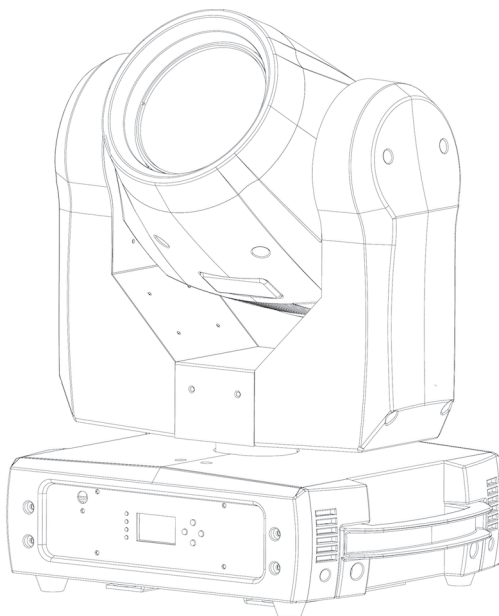


MH 3 Beam



User Manual



Professional Entertainment Technology

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Manual: Revision E

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Safety information



WARNING!

Read the safety precautions in this manual before installing, operating or servicing this product.

The following symbols are used to identify important safety information on the product and in this manual:



Warning!

Safety hazard. Risk of severe injury or death.



Warning!

Powerful light emission. Risk of eye injury.



Warning!

See user manual for important safety information.



Warning!

Hazardous voltage. Risk of lethal or severe electric shock.



Warning!

Hot surfaces and fire hazard.



Warning! Risk Group 1 product according to EN 62471. Do not look directly into the beam. Do not view the light output with optical instruments or any device that may concentrate the beam.

This lighting fixture is for professional use only and must be installed by a qualified technician. It is not for household use. It presents risks of severe injury or death due to fire hazards, electric shock and falls. It produces a powerful, concentrated beam of light that can create a fire hazard or a risk of eye injury if the safety precautions below are not followed.



Install, operate and service RUSH by Martin™ products only as directed in their user manuals, or you may create a safety hazard or cause damage that is not covered by product warranties.

Follow the safety precautions listed below and observe all warnings in this manual and printed on the product. Keep this user manual for future use.

For the latest user documentation and other information for this and all Martin™ products, please visit the Martin website at <http://www.martin.com>

If you have any questions about how to install, operate or service the fixture safely, please contact your Martin™ distributor (see www.martin.com/distributors for details) or call the Martin™ 24-hour service hotline on +45 8740 0000, or in the USA on 1-888-tech-180.

Respect all locally applicable laws, codes and regulations when installing, operating or servicing the fixture.



Protection from electric shock

Do not expose the fixture to rain or moisture.

Disconnect the fixture from AC power before carrying out any installation or maintenance work and when the fixture is not in use.

Ensure that the fixture is electrically connected to ground (earth).

Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.

Socket outlets or external power switches used to supply the fixture with power must be located near the fixture and easily accessible so that the fixture can easily be disconnected from power.

Replace defective fuses with ones of the specified type and rating only.

Isolate the fixture from power immediately if the power plug or any seal, cover, cable, or other component is damaged, defective, deformed, wet or showing signs of overheating. Do not reapply power until repairs have been completed.

Before using the fixture, check that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.

Use only a Neutrik PowerCon cable connector to connect to the power input socket.



Protection from burns and fire

Do not operate the fixture if the ambient temperature (T_a) exceeds 40° C (104° F).

The surface of the product casing can reach up to 85° C (185° F) during operation. Avoid contact by persons and materials. Allow the fixture to cool for at least 10 minutes before handling.

Keep flammable materials well away from the fixture. Keep all combustible materials (e.g. fabric, wood, paper) at least 100 mm (4 in.) away from the fixture's head.

Ensure that there is free and unobstructed airflow around the fixture. Provide a minimum clearance of 100 mm (4 in.) around fans and air vents.

Do not illuminate surfaces within 12 m (39.4 ft.) of the fixture.

Do not attempt to bypass thermostatic switches or fuses.

Do not stick filters, masks or other materials onto any optical component.



Lamp safety

Install only a lamp that is approved by Martin™ for use in the product.



Prolonged exposure to an unshielded discharge lamp can cause eye and skin burns. Do not look at an exposed lamp while it is lit. Do not operate the fixture with missing or damaged covers, shields, lenses, ultraviolet screens or any optical component.

A hot discharge lamp is under pressure and can explode without warning. Allow the fixture to cool for at least 2 hours and protect yourself with safety glasses and gloves before handling a lamp.

Replace the lamp immediately if it becomes visually deformed, damaged or in any way defective.

Monitor hours of lamp use. Replace the lamp when it reaches the limit of its service life as specified in this manual or by the lamp manufacturer. If you exceed the lamp lifetime, the lamp may explode and damage the fixture.

If the quartz envelope of a discharge lamp is broken, the lamp releases a small quantity of mercury and other toxic gases. If a discharge lamp explodes in a confined area, evacuate the area and ventilate it thoroughly. Wear nitrile gloves when handling a broken discharge lamp. Treat broken or used discharge lamps as hazardous waste and send to a specialist for disposal.



Protection from eye injury

Do not stare directly into the product's light output.

Do not look at the light output with magnifiers, telescopes, binoculars or similar optical instruments that may concentrate the light output.

Ensure that persons are not looking directly into the front of the fixture when the product lights up suddenly. This can happen when power is applied, when the product receives a DMX signal, or when certain control menu items are selected.

To minimize the risk of eye irritation or injury, disconnect the fixture from power at all times when the fixture is not in use, and provide well-lit conditions to reduce the pupil diameter of anyone working on or near the fixture.



Protection from injury

Fasten the fixture securely to a fixed surface or structure when in use. The fixture is not portable when installed.

Ensure that any supporting structure and/or hardware used can hold at least 10 times the weight of all the devices they support.

If suspending from a rigging structure, fasten the fixture to a rigging clamp. Do not use safety cables as the primary means of support.

If the fixture is installed in a location where it may cause injury or damage if it falls, install as directed in this manual a secondary attachment such as a safety cable that will hold the fixture if a primary attachment fails. The secondary attachment must be approved by an official body such as TÜV as a safety attachment for the weight that it secures, must comply with EN 60598-2-17 Section 17.6.6 and must be capable of bearing a static suspended load that is ten times the weight of the fixture and all installed accessories.

Allow enough clearance around the head to ensure that it cannot collide with an object or another fixture when it moves.

Check that all external covers and rigging hardware are securely fastened.

Block access below the work area and work from a stable platform whenever installing, servicing or moving the fixture.

Do not operate the fixture with missing or damaged covers, shields or any optical component.

Do not lift or carry the fixture by its head. Support the fixture by its base only.

In the event of an operating problem, stop using the fixture immediately and disconnect it from power. Never attempt to use a fixture that is obviously damaged.

Do not modify the fixture in any way not described in this manual or install other than genuine RUSH by Martin™ parts.

Refer any service operation not described in this manual to a qualified technician.

Introduction

The MH 3 Beam is a high-performance moving-head lighting fixture equipped with an MSD Platinum 5R lamp. It has a state-of-the-art optical system that incorporates a motorized 1°~ 3.8° zoom. Its compact design makes it ideal for live shows, TV events, stage and concerts.

The fixture provides a rotating gobo wheel with 17 gobos, a color wheel with 14 color filters, smooth mechanical dimming, pan/tilt feedback, coarse and fine control of movement and effects, a range of built-in movement and effect macros, prism effects, motorized focus, as well as frost filter and strobe effects. The device is rugged, lightweight and compact, and is ideal for touring applications or small fixed installations.

The fixture can be controlled using any DMX-compliant controller.

The fixture is supplied with this user manual, a 1.5 m (5 ft.) power cable (local power plug not included) and two omega brackets for rigging clamp attachment.

Before using the product for the first time

1. Read 'Safety information' on page 5 before installing, operating or servicing the fixture.
2. Unpack and ensure that there is no transportation damage before using the fixture. Never attempt to operate a damaged fixture.
3. If the fixture is not going to be hard-wired to a mains supply, attach a local power plug (not supplied) to the end of the supplied power cable.
4. Before operating, ensure that the voltage and frequency of the power supply match the power requirements of the fixture.
5. Check the RUSH support pages on the Martin Professional™ website at www.martin.com for the most recent user documentation and technical information about the fixture. RUSH by Martin™ user manual revisions are identified by the revision letter at the bottom of the inside cover.

Unlock the pan and tilt locks on the yoke before applying power.

Note that whenever AC power is applied to the fixture, it will reset all effects and functions to their home positions. The fixture head will move. This process usually takes around 20 seconds.

Maximizing lamp life

To obtain maximum operating life from the fixture's discharge lamp:

- Each time you power the lamp on, allow it to warm up for at least 5 minutes before you power it off.
- Before shutting down power completely, power the lamp off but leave power applied to the fixture for a few minutes so that cooling fans can prevent any momentary lamp temperature increase caused by heat from surrounding components.

Physical installation



Warning! Read 'Safety information' on page 5 before installing the fixture.

The fixture is designed for indoor use only and must be used in a dry location with adequate ventilation. Ensure that none of the fixture's ventilation slots are blocked and ensure that the fixture is fastened to a secure structure or surface. Do not use the fixture to illuminate surfaces less than 12 m (39.4 ft.) from the fixture.

Fastening the fixture to a flat surface

The fixture can be fastened to a hard, fixed, flat surface that is oriented at any angle. Ensure that the surface and all fasteners used can support at least 10 times the weight of all fixtures and equipment they will support.

Fasten the fixture securely. Do not stand it on a surface or leave it where it can be moved or fall over. If you install the fixture in a location where it may cause injury or damage if it falls, secure it as directed below with a securely anchored safety cable that will hold the fixture if the primary fastening method fails.

Mounting the fixture on a truss

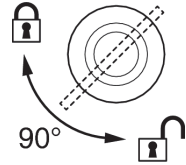
The fixture can be clamped to a truss or similar rigging structure in any orientation. When installing the fixture hanging vertically down, you can use an open-type clamp such as a G-clamp. When installing in any other orientation, you must use a half-coupler clamp (see illustration on right) that completely encircles the truss chord.



To clamp the fixture to a truss:

1. Check that the rigging structure can support at least 10 times the weight of all fixtures and equipment to be installed on it.
2. Block access under the work area.
3. The fixture is supplied with two omega-type brackets to which rigging clamps can be attached. Bolt a rigging clamp securely to each bracket. The bolts used must be M12, grade 8.8 steel minimum, and fastened with self-locking nuts.

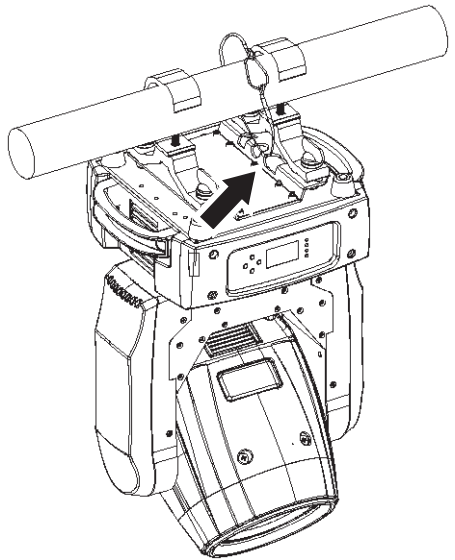
4. Fasten the omega brackets to the base of the fixture using the brackets' quarter-turn fasteners. Turn quarter-turn fasteners a full 90° to lock them (see illustration on right).
5. Working from a stable platform, hang the fixture on the truss and fasten the rigging clamps onto the truss.
6. Secure the fixture with a safety cable as directed below.
7. Check that the head will not collide with other fixtures or objects.



Securing with a safety cable

Secure the fixture with a safety cable (or other secondary attachment) that is approved for the weight of the fixture so that the safety cable will hold the fixture if a primary attachment fails. Loop the safety cable through the cutout in the fixture's baseplate (arrowed in illustration on right) and around a secure anchoring point.

Martin™ can supply suitable safety cables and rigging clamps (see 'Accessories' on page 46).



AC power



Warning! Read ‘Safety information’ on page 5 before connecting the fixture to AC mains power.

For protection from electric shock, the fixture must be grounded (earthed). The power distribution circuit must be equipped with a fuse or circuit breaker and ground-fault (earth-fault) protection.

Socket outlets or external power switches used to supply the fixture with power must be located near the fixture and easily accessible so that the fixtures can easily be disconnected from power.

Do not insert or remove live Neutrik PowerCon connectors to apply or cut power, as this may cause arcing at the terminals that will damage the connectors.

Do not use an external dimming system to supply power to the fixture, as this may cause damage to the fixture that is not covered by the product warranty.

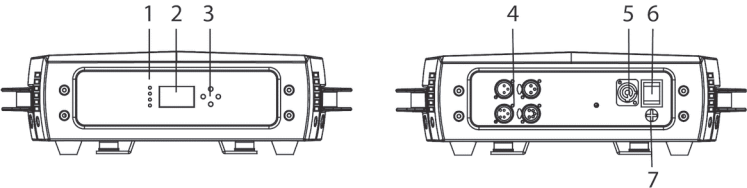
The fixture can be hard-wired to a building electrical installation if you want to install it permanently, or a power plug (not supplied) that is suitable for the local power outlets can be installed on the power cable.

If you install a power plug on the power cable, install a grounding type (earthed) plug with integral cable grip that is rated minimum 250 V, 6 A. Follow the plug manufacturer’s instructions and connect the wires in the power cable as shown in this table:

	Live or L	Neutral or N	Earth, Ground or 
US system	Black	White	Green
EU system	Brown	Blue	Yellow/green

The fixture has an auto-ranging power supply that accepts AC mains power at 100-240 V at 50/60 Hz. Do not apply AC mains power at any other voltage or frequency to the fixture.

Fixture overview



1 - LEDs

The LEDs on the front of the base give the following indications:

POWER	Power on
DMX	Valid DMX signal present

2 – Display

3 – Buttons

MENU	• Activate the menu mode functions, or • Return to the previous level of the menu structure, or • Hold to exit the menus
DOWN	Go down a menu branch
UP	Go up a menu branch
ENTER	Confirm the selected function

4 - DMX input/output

3 and 5-pin XLR sockets are provided for DMX input and output (throughput).

5 – AC mains power input

A blue Neutrik PowerCon socket is provided to connect the fixture to mains power.

6 – Power on/off switch

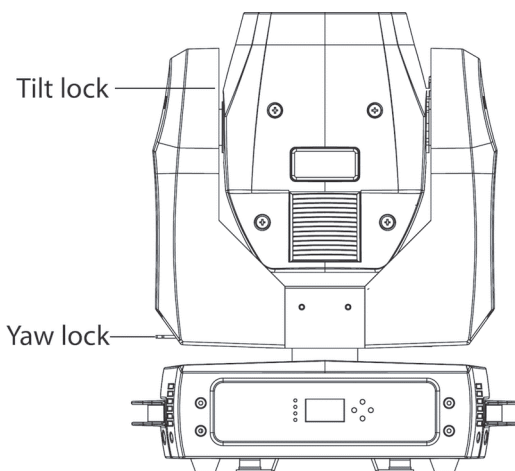
7 – Fuse

The T5A fixture fuse is located under the cover below the power switch.

Pan and tilt locks

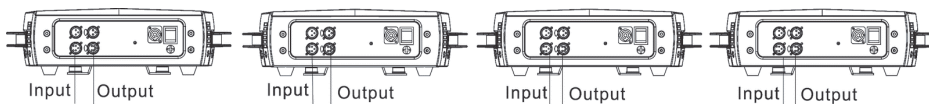
Disengage the pan (yaw) and tilt locks before applying power to the fixture.

Discharge lamps are fragile: engage the pan and tilt locks before moving or transporting the fixture.



Control data link

A DMX 512 data link is required in order to control the fixture via DMX. The fixture has 3-pin and 5-pin XLR connectors for DMX data input and output.



The number of daisy-chained fixtures is limited by the number of DMX channels required by the fixtures in relation to the maximum 512 channels available in one DMX universe. Note that if independent control of a fixture is required, it must have its own DMX channels. Fixtures that are required to behave identically can share the same DMX address and channels. To add

more fixtures or groups of fixtures when the above limit is reached, add a DMX universe and another daisy-chained link.

Tips for reliable data transmission

Use shielded twisted-pair cable designed for RS-485 devices: standard microphone cable cannot transmit control data reliably over long runs. 24 AWG cable is suitable for runs up to 300 meters (1000 ft.). Heavier gauge cable and/or an amplifier is recommended for longer runs. The pin-out on all connectors is pin 1 = shield, pin 2 = cold (-), and pin 3 = hot (+). Pins 4 and 5 in the 5-pin XLR connectors are not used in the fixture but are available for possible additional data signals as required by the DMX512-A standard. Standard pin-out is pin 4 = data 2 cold (-) and pin 5 = data 2 hot (+).

To split the link into branches, use a splitter, such as the Martin 4-Channel Opto-Isolated RS-485 Splitter/Amplifier. Terminate the link by installing a termination plug in the output socket of the last fixture. The termination plug, which is a male XLR plug with a 120 Ohm, 0.25-Watt resistor soldered between pins 2 and 3, “soaks up” the control signal so it does not reflect and cause interference. If a splitter is used, terminate each branch of the link.

Connecting the DMX data link

To connect the fixture to data:

1. Connect the DMX data output from the controller to the first fixture's male XLR DMX input connector.
2. Connect the first fixture's DMX output to the DMX input of the next fixture and continue connecting fixtures output to input. Terminate the last fixture on the link with a DMX termination plug.

Fixture setup

This section explains the fixture settings and utilities that the user has access to via the control panel.

Settings are retained when the fixture is powered off.

A complete map of the control menu structure can be found in 'Control menus' on page 38.

Using the control menus

To access the control menus, press the MENU button. Navigate the menu structure using the ENTER, DOWN and UP buttons. Select any required menu option using the ENTER button. To return to the previous level in the menu structure without making a change, press the MENU button.

To exit the menus, press and hold the MENU button.

DMX function settings

DMX function settings include the DMX address and a DMX viewer.

DMX addressing

The fixture can be controlled using signals sent by a DMX controller over 19 DMX channels. The DMX address, also known as the start channel, is the first channel used to receive instructions from a DMX controller. Each DMX controlled fixture must have a DMX address set. If a fixture has its DMX address set to 11, then it uses channels 11 to 29. The following fixture in the DMX chain could then be set to a DMX address of 30.

For independent control, each fixture must be assigned its own control channels. Two fixtures of the same type may share the same address, if identical behavior is desired. Address sharing can be useful for diagnostic purposes and symmetric control, particularly when combined with the inverse pan and tilt options.

The DMX address is configured using the DMX FUNCTIONS menu in the control panel.

To set the fixture's DMX address:

1. Select DMX FUNCTIONS and press ENTER.
2. Use the UP and DOWN buttons to select DMX ADDRESS and press ENTER to confirm. The present address will blink on the display.
3. Use the UP and DOWN buttons to select the address (1 to 512).

4. Once the address has been selected, press ENTER to set it (or press MENU to exit without making a change).

DMX viewer

You can check the DMX values that the fixture is receiving on each DMX channel in the VIEW DMX VALUE menu.

To see the DMX values:

1. Select DMX FUNCTIONS and press ENTER.
2. Use the UP and DOWN buttons to select VIEW DMX VALUE and press ENTER.
3. Use the UP and DOWN buttons to scroll through the DMX channels and press ENTER to select a channel. The fixture will display the DMX value it is receiving on that channel.
4. Press MENU to exit the viewer.

Fixture settings

Pan and/or tilt inversion

The FIXTURE SETTINGS→PAN INVERSE and TILT INVERSE menus can be used to reverse the direction of pan and/or tilt. These settings are useful for symmetrical effects with multiple fixtures, or when coordinating the movement of fixtures that are floor mounted and rigged upside down.

To adjust the pan inversion settings:

1. Select FIXTURE SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select PAN INVERSE or TILT INVERSE and press ENTER to confirm.
3. Use the DOWN and UP buttons to select the YES (inversion) or NO (normal) mode.
4. Press ENTER to set (or press MENU to exit without making a change).

Pan/tilt feedback

When pan/tilt feedback is enabled and pan or tilt loses its correct position, the fixture will detect this and reset pan and tilt so that the correct pan/tilt position is restored.

To deactivate or activate this function, use the FIXTURE SETTINGS→P/T FEEDBACK menu.

Blackout during change or movement

The fixture can be set so that when running a show, blackout is enabled during gobo change, color change, and/or pan and tilt movement. This is switched off by default. To adjust the blackout during show playback settings:

1. Select **FIXTURE SETTINGS** and press **ENTER** to confirm.
2. Use the **DOWN** and **UP** buttons to select **BL. O. P/T MOVING BL. O.COLOR CHANGE**, or **BL. O: GOBO CHANGE** and press **ENTER** to confirm.
3. Use the **DOWN** and **UP** buttons to select **YES** (blackout during movement or change) or **NO** (normal).
4. Press **ENTER** to set (or press **MENU** to exit without making a change).

Lamp settings

Lamp on/off

To turn the lamp on or off via the control panel:

1. Select **LAMP SETTINGS** and press **ENTER** to confirm.
2. Use the **DOWN** and **UP** buttons to select **ON/OFF** and press **ENTER** to confirm.
3. Use the **DOWN** and **UP** buttons to select **ON** or **OFF**.
4. Press **ENTER** to confirm (or press **MENU** to exit without making a change).

State/power on

To set whether the fixture should power the lamp on automatically when the fixture is powered on:

1. Select **LAMP SETTINGS** and press **ENTER** to confirm.
2. Use the **DOWN** and **UP** buttons to select **STATE/POWER ON** and press **ENTER** to confirm.
3. Use the **DOWN** and **UP** buttons to select **ON** or **OFF**.
4. Press **ENTER** to confirm (or press **MENU** to exit without making a change).

Off via DMX

To enable the lamp to be turned off via DMX:

1. Select **LAMP SETTINGS** and press **ENTER** to confirm.

2. Use the DOWN and UP buttons to select OFF VIA DMX and press ENTER to confirm.
3. Use the DOWN and UP buttons to select NO or YES.
4. Press ENTER to confirm (or press MENU to exit without making a change).

On if DMX on

To set whether the fixture powers the lamp on automatically when it receives a DMX signal:

1. Select LAMP SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select ON IF DMX ON and press ENTER to confirm.
3. Use the DOWN and UP buttons to select NO (lamp power is not applied automatically) or YES (lamp power is applied automatically).
4. Press ENTER to confirm (or press MENU to exit without making a change).

Off if DMX off

To set whether the fixture powers the lamp off automatically if a DMX signal stops:

1. Select LAMP SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select OFF IF DMX OFF and press the
3. ENTER button to confirm.
4. Use the DOWN and UP buttons to select NO (lamp power is not shut down automatically) or YES (lamp power is shut down automatically).
5. Press ENTER to confirm (or press MENU to exit without making a change).

Ignition delay

An ignition delay of 0 to 255 seconds can be set so that there is a delay between power on and lamp on. This can help you avoid electrical problems if a large number of lamps power on at the same time. To set a delay:

1. Select LAMP SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select IGNITION DELAY and press ENTER to confirm.
3. Use the DOWN and UP buttons to scroll to a duration.

4. Press ENTER to confirm that duration (or press MENU to exit without making a change).

Low power delay

To set a low power delay, where the lamp runs at half power for a period before shutting off when a lamp off command is issued:

1. Select LAMP SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select LOW POWER DELAY and press ENTER to confirm.
3. Use the DOWN and UP buttons to specify a duration.
4. Press ENTER to confirm (or press MENU to exit without making a change).

Display settings

Invert display

Inverting the display is useful if the fixture is hung from a truss or from elevation. To invert the display:

1. Select DISPLAY SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select DISPLAY INVERSE and press ENTER to confirm.
3. Use the DOWN and UP buttons to select YES (inverted) or NO (normal).
4. Press ENTER to confirm (or press MENU to exit without making a change).

Automatically turn off display backlight

By default the display is lit when the power is applied to the fixture. It can be set to automatically dim if the buttons and menus have not been used for a period:

1. Select DISPLAY SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select BACKLIGHT AUTO OFF and press ENTER to confirm.
3. Use the DOWN and UP buttons to select YES (auto off) or NO (constant backlight).
4. Press ENTER to confirm (or press MENU to exit without making a change).

Adjust backlight intensity

To adjust the brightness of the control panel display:

1. Select DISPLAY SETTINGS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select BACKLIGHT INTENSITY and press ENTER to confirm.
3. Use the DOWN and UP buttons to select a level from 1 to 10.
4. Press ENTER to confirm (or press MENU to exit without making a change).

Fixture test

You can run an automatic test of all functions, or manually test individual functions from the control menus.

Auto test

To perform a complete test of all of the fixture functions:

1. Select FIXTURE TEST and press ENTER to confirm.
2. Use the DOWN and UP buttons to select AUTO TEST and press ENTER to confirm. The automatic test will run.
3. Press MENU to exit the test.

Manual test

Fixture functions can be tested or controlled without a DMX signal:

1. Select FIXTURE TEST and press ENTER to confirm.
2. Use the DOWN and UP buttons to select MANUAL TEST and press ENTER to confirm.
3. Select and activate the functions you wish to control.
4. Press MENU to exit.

Fixture information

Fixture operating hours counter

To display the total number of hours the fixture has been used:

1. Select FIXTURE INFORMATION and press ENTER to confirm.
2. Use the DOWN and UP buttons to select FIXTURE USE TIME and press ENTER to confirm. The number of hours is shown in the display.
3. Press MENU to exit.

Lamp operating hours counter

The resettable lamp operating time counter lets you monitor lamp use and see when lamp replacement is due. The counter is available in the FIXTURE INFORMATION→LAMP ON TIME menu. Do not exceed the specified lamp lifetime, or the lamp may explode. Reset the counter when you replace the lamp.

Firmware version

To display the software version installed in the fixture:

1. Select FIXTURE INFORMATION and press ENTER to confirm.
2. Use the DOWN and UP buttons to select FIRMWARE VERSION and press ENTER to confirm. The firmware version is shown in the display.
3. Press MENU to exit.

Reset functions or effects

The various effects—pan, tilt color, gobos, iris, focus, prism—or all effects, can be manually reset to their home positions:

1. Select RESET FUNCTIONS and press ENTER to confirm.
2. Use the DOWN and UP buttons to select the function or effect that is to be reset. Press ENTER.
3. Use the DOWN and UP buttons to select YES and
4. Press ENTER to confirm (or press MENU to exit without making a change).

Special functions

Fixture Maintenance

To help you monitor service intervals, the maintenance timer lets you set an interval and display the remaining time in hours before the end of the interval is reached.

Reset factory default settings

The fixture's default settings can be restored using SPECIAL FUNCTIONS→FACTORY SETTINGS.

Effect home position adjustment

Offset menu

If an effect loses its correct home position, you can adjust the position offset to restore it.

To adjust an effect's home position offset:

1. In the menu structure, hold the ENTER button down for at least 3 seconds to enter the OFFSET MENU.
2. Use the DOWN and UP buttons to choose the function that requires adjustment. Press ENTER to select.
3. The currently indexed home position will blink in the display. Use the DOWN and UP buttons to adjust the home position.
4. Once the correct position has been reached, press ENTER to confirm (or press MENU to exit without making a change).

Effects

This section describes DMX-controllable effects that require particular explanation. See DMX protocol on page 33 for a full list of the DMX channels and values required to control the different effects.

Note that if a fixture loses its DMX signal it will maintain its current effect until powered off or reset.

Pan and tilt

The fixture's moving head can be panned through 540° and tilted through 270° using coarse or fine control channels. The fixture can be set to automatically blackout during pan and tilt movement. A range of pan/tilt macros is available.

The fixture incorporates pan and tilt feedback, so that if correct pan or tilt position is lost, the shutter closes and the fixture resets to the correct position. This feature can be enabled or disabled as required (see 'Control menus' on page 38).

Function channel

The function DMX channel lets you adjust certain fixture settings via DMX. This can be useful if access to the fixture's control panel is difficult or inconvenient when the fixture is installed.

Dimming

Full range mechanical dimming is provided. Two dimming curves are available: linear or conventional. The dimming curve can be selected on the function channel.

Frost filter

The frost filter softens and diffuses the projection.

Zoom

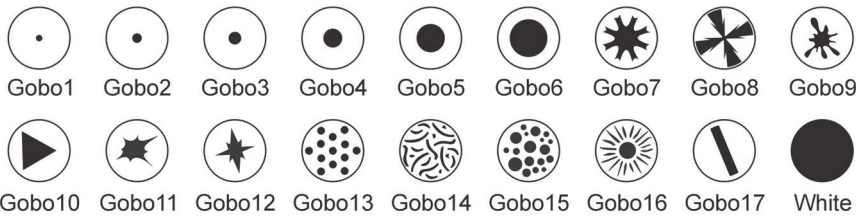
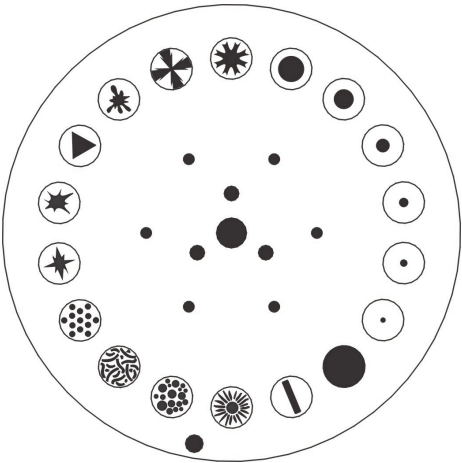
The fixture provides a 1°~ 3.8° zoom.

Strobe effects

A range of variable speed and random shutter/strobe effects are provided.

Gobos

The fixture contains a rotating wheel with 17 fixed gobos:



Any gobo can be projected statically, or the wheel can be rotated clockwise or counter-clockwise with variable speed. The fixture can be set to automatically blackout during gobo changes. The sharpness of gobo projections can be adjusted via DMX using the focus channel.

Prism

The fixture incorporates an 8-facet prism that can be inserted into the beam to provide split beam effects. The prism can be set to an indexed position or rotated clockwise or counter-clockwise. A range of prism macros and movement effects are provided.

Color wheels

The fixture incorporates a color wheel with 14 color filters (plus open). Colors can be individually selected or selected as splits between two colors, and the wheel can be rotated at varying speeds, both clockwise and counter-clockwise. The fixture can be set to automatically blackout during color changes.

Maintenance



Warning! Read 'Safety information' on page 5 before servicing the fixture.

Refer any service operation not described in this user manual to a qualified service technician.

Disconnect the fixture from mains power and allow to cool completely before cleaning or servicing.

Service fixtures in an area where there is no risk of injury from failing parts, tools or other materials.

Excessive dust, smoke fluid, and particle buildup degrades performance, causes overheating and will damage the fixture. Damage caused by inadequate cleaning or maintenance is not covered by the product warranty.

Cleaning

The cleaning of external optical lenses must be carried out periodically to optimize light output. Cleaning schedules for lighting fixtures vary greatly depending on the operating environment. It is therefore impossible to specify precise cleaning intervals for the fixture. Environmental factors that may result in a need for frequent cleaning include:

- Use of smoke or fog machines.
- High airflow rates (near air conditioning vents, for example).
- Presence of cigarette smoke.
- Airborne dust (from stage effects, building structures and fittings or the natural environment at outdoor events, for example).

If one or more of these factors is present, inspect fixtures within their first 100 hours of operation to see whether cleaning is necessary. Check again at frequent intervals. This procedure will allow you to assess cleaning requirements in your particular situation. If in doubt, consult your RUSH by Martin dealer about a suitable maintenance schedule.

Use gentle pressure only when cleaning, and work in a clean, well-lit area. Do not use any product that contains solvents or abrasives, as these can cause surface damage.

To clean the fixture:

1. Disconnect the fixture from power and allow it to cool for at least 10 minutes.

2. Vacuum or gently blow away dust and loose particles from the outside of the fixture and the air vents at the back and sides of the head and in the base with low-pressure compressed air.
3. Clean lenses by wiping gently with a soft, clean lint-free cloth moistened with a weak detergent solution. Do not rub the surface hard: lift particles off with a soft repeated press. Dry with a soft, clean, lint-free cloth or low-pressure compressed air. Remove stuck particles with an unscented tissue or cotton swab moistened with glass cleaner or distilled water.
4. Check that the fixture is dry before reapplying power.

Lamp replacement



Warning! Wear safety glasses and gloves when handling lamps.

To avoid the risk of a discharge lamp exploding in the fixture, replace the lamp when it reaches its expected lifetime.

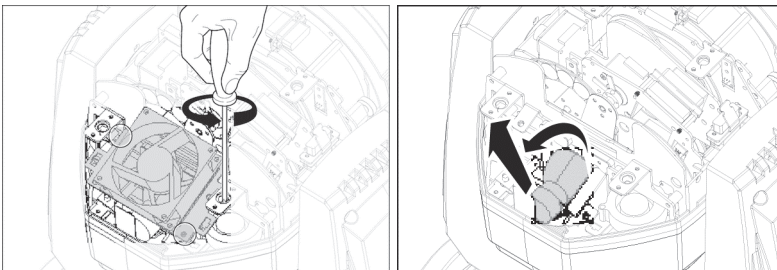
Install only lamps that are approved by Martin for this fixture™.

The lamp must be perfectly clean and totally free of oil and grease. Never touch the lamp with bare hands. If you contaminate the lamp, clean it with an alcohol wipe and then dry it with a lint-free cloth.

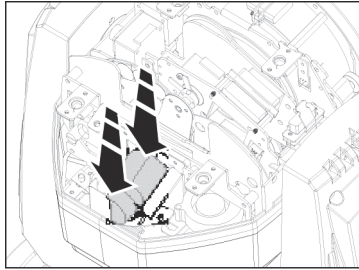
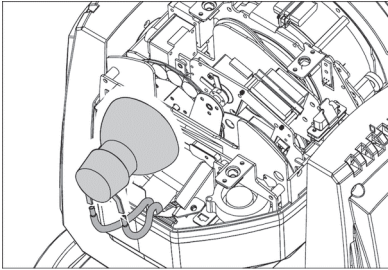
The lamp can be adjusted to obtain the best projection.

To replace the lamp:

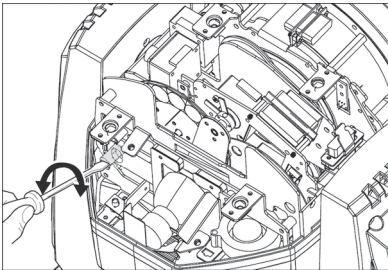
1. Disconnect the fixture from power and allow it to cool for two hours.
2. Remove the fixture head covers using a Phillips screwdriver.
3. Position the head as shown below and remove the lamp cooling fan at the rear of the head.



4. Lift the lamp out of its recess.
5. Disconnect the lamp and connect the replacement lamp. Use only a lamp that is approved by Martin™.



6. Place the new lamp into the lamp recess.
7. See illustration below. Adjust the lamp using a slotted (flat head) screwdriver until it is centralized.



8. Reinstall the fan and secure it.
9. Replace and secure the head covers before reapplying power.
10. Reset the lamp hour counter using the control panel.

Replacing the primary fuse

If the fixture is completely dead, the fixture's primary fuse F1 may have blown and it may be necessary to install a new fuse. This fuse is located in a fuseholder next to the power ON/OFF switch on the connections panel. See 'Fixture overview' on page 15.

If you need to replace a fuse:

Disconnect the fixture from power and allow it to cool for at least 10 minutes.

1. Unscrew the cap of the fuseholder and remove the fuse. Replace with a fuse of the same size and rating only.
2. Reinstall the fuseholder cap before reapplying power.

Other service and repairs

There are no user-serviceable parts inside the fixture. Do not open the housing. Never try to repair the fixture yourself, as this may result in damage or malfunction, and it may void your product warranty. Service operations not described in this manual may only be carried out by an authorized Martin™ service agent.

Installation, on-site service and maintenance can be provided worldwide by the Martin™ Global Service organization and its approved agents, giving owners access to Martin's expertise and product knowledge in a partnership that will ensure the highest level of performance throughout the product's lifetime. Please contact your RUSH by Martin™ supplier for details.

DMX protocol

Channel	Value	Function
1	0-255	Pan 0°~540°
2	0-255	Pan (fine control)
3	0-255	Tilt 0°~270°
4	0-255	Tilt (fine control)
5	0-255	Pan/tilt speed – fast-slow
6	0-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99 100-109 110-119 120-129 130-139 140-149 150-159 160-169 170-179 180-189 190-199 200-209 210-219 220-229 230-239 240-255	Function No function Dimmer - conventional Dimmer - linear Pan/tilt - fast Pan/tilt - normal Blackout during pan & tilt Disable blackout during pan & tilt Blackout during color change Disable blackout during color change Blackout during gobo change Disable blackout during gobo change Lamp on Pan/tilt reset Color reset Gobo reset Shutter/prism/rotating prism reset No function Frost/focus/zoom reset Reset all Blackout during pan/tilt or color/gobo change Disable blackout during pan/tilt or color/gobo change Lamp off No function
7	0-7 8-15 16-23 24-31 32-39 40-47	Pan/tilt macros Off Macro 1 Macro 2 Macro 3 Macro 4 Macro 5

Channel	Value	Function
	48-55	Macro 6
	56-63	Macro 7
	64-71	Macro 8
	72-79	Macro 9
	80-87	Macro 10
	88-95	Macro 11
	96-103	Macro 12
	104-111	Macro 13
	112-119	Macro 14
	120-127	Macro 15
	128-135	Macro 16
	136-143	Macro 17
	144-151	Macro 18
	152-159	Macro 19
	160-167	Macro 20
	168-175	Macro 21
	176-183	Macro 22
	184-191	Macro 23
	192-199	Macro 24
	200-207	Macro 25
	208-215	Macro 26
	216-223	Macro 27
	224-231	Macro 28
	232-239	Macro 29
	240-247	Macro 30
	248-255	Macro 31
8	0-255	Pan/tilt macro speed fast-slow
9		Color
	0-2	Open
	3-4	Split color
	5-6	Red
	7-8	Split color
	9-10	Yellow
	11-12	Split color
	13-14	Blue
	15-16	Split color
	17-18	Blue Green
	19-21	Split color
	22-23	Green
	24-25	Split color
	26-27	Light blue

Channel	Value	Function
	28-29	Split color
	30-31	Light pink
	32-33	Split color
	34-35	Yellow green
	36-37	Split color
	38-39	Dark pink
	40-42	Split color
	43-44	Blue
	45-46	Split color
	47-48	Light yellow
	49-50	Split color
	51-52	Off white
	53-54	Split color
	55-56	Light blue
	57-58	Split color
	59-60	Dark blue
	61-63	Split color (with open)
	64-127	Color wheel indexing
	128-189	Clockwise rotation, fast-slow
	190-193	Stop
	194-255	Counter-clockwise rotation, slow-fast
10		Gobos
	0-3	Open
	4-6	Gobo 1
	7-9	Gobo 2
	10-12	Gobo 3
	13-15	Gobo 4
	16-18	Gobo 5
	19-21	Gobo 6
	22-24	Gobo 7
	25-27	Gobo 8
	28-30	Gobo 9
	31-33	Gobo 10
	34-36	Gobo 11
	37-39	Gobo 12
	40-42	Gobo 13
	43-45	Gobo 14
	46-48	Gobo 15
	49-51	Gobo 16
	52-55	Gobo 17
	56-59	Open gobo shake

Channel	Value	Function
	60-63	Gobo 1 shake
	64-67	Gobo 2 shake
	68-71	Gobo 3 shake
	72-75	Gobo 4 shake
	76-79	Gobo 5 shake
	80-83	Gobo 6 shake
	84-87	Gobo 7 shake
	88-91	Gobo 8 shake
	92-95	Gobo 9 shake
	96-99	Gobo 10 shake
	100-103	Gobo 11 shake
	104-107	Gobo 12 shake
	108-111	Gobo 13 shake
	112-115	Gobo 14 shake
	116-119	Gobo 15 shake
	120-123	Gobo 16 shake
	124-127	Gobo 17 shake
	128-189	Wheel rotation, counter-clockwise, fast-slow
	190-193	Stop
	194-255	Wheel rotation, clockwise, slow-fast
11		Prism effects
	0-7	No function
	8-127	Prism effect
	128-132	Prism rotation effects 1
	133-137	Prism rotation effects 2
	138-141	Prism rotation effects 3
	142-146	Prism rotation effects 4
	147-150	Prism rotation effects 5
	151-155	Prism rotation effects 6
	156-159	Prism rotation effects 7
	160-164	Prism rotation effects 8
	165-168	Prism rotation effects 9
	169-173	Prism rotation effects 10
	174-177	Prism rotation effects 11
	178-182	Prism rotation effects 12
	183-187	Prism rotation effects 13
	188-191	Prism rotation effects 14
	192-196	Prism rotation effects 15
	197-200	Prism rotation effects 16
	201-205	Prism rotation effects 17
	206-209	Prism rotation effects 18

Channel	Value	Function
	210-214	Prism rotation effects 19
	215-218	Prism rotation effects 20
	219-223	Prism rotation effects 21
	224-227	Prism rotation effects 22
	228-232	Prism rotation effects 23
	233-236	Prism rotation effects 24
	237-241	Prism rotation effects 25
	242-246	Prism rotation effects 26
	247-250	Prism rotation effects 27
	251-255	Prism rotation effects 28
12	0-127 128-189 190-193 194-255	Prism rotation (coarse control) Indexing Prism rotation, clockwise, fast-slow Stop Prism rotation, counter-clockwise, slow-fast
13	0-255	Prism rotation (fine control)
14	0-255	Zoom 0-100%
15	0-255	Focus – near-far
16	0-255	Frost 0-100%
17	0-7 8-15 16-131 132-167 168-203 204-239 240-247 248-255	Shutter Off Open Shutter strobe effect, slow-fast Fast close, slow open Slow close, fast open Pulse open and close Random shutter Open
18	0-255	Dimmer (coarse control) 0-100%
19	0-255	Dimmer (fine control)

Control menus

See ‘Using the control menus’ on page 18. Default settings are shown in **bold**.

Menu	Sub-menu	Setting/value	Explanation
DMX Functions	DMX Address	1–493	Fixture DMX address setting
	View DMX Value		View received DMX values
Fixture setting	Pan Inverse	No	Inverse pan movement left→right
		Yes	
	Tilt Inverse	No	Inverse tilt movement up→down
		Yes	
	P/T Feedback	No	No correction
		Yes	If a pan or tilt position error is detected, the fixture corrects pan/tilt position
	Bl.O. P/T Moving	No	Blackout during pan/tilt movement
		Yes	
	Bl.O. Color Change	No	Blackout during color change
		Yes	
	Bl.O. Gobo Change	No	Blackout during gobo change
		Yes	
Lamp Setting	On/Off	Off	Manually power lamp on or off
		On	
	State/Power On	Off	Lamp power on when fixture is powered on
		On	
	Off via DMX	No	Lamp can be powered off via DMX
		Yes	
	On if DMX On	No	Lamp power on when fixture receives DMX
		Yes	
	Off if DMX Off	No	Lamp power off when fixture does not receive DMX
		Yes	
	Ignition Delay	0~255S	Delay lamp ignition: 0 to 255 seconds.

Menu	Sub-menu	Setting/value	Explanation
	Low Power Delay	0~255S	Low lamp power period when lamp is powered off: 0 to 255 seconds.
Display settings	Display inverse	No	Invert control panel display
		Yes	
	Backlight Auto Off	No	Automatically turn off display panel backlight when not in use.
		Yes	
	Backlight Intensity	1-10	Display panel backlight intensity
	Temperature Unit	°C	Temperature display: Celsius/Fahrenheit
		°F	
	Display Warning	No	Show warnings in LED display
		Yes	
Fixture Test	Auto Test		Automatic test of all functions
	Manual Test		Manually test each function
Fixture Information	Fixture Use Time		Fixture operating hour counter
	Lamp On Time	Exit	Exit lamp hour use counter without resetting.
		Reset Time	Reset lamp hour use counter
	Firmware Version		Current installed firmware version
Reset Functions	Pan/Tilt	No	Reset pan and tilt only
		Yes	
	Shutter/Dimmer	No	Reset shutter/dimmer only
		Yes	
	Color	No	Reset color wheel only
		Yes	
	Gobo	No	Reset gobo wheel only
		Yes	
	Zoom/Frost/Focus	No	Reset zoom, frost and focus only
		Yes	
	All	No	Reset all effects
		Yes	

Menu	Sub-menu	Setting/value	Explanation
Special Functions	Fixture Maintenance	Remain time	Show remaining time before service
		Interval	Set service interval
	Factory Settings	No	
		Yes	Restore fixture's default factory settings

Offset menu

The offset menu is used to adjust the home position of the various effects.

To access the Offset menu, press the MENU button to enter the menu structure and then press and hold the ENTER button for three seconds.

Menu	Sub-menu	Setting	Explanation
Offset Menu	Pan	-128~127	Pan offset
	Tilt	-128~127	Tilt offset
	Shutter	0~255	Shutter offset
	Color	-128~127	Color offset
	Gobo	-128~127	Gobo offset
	Prism	0~255	Prism offset
	R-Prism	-128~127	Rotating prism offset
	Zoom	0~255	Zoom offset
	Focus	0~255	Focus offset
	Frost	0~255	Frost offset

Error messages

Error:	Appears when:
Lamp Startup Fail	No lamp or lamp wiring damaged.
Temperature Sense Error	Temperature sensor on the PCB is damaged.
Lamp Too Hot Power Off	Temperature above maximum safe level has been detected. Ensure that the fixture is adequately ventilated. Fans or temperature sensor may be damaged. Contact authorized Martin™ service agent.
Lamp Too Hot Low Power	Temperature close to maximum safe level has been detected. The fixture runs at a low power level.
Maintenance Fixture	Fixture maintenance is required (based on the countdown timer). Maintain the fixture, and then reset the countdown timer using the menus.
Lamp On Over 2000 Hour	The lamp has been in use for more than 2000 hours. Turn fixture off and replace lamp.
Memory Initial Fail	Damaged memory IC. Contact authorized Martin™ service agent.
CPU-B Error CPU-C Error CPU-D Error	PCB or fixture wiring is damaged. Contact authorized Martin™ service agent.
Pan Reset Error Pan Encode Error Tilt Reset Error Tilt Encode Error Shutter Reset Fail Dimmer Reset Fail Color Reset Fail Gobo Reset Fail Frost Reset Fail	These can appear when powering on or resetting the fixture and can indicate damage to sensors or components. Contact authorized Martin™ service agent.

Troubleshooting

This section describes a few common problems that may occur during operation and provides some suggestions for easy troubleshooting:

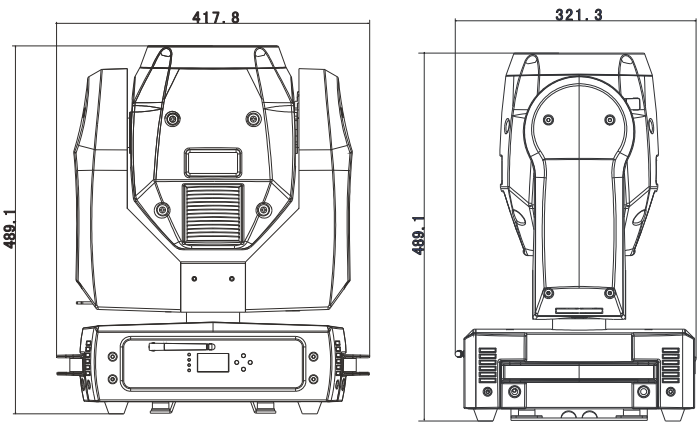
Symptom	Potential cause	Remedies
No light from fixture, or fans not working.	Power supply issue such as blown fuse, faulty connector or damaged cable.	Ensure that the mains supply is connected and supplying power to the fixture. Ensure that the fixture's power-on LED is lit. Check all power connections and cables. Replace the fixture fuse.
Lamp cuts out intermittently	Incorrect mains voltage or internal temperature too high.	Check mains voltage. Check ambient temperature, inspect product to see if cleaning is required. Fan may need replacing. Contact your RUSH by Martin™ authorized distributor or service center for assistance.

Symptom	Potential cause	Remedies
Fixture does not respond to DMX control.	Fault in the DMX network due to damaged connector or cable, or incorrect DMX addressing, or interference from proximity to a high voltage installation.	Check that the fixture's DMX LED is on, and if not, check all DMX cables and connections to ensure the integrity of the physical network. Ensure that the DMX network is terminated. Check that the components in the DMX network all use standard DMX polarity. Ensure that the fixture is set to the DMX address that matches the address set on the DMX control device. Check the pins on the connectors from the previous fixture in the DMX network. Attempt to control the fixture with another DMX control device. Move the fixture if it is being operated very close to an unshielded high-voltage installation.

Specifications

Physical

Dimensions (LxWxH)418 x 321x 489 mm (16.5 x 12.6 x 19.3 in.)
Weight20.5 kg (45.2 lbs.)



Lamp

Approved lamp Philips MSD Platinum 5R
Color temperature 8000 K
CRI (Color rendering index) 75
Average lifetime.....2000 hours

Dynamic Effects

Color wheel ... 14 colors plus open, rotation with variable direction and speed
Static gobo wheel..... 17 gobos plus open, wheel rotation and shake
Pre-programmed effects31 pan and tilt macros, adjustable speed
Shutter.....Strobe effect, pulse effects, instant open and blackout
Prism 8-facet, indexing and rotation with variable direction and speed
FrostFade in/out
Zoom Motorized
Focus..... Motorized
Dimmer 0 - 100%, four dimming curve options
Pan 540°, with coarse & fine control and speed, P/T macros
Tilt..... 270°, with coarse & fine control and speed, P/T macros

Optics

Beam angle1° - 3.8°

Control and Programming

Control system	DMX
DMX channels	19
Setting and addressing	Control panel with backlit LCD display
DMX compliance	USITT DMX512/1990
Pan and tilt speed.....	Adjustable via onboard control panel and DMX
Head position	Pan/tilt feedback correction

Construction

Color	Black
IP rating	IP 20

Installation

Minimum distance from illuminated surfaces	12 m (39.4 ft.)
Location	Indoor use only, must be fastened to surface or structure
Mounting points	Two quarter-turn brackets for rigging clamps
Orientation	Any

Connections

AC power input	Neutrik PowerCon
DMX data in/out.....	3-pin & 5-pin locking XLR

Electrical

AC power.....	100-240 V, 50/60Hz
Fuse	T5A
Power supply unit.....	Auto-ranging electronic switch mode

Typical power and current

110 V, 60 Hz.....	3.1 A, 348 W, PF 0.990
230 V, 50 Hz.....	1.6 A, 330 W, PF 0.917
<i>Measurements made at nominal voltage. Allow for a deviation of +/- 10%.</i>	

Thermal

Cooling	Forced air
Maximum ambient temperature (T _a max.).....	40° C (104° F)
Minimum ambient temperature (T _a min).....	0° C (32° F)
Total heat dissipation (calculated, +/- 10%).....	1200 BTU/hr.

Approvals



EU safety.....	EN 60598-2-17 (EN 60598-1), EN 62471, EN 62493
EU EMC	EN 55015, EN 55103-1, EN 55103-2,
	EN 61000-3-2, EN 61000-3-3, EN 61547
US safety (pending).....	UL 1573

US EMC	FCC Part 15 Class A
Canadian safety (pending)	CSA C22.2 No. 166
Canadian EMC	ICES-003 Class A
Australia/NZ.....	C-TICK N4241

Included Items

- Power cable, 6 A, 18 AWG, 0.75 mm², UL- listed, H05VV-F, 1.5 m, without mains plug
- Two omega-type brackets for rigging clamp attachment

Accessories

- Neutrik PowerCon NAC3FCA
- power input connector, cable mount, blueP/N 05342804
- Half-coupler clampP/N 91602005
- G-clamp (vertical hanging suspension only)P/N 91602003
- Quick-trigger clamp (vertical hanging suspension only)P/N 91602007
- Safety cable, safe working load 50 kg.....P/N 91604003

Related Items

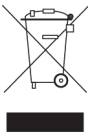
- RUSH Software Uploader 1™P/N 91611399

Ordering Information

- RUSH MH 3 Beam™ in cardboard box.....P/N 9 0280010

Specifications are subject to change without notice. For latest product specifications, see www.martin.com

Disposing of this product



RUSH by Martin™ products are supplied in compliance with Directive 2012/19/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), where applicable. Help preserve the environment! Ensure that this product is recycled at the end of its life. Your supplier can give details of local arrangements for the disposal of RUSH by Martin™ products.



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