RoboScan Pro 518

user manual

![Martin]

section 1

INTRODUCTION

Thank you for purchasing the Martin RoboScan Pro 518 moving-mirror intelligent projector. It is designed, built, and programmed to be bright, reliable, safe and easy to use. With proper setup and maintenance, the RoboScan Pro 518 will provide years of trouble-free operation.

This manual covers the RoboScan Pro 518 with software version 6.4. The latest information on the RoboScan Pro 518 is always available from your dealer and the Martin web site at http://www.martin.dk.

RoboScan Pro 518 Safety Information

WARNING!

This product is for professional use only. It is not for household use.

This product presents risks of lethal or severe injury due to fire and heat, electric shock, ultraviolet radiation, lamp explosion, and falls. **Read this manual** before powering or installing the fixture, follow the safety precautions listed below and observe all warnings in this manual and printed on the fixture. If you have questions about how to operate the fixture safely, please contact your Martin dealer or call the Martin 24-hour service hotline at +45 70 200 201.

To protect yourself and others from electric shock

- Disconnect the fixture from AC power before removing or installing the lamp, fuses, or any part, and when not in use.
- Always ground (earth) the fixture electrically.
- Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault protection.
- Do not expose the fixture to rain or moisture.
- Refer any service operation not described in this manual to a qualified technician.

To protect yourself and others from UV radiation and lamp explosion

- Never operate the fixture with missing or damaged lenses and/or covers.
- When replacing the lamp, allow the fixture to cool for at least 5 minutes before opening the fixture or removing the lamp. Protect your hands and eyes with gloves and safety glasses.
- Do not stare directly into the light. Never look at an exposed lamp while it is lit.
- Replace the lamp if it becomes defective or worn out.

To protect yourself and others from burns and fire

- Never attempt to bypass the thermostatic switch or fuses. Always replace defective fuses with ones of the specified type and rating.
- Keep all combustible materials (for example fabric, wood, paper) at least 0.1 meters (4 inches) away from the fixture. Keep flammable materials well away from the fixture.
- Do not illuminate surfaces within 0.3 meters (12 inches) of the fixture.
- Provide a minimum clearance of 0.1 meters (4 inches) around fans and air vents.
- Never place filters or other materials over the lens or mirror.
- The exterior of the fixture can reach temperatures up to 65° C (150° F). Allow the fixture to cool for at least 5 minutes before handling.
- Do not modify the fixture or install other than genuine Martin parts.
- Do not operate the fixture if the ambient temperature (Ta) exceeds 40° C (104° F).

To protect yourself and others from injury due to falls

- When suspending the fixture above ground level, verify that the structure can hold at least 10 times the weight of all installed devices.
- Verify that all external covers and rigging hardware are securely fastened and use an approved means of secondary attachment such as a safety cable.
- Block access below the work area whenever installing or removing the fixture.

Features

- Remote lamp on/off
- Coated precision optics with adjustable focus
- Smooth, full-range dimming
- "Instant" blackout and variable strobe effects up to 9 Hz
- 3-facet prism
- Frost filter
- 17 dichroic colors plus CTC filter and white (36 color combinations)
- Continuous bi-directional scroll color wheel
- 5 interchangeable rotating gobos
- 176° pan and 85° tilt with 16-bit microstep precision
- Works with Martin and DMX 512 controllers
- Variable speed control on all functions
- Preprogrammed stand-alone operation
- Music trigger using built-in microphone
- Power factor correction for low current consumption
- Overheating protection

Accessories

Your Martin dealer can provide you with the following RoboScan Pro 518 accessories:

- Optional gobo set (6 pcs)...P/N 00101507
- 2-unit flight case ....P/N 91505000
- 4-unit flight case ....P/N 91505001

INSTALLATION

The RoboScan Pro 518 package comes complete with the following items:

- 5 meters XLR-XLR cable
- mains cable
- mounting bracket and hardware
- this user manual

WARNING!
Disconnect the fixture from AC power before proceeding.

Installing and Changing the Lamp

The RoboScan Pro 518 is designed to use the Osram HSD 250 and Philips MSD-250/2 discharge lamps. *Installing other lamps may damage the fixture.* The lamp holder is pre-adjusted at the factory. For precise alignment, see "Adjusting the Lamp" on page 11.

To minimize the risk of lamp explosion, replace the lamp before usage exceeds 2200 hours.

1. Remove the 3 thumbscrews securing the lamp-socket assembly to the rear of the RoboScan. Gently pull out the assembly.

2. If replacing the lamp, remove the old lamp from the socket.

3. Holding the new lamp in a clean cloth (do not touch the glass), carefully insert it firmly and squarely into the lamp socket.

4. If your fingers touch the glass, clean the bulb with a clean, lint-free cloth wetted with denatured alcohol.

5. Replace the lamp-socket assembly and tighten the thumbscrews.

Checking Voltage and Frequency Settings

The voltage and frequency settings must match the local AC power supply! Operating at the incorrect setting can result in poor light output, shortened lamp life, overheating and damage to the fixture. The settings are printed on the serial number label on the front of the case. If the voltage is not within 5 percent of the local supply, or if the frequency (50/60 Hz) is not the same, then the ballast and/or transformer must be rewired as described on page 13.

Installing a Plug on the Power Cord

WARNING!
For safe operation, the fixture must be grounded (earthed).

The RoboScan Pro 518 may be delivered without a plug on the power cord. Following the manufacturer's instructions, install an approved 3-prong grounding-type plug that fits your supply. Connect the wires to the pins as listed below. If the pins are not clearly identified, or if you have any doubts ab/out proper installation, consult a qualified electrician.

Wire	Pin	Marking	Screw color (US)
brown	live	"L"	yellow or brass
blue	neutral	"N"	silver
yellow/green	ground	⏚	green

Releasing the Pan/Tilt Lock

The pan/tilt assembly floats in a rubber mount in order to reduce noise. To protect the assembly from damage during shipment, it is locked with plastic straps and 2 thumbscrews. *These must be removed before using the RoboScan!*

1. Cut and remove the 2 plastic straps.

2. Remove the thumbscrews from positions A1 and A2 on either side of the pan/tilt assembly and store them in positions B1 and B2.

Note: It is strongly recommended that the pan/tilt assembly be locked for transportation by replacing the thumbscrews in positions A1 and A2.

3. Carefully remove the protection foil and warning notice from the mirror.

Rigging

1. Secure the mounting bracket to the 3 bolts located on the top of the chassis with 3 M8 self-locking nuts (included).

2. Verify that the clamp (not included) is undamaged and can bear at least 10 times the fixture's weight. Bolt the clamp securely to the bracket with a grade 8.8 (minimum) M10 bolt and lock nut, or as recommended by the clamp manufacturer, through the 11 mm hole in the center of the mounting bracket.

3. If permanently installing the fixture, verify that the hardware (not included) and mounting surface can bear at least 10 times the fixture's weight.

4. Verify that the structure can support at least 10 times the weight of all installed fixtures, clamps, cables, auxiliary equipment, etc.

5. Working from a stable platform, clamp or fasten the fixture to the structure.

6. Install a safety cable that can hold at least 10 times the weight of the fixture through/over the support and mounting bracket.

7. Loosen the swivel locks and tilt the fixture to the desired angle. Turn the swivel locks clockwise to tighten. If a swivel lock does not tighten fully, pull the handle out, turn it counterclockwise, and retighten. Repeat as necessary.

8. Verify that the fixture is located at least 0.3 meters (12 in.) away from the surface to be illuminated and at least 0.1 meters (4 in.) from any combustible materials. Verify that the clearance around the fan and air vents is at least 0.1 meters (4 in.). Verify that there are no flammable materials nearby.

Setup for Controller Operation

Connect the Serial Link

The RoboScan Pro 518 may be used with DMX and Martin protocol controllers. The outputs on these controllers are different. DMX controllers usually have 5-pin XLR outputs and are wired with pin 2 cold (-) and pin 3 hot (+). Martin-standard controllers have 3-pin XLR outputs wired with pin 2 hot (+) and pin 3 cold (-). The Pro 518's XLR input is configured for the Martin standard. *When connecting a RoboScan Pro 518 to any DMX-standard device, you must swap the hot and cold signals with a phase reversing cable.*

1. Connect the controller's data output to the RoboScan Pro 518's input. If using a Martin-standard controller, use a direct 3-pin to 3-pin cable such as the one included. If using a DMX controller, use a phase reversing cable, either 3-pin to 3-pin, or 5-pin to 3-pin, depending on the output of the controller.

2. Continue the link: connect the output of the fixture closest to the controller to the input of the next fixture. Use a direct cable when connecting same-standard fixtures. Use a phase reversing cable only when connecting a DMX-standard fixture to a Martin fixture with pin 2 hot. Up to 32 fixtures may be connected on a serial link.

3. Insert a male 120 Ω XLR termination plug in the output of the last fixture on the link. The termination plug is simply a 3-pin male XLR plug with a 120 Ω resistor soldered between pins 2 and 3. *The termination plug is required for error-free communication.*

Set the Address

When using the RoboScan Pro 518 with a controller, you must set the DIP-switch to the start channel, also known as the address, which is the first channel the controller uses to send instructions to the RoboScan Pro 518.

3-pin to 3-pin Phase Reversing Cable	5-pin to 3-pin Phase Reversing Cable	3-pin to 5-pin Phase Reversing Cable
Connections	Connections	Connections
Male Female	Male Female	Male Female

1 ——— 1
2   ⨯   2
3   3
	1 ——— 1
	2 ⨯ 2
	3 3
	4
	5
		1 ——— 1
		2 ⨯ 2
		3 3
		      4
		      5

P/N 11820006	P/N 11820003	P/N 11820002

For independent control, each fixture must have its own address and control channels. Two or more RoboScan Pro 518s may have the same address; however, they will receive the same instructions and behave identically.

Martin mode: The RoboScan Pro 518 uses 1 channel to communicate with the controller. The address may be any channel between 1 and 32.

DMX mode: The RoboScan Pro 518 may be operated in 3 DMX modes; see the DMX protocol starting on page 16 for details. It uses 7 consecutive DMX channels in mode 1, and 9 consecutive DMX channels in modes 2 and 3. *The factory default is mode 3.* The address may be any channel up to 504 within the controller's range (506 if 7 channels are used).

Example: 4 Pro 518s using mode 3 can be addressed as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Pro 518 No. 1 Address: 1									Pro 518 No. 2 Address: 10									Pro 518 No. 3 Address: 19									Pro 518 No. 4 Address: 28								

Use the following procedure to set a Martin or DMX address.

1. Select an available address within the controller's range.
2. Find the DIP-switch setting in the address table on page 21.
3. Set the DIP-switch by flipping pins 1 through 9 ON or OFF as listed in the address table.   Flip pin 10 to OFF.

OPERATION

Stand-Alone Operation

The Roboscan Pro 518 may be operated without a controller in stand-alone mode. In this mode, the fixture performs a random sequence that is triggered by the beat of the music or at a set speed. The DIP-switch must be set to the desired stand-alone mode before applying power.

1.   With the fixture powered off, set the DIP-switch as shown below for the desired mode. *Pins not listed must be switched off.*

2.   Apply power to the RoboScan Pro 518 to run the sequence.

Stand-Alone Modes

Description	Pins Switched ON
Random sequence, wide pan/tilt, auto trigger	2, 10
Random sequence, wide pan/tilt, music trigger	1, 2, 10
Random sequence, narrow pan/tilt, auto trigger	2, 3, 10
Random sequence, narrow pan/tilt, music trigger	1, 2, 3, 10
Lamp ON	8, 10
Lamp OFF	7, 10
Adjustment sequence (for service use only)	(1), 5, 10
Adjustment sequence (for service use only)	(1), 2, 5, 10
L.E.D. chase auto-trig (for service use only)	4, 10
L.E.D. chase music-trig (for service use only)	1, 4, 10

Controller Operation

Getting Started

The RoboScan Pro 518 may be used with DMX-512 and Martin protocol controllers; it automatically determines which protocol is used. Protocol auto-detection can be reactivated if necessary by switching on all ten DIP-switches and then resetting the address.

1.   Connect the RoboScan Pro 518 to the controller as described under "Setup for Controller Operation" on page 6.

2.   Switch on and configure the controller.

3.   Apply power to the RoboScan. After a short reset procedure it will respond to the controller.

The controllable effects are described below. See your controller manual and the DMX protocol for additional information.

Lamp

A relay inside the fixture allows you to turn on and off the lamp via the controller without affecting the rest of the fixture. After switching on the RoboScan Pro 518, the lamp will remain off until you send a "lamp on" command from the controller.

It's important to note that the lamp is a cold restrike type, meaning that it must be cold before re-striking is possible. You must wait approximately 10 minutes after having powered off the lamp before you can turn it back on again.

To turn the lamp off via DMX, you must set values on 3 channels and hold them for 5 seconds as follows:

Channel	DMX Value	Percent	Effect
1	253 - 255	99 - 100	Lamp Off
3	120 - 123	47 - 48	UV Pass
5	64 - 127	25 - 50	5500 → 3400K CTC filter

Pan/Tilt

The moving mirror allows you to pan the beam 176° and tilt it 85°. Microstep motors provide smooth and accurate movement at all speeds. DMX modes 1 and 2 offer 8-bit pan/tilt resolution, while DMX mode 3 and Martin mode provides finer position control with 16-bit resolution. Selecting the B/O speed blacks out the light while the mirror is moving.

Color Wheel

The Pro 518 has 17 color positions on the color wheel: 14 with saturated dichroic colors, 2 with multi-colors, 1 with a special UV-pass filter, and 1 open white position. The wheel can be positioned between 2 colors to split the beam. Acceleration control allows variable speed color scrolling. Selecting the B/O speed blacks out the light while scrolling at highest speed.

Rotating Gobos

The Pro 518 has five rotating gobos. The gobos can be rotated in both directions at different speeds. The B/O speed blacks out the light while the gobos are changing.

Dimmer/Shutter

High resolution, 0 to 100% smooth dimming is provided by the combined dimmer/shutter system. Use high speed dimming to open or close the dimmer instantly. It's also possible to strobe at up to 9 flashes per second.

Effects Wheel

The effects wheel has a frost filter, a 3-facet prism for multiplying images, and a 5500 to 3400K color temperature corrector (CTC). Combining the CTC with a color filter yields another shade of the color.

Fan

Fan speed can be reduced for short periods if quieter operation is required. Low fan speed reduces cooling ability and should only be used when absolutely necessary and only if the ambient temperature is 25° C (77° F) or less. If the temperature inside the fixture exceeds a certain level, a built-in thermostat will automatically power off the lamp. You can turn off the lamp if the fan must be run at low speed for more than a few minutes.

Focus

Focus may be adjusted manually by turning the lens barrel.

Operating with Martin Controllers

Beginning with software version 6.4, an improved speed array has been programmed for use with the Martin controllers. This increases the range of speeds available for controlling effects. To use this feature, the DMX-mode jumper must be set to mode 3. This is the factory default setting. See "DMX Mode Selection" on page 12 if you need to change the mode setting.

section 4
SERVICE AND MAINTENANCE

IMPORTANT!

Read the procedures carefully. If you do not feel completely competent to perform the service, consult qualified service personnel for assistance.

Adjusting the Lamp

The RoboScan Pro 518 comes fully adjusted from the factory, however, readjustment of the lamp may be necessary due to differences between lamps. The lamp is adjusted by turning the 3 Phillips-head screws on the lamp access plate. Turning these clockwise pulls the lamp back towards the rear and vice versa. Keep adjustments small to avoid pulling the lamp so far off center that it hits the reflector.

WARNING!

The fixture must be cool and disconnected from AC power.

---

1. Remove the 3 thumbscrews from the lamp access plate and remove the lamp assembly.

2. Make a preliminary adjustment: turn the adjustment screws so that the inside-to-inside measurement between the lamp socket mounting plate and the lamp access plate is 13 mm (1/2 in). Replace the lamp assembly.

3. Flip DIP-switch pins 8 and 10 on. Flip all other pins off.

4. Apply power to the RoboScan Pro 518. After it has reset, it produces a white light with an open gobo for adjustment purposes. Wait approximately 5 minutes for the lamp to reach full brightness.

5. Manually position the fixture and/or mirror so the light shines on a flat surface and focus the beam.

6. If there is an off-center "hot spot," the lamp is not centered in the reflector. "Pull" the hot spot into the center of the field with small adjustments of one or more of the screws.

7. If the light is significantly brighter in the center of the field than it is at the edge, the lamp is too far forward in the reflector. Pull the lamp in by turning all three screws clockwise 1/4-turn at a time until the light is evenly distributed.

8. If the light is brighter around the edge than it is in the center, or if light output is low, the lamp is too far back in the reflector. "Push" the lamp out by turning the screws counter-clockwise 1/4-turn at a time until the light is bright and evenly distributed.

DMX Mode Selection

The DMX mode is set by a jumper inside the RoboScan Pro 518. *The factory default is mode 3* (jumper on pins 4 and 5). Follow the procedure below to enable modes 1 or 2.

W A R N I N G !

Make sure the fixture is disconnected from AC power before proceeding.

---

1. Remove the 6 screws labelled 'D' and 'C' in figure 1 and carefully remove the complete pan/tilt section. Avoid unplugging the motor cables from the circuit board.

2. Locate jumper PL432 on the circuit board (refer to the nearby label). To enable DMX mode 1, simply remove this jumper. To enable DMX mode 2, move the jumper to pins 5 and 6.

3. Reassemble the fixture before connecting to AC power.
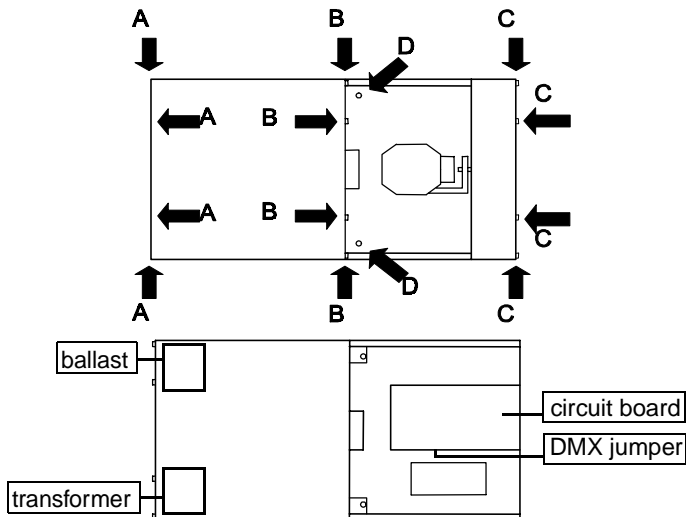
Figure 1

Selecting Voltage and Frequency

The voltage and frequency settings must match the local AC power supply! Operating at the incorrect setting can result in poor light output, shortened lamp life, overheating and damage to the fixture. The settings are printed on the serial number label on the front of the case: if the voltage is not within 5 percent of the local supply or the frequency (50/60 Hz) is different, then the ballast and transformer must be rewired.

Model	Selectable Voltages	Selectable Frequencies
RoboScan Pro 518 EU	230 V / 240 V / 250 V	50 Hz
RoboScan Pro 518 US	100 V / 110 V / 120 V	50/60 Hz

W A R N I N G !

Make sure the fixture is disconnected from AC power before proceeding.

RoboScan Pro 518 US

1. Unscrew the 8 screws, labelled 'A' and 'B' in figure 1, that secure the casing over the lamp housing, and remove the casing.
2. Locate the ballast at the rear-left corner (see figure 1) and move the GREY wire, labelled 'F', to either the 50 Hz or the 60 Hz terminal to select the local frequency.
3. Locate the transformer at the rear-right corner of the unit, and move the BROWN wire, labelled 'V', to either the 100 V, 110 V, or 120 V terminal to select the local AC voltage.
4. Reassemble the unit before connecting to AC power.

RoboScan Pro 518 EU

1. Unscrew the 8 screws, labelled 'A' and 'B' in figure 1, that secure the casing over the lamp housing, and remove the casing.
2. Locate the ballast at the rear-left corner (see figure 1) and move the GREY wire, labelled 'V', to either the 220 V, 230 V, or 250 V terminal to select the local AC voltage.
3. Locate the transformer at the rear-right corner of the unit and move the BROWN wire, also labelled 'V', to either the 225 V or 240 V terminal to select the local AC voltage.
4. Reassemble the unit before connecting to AC power.

Adjusting the Mirror

Readjusting the mechanical stop on the RoboScan Pro 518 mirror adaptor is required if the pan or tilt motor occasionally loses step, leaving the mirror incorrectly positioned after a reset. This error occurs when the recoil of the mechanical reset bounces the mirror and bracket a whole pan or tilt motor step.
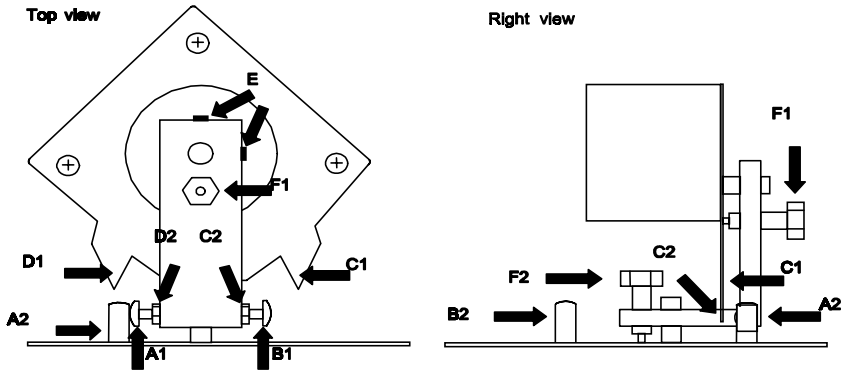
Figure 2

Pan Adjustment

1. Connect the RoboScan Pro 518 to a controller and set the address. Switch on the controller and then the fixture.

2. Use the controller to move the mirror to the extreme left position, thus positioning screw A1 at the upper mechanical stop (A2).

3. Release the lock-nut on adjustment screw A1.

4. Turn screw A1 clockwise 1/2 - 1 turn to increase the distance between the head of the screw and the mechanical stop (A2).

5. Tighten the lock-nut on screw A1.

6. Reset the fixture a number of times to check the new reset position.

7. Use the controller to move the mirror through all extreme positions, checking that adjustment screw B1 does not touch mechanical stop B2. during these steps. If it does, then adjust screw B1 accordingly.

Tilt Adjustment

1. Use the controller to move the mirror to the upper-left position until the top mechanical stop (C1) is positioned at the edge of the mirror bracket (C2).

2. Loosen the 2 set crews (E) holding the motor axle while taking care that the motor does not slide vertically from its current position.

3. Carefully turn the motor and mirror clockwise (make sure the motor axle does not turn) until there is a distance of 1/2 to 1 mm (1/64 - 1/32") between the edge of the mirror bracket (C2) and the top mechanical stop (C1).

4. Tighten the set screws.

5. Use the controller to reset the fixture and move the mirror through all extreme positions, checking that the bottom mechanical stop (D1) does not touch the edge of the mirror bracket (D2). If it does, then readjust as described above, making the distance between C2 and C1 even smaller.

appendix a
DMX 512 PROTOCOL

The RoboScan Pro 518 supports tracking and vector mode and 8 and 16 bit pan/tilt resolution. The 3 DMX modes and the channel requirements for each are shown below. The correct mode will depend on your programming preferences and your controller's abilities.

In tracking mode, movement speed is determined directly by the controller's fade time.

In vector mode, speed is determined by a value programmed on a separate DMX channel. *For smooth movement in vector mode, the controller's fade time must be set to 0, i.e., the position must bump from the current value to the next.* If the RoboScan Pro 518 is set to run vector mode, tracking mode can be enabled by programming the speed channels to 0.

With 8-bit pan/tilt resolution, pan and tilt are divided into 256 positions. Finer position control is possible with 16-bit pan/tilt resolution, which divides each position into smaller increments.

DMX Mode	Channels	PL432 Jumper
Mode 1 - 8 bit Pan/Tilt, Tracking	7	No jumper
Mode 2 - 8 bit Pan/Tilt, Vector	9	Jumper on pin 5 and 6
Mode 3 (default) - 16 bit Pan/Tilt, Tracking	9	Jumper on pin 4 and 5

Channel			DMX		
Mode 1	Mode 2	Mode 3	Values	Percent	**Effect**
	1		0 - 5	0 - 2	**Strobe/Stand-Alone/Reset/Lamp On/Off** Default
			6 - 10	2 - 4	Fan low (Fan high at all other values.)
			11 - 138	4 - 54	Strobe, fast → slow
			139 - 170	55 - 67	Remote stand-alone, auto trigger
* Set color to UV Pass			171 - 202	67 - 79	Remote stand alone, music trigger
and effects wheel to			203 - 235	80 - 92	Reset fixture
5500 → 3400K CTC			236 - 252	93 - 98	Lamp power ON
filter. Hold 5 seconds.			253 - 255	99 - 100	Lamp power OFF*
	2		0 - 14	0 - 5	**Dimmer** Full dimming
			15 - 239	6 - 94	Dimming, 100 → 0%
			240 - 255	94 - 100	No dimming

Channel			DMX		
Mode 1	Mode 2	Mode 3	Values	Percent	Effect
	3				**Color**
			0 - 3	0 - 1	White
			4 - 7	2 - 3	White / Pink split
			8 - 11	3 - 4	Pink
			12 - 15	5 - 6	Pink / Magenta split
			16 - 19	6 - 7	Magenta
			20 - 23	8 - 9	Magenta / Primary Red split
			24 - 27	9 - 11	Primary Red
			28 - 31	11 - 12	Primary Red / Flame Red split
			32 - 35	13 - 14	Flame Red
			36 - 39	14 - 15	Flame Red / Dark Orange split
			40 - 43	16 - 17	Dark Orange
			44 - 47	17 - 18	Dark Orange / Orange split
			48 - 51	19 - 20	Orange
			52 - 55	20 - 22	Orange / Yellow split
			56 - 59	22 - 23	Yellow
			60 - 63	24 - 25	Yellow / Light Green split
			64 - 67	25 - 26	Light Green
			68 - 71	27 - 28	Light Green / Fern Green split
			72 - 75	28 - 29	Fern Green
			76 - 79	30 - 31	Fern Green / Turquoise split
			80 - 83	31 - 33	Turquoise
			84 - 87	33 - 34	Turquoise / Cyan split
			88 - 91	35 - 36	Cyan
			92 - 95	36 - 37	Cyan / Light Blue split
			96 - 99	38 - 39	Light Blue
			100 - 103	39 - 40	Light Blue / Dark Lavender Split
			104 - 107	41 - 42	Dark Lavender
			108 - 111	42 - 44	Dark Lavender / Dark Blue split
			112 - 115	44 - 45	Dark Blue
			116 - 119	45 - 47	Dark Blue / UV Pass split
			120 - 123	47 - 48	UV Pass
			124 - 127	49 - 50	UV Pass / Multi Color 1 split
			128 - 131	50 - 51	Multi Color 1
			132 - 135	52 - 53	Multi Color 1 / Multi Color 2 split
			136 - 139	53 - 55	Multi Color 2
			140 - 197	58 - 77	CW rotation, fast → slow
			198 - 255	78 - 100	CCW rotation, slow → fast

Channel			DMX		
Mode 1	Mode 2	Mode 3	Values	Percent	Effect
4			0	0	**Rotating Gobo Wheel** Open
			1 - 24 25 - 27 28 - 51	0 - 9 10 - 11 11 - 20	Gobo 1, CCW, fast → slow Gobo 1, static Gobo 1, CW, slow → fast
			52 - 75 76 - 78 79 - 102	20 - 29 30 - 31 31 - 40	Gobo 2, CCW, fast → slow Gobo 2, static Gobo 2, CW, slow → fast
			103 - 126 127 - 129 130 - 153	40 - 49 50 - 51 51 - 60	Gobo 3, CCW, fast → slow Gobo 3, static Gobo 3, CW, slow → fast
			154 - 177 178 - 180 181 - 204	60 - 69 70 - 71 71 - 80	Gobo 4, CCW, fast → slow Gobo 4, static Gobo 4, CW, slow → fast
			205 - 228 229 - 231 232 - 255	80 - 89 90 - 91 91 - 100	Gobo 5, CCW, fast → slow Gobo 5, static Gobo 5, CW, slow → fast
5			0 - 63 64 - 127 128 - 191 192 - 255	0 - 25 25 - 50 50 - 75 75 - 100	**Effects Wheel** Open 5500 → 3400K CTC filter Frost 3-facet prism
6			0 - 255	0 - 100	**Pan** Left → Right (127 = neutral)
-	-	7	0 - 255	0 - 100	**Pan Fine (LSB)** Left → Right (127 = neutral)
7	7	8	0 - 255	0 - 100	**Tilt** Up → Down (127 = neutral)
-	-	9	0 - 255	0 - 100	**Tilt Fine (LSB)** Up → Down (127 = neutral)
-	8	-	0 1 - 251 252 - 255	0 0 - 98 99 - 100	**Pan/Tilt Speed** Tracking Fast → Slow Blackout while moving
-	9	-	0 1 - 251 252 - 255	0 0 - 98 99 - 100	**Color Speed** Tracking Fast → Slow Blackout while moving
			0 - 251 252 - 255	0 - 98 99 - 100	**Dimmer Speed** Fast → Slow Fast

SPECIFICATIONS

Dimensions

- Length:...533 mm (21.0")
- Height with bracket: ....325 mm (12.8")
- Height without bracket: ....185 mm (7.3")
- Width: ....280 mm (11.0")
- Weight:...14 kg (31 lb)

Electrical

- Power and current consumption: ....335 W, 1.6 A @ 230 V / 50 Hz
- AC voltage and frequency (EU model): .... 230 V / 240 V / 250 V, 50 Hz
- AC voltage and frequency (US model): .... 100 V / 110 V / 120 V / 225 V, 50/60 Hz
- Fuse:...T 3.15A (EU) / T 6.3A (US)

Lamps

- Osram HSD 250...2000 h, 250 W, 6000K, P/N 97010103
- Philips MSD 250/2 ....2000 h, 250 W, 8500K, P/N 97010100

Photometric

- Focused beam angle: ....16°

Serial Data Link

- Data input .... 3-pin XLR male
- Data output .... 3-pin XLR female
- Pin 1 .... ground
- Pin 2 ....signal + (hot)
- Pin 3 ....signal - (cold)

EXTERIOR VIEW

15°   **100°**

324.8

184.5

280

533
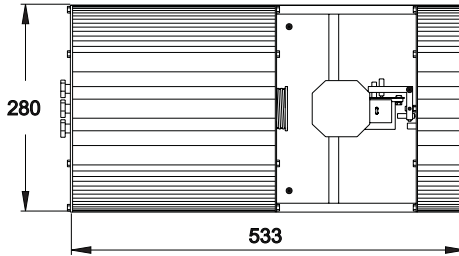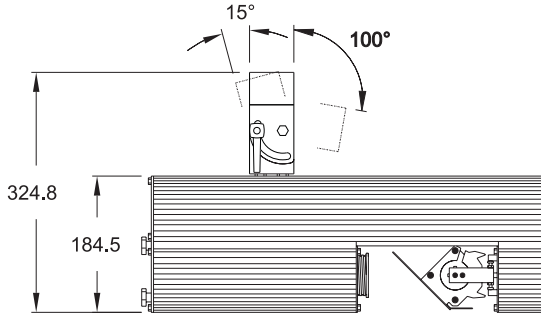
(dimensions in millimeters)

wrap safety wire
through bracket

(clamp not shown)

bracket mounting bolts

lamp access plate

DIP switch

lamp adjustment screws

serial number label

AC input & fuse
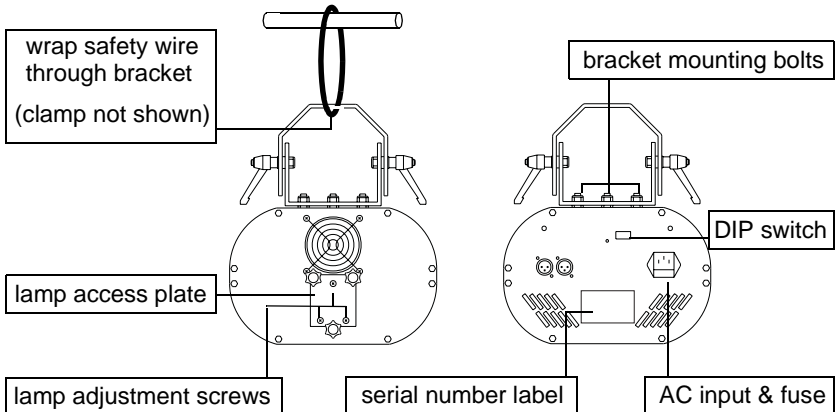
appendix d
DIP-SWITCH TABLE

This table shows DIP-switch settings for channels 1- 511. To find a setting, locate the channel in the table. Follow the row to the left to find the settings for pins 1 through 5; follow the column to the top to find the settings for pins 6 through 9. A "0" indicates the pin is turned off and a "1" indicates the pin is turned on. *Pin 10 is always switched OFF when setting a controller address.*

Example: The table shows the setting for channel 212 is 00101 for pins 1 - 5 and 0110 for pins 6 - 9. Pins 3, 5, 7, and 8 are set to on; pins 1, 2, 4, 6, 9, and 10 are set to off.

DIP-Switch Setting					#9	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
					#8	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
		0 = OFF			#7	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
		1 = ON			#6	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
#1	#2	#3	#4	#5																	
0	0	0	0	0			32	64	96	128	160	192	224	256	288	320	352	384	416	448	480
1	0	0	0	0		1	33	65	97	129	161	193	225	257	289	321	353	385	417	449	481
0	1	0	0	0		2	34	66	98	130	162	194	226	258	290	322	354	386	418	450	482
1	1	0	0	0		3	35	67	99	131	163	195	227	259	291	323	355	387	419	451	483
0	0	1	0	0		4	36	68	100	132	164	196	228	260	292	324	356	388	420	452	484
1	0	1	0	0		5	37	69	101	133	165	197	229	261	293	325	357	389	421	453	485
0	1	1	0	0		6	38	70	102	134	166	198	230	262	294	326	358	390	422	454	486
1	1	1	0	0		7	39	71	103	135	167	199	231	263	295	327	359	391	423	455	487
0	0	0	1	0		8	40	72	104	136	168	200	232	264	296	328	360	392	424	456	488
1	0	0	1	0		9	41	73	105	137	169	201	233	265	297	329	361	393	425	457	489
0	1	0	1	0		10	42	74	106	138	170	202	234	266	298	330	362	394	426	458	490
1	1	0	1	0		11	43	75	107	139	171	203	235	267	299	331	363	395	427	459	491
0	0	1	1	0		12	44	76	108	140	172	204	236	268	300	332	364	396	428	460	492
1	0	1	1	0		13	45	77	109	141	173	205	237	269	301	333	365	397	429	461	493
0	1	1	1	0		14	46	78	110	142	174	206	238	270	302	334	366	398	430	462	494
1	1	1	1	0		15	47	79	111	143	175	207	239	271	303	335	367	399	431	463	495
0	0	0	0	1		16	48	80	112	144	176	208	240	272	304	336	368	400	432	464	496
1	0	0	0	1		17	49	81	113	145	177	209	241	273	305	337	369	401	433	465	497
0	1	0	0	1		18	50	82	114	146	178	210	242	274	306	338	370	402	434	466	498
1	1	0	0	1		19	51	83	115	147	179	211	243	275	307	339	371	403	435	467	499
0	0	1	0	1		20	52	84	116	148	180	212	244	276	308	340	372	404	436	468	500
1	0	1	0	1		21	53	85	117	149	181	213	245	277	309	341	373	405	437	469	501
0	1	1	0	1		22	54	86	118	150	182	214	246	278	310	342	374	406	438	470	502
1	1	1	0	1		23	55	87	119	151	183	215	247	279	311	343	375	407	439	471	503
0	0	0	1	1		24	56	88	120	152	184	216	248	280	312	344	376	408	440	472	504
1	0	0	1	1		25	57	89	121	153	185	217	249	281	313	345	377	409	441	473	505
0	1	0	1	1		26	58	90	122	154	186	218	250	282	314	346	378	410	442	474	506
1	1	0	1	1		27	59	91	123	155	187	219	251	283	315	347	379	411	443	475	507
0	0	1	1	1		28	60	92	124	156	188	220	252	284	316	348	380	412	444	476	508
1	0	1	1	1		29	61	93	125	157	189	221	253	285	317	349	381	413	445	477	509
0	1	1	1	1		30	62	94	126	158	190	222	254	286	318	350	382	414	446	478	510
1	1	1	1	1		31	63	95	127	159	191	223	255	287	319	351	383	415	447	479	511