

## GEMINI ROBOT KITS

## Power Distribution Board Assembly Instructions

## Parts List

DESCRIPTION	QTY	PART #
<u>Resistors</u>		
1K (BRN-BLK-RED-GLD)	6	CCF251K
1.8K (BRN-GRY-RED-GLD)	1	CCF251.8K
10K (BRN-BLK-ORG-GLD)	1	CCF2510K
18K (BRN-GRY-ORG-GLD)	1	CCF2518K
200 ohm Potentiometer (200)	3	91ER200
1K ohm Potentiometer (1K)	1	91ER1K
<u>Capacitors</u>		
.47 microfarad (474K)	3	CK06BX474K
.1 microfarad (104)	8	SR205E104M-AA
.0022 microfarad (2A222FT, grn)	1	MY.0022/100
.68 microfarad (684) Electrolytic	1	196D684X9035
.0068 microfarad (682)	1	C135C682K5R5CA
1000 microfarad 35v Electrolytic	1	CRE1000MF35V
1000 microfarad 25v Electrolytic	1	CRE1000MF25V
<u>Diodes</u>		
1N4002	3	1N4002
1N914 or 1N4148	1	1N914
VSK340	1	VSK340
<u>ICs</u>		
TIL-111	1	TIL-111
LAS6320P	1	LAS6320P
7812 (UA7812C)	3	7812C
<u>Miscellaneous</u>		
Printed Circuit Board	1	
2N2222 Transistor	1	PN2222A
HL20374 Coil (Red)	1	HL20374
275-243 Relay (Blue, 5 leads)	1	275-243
2 amp Slow Blow Fuse	3	413002
Fuse Holders	6	F071
Black Heat Sinks	3	HS104-1
Gold Heat Sink	1	HS125
4-40 X 1/2" Screws	3	91783A110

cont.

4-40 Hex Nuts	3	91841A005
Lockwashers	3	921416A005
Nylon 1" Screw	1	94611A153
Nylon Nut	1	94812A113
Nylon Washer	1	GIPD-1
2 Pin Molex (white)	1	09-74-1021
6 Pin Molex (white)	2	09-74-1061
8 Pin Molex (white)	1	09-74-1081
2 Pin Single Male Header	1	929834-01
3 Pin Single Male Header	1	22-03-2031

#### Assembling the Power Distribution Board

1. Insert and solder all resistors into their proper place.

( ) R1 - 1K (BRN-BLK-RED-GLD)  
 ( ) R5 - 1K "  
 ( ) R7 - 1K "  
 ( ) R8 - 1K "  
 ( ) R9 - 1K "  
 ( ) R10 - 1K "  
 ( ) R6 - 10K (BRN-BLK-ORG-GLD)  
 ( ) R12 - 18K (BRN-GRY-ORG-GLD)  
 ( ) R13 - 1.8K (BRN-GRY-RED-GLD)

2. Insert and solder all diodes.

( ) CR2 - IN4002  
 ( ) CR3 - "  
 ( ) CR4 - "  
 ( ) CR1 - IN914  
 ( ) CR5 - VSK340

3. Install the pots. The value is printed on the end with only 1 lead.

( ) R2 - 200 ohm  
 ( ) R3 - "  
 ( ) R4 - "  
 ( ) R11 - 1K ohm

4. When installing the IC's on this board, no sockets will be used. Be sure to orient pin 1 properly.

( ) U1 - TIL-111  
 ( ) U2 - LAS6320P Before soldering this in place, slide the gold heat sink onto the IC with the opening toward pin 1.

5. To install the voltage regulators (7812), bend the legs on the 7812 to fit into the three holes on the circuit board so that the hole on the top of the 7812 lines up with the hole in the circuit board. Insert the black heat sink under the 7812. We recommend that you use a small amount of Heat Sink Compound between the 7812 and the black heat sink. Next, place a 4-40 X 3/8" screw through the hole on the top of the heat sink and secure on the underside of the circuit board with a lockwasher and hex nut. Solder the leads of each 7812 to the circuit board. Bend the upper tabs on each side of the heat sink inwards so as not to touch the nearby potentiometers.

( ) VR1, VR2, VR3 - 7812

6. Install the transistor. Make sure that the Emitter is properly lined up.

( ) Q1 - 2N2222

7. Install the Relay (blue).

( ) K1 - 275-243

8. Locate a fuse holder and find the small lip at one end. When placing the fuse holder into the circuit board you must have these lips facing away from each other. (There are two pieces per fuse.) When soldering, push the fuse holders away from each other to make sure they are against the outer edges of the mounting holes. This is to make sure that the fuses will fit snugly.

( ) FS1 - FS3

9. Install the capacitors.

( ) C10 - .0062 (682)

( ) C1, C4, C7 - .47 (474K)

( ) C2, C3, C5, C6, C8, C9, C12, C13 - .1 (104)

( ) C15 - .68 (684) Use caution when installing this capacitor as it is electrolytic. You will notice a small positive sign (+) over one lead. The pc board is not marked as to which lead so position the positive lead next to R12.

( ) C11 - 1000 25v Electrolytic

( ) C14 - 1000 35v Electrolytic You will have to bend one of the tabs on the gold heat sink inwards to avoid touching the capacitor.

( ) C16 - .0022 (2A222FT, grn)

10. To install the inductor, first trim back the leads so that there is not much excess lead length when the center of the inductor is positioned over the the large mounting hole. Scrape off the red insulation from the ends of the leads. Insert the leads into the holes, place the large nylon washer on top of the coil, secure in place with the nylon screw and nut, and tighten the nut on the underside of the board. Be careful not to tighten too much, since the washer will pull through the inductor. Solder the leads.

( ) L1 - Red Inductor

11. When installing the connectors to the board, make sure that the lip on the connector faces the inside of the board.

( ) J1 - 2 Pin Molex

( ) J2 - 6 Pin Molex

( ) J3 - 6 Pin Molex

( ) J4 - 8 Pin Molex

12. Next, install the headers. Insert the shortest end into the board and solder.

( ) J5 - 3 Pin Single Male

( ) DS1 - 2 Pin Single Male

13. At this point we recommend that you clean the board with alcohol and a scrub brush. You can also use Flux Remover.

14. Insert the 2 amp fuses into the fuse holders. Check the top of the holders to see if any are touching. Bend back the tops if necessary.

Your Power Distribution Board is now complete.

