

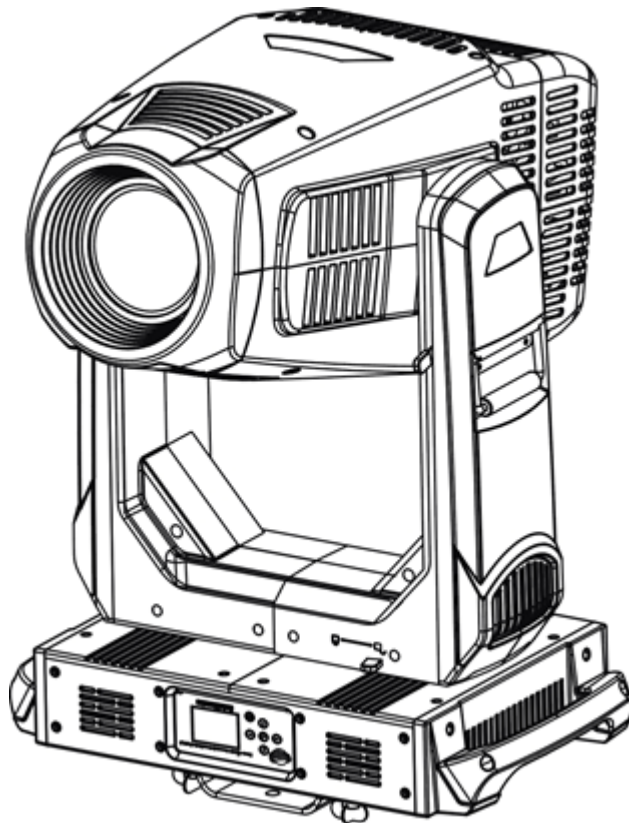
HIGH END SYSTEMS



an ETC. Company



User Manual



SolaFrame Theatre

Version 1.2 --- Revision A

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Welcome

Notice

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Declaration of Conformity



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

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

High End Systems products are designed and manufactured to meet the requirements of United States and International safety regulations. Modifications to the product could affect safety and render the product non-compliant to relevant safety standards.

Mise En Garde Contre La Modification Du Produit

Les produits High End Systems sont conçus et fabriqués conformément aux exigences des règlements internationaux de sécurité. Toute modification du produit peut entraîner sa non conformité aux normes de sécurité en vigueur.

Produktmodifikationswarnung

Design und Herstellung von High End Systems entsprechen den Anforderungen der U.S. Amerikanischen und internationalen Sicherheitsvorschriften. Abänderungen dieses Produktes können dessen Sicherheit beeinträchtigen und unter Umständen gegen die diesbezüglichen Sicherheitsnormen verstoßen.

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I prodotti di High End Systems sono stati progettati e fabbricati per soddisfare i requisiti delle normative di sicurezza statunitensi ed internazionali. Qualsiasi modifica al prodotto potrebbe pregiudicare la sicurezza e rendere il prodotto non conforme agli standard di sicurezza pertinenti.

Advertencia De Modificación Del Producto

Los productos de High End Systems están diseñados y fabricados para cumplir los requisitos de las reglamentaciones de seguridad de los Estados Unidos e internacionales. Las modificaciones al producto podrían afectar la seguridad y dejar al producto fuera de conformidad con las normas de seguridad relevantes.

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.

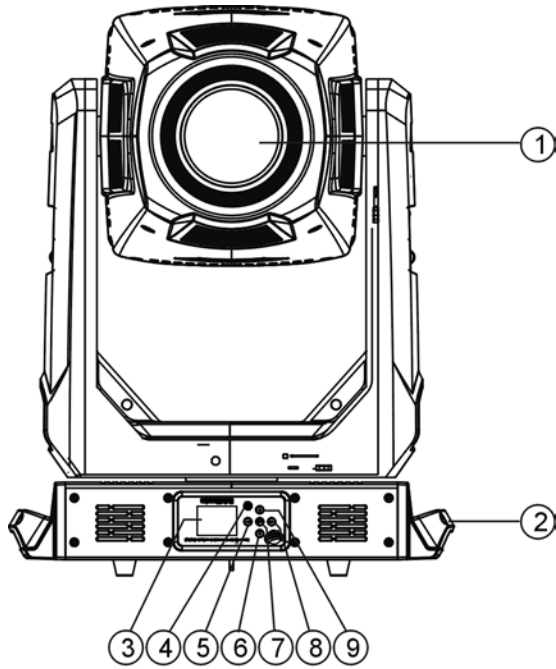
- If the device has been exposed to temperature changes due to environmental changes, do not switch it on immediately. The condensation could cause damage to the device. Leave the device switched off until it has reached room temperature.
- This device falls under protection-class I. Therefore it is 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.

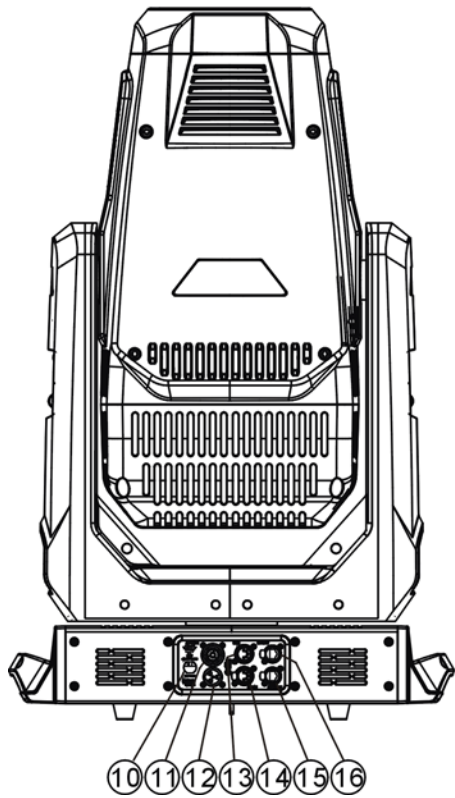
General Guidelines

- 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

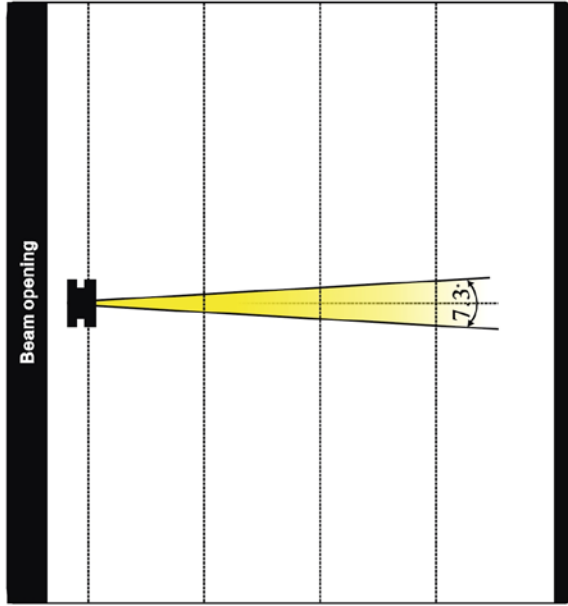
WEIGHT

Net weight: 49.8 kg

Photometric data image

Min. Beam angle

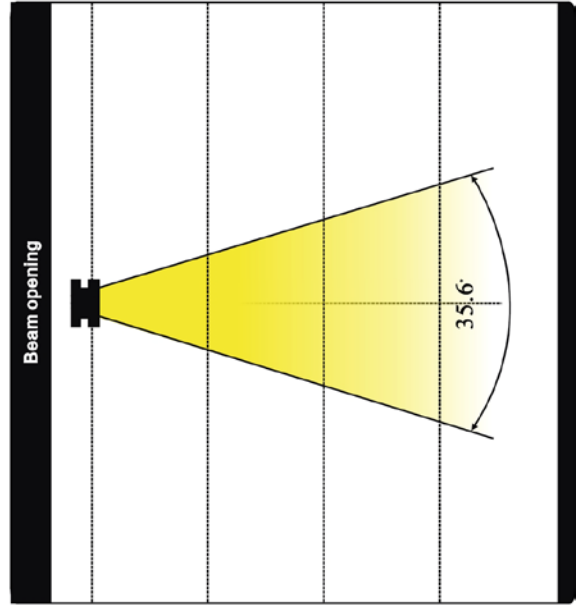
Intensity LUX 17330 7868 4330



Distance(m)	5	7.5	10
Diametre(m)	Φ0.64	Φ0.96	Φ1.27

Max. Beam angle

Intensity LUX 1398 685.7 399.8



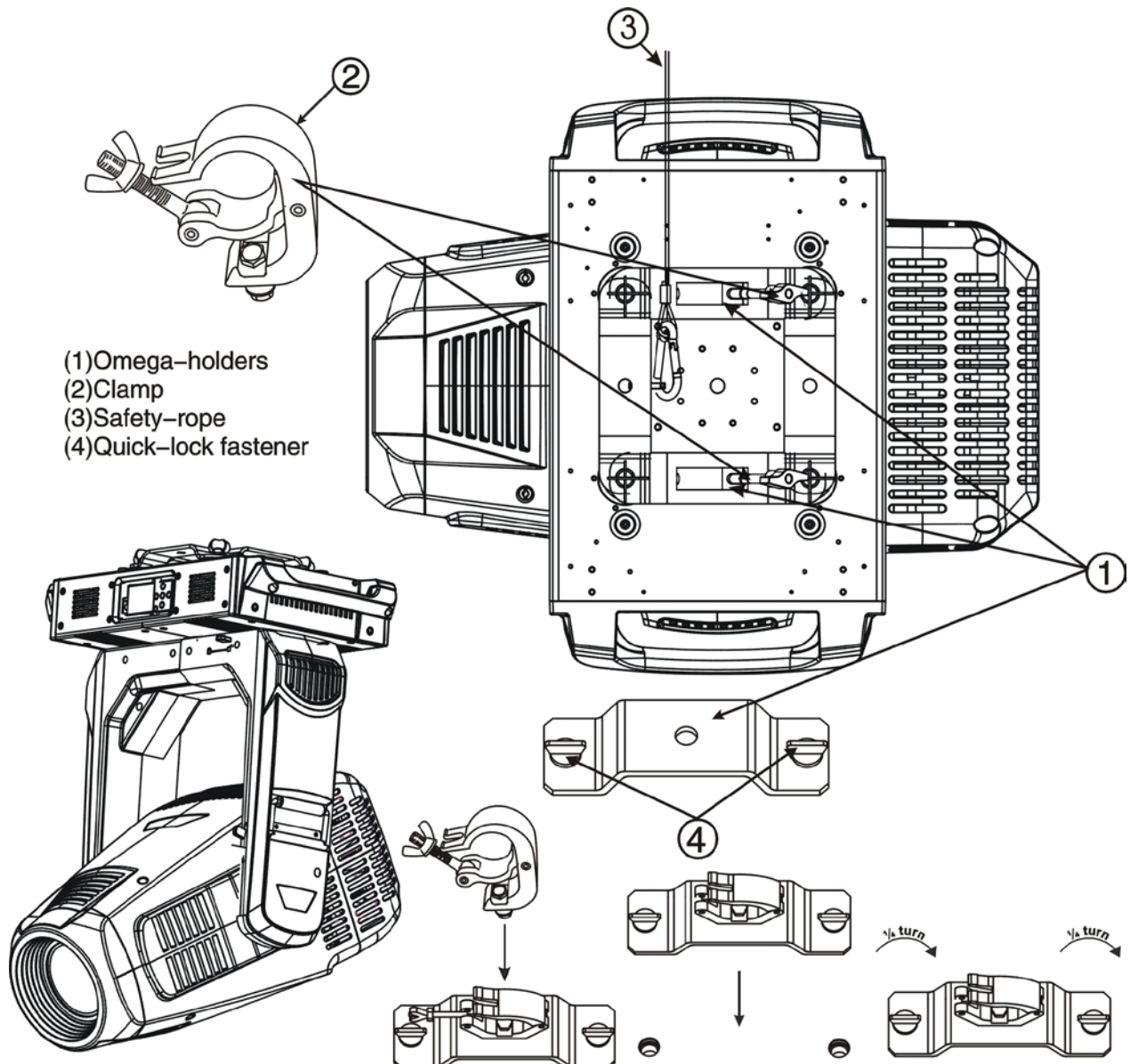
Distance(m)	5	7.5	10
Diametre(m)	Φ3.21	Φ4.81	Φ6.42

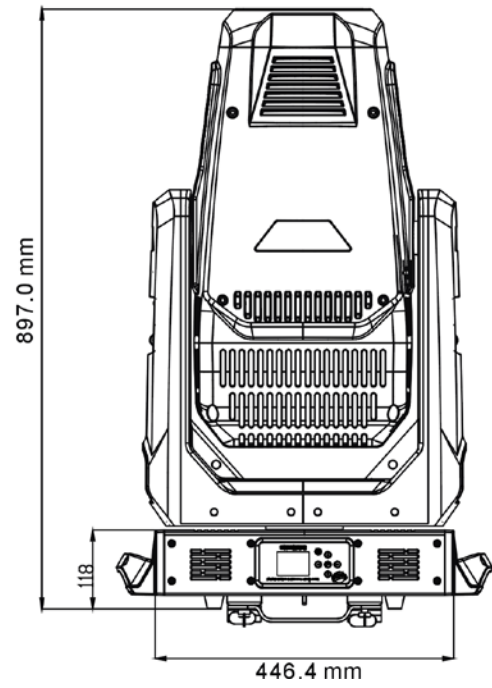
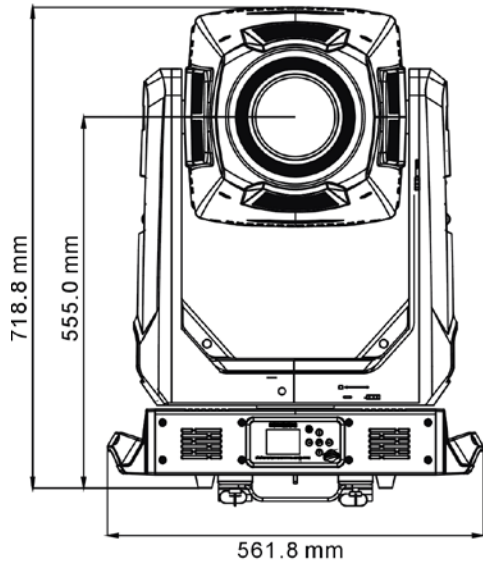
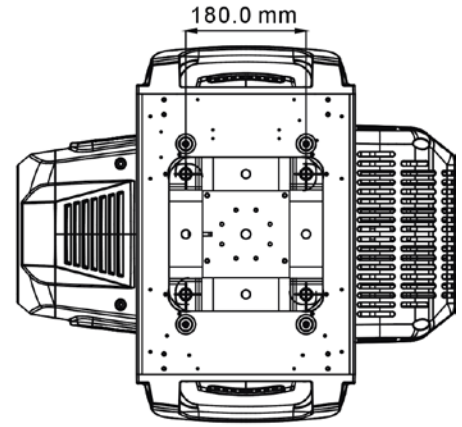
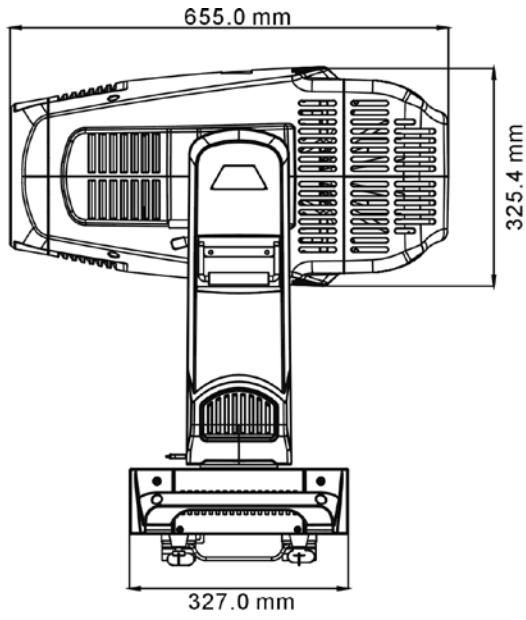
Installation Instructions

- 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

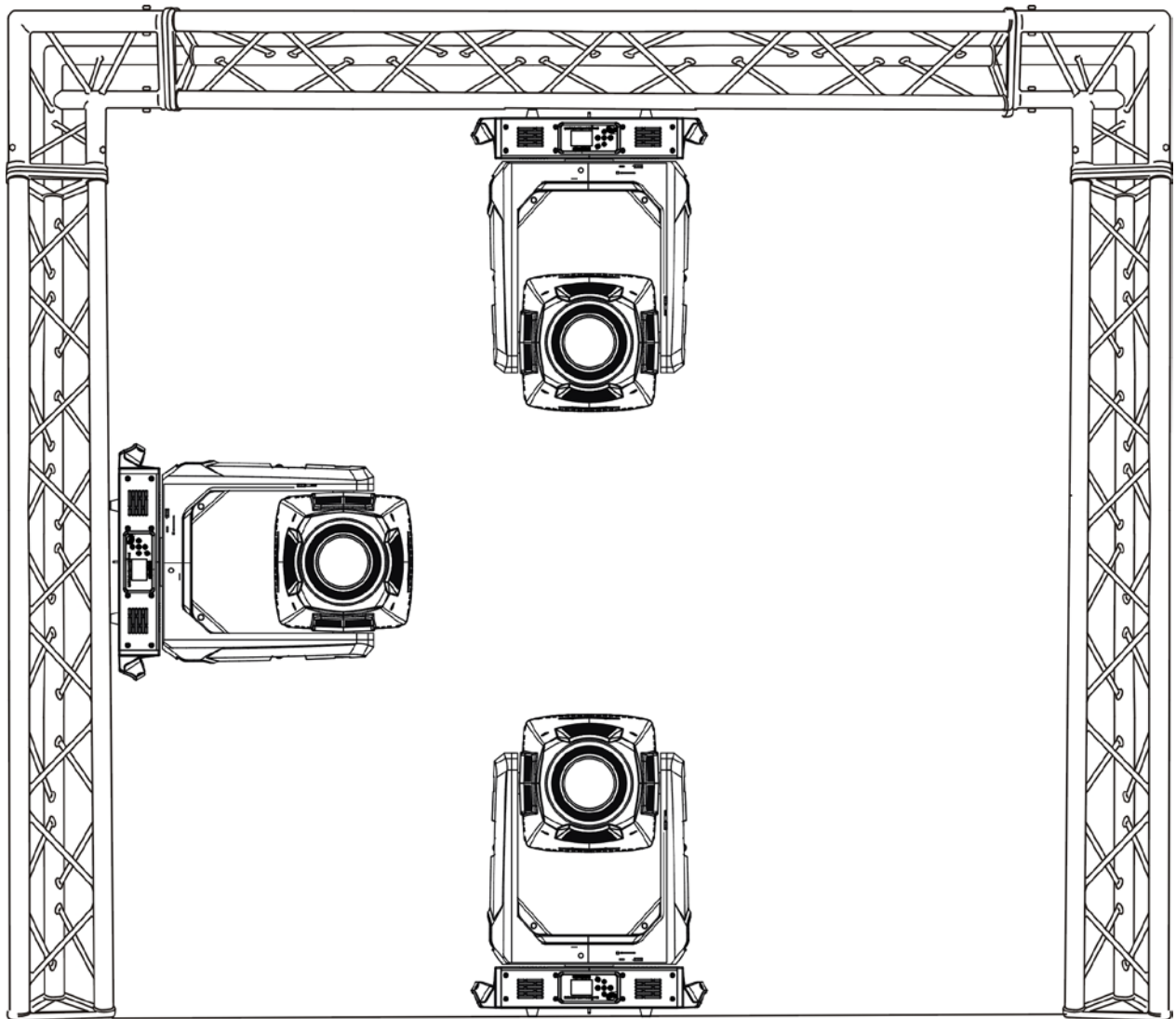




Mounting

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 fourth 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:

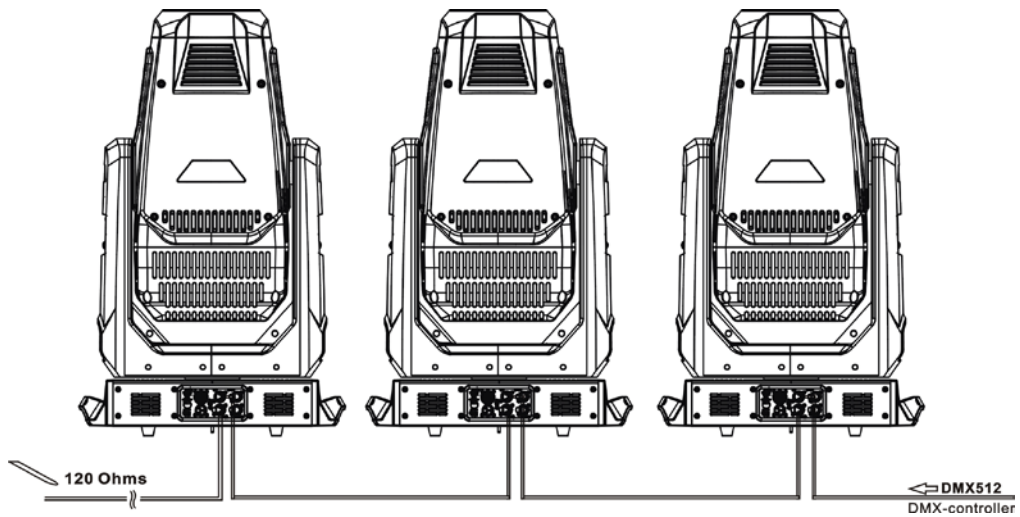
DMX Output
5-Pin XLR Socket



DMX Input
5-Pin XLR Socket



- 1: Ground
- 2: Signal (-)
- 3: Signal (+)
- 4: N.A.
- 5: N.A.



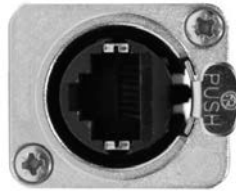
Ethernet - Connection

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.

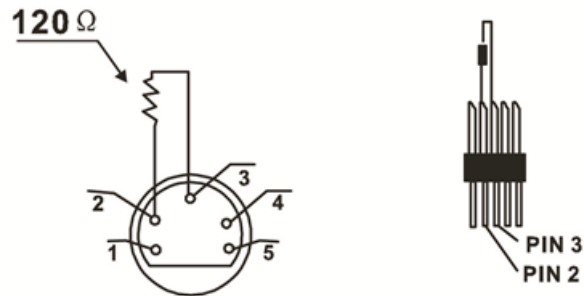
If you set the same address, all the units will start to “listen” to the same control signal from the same channel number. In other words, changing the settings of one channel will affect all the fixtures simultaneously.

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 club, 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 $120\ \Omega$ 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 Ttl Life Hrs Last Run Hrs LED Hours Timer PIN Clr Last Run LED Time PIN Clean LED Time	XXXX(Hours) XXXX(Hours) XXXX(Hours) XXXX(Hours) Password=XXX ON/OFF Password=XXX ON/OFF	Power on running time Fixture running time Clear Fixture Last time LED time LED Password Clear lamp time LED Password Clear LED time
	Error Info	Pan Coarse Tilt Coarse		Shows current error information
	Value Disp.	ALL, Auto Program, PAN.....		DMX Control DMX value display
	Head Temp.	XXX°C/°F		Temperature in the head
	Ethernet IP	Ethernet IP XXX. XXX. XXX. XXX 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 Pan Reverse Tilt Reverse Pan Degree Encoders Pan/Tilt Spd Hibernation Defogger	Close Shutter/Hold/ Auto Program/ Music Control ON/OFF ON/OFF 630/540 ON/OFF Speed 1~ 4 OFF, 01M~99M, 15M Defog OnOP	Auto run if no DMX Pan Reverse movement Tilt Reverse movement Pan Degree Select Movement Feedback Movement Mode Select Standby Mode Defogger On Operation

		Dimming Mode CMY Curve	Defog Off Defog OnPwr Standard /Theatrical Linear /Non-Linear	Defogger off Defogger on power Choose Dimming Mode Choose CMY Curve
	Select Input	DMX Only Art-Net On IP2 Art-Net On IP10 sACN	DMX Only Art-Net IP02 Art-Net IP10 sACN	
	Set Universe	000-255	Set Art-Net Universe	
	Service PIN	Service PIN RDM UID Ethernet IP Ether Mask IP Clr Err Info	XXXXXX XXX. XXX. XXX. XXX XXX. XXX. XXX. XXX ON/OFF	Service Password “ ” RDM PID Code Ethernet IP Ether Mask IP Clear Err information
	Disp. Setting	Shutoff Time Flip Display Key Lock	02~60m 05m ON/OFF ON/OFF	Display shutoff time Display Rev. 180 degree Key Lock
	Temp. C/F	Fahrenheit Celsius		Temperature switch between °C/°F
	ResetDefault	ON/OFF		Restore factory set.
Test	Home	All Pan&Tilt Colors Gobos Others		Reset All Reset Pan & Tilt Reset Colors Reset Gobos Reset Others
	Test Channel	PAN		Test function
	Manual Ctrl.	PAN =XXX :		Fine adjustment of the lamp
	Calibration	-Password- Pan =XXX :		Contact Service.

Preset	PlayBack	DMX Control Set To Slave Auto Program	Slave1,Slave2,Slave3 Master / Alone	DMX Control Slave setting Auto program
	Select Prog.	Prog. Part 1 = Program 1 ~ 10 Program 1 Prog. Part 2 = Program 1 ~ 10 Program 2 Prog. Part 3 = Program 1 ~ 10 Program 3		Select programs to be run
	Edit Prog.	Program 1 : Program 10	Program Test Step 01=SCxxx Step 64=SCxxx	Testing program Program in loop Save and exit
	Edit Scenes	Edit Scene 001 ~ Edit Scene 250	Pan,Tilt,... --Fade Time-- --Scene Time-- Input By Outside	Save and automatically return 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.xxx".
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.

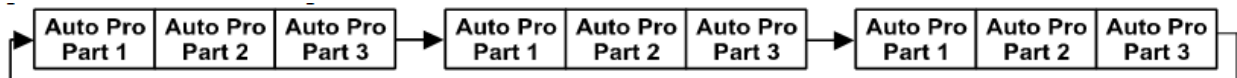
Scenes Input

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

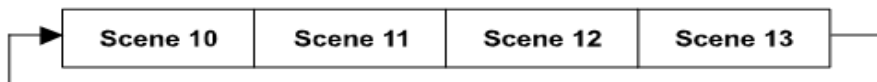
Program 6 includes scenes: 12, 13, 14, 15

Auto Pro Part 1 is Program 2;

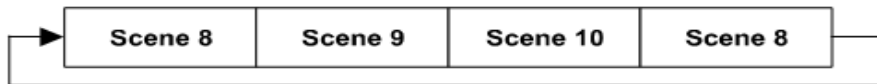
Auto Pro Part 2 is Program 3;

Auto Pro Part 3 is Program 6

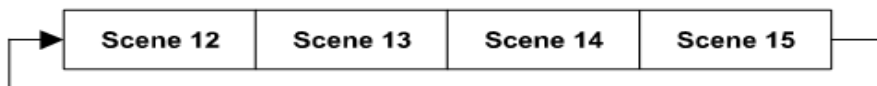
The 3 Slave groups run the Auto Program in certain time segments, as shown in the following picture:



Part 2:



Part 3:



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 7 8	Cyan Magenta Yellow	Pure Mix							255		
		Full Saturation	0		100%		00h				
		Open	255		0%		FFh				
		Cycle & Random Modes. Scan Speed controlled by Cyan Channel									
9	CTO	Slow Rate	0		0%		00h		255		
		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									
		1. Open (White)	0	14	0%	5%	00h	0Eh	0		
		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 3 Angle 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	
32	Prism Rotate Fine	Rotate Slowest to Fastest	4	255	2%	100%	04h	FFh	255
		Continuous mode							
33	Frost	Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	0
		Disengaged	0	1	0%		00h		
34	Focus Coarse	Variable Frost	2	254	1%		02h		127
		Full Frost	255		100%		FFh		
		Focus In	0		0%		00h		
35	Focus Fine	Focus Out	255		100%		FFh	255	
		Focus In	0		0%		00h		
36	Zoom Coarse	Focus Out	255		100%		FFh	127	
		Zoom In	0		0%		00h		
37	Zoom Fine	Zoom Out	255		100%		FFh	255	
		Zoom In	0		0%		00h		
38	Iris	Zoom Out	255		100%		FFh	255	
		Iris Closed	0		0%		00h		
		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.							
		Close	0	23	0%	9%	00h	17h	255
		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	
		...							
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.							
		Safe (normal operation)	0	9	0%	4%	00h	09h	0
		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.