RoboScan 812

user manual

ø 11 mm

267 mm

165 mm

245 mm

190 mm

436 mm

section 1
INTRODUCTION

Thank you for selecting the Martin RoboScan 812. It is designed and built to be bright, reliable and easy to use. With proper setup and maintenance, the RoboScan 812 will provide years of trouble-free operation.

Read this manual before operating the RoboScan 812. Safety hazards or damage to the fixture may occur if it is handled or operated incorrectly. For your protection and other's, always follow the safety precautions listed below and observe the warnings in this manual and printed on the fixture. If you have questions about how to operate and service the fixture, please contact your Martin dealer for assistance before proceeding. Refer any service not described in this manual to a qualified Martin technician.

This manual covers the RoboScan 812 with software version 2.8 or higher. The latest information on the RoboScan 812 is always available from your dealer and the Martin web site at http://www.martin.dk.

SAFETY PRECAUTIONS

- The RoboScan 812 is NOT for domestic use.

- For protection against dangerous electric shock, always ground (earth) the fixture electrically, use only a source of AC power that complies with local building and electrical codes, and do not expose the fixture to rain or moisture. Disconnect the fixture from AC power before removing any cover or part.

- Disconnect the fixture from AC power if the lamp blows. Allow the fixture to cool for 10 minutes before installing a new lamp.

- Do not illuminate surfaces within 30 cm (12 inches) of the fixture.

- Do not place filters or other objects over the lens or mirror.

- Keep all combustible materials (for example fabric, wood, paper) at least 10 cm (4 inches) away from the fixture. Keep flammable materials well away from the fixture.

- Provide a minimum clearance of 10 cm (4 inches) around the fan and air vent.

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

- When suspending the fixture above ground level, verify that the structure can hold at least 10 times the weight of all installed devices and secure the fixture with an approved safety cable. Block access below the work area whenever installing or removing the fixture.

- For protection against dangerous UV radiation, never operate the fixture with missing and/or damaged covers or lenses installed and do not stare into the light. Replace any broken or cracked component immediately.

- Refer all service to a qualified technician.

Features

- 150 watt discharge lamp
- 11 dichroic colors plus white
- 11 gobos plus open and blackout
- 175° pan movement
- 83° tilt movement
- Variable speed control on all functions
- Split color and gobo effects
- Variable strobe up to 7 Hz
- Remote lamp on/off (with Martin-protocol controllers)
- Coated precision optics
- Adjustable focus
- Controllable via Martin and DMX-512 controllers
- Preprogrammed stand-alone operation
- Music trigger using built-in microphone
- Power factor correction for low current consumption
- Efficient fan cooling
- Overheating protection

INSTALLATION

The RoboScan 812 is delivered fully adjusted from the factory; only a few setup steps are necessary. Please follow them carefully to get the most out of your new equipment.

Unpacking

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

The RoboScan 812 comes complete with the following items:

*   150 W Martin Metal Halide discharge lamp
*   5 meters XLR-XLR cable
*   mains cable
*   mounting bracket and hardware
*   this user manual

Installing a Plug on the Power Cord

W A R N I N G !

For protection from dangerous electric shock, the fixture must be grounded (earthed). The AC supply shall be fitted with a fuse or circuit breaker and ground-fault protection.

The RoboScan 812 is 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. The table shows some possible pin identification schemes; if the pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.

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

Checking voltage and frequency settings

The RoboScan 812 voltage setting must be within 5% of the AC mains supply. The voltage setting may be adjusted to local conditions. The frequency (50 or 60 Hz depending on model), however, must match your supply. Check the settings printed on the label near the mains input. See page 13 to change the voltage setting if necessary.

Releasing the Pan/Tilt Lock

The pan/tilt assembly (9) floats in a special rubber mount to reduce noise when operating the pan and tilt motors. In order to protect the pan/tilt assembly from damage during shipment, it is secured with two plastic straps and a locking thumbscrew. *These must be removed before using the RoboScan!*

It is strongly recommended that the pan/tilt assembly be locked for transportation by replacing the thumbscrew in position A over the pan/tilt assembly.

1.   Cut and remove the two plastic straps.

2.   Remove the thumbscrew over the pan/tilt assembly and store it in the threaded hole, labelled B, on the pan/tilt plate.

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

Installing the Mounting Bracket

Use the 11 mm hole in the center of the mounting bracket to fasten a clamp (not included), or to permanently bolt the fixture in place, with a grade 8.8 (minimum) M10 bolt and lock nut. For safety, verify that the structure can support at least 10 times the weight of all installed fixtures, clamps, cables, auxiliary equipment, etc., and always use an approved means of secondary attachment such as a safety cable to prevent falls.

The mounting bracket may also be used as a floor stand.
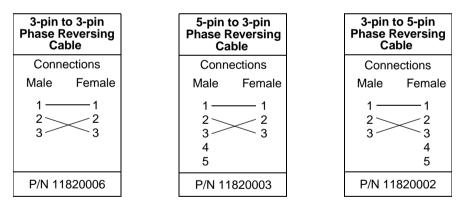
1.   Insert the two black plastic hand wheels into the bracket holes.

2.   Place a plastic spacer on each hand wheel, between the bracket and the casing, and screw the hand wheels into the fixture.

3.   Turn or tilt the RoboScan to the desired position and tighten the hand wheels.

Setup for Controller Operation

Connect the Serial Link

The RoboScan 812 may be used with DMX and Martin protocol controllers. The RoboScan 812's XLR connections are configured for Martin protocol controllers such as the 3032. *When connecting a RoboScan 812 to any DMX-standard device, you must swap pins 2 and 3 with a phase-reversing cable.*

1. Connect the controller's data output to the RoboScan 812's input (2). If using a Martin-standard controller, use a direct 3-pin to 3-pin cable such as the one provided. 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 (1) 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.*

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

Set the Address

When using the RoboScan 812 with a controller, you must set the DIP-switch (3) to the start channel, also known as the address, which is the first channel the controller uses to send instructions to the RoboScan 812.

For independent control, each fixture must have its own address and control channels. Two or more RoboScan 812s may have the same address; however, they will receive the same instructions and behave identically.

Martin mode: The RoboScan 812 uses 1 channel to communicate with the controller. The address may be any channel between 1 and 32.

DMX mode: The RoboScan 812 may be operated in tracking or vector mode; see the DMX protocol for details. It uses 5 consecutive DMX channels in tracking mode and 7 consecutive DMX channels in vector mode. *The factory default is tracking mode.* The address may be any channel up to 508 within the controller's range (506 if 7 channels are used).

Example: 4 RoboScans using tracking mode (5 channels) may be addressed as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
812 No. 1					812 No. 2					812 No. 3					812 No. 4				
Address: 1					Address: 6					Address: 11					Address: 16				

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

1. Select an available address within the controller's range.

2. Look up the DIP-switch setting on page 19. You can also calculate it by subtracting pin values until the total of the values equals the address. Start with the highest pin value that can be subtracted and work down until there is no remainder. The table below shows the pin values.

3. Set the DIP-switch (3) by flipping ON the pins found in step 2.

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

.

<table>
<tr><td colspan="2">Example: Channel 6
Pins 2 and 3 ON</td></tr>
<tr><td>channel
- value of pin 3</td><td>6
-4</td></tr>
<tr><td>remainder
- value of pin 2</td><td>2
-2</td></tr>
<tr><td>remainder</td><td>0</td></tr>
</table>

On
1 2 3 4 5 6 7 8 9 10

<table>
<tr><td colspan="2">Example: Channel 82
Pins 2, 5 and 7 ON</td></tr>
<tr><td>channel
- value of pin 7</td><td>82
- 64</td></tr>
<tr><td>remainder
- value of pin 5</td><td>18
- 16</td></tr>
<tr><td>remainder
- value of pin 2</td><td>2
- 2</td></tr>
<tr><td>remainder</td><td>0</td></tr>
</table>

On
1 2 3 4 5 6 7 8 9 10

section 3
OPERATION

Stand-Alone Operation

The RoboScan 812 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 automatically at a set speed. The DIP-switch must be set to the desired stand-alone mode before applying power. Settings for the different modes are shown below.

1. With the fixture powered off, set the DIP-switch (3) for the desired mode. *Pins not listed must be switched off.*

2. Apply power to the RoboScan 812 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 and lamp adjustment)	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 812 may be used with DMX-512 and Martin protocol controllers; it automatically determines which protocol is in use. Protocol auto-detection can be reactivated if necessary by switching on all ten DIP-switches and then resetting the address.

1. Connect the RoboScan 812 to the controller and set the address.

2. Switch on and configure the controller.

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

Controllable Effects

Lamp

After switching on the RoboScan 812, the lamp remains off until a "lamp on" command is sent from the controller. If using a Martin protocol controller, the lamp may also be turned off via the controller. This feature is not implemented in the DMX protocol - to turn off the lamp you must power off the fixture.

It's important to note that the lamp is a cold restrike type: it must be cold before striking is possible. The lamp must cool for approximately 5 minutes before it can be turned on again.

Pan/Tilt

The moving mirror allows you to pan the beam 175° and tilt it 83°. Movement speed may be adjusted with the controller fade time (DMX tracking mode and Martin controllers) or on a separate channel (DMX vector mode).

Color Wheel

The RoboScan 812 has 13 positions on the color wheel: 11 with saturated dichroic colors, open white, and blackout. The wheel can be positioned between 2 colors to split the beam. The speed of the color and gobo wheels may be adjusted with the controller fade time (DMX tracking mode and Martin controllers) or on a separate channel (DMX vector mode).

Selecting color strobe causes the color wheel to change between any 2 adjacent colors or between white and black. The strobe speed is variable.

Gobos

The RoboScan 812 has 11 gobos on the gobo wheel plus open and blackout. Selecting gobo strobe causes the gobo wheel to change between any 2 adjacent gobos or between full open and black. The strobe speed is variable.

Random Sequence

The RoboScan 812 may be set to perform a preprogrammed sequence with automatic or music trigger.

Focus

Focus may be adjusted manually from 1 meter to infinity by turning the threaded lens barrel (7). Screwing the lens in increases the focus distance; screwing it out decreases the distance at which the image is focused.

SERVICE AND MAINTENANCE

W A R N I N G !

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

Disconnect the fixture from power before removing any cover.

Changing the Lamp

	Martin 150 W Metal Halide	Osram HTI 150	GE CSS 150
Martin P/N	97010107	97010108	97010104
Average Life	2000 h	750 h	1000 h
Color Temp.	5000K	6500K	5000K
Output	900 lm	1200 lm	900 lm

The three lamps shown above may be used in the RoboScan 812. *Installing any other lamp may damage the fixture*. The lamp holder is adjusted at the factory; if further alignment is necessary, the procedure is described on page 12.

1. Remove the 3 thumbscrews (10) securing the lamp-socket assembly to the rear of the RoboScan. Gently pull out the assembly.

2. If changing 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 alcohol.

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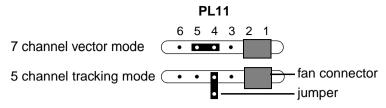
Adjusting the Lamp

The RoboScan 812 comes fully adjusted from the factory, however, readjustment of the lamp may improve performance. The lamp is adjusted by turning the 3 screws (11) on the lamp access plate (12). 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.*

1. Set up the RoboScan 812 so that you can access the lamp-access plate (12) and, if adjusting the lamp without a controller, the DIP-switch (3).

2. **With controller:** Turn on the RoboScan 812 and allow the lamp to warm up for 5 minutes. From the controller, select white light with the open gobo and position the beam on a flat, white surface. Focus the beam.

   Without controller: Flip DIP-switch pins 1, 5 and 10 on. Flip all other pins off. Apply power to the RoboScan 812. After it has reset, the fixture produces a white light with an open gobo for adjustment purposes. Wait approximately 5 minutes for the lamp to reach full brightness. Position the fixture and/or mirror so the light shines on a flat, white surface and focus the beam.

3. 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 (11). *Note: the Martin Metal Halide lamp is nearly as large as the reflector opening - very little side to side adjustment is possible or necessary.*

4. 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.

5. 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.

6. If you have made large sideways adjustments, disconnect the fixture from AC power, allow it to cool, and remove the lamp assembly to ensure that the lamp is still placed squarely in the socket.

DMX Mode Selection

PL11

6 5 4 3 2 1

7 channel vector mode

5 channel tracking mode — fan connector

jumper

The DMX mode is set with a jumper on the circuit board inside the unit. *The factory default is tracking mode.* Follow the procedure below to change the mode.

W A R N I N G !
Make sure the fixture is disconnected from AC power.

---

1. Remove the cover (6) above the lamp. Remove the cover (8) above the circuit board.

2. Locate connector PL11 on the circuit board: refer to the label inside the chassis. On one or two of the pins there is a black clip - a jumper - that creates an electrical connection when placed over 2 pins.

3. Place the jumper on pins 4 and 5 to enable 7-channel vector mode. Remove the jumper to enable 5-channel tracking mode. You can store the jumper by placing it sideways on one of the pins.

4. Reassemble the fixture.

Selecting Voltage

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 factory setting is printed on the serial number label next to the mains input. If the voltage is not within 5 percent of the local supply, then the ballast and transformer must be rewired.

Model	Selectable Voltages	Frequency
RoboScan 812 EU	230 V / 240 V / 250 V	50 Hz
RoboScan 812 US	100 V / 110 V / 120 / 220 V	50 or 60 Hz*

* The RoboScan 812 US may also be used with a 100 V, 50 Hz supply when wired for 120 V, 60 Hz operation.

W A R N I N G !
Make sure the fixture is disconnected from AC power.

R o b o S c a n   8 1 2   U S

1. Remove the cover above the lamp. (6)

2. Remove the cover (8) above the circuit board.

3. Locate the connection block next to the circuit board. Right beside it is a label indicating the proper terminal for each voltage.

4. With a small screwdriver, loosen the screw in the terminal that holds the BROWN wire. Remove the brown wire. Tighten the screw. *Note: The BLACK wire must always be connected to the 220 V terminal.*

5. Loosen the screw for the terminal closest to the supply voltage and insert the BROWN wire. Tighten the screw.

6. Remove the end plate (5) to access the ballast.

7. To set the frequency, move the GREY wire on the ballast to the "230-50" (50 Hz) or "230-60" (60 Hz) terminal. The wire is released and locked by inserting a small screwdriver in the square hole next to the terminal and prying back the spring.

8. Tug lightly on the GREY wire to make sure that it is connected securely.

9. Reassemble the unit before connecting to AC power.

R o b o S c a n   8 1 2   E U

50 Hz AC Supply	Transformer Setting	Ballast Setting
218 - 234 V	230 V	230 V
235 - 240 V	230 V	240 V
241 - 244 V	250 V	240 V
245 - 260 V	250 V	250 V

1. Remove the cover above the lamp. (6)

2. Remove the cover (8) above the circuit board.

3. Move the BROWN transformer wire to the transformer setting shown above. Do not move the WHITE and BLUE wires from terminal 1.

4. Remove the end plate (5) to access the ballast.

5. Remove the GRAY wire from the ballast terminal: insert a screwdriver in the small hole under the terminal and release the spring with a clockwise turn.

6. Open the spring for the correct ballast terminal and insert the GRAY wire. The terminals are marked on the side of the ballast.

7. Reassemble the unit before connecting to AC power.

Replacing the Fuse

The holder for the main fuse is built in to the mains input socket (4). If the fuse blows repeatedly, the fixture requires 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.

DMX 512 PROTOCOL

The RoboScan 812 supports tracking and vector mode. In tracking mode, speed is determined 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 812 is set to run vector mode, tracking mode can be enabled by programming the speed channels to 0.

DMX Channel	DMX Values	Percent	Effect
			Strobe, SA, Reset, Lamp ON
	0 - 10	0 - 4	No strobe
	11 - 74	4 - 29	Gobo strobe (fast → slow)
	75 - 138	29 - 54	Color strobe (fast → slow)
1	139 - 170	55 - 67	Remote Auto trig
	171 - 202	67 - 79	Remote Music trig
	203 - 235	80 - 92	Reset fixture
	236 - 255	93 - 100	Lamp power ON
			Color
	0 - 15	0 - 6	black → white
	15 - 30	6 - 12	white → color 1
	30 - 45	12 - 18	color 1 → color 2
	45 - 60	18 - 24	color 2 → color 3
	60 - 75	24 - 29	color 3 → color 4
	75 - 90	29 - 35	color 4 → color 5
	90 - 105	35 - 41	color 5 → color 6
	105 - 120	41 - 47	color 6 → color 7
	120 - 135	47 - 53	color 7 → color 8
	135 - 150	53 - 59	color 8 → color 9
	150 - 165	59 - 65	color 9 → color 10
	165 - 180	65 - 71	color 10 → color 11
2			
	180 - 184	71 - 72	color 11
	185 - 189	73 - 74	color 10
	190 - 194	75 - 76	color 9
	195 - 199	76 - 78	color 8
	200 - 204	78 - 80	color 7
	205 - 209	80 - 82	color 6
	210 - 214	82 - 84	color 5
	215 - 219	84 - 86	color 4
	220 - 224	86 - 88	color 3
	225 - 229	88 - 90	color 2
	230 - 234	90 - 92	color 1
	235 - 239	92 - 94	white
	240 - 255	94 - 100	black

			Gobo
	0 - 15	0 - 6	closed → open
	15 - 30	6 - 12	open → gobo 1
	30 - 45	12 - 18	gobo 1 → gobo 2
	45 - 60	18 - 24	gobo 2 → gobo 3
	60 - 75	24 - 29	gobo 3 → gobo 4
	75 - 90	29 - 35	gobo 4 → gobo 5
	90 - 105	35 - 41	gobo 5 → gobo 6
	105 - 120	41 - 47	gobo 6 → gobo 7
	120 - 135	47 - 53	gobo 7 → gobo 8
	135 - 150	53 - 59	gobo 8 → gobo 9
	150 - 165	59 - 65	gobo 9 → gobo 10
	165 - 180	65 - 71	gobo 10 → gobo 11
3			
	180 - 184	71 - 72	gobo 11
	185 - 189	73 - 74	gobo 10
	190 - 194	75 - 76	gobo 9
	195 - 199	76 - 78	gobo 8
	200 - 204	78 - 80	gobo 7
	205 - 209	80 - 82	gobo 6
	210 - 214	82 - 84	gobo 5
	215 - 219	84 - 86	gobo 4
	220 - 224	86 - 88	gobo 3
	225 - 229	88 - 90	gobo 2
	230 - 234	90 - 92	gobo 1
	235 - 239	92 - 94	open
	240 - 255	94 - 100	closed
4	0	0	**Pan** Max Left
	127	50	Neutral
	255	100	Max Right
5	0	0	**Tilt** Max Up
	127	50	Neutral
	255	100	Max Down
6	0	0	**Movement Speed (vector mode only)** Tracking mode enabled
	1 - 255	1 - 100	Speed (fast → slow)
7	0	0	**Color / Gobo speed (vector mode only)** Tracking mode enabled
	1 - 255	1 - 100	Speed (fast → slow)

appendix b
TECHNICAL SPECIFICATIONS

RoboScan 812 EU / US

Dimensions:

- Length:..436 mm (17.2")
- Height incl./excl. bracket:..................................267 mm / 165 mm (10.5" / 6.5")
- Width incl./excl. bracket:...................................245 mm / 190 mm (9.6" / 7.5")
- Weight incl. bracket (EU model):..9.4 Kg (20.7 lb)
- Weight incl. bracket (US model):..10.5 Kg (23.1 lb)

Electrical

- Power and current consumption: ....170 W, 1 A at 230 V, 50 Hz
- AC voltage and frequency (EU model): ....230/240/250 V, 50 Hz
- AC voltage and frequency (US model): ....100/110/120/220 V, 60 Hz
- Fuse:..3.15 AT (EU) / 4AT (US)

Compatible Lamps

- Martin Metal Halide 150 (standard) ....P/N 97010107
- Osram HTI 150...P/N 91010108
- GE Lighting CSS 150...P/N 91010104

Photometric

- Beam angle: ....15.5°

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 using the RoboScan 812 with a controller.*

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