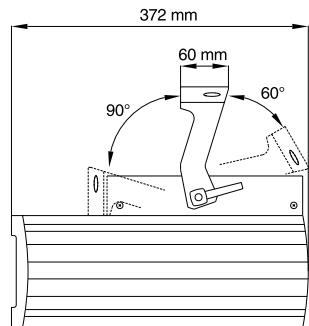
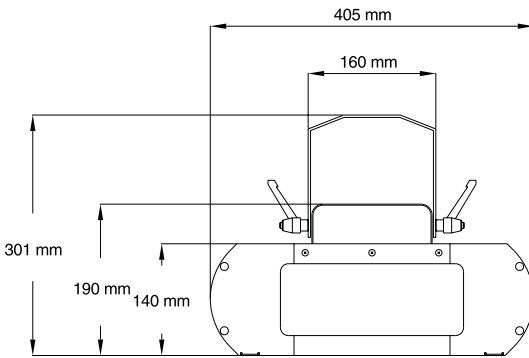
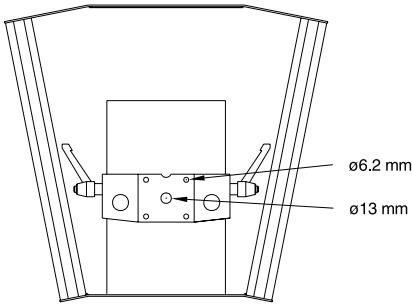


# SynchroZap QX250

user manual





© 1998, 1999 Martin Professional A/S, Denmark.

All rights reserved. No part of this manual may be reproduced, in any form or by any means, without permission in writing from Martin Professional A/S, Denmark.

Printed in Denmark.

P/N 35000025, Rev. C

# section 1 INTRODUCTION

Thank you for selecting the Martin SynchroZap QX250. This manual covers the SynchroZap QX250 with CPU software version 1.1. For the latest product news and documentation, please contact your dealer or the Martin web site at <http://www.martin.dk>.

## SynchroZap QX250 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 service to a qualified technician. There are no user-serviceable parts inside.

#### **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.
- 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 ( $T_a$ ) exceeds 40° C (104° F).

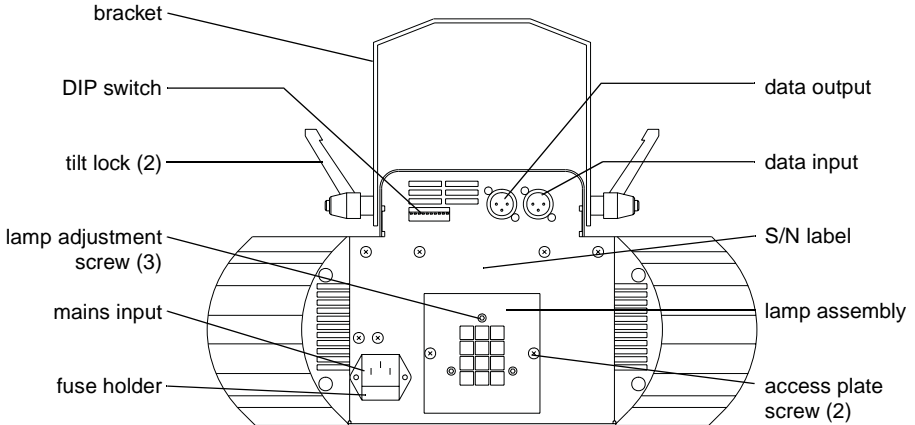
## **To protect yourself and others from injury due to falls**

- 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.

## section 2

# SETUP

This section describes the steps required to prepare the SynchroZap for operation.



**Figure 1: Rear view**

## Unpacking

The SynchroZap QX250 comes with:

- 5-meter, 3-pin shielded XLR control cable
- 1.5-meter, 3-wire IEC power cable
- user manual

The packing material is carefully designed to protect the fixture during shipment - always use it to transport the fixture.

## Installing or changing the lamp

The SynchroZap QX250 is designed for the Philips MSD 250/2 or the Osram HSD 250 discharge lamp. The Philips MSD 200 may be substituted if less power is desired. *Installing other lamps may damage the fixture.*

---

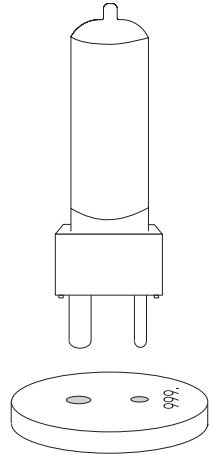
## WARNING!

Disconnect the fixture from AC power before proceeding.

The lamp operates under high temperature and pressure and can explode when hot. Always allow a hot lamp to cool for at least 5 minutes before removing it from the fixture and wear safety goggles to protect your eyes.

---

1. Remove the 2 lamp access screws from the lamp assembly and gently remove the assembly. See Figure 1.
2. Remove the old lamp, if any, by its ceramic base.
3. **Holding the new lamp by its ceramic base** (do not touch the glass), align the pins as shown in Figure 2 so that the small pin goes in the small hole. Insert the lamp firmly and squarely into the socket and ensure that all 4 small projections on the ceramic base touch the face of the socket.
4. Clean the glass bulb with the cloth supplied with the lamp, particularly if your fingers touch the glass. A clean, lint-free cloth wetted with alcohol may also be used.
5. Turn the lamp assembly so the wires are at the top. Gently insert the assembly, making sure the lamp fits through the opening in the reflector. Replace the lamp access screws.
6. The lamp holder is pre-adjusted at the factory; however, precise alignment to compensate for slight variations between lamps may improve performance. See "Adjusting the lamp" on page 14.



**Figure 2**

## Powering the fixture

---

## WARNING!

The fixture must be grounded (earthed).

The voltage and frequency settings must match the local AC power supply.


---

## Check voltage and frequency settings

Verify that the settings printed on the S/N label match your local power supply. If the voltage is not within 5 percent of the local supply, or if the frequency (50/60 Hz) is different, then the ballast and/or transformer must be rewired by a qualified technician before power is applied. Please contact your Martin dealer.

## Prepare the power cable

The SynchroZap QX250 has a 3-pin IEC power inlet. To use the supplied power cable, you must install a grounding-type cord cap that fits your supply. Following the manufacturer's instructions, connect the yellow/green wire to the ground (earth) pin, the blue wire to the neutral pin, and the brown wire to the live pin. The table shows some pin identification schemes; if the pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.

Connections		Possible Markings		
Wire	Pin	Typical	US	UK
brown	live	“L”	yellow or brass	red
blue	neutral	“N”	silver	black
yellow/green	ground		green	green

## Apply power

Note: Do not power the SynchroZap on a variable dimmer circuit. Disconnect the fixture from power when not in use.

1. Check the voltage and frequency settings.
2. Verify that the supply cable is undamaged and rated for the current requirements of all connected devices.
3. When ready to operate, plug the prepared power cord into the mains input on the rear panel and the AC power supply.

## Rigging

---

### **WARNING!**

Always use an approved safety cable.

---

The SynchroZap may be installed by fastening the mounting bracket directly to a structural support or by using a rigging clamp. See page 21 for clamps available from Martin.

1. Verify that the structure can support at least 10 times the weight of all installed fixtures, clamps, cables, auxiliary equipment, etc.
2. If hanging the fixture with a rigging clamp, verify that the clamp is undamaged and is designed for the fixture's weight. Bolt the clamp securely to the bracket with a grade 8.8 (minimum) M12 bolt and lock nut, or as recommended by the clamp manufacturer, through the clamp hole in 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. The four 6 mm holes and/or the 13 mm clamp hole in the mounting bracket may be used for attachment.
4. Working from a stable platform, clamp or fasten the fixture to the structure.
5. Install a safety cable that can hold at least 10 times the weight of the fixture through/over the support and mounting bracket.
6. Loosen the tilt locks, tilt the fixture to the desired angle, and retighten.
7. Verify that the fixture is at least 0.3 meters (12 in.) from the surface to be illuminated and at least 0.1 meters (4 in.) from any combustible materials. Verify that the clearance around the air vents is at least 0.1 meters (4 in.).

## Connecting the serial data link

The SynchroZap must be connected by a serial data link if it is to be operated by a controller or in stand-alone master/slave mode. **The pin-out of the 3-pin data input and output sockets is compatible with the DMX-512 standard**, i.e., pin 1 to shield, pin 2 to cold (-) and pin 3 to hot (+). As some devices have 5-pin connectors or 3-pin connectors with reversed polarity on pins 2 and 3, the following adaptor cables may be required.

5-pin to 3-pin Adaptor	
Male	Female
1	1
2	2
3	3
4	
5	
P/N 11820005	

3-pin to 5-pin Adaptor	
Male	Female
1	1
2	2
3	3
	4
	5
P/N 11820004	

3-pin to 3-pin Phase-Reversing Adaptor	
Male	Female
1	1
2	3
3	2
P/N 11820006	



1. **Connect controller:** For a DMX controller with 5-pin output, use a cable with a 5-pin male and a 3-pin female connector, such as P/N 11820005. Pins 4 and 5 are not used. For a DMX controller with 3-pin output, use a cable with 3-pin male and female connectors such as the one supplied. Connect the cable to the controller's DMX output and the SynchroZap's data input.
2. **Connect additional fixtures:** Connect the output of the fixture closest to the controller to the input of the next fixture. When connecting a SynchroZap QX250 to a Martin fixture with pin 3 cold (-), use a 3-pin phase-reversing adaptor such as Martin P/N 11820006.
3. **Terminate the link:** Insert a male 120  $\Omega$  XLR termination plug in the output of the last fixture on the link. The termination plug, which is simply a male XLR connector with a 120  $\Omega$ , 0.25 watt resistor soldered between pins 2 and 3, "soaks up" the control signal so it does not reflect back down the link and cause interference. If linking many SynchroZaps for stand-alone master/slave operation, it may be necessary to terminate the input of the first fixture with a female 120  $\Omega$  XLR termination plug.

## **Tips for building a trouble-free serial link**

- Use shielded twisted-pair cable designed for RS-485 devices. Though standard microphone cable may work in some situations, it is prone to interference that can cause unpredictable performance.
- Never use a "Y" connector to split the link. To split the serial link into branches use a splitter such as the Martin 4-Channel Opto-Isolated RS-485 Splitter/Amplifier. If a splitter is used, terminate each branch of the link.
- Do not overload the link. Up to 32 devices may be connected on a serial link.

## **Address and mode setting**

### **Select DMX mode**

The SynchroZap QX250 has 2 DMX modes: a 6-channel mode that provides full control of all effects and a 1-channel mode in which the SynchroZap performs a random sequence at 3 trigger rates.

1. To select the 6-channel mode, simply set an address as described below.
2. To select the 1-channel mode, set DIP-switch pins 9 and 10 to ON. Pins 1 through 8 are used to select an address between 1 and 255.

### **Select the address**

When operating the SynchroZap QX250 with a controller, the DIP-switch must be set to the start channel, also known as the address, which is the first channel the controller uses to send instructions to the fixture. The address may be any channel up to 507 in 6-channel DMX mode and any channel up to 255 in the 1-channel mode.

For independent control, each fixture must have its own address as in example 1. If independent control is not required, 2 or more SynchroZaps may share the same address: they will receive the same instructions and behave identically. In example 2, units 1 and 2 will behave the same, as will units 3 and 4.

**Example 1: 4 units, 6-channel control**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
unit 1 address = 1						unit 2 address = 7						unit 3 address = 13						unit 4 address = 19					

**Example 2: 2 sets of 2 units with 6-channel control and 4 units with 1-channel control**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
units 1 and 2 address = 1						units 3 and 4 address = 7						unit 5	unit 6	unit 7	unit 8										

1. Look up the DIP-switch setting for the selected address on page 22. You can also find the setting by subtracting pin values, shown below, until the total of the values equals the address. Start with the highest pin value that can be subtracted and continue until there is no remainder.

pin	1	2	3	4	5	6	7	8	9	10
value	1	2	4	8	16	32	64	128	256	special

**DIP-switch pin values**

2. Set the DIP-switch by flipping the OFF pins up and the ON pins down with a small screwdriver or similar tool.

**Example: channel 100  
1-channel mode  
Pins 3, 6, 7, 9, 10 ON**

channel	100
- value of <b>pin 7</b>	- 64
remainder	36
- value of <b>pin 6</b>	- 32
remainder	4
- value of <b>pin 3</b>	- 4
remainder	0



**Example: Channel 50,  
6-channel mode  
Pins 2, 5 and 6 ON**

channel	50
- value of <b>pin 6</b>	- 32
remainder	18
- value of <b>pin 5</b>	- 16
remainder	2
- value of <b>pin 2</b>	- 2
remainder	0



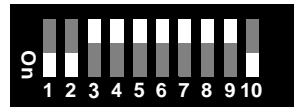
# section 3 OPERATION

## Stand-alone operation

The SynchroZap QX250 may be operated without a controller in a stand-alone mode in which it performs a random sequence triggered by the beat of the music. Two or more SynchroZap QX250s may be connected for synchronized stand-alone “master/slave” operation.

### Single SynchroZap

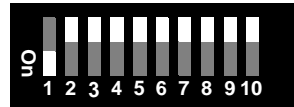
1. With the fixture off, set DIP-switch pins 1,2, and 10 to ON and set the others to OFF.
2. Apply power to the SynchroZap QX250. Adjust the volume of the music until the fixture responds.



Stand-alone setting for single or master unit

### Multiple SynchroZaps

1. Link the fixtures together as described under “Connecting the serial data link” on page 8.
2. Select one SynchroZap to be the “master” by setting its DIP-switch pins 1, 2, and 10 to ON as shown above. Any SynchroZap - but no more than 1 - may be the master regardless of its position on the link.
3. Set all other SynchroZaps to be “slaves” by setting DIP-switch pin 1 to ON and setting all other pins to OFF.
4. Apply power to the fixtures. Adjust the volume of the music until the fixtures respond.



Stand-alone setting for slave units

## 1-channel DMX or MC-1 controller operation

To operate the SynchroZap QX250 with the MC-1 controller, select the 1 channel DMX mode and set the control address to channel 1. Connect the data link as for full DMX operation. The 1-channel DMX protocol is shown below.

Channel	DMX Values	Percent	Effect
1	0 - 50	0 - 19	Blackout
	51 - 101	20 - 39	2.0 second trigger
	102 - 152	40 - 59	1.0 second trigger
	153 - 255	60 - 100	0.2 second trigger

# Full DMX operation

The SynchroZap QX250 may be operated with any DMX-512 controller. It is ideally suited for use with the Martin 2518 DMX Controller.

1. Set up the SynchroZap QX250 as described in section 2.
2. Switch on and configure the controller.
3. Apply power to the SynchroZap. After it resets it is ready to respond to the controller. The DMX protocol beginning on page 18 describes in detail how the fixture responds to DMX commands.

## Loss of DMX

If the DMX signal is lost, the SynchroZap automatically executes a random sequence using the music trigger after 5 seconds. DMX control resumes when the signal returns.

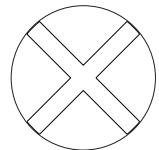
# Controllable effects

## Channel 1: lamp on/off, shutter, reset

**When power is applied to the SynchroZap, the lamp remains off until a “lamp on” command is sent from the controller.** To strike (turn on) the lamp, set channel 1 to lamp on (5%).

Note: A peak of electric current that can be many times the operating current is drawn when striking the lamp. Striking many lamps at the same time may cause a voltage drop large enough to prevent lamps from striking or trip the main circuit breaker. It is a good practice to strike lamps one at a time at 5 second intervals.

The lamp can be turned off from the controller by sending a “lamp off” command. Set channel 1 to lamp off (100%), channel 2 to green (45%), channel 3 to gobo 9 (34%) and hold for 5 seconds.



Gobo 9

The lamp cannot be turned on again until after it has cooled for approximately 5 minutes. If the lamp does not strike, send the lamp off command and allow it to cool.

Channel 1 also controls the shutter, allowing you to black out the light and flash the light at variable or random speeds for strobe-like effects.

Finally, the mechanical effects can be reset to their home position by sending the “reset” command (95%).

## Channel 2: color wheel

The SynchroZap has 9 dichroic color filters plus an open white position. Between each position is a split-color position. The color wheel can also be rotated at varying speeds and

scrolled using the music trigger.

### **Channel 3: gobo wheel**

The SynchroZap QX250 has 19 gobos plus an open position. The gobo wheel can be rotated at varying speeds and scrolled using the music trigger.

### **Channels 4 and 5: mirror drums**

The SynchroZap has 2 asymmetrically mounted mirror drums with independently controllable rotation. Each drum can rotate in both directions at varying speeds, stand still, or be set for musically triggered random or synchronized action. Channel 4 controls the left drum and channel 5 controls the right drum.

### **Channel 6: Synchronized drum rotation and music trigger speed**

**Synchronized drum rotation:** Synchronized drum rotation causes the mirror drums to rotate in opposite directions at the same speed with their “tilt” angle offset by 0°, 90°, 180°, or 270°. This effect can be seen clearly by setting channel 1 to open (10%), channel 2 to yellow/magenta (25%), channel 3 to gobo 19 (68%), channel 4 to fast ccw rotation (35%), and then experimenting with the values between 8% and 38% on channel 6.

When synchronized rotation is selected, the drum speed and direction are set on channel 4 and channel 5 has no effect. To regain independent control of the drums, turn synchronized rotation off (0%) or select a music trigger speed.

If both drum channels are set to music trigger (100%), independent random rotation may be selected by setting a music trigger speed; synchronized random rotation may be selected by setting a synchronized drum rotation angle.

**Music trigger speed:** Channel 6 also controls the effects speed when music trigger is selected. Three speeds are available. The difference is most noticeable on the mirror drums.

Music trigger works even if no speed is selected, that is, if channel 6 is set to synchronized rotation.

section 4  
**BASIC SERVICE**

## Replacing the lamp

---

### WARNING

The lamp operates under high temperature and pressure and can explode. Always wear safety goggles to protect your eyes and allow a hot lamp to cool for at least 5 minutes before removing it from the fixture.

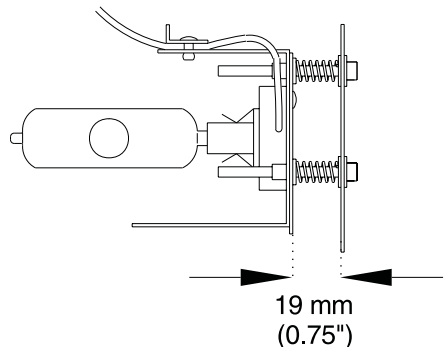
---

Discharge lamps become more difficult to strike with age. If the lamp is difficult to strike, it probably needs to be replaced. You can expect, on average, to get 2000 hours of use from MSD lamps. Please refer to “Installing or changing the lamp” on page 5 for the lamp replacement procedure.

## Adjusting the lamp

The SynchroZap QX250 lamp assembly is adjusted at the factory. Due to differences between lamps, however, fine adjustment may be improve performance.

1. Disconnect the fixture from AC power.
2. (Optional) Perform a rough adjustment: Remove the lamp assembly and turn the 3 lamp adjustment screws until there are 19 mm (0.75 in) between the 2 plates as shown. Replace the lamp assembly.
3. **With controller:** Turn on the SynchroZap QX250 and select white light with the open gobo.



**Figure 3: Preliminary adjustment**

**Without controller:** Flip DIP-switch pins 8 and 10 on. Flip all other pins off. Apply power to the SynchroZap QX250. After it has reset, the fixture produces a white light with an open gobo for adjustment purposes.

4. Wait for the lamp to reach full brightness. Position the fixture so the light shines on a flat, white surface.
5. 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 lamp-adjustment screws.
6. 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.
7. 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 counterclockwise 1/4-turn at a time until the light is bright and evenly distributed.

## Replacing the main fuse

The holder for the main fuse is built in to the mains input socket. If the fuse blows repeatedly, refer the fixture for servicing by a qualified technician. *Never replace the fuse with one of a different rating!*

1. Unplug the mains cable from the input socket.
2. Pry open the fuse holder and remove the fuse.
3. Replace the fuse with one of the same type and rating. The fuse rating is listed on serial number label on the end plate.
4. Close the fuse holder and replace the mains cable.

## Information for service technicians

---

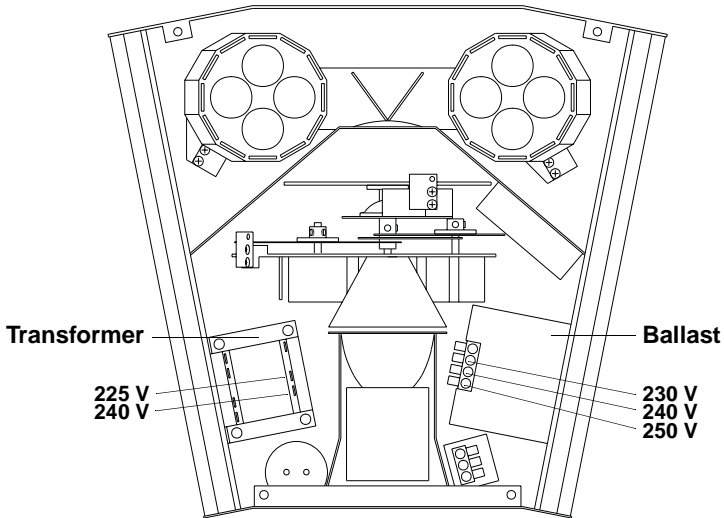
### **WARNING!**

There are no user-serviceable parts inside. The following procedures and all other service shall be performed by qualified service technicians only.

---

## Adjusting EU model voltage settings

Local AC Supply		Transformer		Ballast	
Freq.	Voltage	Setting	Terminal	Setting	Terminal
50 Hz	220 - 235 V	225 V	3	230 V	230
50 Hz	235 - 245 V	240 V	4	240 V	240
50 Hz	245 - 260 V	240 V	4	250 V	250



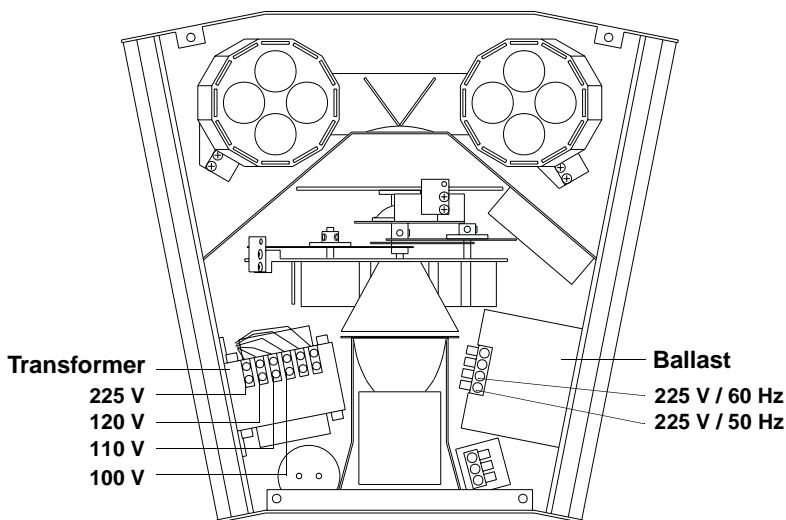
**Figure 4: EU model transformer and ballast taps**

1. **Disconnect the fixture from AC power** and place it upside down on a work table. If the lamp is hot, allow it to cool for 5 minutes and wear safety goggles to protect your eyes.
2. Remove the screws from the 4 corners of the bottom plate and lift it off.
3. On the transformer, move the BROWN wire to the transformer terminal shown in the table above for the local AC supply voltage. The terminals are indicated on a label on the side of the transformer.
4. On the ballast, move the BROWN wire to the terminal listed for the voltage. The terminals are indicated on the side of the ballast.
5. Replace the cover.



## Adjusting US model voltage settings

Local AC Voltage	Transformer Setting
95 - 105 V	100 V, 50/60 Hz
105 - 115 V	110 V, 50/60 Hz
115 - 125 V	120 V, 50/60 Hz
215 - 235 V	225 V, 50/60 Hz



**Figure 5: US model transformer and ballast taps**

1. **Disconnect the fixture from AC power** and place it upside down on a work table. If the lamp is hot, allow it to cool for 5 minutes and wear safety goggles to protect your eyes.
2. Remove the screws from the 4 corners of the bottom plate and lift it off.
3. On the ballast, move the BROWN wire to the 225 V / 50 Hz terminal for 50 Hz AC or to the 225 V / 60 Hz terminal for 60 Hz AC.
4. On the transformer, move the BROWN wire to the setting as listed above for the local AC voltage.
5. Replace the cover.

appendix a  
**DMX 512 PROTOCOL**

Channel	DMX Values	Percent	Effect
1	0 - 10	0 - 3	<b>Shutter, lamp power, reset</b>
	11 - 19	4 - 7	Blackout (shutter closed)
	20 - 39	8 - 15	Lamp power on, shutter open
	40 - 100	16 - 39	Shutter open
	101 - 109	40 - 43	Strobe, fast → slow
	110 - 130	44 - 51	Blackout
	131 - 180	52 - 71	Random strobe
	181 - 239	72 - 94	Random strobe w/music trigger
	240 - 248	95 - 97	Blackout
	249 - 255	98 - 100	Reset Lamp power off (Set color to green, gobo to position 9 and hold 5 seconds.)
2	0 - 8	0 - 3	<b>Colors</b> White
	9 - 17	4 - 7	White/pink
	18 - 26	8 - 10	Pink
	27 - 35	11 - 14	Pink/light green
	36 - 44	15 - 17	Light green
	45 - 53	18 - 21	Light green/yellow
	54 - 62	22 - 24	Yellow
	63 - 71	25 - 28	Yellow/magenta
	72 - 80	29 - 31	Magenta
	81 - 89	32 - 35	Magenta/light blue
	90 - 98	36 - 38	Light blue
	99 - 107	39 - 42	Light blue/green
	108 - 116	43 - 45	Green
	117 - 125	46 - 49	Green/orange
	126 - 134	50 - 53	Orange
	135 - 143	54 - 56	Orange/blue
	144 - 152	57 - 60	Blue
	153 - 161	61 - 63	Blue/deep orange
	162 - 170	64 - 67	Deep orange
	171 - 179	68 - 70	Deep orange/white
180 - 187	71 - 73	White	
188 - 237	74 - 93	Continuous rotation, slow → fast	
238 - 248	94 - 97	White	
249 - 255	98 - 100	Music trigger	

Channel	DMX Values	Percent	Effect
3	0 - 8 9 - 17 18 - 26 27 - 35 36 - 44 45 - 53 54 - 62 63 - 71 72 - 80 81 - 89 90 - 98 99 - 107 108 - 116 117 - 125 126 - 134 135 - 143 144 - 152 153 - 161 162 - 170 171 - 179 180 - 187 188 - 237 238 - 248 249 - 255	0 - 3 4 - 7 8 - 10 11 - 14 15 - 17 18 - 21 22 - 24 25 - 28 29 - 31 32 - 35 36 - 38 39 - 42 43 - 45 46 - 49 50 - 53 54 - 56 57 - 60 61 - 63 64 - 67 68 - 70 71 - 73 74 - 93 94 - 97 98 - 100	<b>Gobos</b> Open Gobo 1 Gobo 2 Gobo 3 Gobo 4 Gobo 5 Gobo 6 Gobo 7 Gobo 8 Gobo 9 Gobo 10 Gobo 11 Gobo 12 Gobo 13 Gobo 14 Gobo 15 Gobo 16 Gobo 17 Gobo 18 Gobo 19 Open Continuous rotation, slow → fast Open Music trigger
4	0 - 2 3 - 89 90 - 176 177 - 209 210 - 255	0 - 1 2 - 35 36 - 69 70 - 82 83 - 100	<b>Mirror drum 1 &amp; synchronized rotation</b> No rotation Continuous ccw rotation, slow → fast Continuous cw rotation, fast → slow No rotation Music trigger, drum 1
5	0 - 2 3 - 89 90 - 176 177 - 209 210 - 255	0 - 1 2 - 35 36 - 69 70 - 82 83 - 100	<b>Mirror drum 2</b> No rotation Continuous ccw rotation, slow → fast Continuous cw rotation, fast → slow No rotation Music trigger, drum 2
6	0 - 19 20 - 39 40 - 59 60 - 79 80 - 99  100 - 194 195 - 224 225 - 255	0 - 7 8 - 15 16 - 23 24 - 31 32 - 39  40 - 76 77 - 88 89 - 100	<b>Synchronized rotation</b> Off 0° offset 90° offset 180° offset 270° offset  <b>Music trigger speed</b> Slow Medium Fast

# appendix b

# SPECIFICATIONS

## Measurements

- Dimensions w/o bracket (LxWxH): ..... 372 x 405 x 190 mm (14.6 x 15.9 x 7.5 in)
- Weight with bracket but no clamp: ..... 11.4 kg (25 lb)

## Electrical, EU model

- Power, current consumption at 230 V, 50 Hz with MSD 250/2: ..... 300 W, 1.51 A
- Power factor at 230 V, 50 Hz with MSD 250/2 ..... 0.87
- Ballast taps:..... 230 V / 240 V / 250 V, 50 Hz
- Main fuse ..... 3.15 A T (time delay), P/N 05020013
- Circuit board fuse ..... 2 A T (time delay), P/N 05020009

## Electrical, US model

- Power, current consumption at 100 V, 50 Hz with MSD 250/2: ..... 280 W, 3 A
- Power factor at 100 V, 50 Hz with MSD 250/2 ..... 0.92
- Power, current consumption at 120 V, 60 Hz with MSD 250/2: ..... 280 W, 2.7 A
- Power factor at 120 V, 60 Hz with MSD 250/2 ..... 0.86
- Transformer taps:..... 100 V / 110 V / 120 V / 225 V, 50/60 Hz
- Main fuse ..... 6.3 A T (time delay), P/N 05020020
- Circuit board fuse ..... 2 A T (time delay), P/N 05020009

## Philips MSD 250/2 lamp

- Power ..... 250 watts
- Rated life..... 2000 hours
- Color temperature ..... 5600K
- Martin part number ..... P/N 97010100

## Osram HSD 250 lamp

- Power ..... 250 watts
- Rated life..... 2000 hours
- Color temperature ..... 6000K
- Martin part number ..... P/N 97010103

## Communication

- Electrical standard ..... RS-485
- Protocol..... USITT DMX512 (1990)
- I/O sockets ..... 3-pin XLR male/female, pin 1=shield, pin 2 (-), pin 3 (+)

## Construction

- Housing..... aluminum and steel
- Finish ..... electrostatic powder coating

## Thermal

- Maximum ambient temperature ( $T_a$ ) .....40° C (104° F)
- Surface temperature under normal operating conditions.....65° C (150° F)

## Accessories

- Half-coupler clamp ..... P/N 91602005
- G clamp..... P/N 91602003

## Service DIP-switch settings

- Lamp adjust ..... pins 8, 10 ON
- Lamp off ..... pins 7, 10 ON
- LED chase, auto trigger ..... pins 4, 10 ON

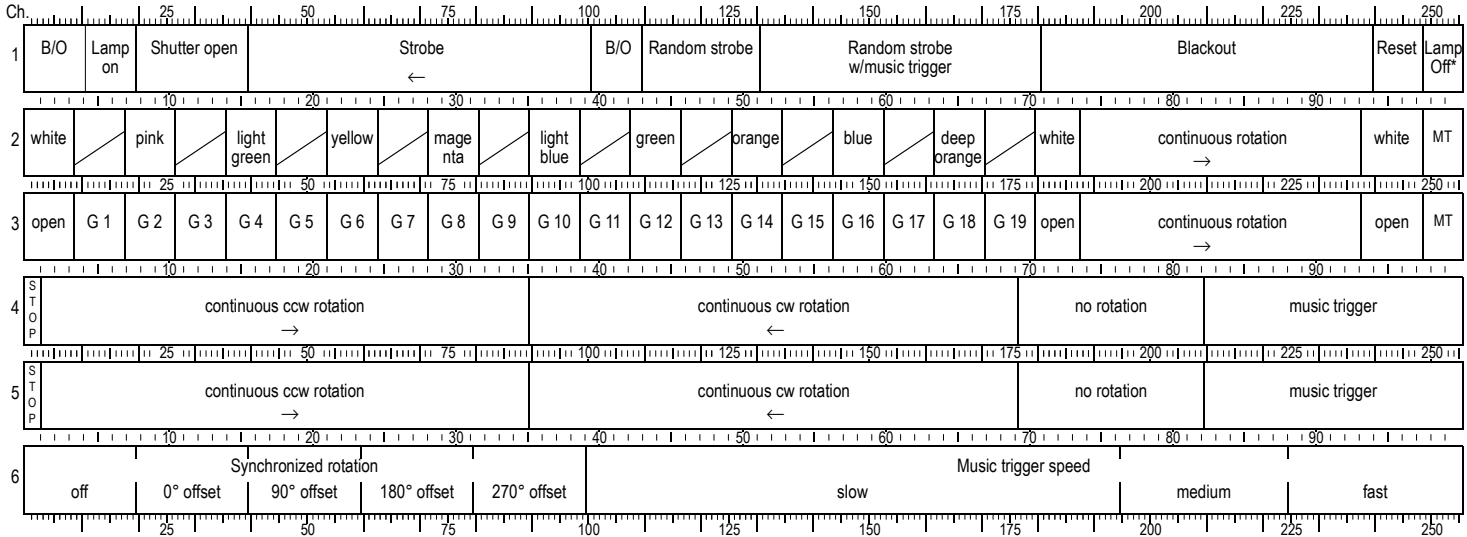
# appendix c DIP-SWITCH TABLE

This table shows DIP-switch settings for channels 1- 511. Note: Pin 10 is always OFF in the 6-channel DMX mode. Pins 9 and 10 must be switched ON to select the 1-channel DMX mode. In this mode, pins 1 - 8 are used to select any channel up to 255.

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.

DIP-Switch Setting					#9	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
0 = OFF					#8	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
1 = ON					#7	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
					#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	

# SynchroZap QX250 6-Channel DMX Protocol



\* Set ch. 2 to green and ch. 3 to gobo 9 to enable lamp off command. Hold for 5 seconds.

← = variable speed, points to fast