POWER COLOR 150™
POWER SCAN 150™
POWER SCAN 150R™
POWER STAR 150™

User Manual
Version 1

POWER LINE™
by High End Systems®
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Unless otherwise stated, your product is covered by a one year parts and labor limited warranty. Dichroic filters and Lido/Patterns high resolution glass gobos are not guaranteed against breakage or scratches to coloring. It is the owner's responsibility to furnish receipts or invoices for verification of purchase, date, and dealer or distributor. If purchase date cannot be provided, date of manufacture will be used to determine warranty period.

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Note: Freight Damage Claims are invalid for fixtures shipped in non-factory boxes and packing materials.

Freight
All shipping will be paid by the purchaser. Items under warranty shall have return shipping paid by the manufacturer only in the Continental United States. Under no circumstances will freight collect shipments be accepted. Prepaid shipping does not include rush expediting such as air freight. Air freight can be sent customer collect in the Continental United States.

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Warranty is void if the product is misused, damaged, modified in any way, or for unauthorized repairs or parts. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
Introduction

Congratulations on purchasing your new fixture. We have endeavored to design quality and reliability to offer you a selection of advanced, fully intelligent DMX 512 fixtures with optimal results at a low budget. These fixtures are extremely advanced for their size and price, utilize a microprocessor system and are DMX 512 compatible. They are addressable on any of the 512 DMX channels, and can read any channel as well. The fixtures incorporate advanced software that alleviates the need for separate velocity channels. The fixtures can run in stand alone mode, can be slaved off another similar fixture in master/slave mode, or can be fully controllable by any DMX controller. The optical system was designed by computer CAD/CAM for optimal results and maximum light output. Aesthetics were not sacrificed, and the modern modular body has been designed on the latest 3D systems. Once again we would like to thank you for purchasing a Power Line fixture, and we are sure that it will provide you with easy operation and tremendous control power.

Caution - Always allow the fitting to cool down before removing the lid, with special regard to the lamp chamber. A minimum of 30 minutes is advised.
Caution - Remove all mains power to the fixture before servicing as lethal voltages are present.
Caution - Never power the fixture up without protection from the lamp as UVA and UVB radiation can be present.
Caution - This fixture should be allowed to cool for 30 minutes before moving.
Caution - Internal temperature can reach 600°C (1112°F)

Safety Points

1) Read these instructions
2) Keep these instructions
3) Heed all warnings
4) Follow the instructions
5) Do not use this apparatus near water
6) Clean the fixture only with a damp cloth, use a dry cloth on the optics.
7) Do not block any of the ventilation openings in the case.
8) Do not install near heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the grounding plug. A grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. When the third prong does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11) Use only attachments / accessories supplied by the manufacturer.
12) Use only the cart, stand, tripod or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug the apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as power supply cord or plug damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate, or has been dropped.
15) Do not look directly at the lamp.
RADIATION:
This apparatus does not emit radiation.

LA SÉCURITÉ AVANT TOUT!

Attention au danger des hautes tensions et des températures élevées à l'intérieur de votre projecteur à effets lumineux. Confiez l'entretien à un personnel qualifié.

Votre appareil est déjà équipé d'une lampe adaptée et optimisée. Le remplacement de la lampe ne pourra être effectué que par une personne dument qualifiée et en se référant au manuel de déinstallation des techniques.
N'utilisez que les éléments de fixation fournis pour attacher la fixation à la partie fixe. Les chaînes de sécurité devront être attachées à la patte métallique à l'appareil et doivent être capables de supporter le poids de l'appareil. Si vous bougez les supports de fixation, ne serrez pas trop fort les goujons de fixation lors de la remise en place des éléments.
L'appareil ne doit pas être installé à proximité de risques ou objets inflammables.
Ne pas utiliser l'équipement à des températures inférieures à 20°C ou supérieures à 40°C. Le taux IP de ce produit est de 20. Le bloc complet est en conformité avec un ralentissement de la propagation de la chaleur des flammes UL94 5V & CTI > 175.
Cet appareil est prévu uniquement pour une utilisation à l'intérieur, et doit être refroidi avant tout déplacement.
Si l'appareil est mobile, lors de l'installation, suivez les recommandations ci-dessus, assurez-vous que les câbles sont connectés en toute sécurité et que l'appareil est fixé correctement au dessus de la hauteur des têtes.

Recommandations Complémentaires
1) Lisez ces recommandations
2) Conservez ces instructions
3) Tenir compte de tous les avertissements
4) Suivre les recommandations
5) Ne pas utiliser cet équipement à proximité d'eau
6) Nettoyer l'appareil uniquement à l'aide d'un chiffon humide, utiliser un chiffon sec pour les parties optiques.
7) Ne pas obstruer les ouvertures de ventilation sur le bloc de l'appareil.
8) Ne pas installer près de sources de chaleur tels que radiateurs de chauffage ou autres équipements (comme les amplificateurs par exemple) pouvant produire de la chaleur.
9) Ne pas détourner l'objectif de sécurité des prises de terre. Une prise de terre est composée de deux lames et d'une pointe. Cette pointe est là pour votre sécurité. Si elle ne correspond pas à votre prise de connexion faites appel à un électricien pour le remplacement de l'ancienne prise.
10) Evitez que l'on marche sur le câble d'alimentation ou que l'on tire les prises et sur les sorties de câbles de l'appareil.
11) N'utilisez que les ustensiles de transports, stands, trépieds, crochet d'attaches ou tables préconisés par le fabricant ou vendus avec l'équipement. Lors du transport de l'appareil soyez prudents afin de ne pas provoquer de dommages en cas de renversement de l'appareil.
12) N'utilisez que les accessoires de fixations par le fabricant.
13) Adressez-vous au personnel qualifié pour le service après-vente. Des réparations sont nécessaires si l'appareil a été endommagé d'une manière ou d'une autre par exemple si un câble d'alimentation ou une prise ont été abîmés un liquide a coulé ou des objets sont tombés à l'intérieur de l'appareil l'appareil est resté sous la pluie ou dans l'humidité si l'appareil ne fonctionne pas ou est tombé.
14) Débranchez l'appareil en cas d'orages ou de non utilisation prolongée.
15) Ne pas regarder directement la lampe.
RADIATIONS
Cet appareil n'émet aucune radiation.
Preparing to Use the Fixture

Use only the components provided with the fixture to attach the handle. Safety chains should be attached to the metal tab on the rear of the fixture, and must be capable of handling the mass of the fixture. A suitably rated power cord set complying with the requirements of UL 817, type SV or SJ, 18AWG VW-1, with a minimum length of 1.5 m (4.9 ft) must be used. The power supply spur / branch feeding the equipment must be individually fused to suit the power consumption of the fixture. (See the power consumption rating on the equipment label).

Suitable data cable conforming to the DMX standard (USITT DMX512 / 1990) must be used to conform to current CE / FCC legislation, such as Belden 9841.

Do not mount the fixture near curtains or any flammable objects.

Do not use if ambient (room) temperature is below 50°F (10°C) or above 104°F (40°C). The IP rating of this product is 20. Overall enclosure complies with flame retardancy UL94 5V & CTT-175.

This equipment is for indoor use only and must be allowed to cool before moving.

All personality options are set from the back panel of the fixture by means of the light-emitting d D) display and keys. The starting channel can be changed at any time.

If you move the fixture to another venue, follow directions above and make sure the cables are routed in a safe manner. Also make sure the fixture is mounted securely above head height.

To hang the fixture:
1. Install a ‘C’ clamp to the yoke through the ½ in (13 mm) hole. The fixture is now ready for permanent installation.
2. Hang the fixture and position it as necessary.
3. When the required angle is reached, lock the fixture in place with the thumb screw. The recommended mounting position is ± 80° from vertical (mirror at top).

Programming the Fixture

You program the fixture using the four keys located by the DMX connectors near the rear of the fixture. Programming choices are indicated on the LED display. As the display characters are limited, h the symbols and their functions:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>PAN movement of the mirror (horizontal)</td>
</tr>
<tr>
<td>t</td>
<td>TILT movement of the mirror (vertical)</td>
</tr>
<tr>
<td>y</td>
<td>YES or NO</td>
</tr>
<tr>
<td>o</td>
<td>OPTION (wide angle or normal mirror movement on pan or tilt)</td>
</tr>
</tbody>
</table>

The keys are defined as:
- **MODE** — press to accept or select a mode
- **SELECT** — press to scroll between options in the selected mode
- **(UP) / (DOWN)** — changes modes, or adjusts the value of the selected option

Using Program Mode

Program mode allows you to set the DMX start channel, invert pan/tilt movement, set wide or narrow angle mirror movement and lock programming. Please note that if the channel number will not change in the “quick change” function, the memory lock is active. To remove this, see “Setting the programming lock” section below.

Setting the DMX Start Channel

To alter the channel number while it is flashing across the display, press either the ↑ or ↓ increase or decrease the number.

To set the fixture to any DMX channel:
1) Toggle to the c option using the MODE key.
2) Press SELECT.
3) When you have selected a value to alter, press either the ↑ or ↓ to change the value.
4) Press SELECT.
5) To finish, press MODE until the channel flashes across the display.
Inverting the Pan and Tilt Movement
This option allows you to invert the pan and tilt mirror movement. (Most controllers are capable of doing this automatically, so consult the documentation.)

To invert the pan and tilt motor movement:
1. Toggle to the I option using the MODE key.
2. Toggle to one of the following options using the SELECT key:
   - P indicates pan movement
   - t indicates tilt movement.
3. Press the ↑ or ↓ key until one of the following appears in the display:
   - y indicates inverted movement.
   - n indicates normal movement.
4. Press SELECT.
5. Finish, press MODE until the channel flashes across the display.

Setting Angle of Movement
This feature is only available on the Power Scan 150 fixture.
This option allows you to set the angle of mirror movement. If the option is selected (YES), the wide angle (164.7° pan / 114° tilt) movement is selected, this is also the factory default. If the option is not selected (NO), the standard angle mirror movement (123.3° pan / 55.8° tilt) will be selected.

To select the mirror movement angle:
1. Toggle to the o option using the MODE key.
2. Toggle to one of the following options using the SELECT key:
   - P indicates pan angle setting.
   - t indicates tilt angle setting.
3. Press the ↑ or ↓ key until one of the following appears in the display:
   - y (wide angle movement)
   - n (narrow angle movement)
4. Press SELECT.
5. To finish, press MODE until the channel flashes across the display.

Setting The Programming Lock
The programming lock is active and authorised programming of options or channel selection. If this is active, the first press of the MODE key will display L to indicate the lock has to be removed before programming. This feature is not available on the Power Scan 150R fixture.

To lock / unlock the fixture:
1. Press the MODE key until L appears in the display.
2. Press SELECT.
3. Press the ↑ or ↓ key until one of the following appears in the display:
   - y locks programming
   - n unlocks programming
4. Press SELECT.
5. To finish, press MODE until the channel flashes across the display.

Resetting fixture and displaying fixture details
It is possible to obtain model number and software versions through the keyboard and display. First press either the ↑ or ↓ to display the channel number for reference. Then change the DMX channel address to c997 (see section setting the “DMX starting channel” above). When the display has finished flashing the DMX channel (c997), pressing the ↓ key will show the model number and the ↑ key will show the software version (a 4 digit code is used). To leave this mode, pressing the select key will reset the fixture after a short delay and the previous DMX address will now be returned to.

Controlling the Fixtures with a DMX Controller
To control the fixtures using a DMX controller (such as the Power Cue DMX™), first assign each fixture a unique DMX starting channel, as discussed in "Error! Reference source not found." on page 5. Then see "DMX Protocol" on page 7 for the DMX protocol for each fixture. You can also operate fixtures in stand-alone (local) mode (without a DMX controller), as discussed in the next section.
Using the Fixtures in Local Mode

This section discusses how to operate one or more fixtures in local mode, triggered by the internal microphone on the master fixture.

Using a Single Fixture in Local Mode

To use a single fixture in local mode, set its DMX start channel to c000, as discussed in "Error! Reference source not found." on page 6.

Linking Fixtures in Local Mode

This section discusses how to set up multiple fixtures which operate in local mode. All fixtures are driven by the master fixture, which must be the first fixture in the link. To obtain the best effect, it is recommended that different fixture types be put on the same link (for example, you should not put a Power Scan 150 on the same link as a Power Star 150). Instead, set up separate links for each fixture type.

To set up a link with local mode fixtures:

1. Set the first fixture in the link to channel c000, as discussed in "Error! Reference source not found." on page 6. This fixture (the master fixture) will pick up sound with its internal microphone, driving effects on the other fixtures in the link.

2. Assign DMX channels to the other fixtures. It is recommended that an even number of fixtures be driven by the same DMX "out" connector of the last fixture (put a 100 ohm resistor between pins 2 and 3).

<table>
<thead>
<tr>
<th>Power Scan 150</th>
<th>Power Star 150</th>
<th>Power Color 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Scan 150R</td>
<td>Power Star 150R</td>
<td>Power Color FOI 150</td>
</tr>
<tr>
<td>Master fixture:</td>
<td>c000</td>
<td>c000</td>
</tr>
<tr>
<td>Slave mimic fixtures:</td>
<td>c001</td>
<td>c002</td>
</tr>
<tr>
<td>Slave opposite fixtures:</td>
<td>c007</td>
<td>c008</td>
</tr>
</tbody>
</table>

DMX Protocol

This section shows the DMX protocol for the following fixtures:

1) Power Color 150
2) Power Color FOI 150
3) Power Scan 150
4) Power Scan 150R
5) Power Star 150

You use the DMX protocol information in this section to control the fixture with a DMX controller. You can also operate one or more fixtures in standalone (local) mode, as discussed in "Using the fixtures in local mode" on page 7.

Table 1 below shows how DMX channels are assigned to each fixture. Adding the number of DMX channels to the base (starting) channel results in the DMX channel range each fixture uses. For example, a Power Color 150 fixture set to base channel c010 uses DMX channels 10 to 12 inclusive.

**Table 1. Fixture Functions by DMX Channel Number**

<table>
<thead>
<tr>
<th>Model</th>
<th>Function by Channel Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base channel</td>
</tr>
<tr>
<td>Power Color FOI 150</td>
<td>Gobo</td>
</tr>
<tr>
<td>Power Color 150</td>
<td>Gobo</td>
</tr>
<tr>
<td>Power Star 150</td>
<td>Effects</td>
</tr>
<tr>
<td>Power Scan 150</td>
<td>Pan</td>
</tr>
<tr>
<td>Power Scan 150R</td>
<td>Pan</td>
</tr>
</tbody>
</table>

Each DMX channel supports values from 0 to 255 (or 0 to 100% on a slider). The following sections list these values, alphabetically by feature name.

Pan and Tilt Mirror

The position and velocity for each motor is defined from a single 8-bit DMX channel using special prediction software (no velocity information is required).
Effects Barrel
The barrel has variable velocity and is bi-directional. This section lists DMX values for the effects barrel for the Power Star 150.

Stop (no movement) 0, 127-129
Clockwise (higher value means slower movement) 1-126
Counter-clockwise (lower value means slower movement) 130-255

Gobo
This section lists DMX values for the gobo wheel on all fixtures.

<table>
<thead>
<tr>
<th>Gobo</th>
<th>Gobo (Power Star 150 and Power Scan 150)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Open</td>
</tr>
<tr>
<td>50% aperture</td>
<td>Arrow</td>
</tr>
<tr>
<td>30% aperture</td>
<td>Catherine wheel</td>
</tr>
<tr>
<td>10% aperture</td>
<td>Meteor shower</td>
</tr>
<tr>
<td>Front</td>
<td>Line</td>
</tr>
<tr>
<td>Color shift (up)</td>
<td>Multi-line triangle</td>
</tr>
<tr>
<td>Color shift (down)</td>
<td>Spiral</td>
</tr>
<tr>
<td>Line cube</td>
<td>Line cube</td>
</tr>
<tr>
<td>Triangle</td>
<td>Triangle</td>
</tr>
<tr>
<td>Flower</td>
<td>Flower</td>
</tr>
<tr>
<td>Planet</td>
<td>Planet</td>
</tr>
<tr>
<td>Propeller</td>
<td>Propeller</td>
</tr>
<tr>
<td>Cone</td>
<td>Cone</td>
</tr>
<tr>
<td>Custom position</td>
<td>Custom position</td>
</tr>
<tr>
<td>Slow auto-step</td>
<td>Slow auto-step</td>
</tr>
<tr>
<td>Medium auto-step</td>
<td>Medium auto-step</td>
</tr>
<tr>
<td>Fast auto-step</td>
<td>Fast auto-step</td>
</tr>
</tbody>
</table>

Gobo (Power Scan 150R)

<table>
<thead>
<tr>
<th>Gobo</th>
<th>Gobo (Power Color FOI 150)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft edge</td>
<td>Shuttered</td>
</tr>
<tr>
<td>Arrow</td>
<td>Open</td>
</tr>
<tr>
<td>Circle</td>
<td>50% aperture</td>
</tr>
<tr>
<td>Curved line</td>
<td>30% aperture</td>
</tr>
<tr>
<td>Big fan</td>
<td>10% aperture</td>
</tr>
<tr>
<td>Circle dots</td>
<td>Color shift (up)</td>
</tr>
<tr>
<td>Square</td>
<td>Color shift (down)</td>
</tr>
<tr>
<td>Triangle</td>
<td>Variable-speed flash</td>
</tr>
<tr>
<td>Circle segments</td>
<td>Sound-activated strobe</td>
</tr>
<tr>
<td>Heart</td>
<td>226-252</td>
</tr>
<tr>
<td>Double circle</td>
<td>253-255</td>
</tr>
</tbody>
</table>

Color
This section lists DMX values for the color wheel for all fixtures. Colors can be either split-colors or full colors (also called snap-to colors).

<table>
<thead>
<tr>
<th>Split-colors</th>
<th>Snap-to colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow scan</td>
<td>Open</td>
</tr>
<tr>
<td>Open/UV</td>
<td>Open</td>
</tr>
<tr>
<td>UV/Hot pink</td>
<td>Cyan</td>
</tr>
<tr>
<td>Hot pink/medium blue</td>
<td>Yellow</td>
</tr>
<tr>
<td>Medium blue/red</td>
<td>Lime green</td>
</tr>
<tr>
<td>Red/dark green</td>
<td>Orange</td>
</tr>
<tr>
<td>Dark green/Blue magenta</td>
<td>Blue magenta</td>
</tr>
<tr>
<td>Blue magenta/orange</td>
<td>Dark green</td>
</tr>
<tr>
<td>Orange/tint green</td>
<td>Red</td>
</tr>
<tr>
<td>Lime green/yellow</td>
<td>Medium blue</td>
</tr>
<tr>
<td>Yellow/cyan</td>
<td>Hot pink</td>
</tr>
<tr>
<td>Cyan/open</td>
<td>U</td>
</tr>
</tbody>
</table>

Gobo Rotation
This section lists DMX values for gobo rotation for the Power Scan 150R.
Shutter
This section lists DMX values for the shutter for all fixtures except the Power Color FOI 150, which uses the gobo wheel to shutter the light output.
Blackout 0
Wipe from blackout to fully open 0-127
Strobe speed, slow to fast 128-254
Locally sound-activated strobe 255

Special Functions
This section lists DMX values for special functions available on all fixtures.
Home all motors Value of 1 on all channels for 4 seconds
Put fixtures in local mode Value of 255 on all channels
Revert from local mode to controller mode Reduce value of any DMX channel from 255 to below 210

Troubleshooting and General Maintenance
This section discusses typical troubleshooting suggestions. If the problem you are having is not listed here, contact High End Systems Customer Service in one of the ways on page 1.

Cleaning the Case, Lenses and mirrors
The case may be cleaned with a dry cleaning cloth. Should it be necessary to use a cleaning compound on the case, it is important to use a non-abrasive, non-bleaching, solvent-free cleaning compound, which leaves no residue. Special care must be taken when cleaning the lens and mirror. Avoid touching any of the optical elements in the fixture with your fingers. This fixture must not be immersed in water.

Other Troubleshooting Suggestions

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>SUGGESTED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixture does not turn on</td>
<td>Check power line connection. Check the green power LED, located near the display visible through the vents. The LED should be ON solid when the fixture is receiving power.</td>
</tr>
<tr>
<td></td>
<td>If still not functioning, contact Customer Service.</td>
</tr>
<tr>
<td>Output power seems low</td>
<td>Make sure the fixture is at its optimum mounting angle, ± 80° from vertical, mirror at the top.</td>
</tr>
<tr>
<td></td>
<td>Make sure the mirror and the (removable) front lens is clean.</td>
</tr>
<tr>
<td></td>
<td>Seek technical help to check optimization of the lamp.</td>
</tr>
<tr>
<td>Fixture does not respond to DMX signal</td>
<td>Check the cable from the controller and along the chain. Look for bad connections and bad cables.</td>
</tr>
<tr>
<td></td>
<td>Make sure a terminator is installed on the female DMX &quot;out&quot; port of the last fixture in the link. (Put a 100 ohm resistor across pins 2 &amp; 3 of the XLR connector).</td>
</tr>
<tr>
<td></td>
<td>Check controller is sending a DMX signal.</td>
</tr>
<tr>
<td>Fixture loses position on one or more of its functions</td>
<td>Check the motors can move freely and are not hindered at all, else contact Customer Service for further instructions.</td>
</tr>
<tr>
<td>Fixture turns on but lamp does not strike.</td>
<td>If the fixture resets correctly, check it is receiving the correct DMX signal.</td>
</tr>
<tr>
<td>The fixture is set to a DMX channel but performs in local mode</td>
<td>Check the DMX channel is not set to 000.</td>
</tr>
<tr>
<td></td>
<td>Check the polarity of the DMX signal pin 3 is +ve / hot and 2 is -ve.</td>
</tr>
<tr>
<td>The fixture does not respond to the music in local or controller sound activated strobe</td>
<td>Make sure the fixture is close to a mid range sound source. Try tapping the fixture's internal microphone, located beside the female XLR connector, to see if it responds. If so, move the fixture closer to the audio source.</td>
</tr>
</tbody>
</table>
SPECIFICATION
Physical
Mass: 18.3 pounds (8.3Kg)
Dimensions for Power Scan 150 or Power Star 150: 19.5 in (495mm) x 10 in (255mm) x 7.9 in (200mm)
Dimensions for Power Color 150 and Power Color POI 150: 12 in (305mm) x 10 in (255mm) x 7.9 in (200mm)

Power
Power consumption with the Aerostream 150W lamp @120V / 60Hz = 230W

Optical
Reflector: Custom polished aluminium multifaceted for even light spread across the beam.
Design: Computer optimized optical system with 50% higher output than other brand projectors.
Lenses: White crown glass, 2 plano-convex lenses are used.

Movements
The position and velocity for each motor is determined from a single standard 8-bit DMX channel using special prediction software.
 PAN: 165°, >2900 step accuracy (wide angle)
 TILT: 114°, >1000 step accuracy (wide angle)
 COLOR: 320° movement, >1400 steps
 GOBO: 340° movement, half stepped.
 SHUTTER: (Rotation series) Half stepped movement.
 BARREL: 360° rotation, 12,800 steps.

Mechanical Specifications
Motors: Type 17 stepper motor, custom designed (one motor per channel).
Construction: Injection moulded thermo-polymer, high tolerance housing.
Cooling: Custom fan with special long life sleeve bearings for prolonged running times.
Operating position: Lamp 5° from vertical (mirror at top) or horizontal
Finish: Color impregnated thermo-polymer with spark finish.

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**TECHNICAL & MAINTENANCE SECTION**
For use by qualified service personnel only

Lethal voltages and high temperatures exist inside the lighting effects and must be serviced by qualified personnel only.

This section discusses the following maintenance procedures:
1) Cleaning the fan
2) Replacing the power supply fuse
3) Replacing and optimizing a lamp
You can also see "Trouble shooting" on page 9 for basic troubleshooting suggestions.

**GENERAL INSTRUCTIONS**

Caution - These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock do not perform any servicing other than contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified personnel.

Some important points when servicing or installing effects lighting equipment.
1) Caution - Always leave the fitting to cool down before removing the lid, with special regard to the lamp chamber. A minimum of 30 minutes is advised.
2) Caution - Remove all mains power to the unit before servicing as lethal voltages are present.
3) Caution - Never power the unit up without protection from the lamp at UVA and UVB radiation can be present.
4) Caution - This unit should be allowed to cool for 30 minutes before moving.
5) Caution - Internal temperature can reach 600°C (1112°F)
6) Always remove the fixture from its mounted position and never attempt to service the equipment while in situ.
7) Always use the mounting hardware provided and ensure that all locking washers are in fitted in place.
8) Do not install the unit near curtains or anything flammable.
9) Ensure the unit is corched (class 1 product).
10) Observe connection ports and use only the correct connectors.
Never bypass any of the safety mechanisms built into the unit.
2 Ensure that ambient temperature (room) is between 10 °C and 40 °C. The IP rating of these products is 20.
3 This equipment is for indoor use only.
4 If you are unsure about any aspect of the unit, seek advice before continuing.
5 Caution - Risk of electric shock, do not open.

RECOMMANDATIONS GÉNÉRALES
Attention. Ces indication de réparations ne s'adressent qu’au personnel qualifié. Pour éviter les risques de décharges électriques, n'effectuez pas de réparations autres que celles présentées dans ce manuel d'emploi sauf si vous êtes qualifiés pour le faire. Adressez-vous aux spécialistes pour toute autre intervention.

Quelques points importants lors de l'installation ou de la réparation de projecteurs lumineux à effets:

1) Attention. Laissez toujours refroidir l'équipement avant d'ouvrir l'appareil, en faisant particulièrement attention à la partie de l'appareil contenant la lampe. Un minimum de 30 minutes d'attente est conseillé.
2) Attention. Coupez toute alimentation électrique connectée à l'appareil avant une intervention pour éviter des problèmes électriques.
3) Attention. Ne mettez jamais l'appareil en route sans protection au niveau de la lampe car des radiations UV A et UV B peuvent se produire.
4) Attention. Cet appareil doit être refroidi pendant 30 minutes avant tout déplacement.
5) Attention. La température interne peut atteindre 600 °C.
6) Enlevez toujours la partie fixe de sa position initiale d'utilisation, et n'essayez pas de réparer l'appareil en cours d'utilisation.
7) Utilisez toujours le matériel de fixation fourni et assurez-vous que toutes les rondelles de fixation sont à leur place.
8) N'installez pas d'éléments métalliques ou autres objets inflammables à proximité de l’appareil.
9) Assurez-vous que l'appareil est connecté à la terre (produit de catégorie I).
10) Vérifiez les connections et utilisez uniquement des connections adaptées.
11) Ne jamais court-circuiter les mécanismes de sécurité internes de l'appareil.
12) Assurez-vous que la température ambiante est située entre 10 °C et 40 °C. Le taux IP de ce produit est de 20.
13) Cet équipement est prévu uniquement pour une utilisation à l'intérieur.
14) Si vous n'êtes pas sûr d'un des éléments de l'appareil, renseignez-vous avant de continuer.
15) Attention. Risque de décharges électriques, ne pas ouvrir.

Cleaning the Fan
Every three to six months, if necessary to remove built-up dust and dirt from the fan, you can clean them using a low-pressure compressed air source. You must place an object (not your fingers!), such as a pen or a screwdriver, into the fan fins to prevent them from spinning while you are blowing air into them.

**CAUTION**

Make sure the fan fins are held stationary. The fan can be severely damaged if they are allowed to spin with the force of compressed air.

**Use only a low-pressure compressed air source (25 psi or lower).**

To avoid personal injury, do not expose your eyes or skin to the direct jet of compressed air, since it can constitute a health hazard. Use suitable protection for your eyes and exposed skin.

To clean the fans:

1) Disconnect power from the fixture, and allow it to cool.
2) Remove the power cord and any DMX cables from the fixture.
3) Place the fixture on a clean work surface in a position that allows you to access it easily. Make sure the fixture has cooled sufficiently to allow safe access (at least 30 minutes).
4) Loosen the lid by turning the three locking bolts (one on the identity label, the other two on the rear end of the unit) counterclockwise.
5) Remove the lid.
6) Hold the fan fins in place with an object (not your fingers!), such as a screwdriver or pen.
7) Observing the cautions above, use the low-pressure compressed air source to remove dust and dirt from the fan.
8) Make sure the compressed air is blowing dust and dirt out of the fixture, not into the fixture.
9) Replace the cover, DMX cables, and power cord.
Replacing the Power Supply Fuse

The fuse must be replaced with a fuse of the specified type and rating only. This is indicated on the label adjacent to the power connector.

If the fixture fails to power up, and you have determined that it is attached to an appropriately-rated power source, you can examine the power supply fuse.

To replace the power supply fuse:
1. Disconnect power from the fixture, and allow it to cool.
2. Locate the fuse holder, molded into the power connector.
3. Remove the power cord from the fixture.
4. Gently remove the fuse holder with a small flat-blade screwdriver.
5. If the fuse is damaged, replace it the same type only as indicated on the label adjacent to the power connector. Please be aware that there are two possible locations for the fuse to fit in the draw. The closest to the fixture is the correct location, the other is not used.

Replacing a Lamp

This section discusses how to replace a lamp, and how to optimize the lamp. For best performance, you must optimize a new lamp immediately after installing it.

To replace the lamp:
1. Disconnect power from the fixture, and allow it to cool.
2. Remove the power cord and any DMX cables from the fixture.
3. Place the fixture on a clean work surface in a position that allows you to access it easily.
4. Make sure the fixture has cooled sufficiently to allow safe access (allow 30 minutes).
5. Loosen the lid by turning the three locking bolts (one on the identity label the other two on the rear end of the unit) counterclockwise.
6. Remove the lid.
7. Rotate the fixture so the lamp is closest to you, and the reflector is facing away.
8. With a small flat-blade screwdriver inserted between the base of the lamp and its holder, gently ease the old lamp out of its holder.
9. Push the lamp forward and twist the reflector to the side on its mounting springs.
11. Installing the new lamp is the reverse action of the above. Do not touch the quartz envelope of the lamp, and always handle it by the ceramic base.
12. Align the pins with the lamp holder and gently push the lamp in.
13. Make sure the internal quartz sphere has approximate 5mm (0.2 in) showing from the reflector for optimum power and is not off-center.
14. Re-fit the case lid and make sure all case lid screws are replaced tightly.

Optimizing a Lamp

Optimizing the lamp places the arc at the focal point of the reflector, and is necessary after either:
1) You install a new lamp
2) You notice a reduction in lamp output, or "hot spots" in the light beam

To optimize the lamp:
1. Make sure the case lid is properly installed.
2. Connect the fixture to an appropriately-rated power supply. (See the label adjacent to the power cord for details.)
3. Allow the fixture to come. After homing, the lamp strikes automatically.
4. Send the correct DMX command from a controller to select an open gobos and open color. Set the mirror to be midway on the pan and tilt or the barrel not rotating for the STAR 150 fixture. Ensure the shutter is fully open.
1. Orient the fixture so the beam will project onto a flat, white surface at least 10 ft (3 m) away.
2. Make sure the light beam is round, and not oval.
3. Manually turn the lens tube to focus the beam until its edge is sharp.
4. Locate the three optimizing Phillips screws, inset on the fixture's base.
5. Turn each screw until the beam is at its maximum brightness, and the light level is uniform across the beam. (Do not leave "hot spots" in the beam.)

If you do not notice any difference, try fully loosening all three screws and individually retightening them.