can edit the internal programs.

**Edit scenes**

With this function, you can edit the scenes of the internal programs.

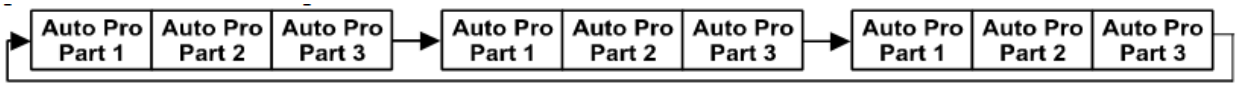
**Scenes Input**

The moving head features an integrated DMX-recorder by which you can transmit the programmed scenes from your DMX-controller to the moving head. Adjust the desired scene numbers via the encoder (from – to). When you call up the scenes at your controller, they will automatically be transmitted to the moving head.

# Example Program

## Example:

A Master unit can send up to 3 different data groups to the Slave units, i.e. a Master unit can start 3 different Slave units, which run 3 different programs. The Master unit sends the 3 program parts in a continuous loop.




The Slave unit receives data from the Master unit according to the group which the Slave unit was assigned to. If e.g. a Slave unit is set to “Slave 1” in the menu “Set to Slave”, the Master unit sends “Auto Program Part 1” to the Slave unit. If set to “Slave 2” ,the Slave unit receives “Auto Program Part 2”.

To start an Auto Program please proceed as follows:

### 1. Slave-Setting

- Select “Function Mode” by turning the encoder.
- Press the Enter button to confirm.
- Select “Set to slave” by turning the encoder.
- Press the Enter button to confirm
- Turn the encoder to select “Slave 1”, “Slave 2” or “Slave 3”
- Press the Enter button to confirm.
- Press the MODE/ESC button in order to return to the main menu.

**2. Automatic Program Run**

- Select “Function Mode” by turning the encoder.
- Press the Enter button to confirm
- Select “Auto Program” by turning the encoder.
- Press the Enter button to confirm.
- Turn the encoder to select “Master” or “Alone”. The selection "Alone" means Stand Alone-mode and "Master" that the device is defined as master.
- Press the Enter button to confirm.
- Press the MODE/ESC button in order to return to the main menu.

**3. Program selection for Auto Pro Part**

- Select “Edit program” by turning the encoder.
- Press the Enter button to confirm
- Select “Select programs” by turning the encoder.
- Press the Enter button to confirm.
- Turn the encoder to select “Auto Pro Part 1”, “Auto Pro Part 2” or “Auto Pro Part 3”, and thus select which Slave program is to be sent. Selection “Part 1” means, that the Slave unit runs the same program as the master units.
- Press the Enter button to confirm.
- Press the MODE/ESC button in order to return to the main menu.

**4. Program selection for Edit Program**

- Select “Edit program” by turning the encoder.
- Press the Enter button to confirm.
- Select “Edit program” by turning the encoder.
- Press the Enter button to confirm.
- Turn the encoder to select the desired program. With this function you can edit specific scenes into a specific program.
- Press the Enter button to confirm.
- Press the MODE/ESC button in order to return to the main menu.

**5. Automatic Scene Recording**

- Select “Edit program” by turning the encoder.
- Press the Enter button to confirm.
- Select “Edit scenes” by turning the encoder.
- Turn the encoder to select the desired scene numbers. You can program a maximum number of 250
- Press the Enter button to confirm.
- Press the MODE/ESC button in order to return to the main menu.

**Example:**

Program 2 includes scenes: 10, 11, 12, 13

Program 4 includes scenes: 8, 9, 10

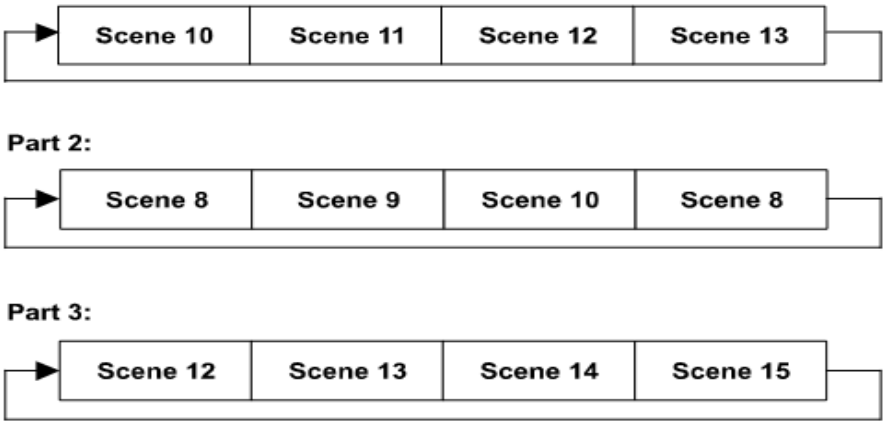
Program 6 includes scenes: 12, 13, 14, 15

Auto Pro Part 1 is Program 2;

Auto Pro Part 2 is Program 3;

Auto Pro Part 3 is Program 6

The 3 Slave groups run the Auto Program in certain time segments, as shown in the following picture:



# DMX Control Protocol

The most current DMX Control Protocol data for the SolaFrame Theatre can be found on the High End Systems, Inc. website https://www.highend.com/SolaFrameTheatre-DMXProtocol.

The following data is current as of protocol version 1.2, revision date July 13, 2017.

| Standard Prototocol | |
|---|---|
| **Channel** | **Construct** |
| 1 | Pan Coarse |
| 2 | Pan Fine |
| 3 | Tilt Coarse |
| 4 | Tilt Fine |
| 5 | Color Mix Function |
| 6 | Cyan |
| 7 | Magenta |
| 8 | Yellow |
| 9 | CTO |
| 10 | Static Color Function |
| 11 | Static Color Position |
| 12 | Gobo 1 Function |
| 13 | Gobo 1 Position |
| 14 | Gobo 2 Function |
| 15 | Gobo 2 Position |
| 16 | Gobo 2 Rotate Function |
| 17 | Gobo 2 Rotate Coarse |
| 18 | Gobo 2 Rotate Fine |
| 19 | Blade 1 Angle A |
| 20 | Blade 1 Angle B |
| 21 | Blade 2 Angle A |
| 22 | Blade 2 Angle B |
| 23 | Blade 3 Angle A |
| 24 | Blade 3 Angle B |
| 25 | Blade 4 Angle A |
| 26 | Blade 4 Angle B |
| 27 | Frame Rotation Coarse |
| 28 | Frame Rotation Fine |
| 29 | Animation Function |
| 30 | Prism Function |
| 31 | Prism Rotate Coarse |
| 32 | Prism Rotate Fine |
| 33 | Frost |
| 34 | Focus Coarse |
| 35 | Focus Fine |
| 36 | Zoom Coarse |
| 37 | Zoom Fine |
| 38 | Iris |
| 39 | Shutter/LED Function |
| 40 | Shutter/LED |
| 41 | Dim Coarse |
| 42 | Dim Fine |
| 43 | Dim Macro |
| 44 | Dim Macro Speed |
| 45 | Dim Macro Xfade |
| 46 | Mspeed |
| 47 | Control |

| Channel | Marketing Construct | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Defaults |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Pan | Pan Coarse | 0 | 255 | 0% | 100% | 00h | FFh | 127 |
| 2 | Pan | Pan Fine | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 3 | Tilt | Tilt Coarse | 0 | 255 | 0% | 100% | 00h | FFh | 127 |
| 4 | Tilt | Tilt Fine | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 5 | Color Mix Function | Pure Mix | 0 | 31 | 0% | 12% | 00h | 1Fh | 0 |
| | | Cycle | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Random | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Reserved | 64 | 255 | 25% | 100% | 40h | FFh | |
| 6<br>7<br>8 | Cyan<br>Magenta<br>Yellow | Pure Mix | | | | | | | 255 |
| | | Full Saturation | 0 | | 100% | | 00h | | |
| | | Open | 255 | | 0% | | FFh | | |
| | | Cycle & Random Modes. Scan Speed controlled by Cyan Channel | | | | | | | |
| | | Slow Rate | 0 | | 0% | | 00h | | |
| | | Fast Rate | 255 | | 100% | | FFh | | |
| 9 | CTO | Full Saturation | 0 | | 0% | | 00h | | 255 |
| | | Open (White) | 255 | | 100% | | FFh | | |
| 10 | Static Color Function | Indexed | 0 | 15 | 0% | 6% | 00h | 0Fh | 48 |
| | | Forward Spin | 16 | 31 | 6% | 12% | 10h | 1Fh | |
| | | Reverse Spin | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Continuous (Note 1) | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Fast Scan | 64 | 79 | 25% | 31% | 40h | 4Fh | |
| | | Random | 80 | 95 | 31% | 37% | 50h | 5Fh | |
| | | Reserved | 96 | 255 | 38% | 100% | 60h | FFh | |
| 11 | Static Color Position | Indexed, Scan & Blink modes | | | | | | | 0 |
| | | 1. Open (White) | 0 | 14 | 0% | 5% | 00h | 0Eh | |
| | | 2. (Open/Red) | 15 | 29 | 6% | 11% | 0Fh | 1Dh | |
| | | 3. (Red) | 30 | 44 | 12% | 17% | 1Eh | 2Ch | |
| | | 4. (Red/Blue) | 45 | 59 | 18% | 23% | 2Dh | 3Bh | |
| | | 5. (Blue) | 60 | 74 | 24% | 29% | 3Ch | 4Ah | |
| | | 6. (Blue/Green) | 75 | 89 | 29% | 35% | 4Bh | 59h | |
| | | 7. (Green) | 90 | 104 | 35% | 41% | 5Ah | 68h | |
| | | 8. (Green/Yellow) | 105 | 119 | 41% | 47% | 69h | 77h | |
| | | 9. (Yellow) | 120 | 134 | 47% | 53% | 78h | 86h | |
| | | 10. (Yellow/Orange) | 135 | 149 | 53% | 58% | 87h | 95h | |
| | | 11. (Orange) | 150 | 164 | 59% | 64% | 96h | A4h | |
| | | 12. (Orange/Magenta) | 165 | 179 | 65% | 70% | A5h | B3h | |
| | | 13. (Magenta) | 180 | 194 | 71% | 76% | B4h | C2h | |
| | | 14. (Magenta/Dark Blue) | 195 | 209 | 76% | 82% | C3h | D1h | |
| | | 15. (Dark Blue) | 210 | 224 | 82% | 88% | D2h | E0h | |
| | | 16. (Dark Blue/Open) | 225 | 239 | 88% | 94% | E1h | EFh | |
| | | 1. Open (White) | 240 | 255 | 94% | 100% | F0h | FFh | |
| | | Spin & Random modes | | | | | | | |
| | | Stop | 0 | | 0% | 0% | 00h | 00h | |
| | | Slowest to fastest | 255 | | 100% | 0% | FFh | 00h | |
| | | Continuous mode | | | | | | | |
| | | Positioning from 0-360 degrees | 0 | 255 | 0% | 100% | 00h | FFh | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | Gobo 1 Function | Indexed | 0 | 15 | 0% | 6% | 00h | 0Fh | |
| | | Forward Wheel Spin | 16 | 31 | 6% | 12% | 10h | 1Fh | |
| | | Reverse Wheel Spin | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Scan | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Random | 64 | 79 | 25% | 31% | 40h | 4Fh | |
| | | TBD/Indexed | 80 | 255 | 31% | 100% | 50h | FFh | |
| 13 | Gobo 1 Position | Indexed, Scan & Blink modes | | | | | | | 0 |
| | | 1. (Open) | 0 | 24 | 0% | 9% | 00h | 18h | |
| | | 2. (Waves) | 25 | 51 | 10% | 20% | 19h | 33h | |
| | | 3. (Splash) | 52 | 75 | 20% | 29% | 34h | 4Bh | |
| | | 4. (Triangles) | 76 | 101 | 30% | 40% | 4Ch | 65h | |
| | | 5. (Polymoba) | 102 | 127 | 40% | 50% | 66h | 7Fh | |
| | | 6. (Tunnel) | 128 | 152 | 50% | 60% | 80h | 98h | |
| | | 7. (Stars) | 153 | 178 | 60% | 70% | 99h | B2h | |
| | | 8. (Modern) | 179 | 203 | 70% | 80% | B3h | CBh | |
| | | 9. (Twist) | 204 | 229 | 80% | 90% | CCh | E5h | |
| | | 1. (Open) | 230 | 255 | 90% | 100% | E6h | FFh | |
| | | Spin & Random modes | | | | | | | |
| | | Rotate Stop | 0 | 3 | 0% | 1% | 00h | 03h | |
| | | Slowest to fastest | 4 | 255 | 2% | 100% | 04h | FFh | |
| 14 | Gobo 2 Function | Indexed | 0 | 15 | 0% | 6% | 00h | 0Fh | 0 |
| | | Forward Wheel Spin | 16 | 31 | 6% | 12% | 10h | 1Fh | |
| | | Reverse Wheel Spin | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Scan | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Random | 64 | 79 | 25% | 31% | 40h | 4Fh | |
| | | TBD/Indexed | 80 | 255 | 31% | 100% | 50h | FFh | |
| 15 | Gobo 2 Position | Indexed, Scan modes | | | | | | | 0 |
| | | 1. (Open) | 0 | 27 | 0% | 11% | 00h | 1Bh | |
| | | 2. (Foliage) | 28 | 55 | 11% | 22% | 1Ch | 37h | |
| | | 3. (Fracture) | 56 | 84 | 22% | 33% | 38h | 54h | |
| | | 4. (Zylem) | 85 | 112 | 33% | 44% | 55h | 70h | |
| | | 5. (Valient) | 113 | 141 | 44% | 55% | 71h | 8Dh | |
| | | 6. (Fire) | 142 | 169 | 56% | 66% | 8Eh | A9h | |
| | | 7. (Bars) | 170 | 198 | 67% | 78% | AAh | C6h | |
| | | 8. (Pin Wheel) | 199 | 226 | 78% | 89% | C7h | E2h | |
| | | 1. (Open) | 227 | 255 | 89% | 100% | E3h | FFh | |
| | | Spin & Random modes | | | | | | | |
| | | Rotate Stop | 0 | 3 | 0% | 1% | 00h | 03h | |
| | | Slowest to fastest | 4 | 255 | 2% | 100% | 04h | FFh | |
| 16 | Gobo 2 Rotate Function | Indexed | 0 | 15 | 0% | 6% | 00h | 0Fh | 0 |
| | | Forward Rotate | 16 | 31 | 6% | 12% | 10h | 1Fh | |
| | | Reverse Rotate | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Forward Strobe Rotate (Gobo animate) | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Reverse Strobe Rotate (Gobo animate) | 64 | 79 | 25% | 31% | 40h | 4Fh | |
| | | Reserved | 80 | 255 | 31% | 100% | 50h | FFh | |
| 17 | Gobo 2 Rotate Coarse | Indexed/Blink Modes | | | | | | | 127 |
| | | Position 0-360 degrees | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | Forward/Reverse/Forward Strobe/Reverse Strobe Rotate Modes | | | | | | | |
| | | Rotate Stop | 0 | 3 | 0% | 1% | 00h | 03h | |
| | | Rotate Slowest to Fastest | 4 | 255 | 2% | 100% | 04h | FFh | |
| 18 | Gobo 2 Rotate Fine | Indexed Mode | | | | | | | 255 |
| | | Low Order Byte 0-360 degrees | 0 | 255 | 0% | 100% | 00h | FFh | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 19 | Blade 1 Angle A | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 20 | Blade 1 Angle B | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 21 | Blade 2 Angle A | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 22 | Blade 2 Angle B | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 23 | Blade 3 Angle A | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 24 | Blade 3Angle B | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 25 | Blade 4 Angle A | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 26 | Blade 4 Angle B | Out of the light path | 0 | | 0% | | 00h | | 0 |
| | | Full in the light path | 255 | | 100% | | FFh | | |
| 27 | Frame Rotation Coarse | Frame Angle Negative | 0 | 127 | 0% | 50% | 00h | 7Fh | 0 |
| | | Frame Angle 0 degrees | 128 | | 50% | | 80h | | |
| | | Frame Angle positive | 129 | 255 | 51% | 100% | 81h | FFh | |
| 28 | Frame Rotation Fine | Frame Angle Negative | 0 | 127 | 0% | 50% | 00h | 7Fh | 0 |
| | | Frame Angle 0 degrees | 128 | | 50% | | 80h | | |
| | | Frame Angle positive | 129 | 255 | 51% | 100% | 81h | FFh | |
| 29 | Animation Function | Disengaged | 0 | 8 | 0% | 3% | 00h | 08h | 0 |
| | | Engaged, Forward Spin speed slow to fast | 9 | 70 | 4% | 27% | 09h | 46h | |
| | | Engaged, Reverse Spin speed slow to fast | 71 | 131 | 28% | 51% | 47h | 83h | |
| | | Engaged, Forward Strobe rotate slow to fast | 132 | 193 | 52% | 76% | 84h | C1h | |
| | | Engaged, Reverse Strobe Rotate slow to fast | 194 | 255 | 76% | 100% | C2h | FFh | |
| 30 | Prism Function | Disengaged | 0 | 15 | 0% | 6% | 00h | 0Fh | 0 |
| | | Continuous | 16 | 31 | 6% | 12% | 10h | 1Fh | |
| | | Forward Spin | 32 | 47 | 13% | 18% | 20h | 2Fh | |
| | | Reverse Spin | 48 | 63 | 19% | 25% | 30h | 3Fh | |
| | | Forward Strobe Rotate (Effect animate) | 64 | 79 | 25% | 31% | 40h | 4Fh | |
| | | Reverse Strobe Rotate (Effect animate) | 80 | 95 | 31% | 37% | 50h | 5Fh | |
| | | Reserved | 96 | 255 | 38% | 100% | 60h | FFh | |
| 31 | Prism Rotate Coarse | Continuous mode | | | | | | | 127 |
| | | Position 0-360 degrees | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | Forward/Reverse/Forward Strobe/Reverse Strobe Rotate Modes | | | | | | | |
| | | Rotate Stop | 0 | 3 | 0% | 1% | 00h | 03h | |
| | | Rotate Slowest to Fastest | 4 | 255 | 2% | 100% | 04h | FFh | |
| 32 | Prism Rotate Fine | Continuous mode | | | | | | | 255 |
| | | Low Order Byte 0-360 degrees | 0 | 255 | 0% | 100% | 00h | FFh | |
| 33 | Frost | Disengaged | 0 | 1 | 0% | | 00h | | 0 |
| | | Variable Frost | 2 | 254 | 1% | | 02h | | |
| | | Full Frost | 255 | | 100% | | FFh | | |
| 34 | Focus Coarse | Focus In | 0 | | 0% | | 00h | | 127 |
| | | Focus Out | 255 | | 100% | | FFh | | |
| 35 | Focus Fine | Focus In | 0 | | 0% | | 00h | | 255 |
| | | Focus Out | 255 | | 100% | | FFh | | |
| 36 | Zoom Coarse | Zoom In | 0 | | 0% | | 00h | | 127 |
| | | Zoom Out | 255 | | 100% | | FFh | | |
| 37 | Zoom Fine | Zoom In | 0 | | 0% | | 00h | | 255 |
| | | Zoom Out | 255 | | 100% | | FFh | | |
| 38 | Iris | Iris Closed | 0 | | 0% | | 00h | | 255 |
| | | Iris Open | 255 | | 100% | | FFh | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 39 | Shutter/LED Functions | Normal Shutter Functions | 0 | 31 | 0% | 12% | 00h | 1Fh | 0 |
| | | Random Random strobe | 32 | 63 | 13% | 25% | 20h | 3Fh | |
| | | Synchronous Random Strobe | 64 | 95 | 25% | 37% | 40h | 5Fh | |
| | | Normal Shutter Functions | 96 | 255 | 38% | 100% | 60h | FFh | |
| 40 | Shutter/LED | Normal/Random/Sync Random shutter functions. | | | | | | | 255 |
| | | Close | 0 | 23 | 0% | 9% | 00h | 17h | |
| | | Strobe Rate (slow to fast) | 24 | 229 | 9% | 90% | 18h | E5h | |
| | | Open | 230 | 255 | 90% | 100% | E6h | FFh | |
| 41 | Dim Coarse | Close | 0 | | 0% | | 00h | | 0 |
| | | Open | 255 | | 100% | | FFh | | |
| 42 | Dim Fine | | 0 | | 0% | | 00h | | 0 |
| | | | 255 | | 100% | | FFh | | |
| 43 | Dim Macro (Note 2) | Macro off | 0 | 3 | 0% | 1% | 00h | 03h | 0 |
| | | Macro 1 | 4 | 7 | 2% | 3% | 04h | 07h | |
| | | Macro 2 | 8 | 11 | 3% | 4% | 08h | 0Bh | |
| | | Macro 3 | 12 | 15 | 5% | 6% | 0Ch | 0Fh | |
| | | Macro 4 | 16 | 19 | 6% | 7% | 10h | 13h | |
| | | Macro 5 | 20 | 23 | 8% | 9% | 14h | 17h | |
| | | … | | | | | | | |
| | | Macro 63 | 252 | 255 | 99% | 100% | FCh | FFh | |
| 44 | Dim Macro Speed | Stop | 0 | | 0% | 0% | 00h | 00h | 128 |
| | | Decreasing speed | 1 | 127 | 0% | 50% | 01h | 7Fh | |
| | | Programmed speed x1 | 128 | | | | 80h | | |
| | | Increasing speed | 129 | 255 | 51% | 100% | 81h | FFh | |
| 45 | Dim Macro X fade | Stop | 0 | | 0% | | 00h | 00h | 128 |
| | | Decreasing speed | 1 | 127 | 0% | 50% | 01h | 7Fh | |
| | | Programmed speed x1 | 128 | | 50% | | 80h | | |
| | | Increasing speed | 129 | 255 | 51% | 100% | 81h | FFh | |
| 46 | Mspeed | Disable | 0 | 3 | 0% | 1% | 00h | 03h | 0 |
| | | Longest (252.7 seconds) | 4 | | 2% | | 04h | | |
| | | Shortest (0.15 seconds) | 255 | | 100% | | FFh | | |
| 47 | Control | The Control channel should not be crossfaded. No shutter channel requirement. | | | | | | | 0 |
| | | Safe (normal operation ) | 0 | 9 | 0% | 4% | 00h | 09h | |
| | | TBD | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | Display Off (send 20 packets) | 20 | 28 | 8% | 11% | 14h | 1Ch | |
| | | Display On (send 20 packets) | 29 | 35 | 11% | 14% | 1Dh | 23h | |
| | | TBD | 36 | 48 | 14% | 19% | 24h | 30h | |
| | | Home All (send 20 packets) | 49 | 68 | 19% | 27% | 31h | 44h | |
| | | Shutdown (send 80 packets) | 69 | 75 | 27% | 29% | 45h | 4Bh | |
| | | TBD | 90 | 96 | 35% | 38% | 5Ah | 60h | |
| | | Disable Pan/Tilt motors | 97 | 103 | 38% | 40% | 61h | 67h | |
| | | TBD | 104 | 160 | 41% | 63% | 68h | A0h | |
| | | Internal Prog 1 scene 1-8 EEPROM | 161 | 171 | 63% | 67% | A1h | ABh | |
| | | Internal Prog 2 scene 9-16 EEPROM | 172 | 182 | 67% | 71% | ACh | B6h | |
| | | Internal Prog 3 scene 17-24 EEPROM | 183 | 193 | 72% | 76% | B7h | C1h | |
| | | Internal Prog 4 scene 25-32 EEPROM | 194 | 204 | 76% | 80% | C2h | CCh | |
| | | Internal Prog 5 scene 33-40 EEPROM | 205 | 215 | 80% | 84% | CDh | D7h | |
| | | Internal Prog 6 scene 41-48 EEPROM | 216 | 226 | 85% | 89% | D8h | E2h | |
| | | Internal Prog 7 scene 49-56 EEPROM | 227 | 237 | 89% | 93% | E3h | EDh | |
| | | TBD | 238 | 255 | 93% | 100% | EEh | FFh | |

## Protocol Notes

1. Continuous mode should take quickest path from 255-0, and 0-255.
   - Continuous mode color wheel aperture centers:

| Color | Center of color DMX value |
|---|---|
| Open | 0 |
| Red | 28 |
| Blue | 64 |
| Green | 95 |
| Yellow | 127 |
| Orange | 166 |
| Magenta | 192 |
| Dark Blue | 224 |

2. 63 Discrete multi step macros to be defined later. These will require macro speed and x fade channels. The macros will operate independently. The Xfade and speed channels act as multipliers of the programmed speed in the discrete macro steps.
   - **Speed / X fade channel operation**
     - 0 stops playback or crossfade
     - 1-127 decreases playback speed / crossfade time (* <1)
     - 128 playback or cross fade speed is as programmed (*1)
     - 129-255 increases playback speed / crossfade time (* >1)

# Error codes

When you turn on the fixture, the startup routine will check all functions. The display may show the “Err channel is XX” message if there are problems found in one or more channels. “XX” stands for channel 1, 2, 3, 4, 5, 6 who has the testing sensor for positioning. For example, when the display shows “Err channel is Pan Movement”, it means there is some error in channel 1. If there multiple errors found, for example on channel 1, channel 3, channel 11, you may see the error message, “Err channel is Pan movement”, “Err channel is Tilt movement” , “Err channel is Shutter”, flash repeated for 2 times, and then the fixture will attempt a homing routine. If the fixture error message remains after performing reset more than 2 times, only the channels which have errors will not work properly, others may work as usual. Please contact with dealer or manufacturer for service.

**PAN- movement Er**

(PAN-yoke movement error) This message will appear after the reset of the fixture if the yoke’s magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it’s driving IC on the main PCB). The PAN- movement is not located in the default position after the reset.

**TILT- movement Er**

(TILT-head movement error) This message will appear after the reset of the fixture if the head’s magnetic-indexing circuit malfunctions (sensor failed or magnet missing) or the stepping-motor is defective (or it’s driving IC on the main PCB). The TILT- movement is not located in the default position after the reset.

**Color Wheel Er**

(Color Wheel - error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it’s driving IC on the main PCB). The Color Wheel is not located in the default position after the reset.

**Gobo Wheel 1 Er**

(Gobo Wheel 1- error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it’s driving IC on the main PCB). The Gobo Wheel 1 is not located in the default position after the reset.

**Gobo Rot. 1 Er**

(Gobo Rot. 1- error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it’s driving IC on the main PCB). The Gobo Rot. 1 is not located in the default position after the reset.

**Gobo Wheel 2 Er**

(Gobo Wheel 2- error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it's driving IC on the main PCB). The Gobo Wheel 2 is not located in the default position after the reset.

**Focus Er**

(Focus - error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it's driving IC on the main PCB). The Focus is not located in the default position after the reset.

**Zoom Er**

(Zoom - error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it's driving IC on the main PCB). The Zoom is not located in the default position after the reset.

**Animation Er**

(Animation - error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it's driving IC on the main PCB). The Animation is not located in the default position after the reset.

**Blade Rot Er**

(Blade Rot - error) This message will appear after the reset of the fixture if the magnetic-indexing circuit malfunction (sensor failed or magnet missing) or the stepping-motor is defective (or it's driving IC on the main PCB). The Blade Rot is not located in the default position after the reset.