INPUT-INC Lip Light PCB

LED Board

Name	Quantity	Unit Price	Total Price
INPUT-INC LED PCB	1	$20.00	$20.00
Kingbright WP7113ND Orange Diffused LED	14	$0.095	$1.33
Kingbright WP7113IT Red Transparent LED	48	$0.092	$4.42
Kingbright WP7113PGT Green Transparent LED	24	$0.106	$2.54
Keystone Electronics LED Spacer 8317 (5mm x 6mm)	72	$0.18	$12.96
DB25 to IDC26 Parallel Port Header Cable Adapter	1	$7.99	$7.99
		Subtotal	**$49.24**

Driver Board

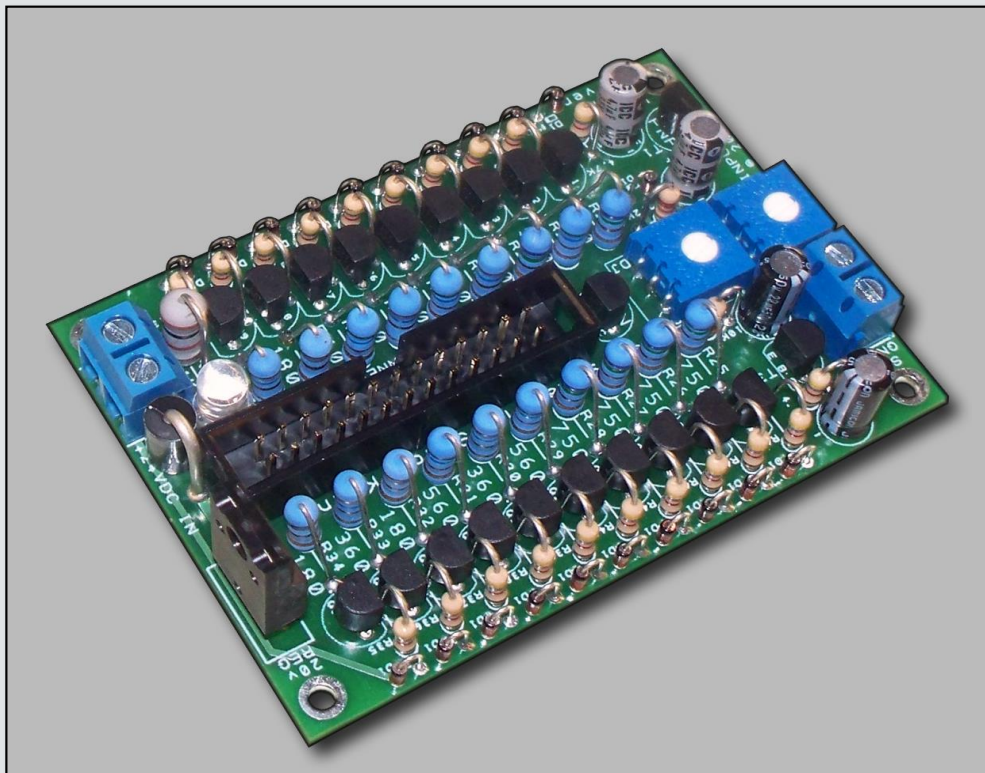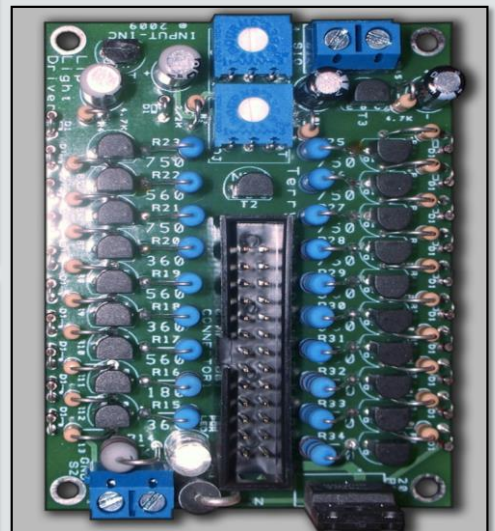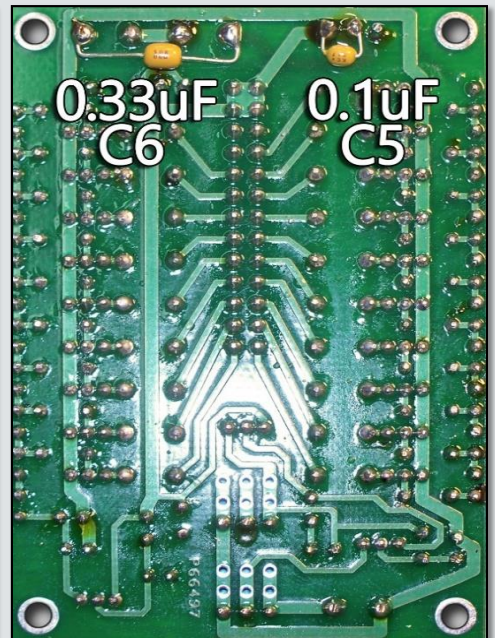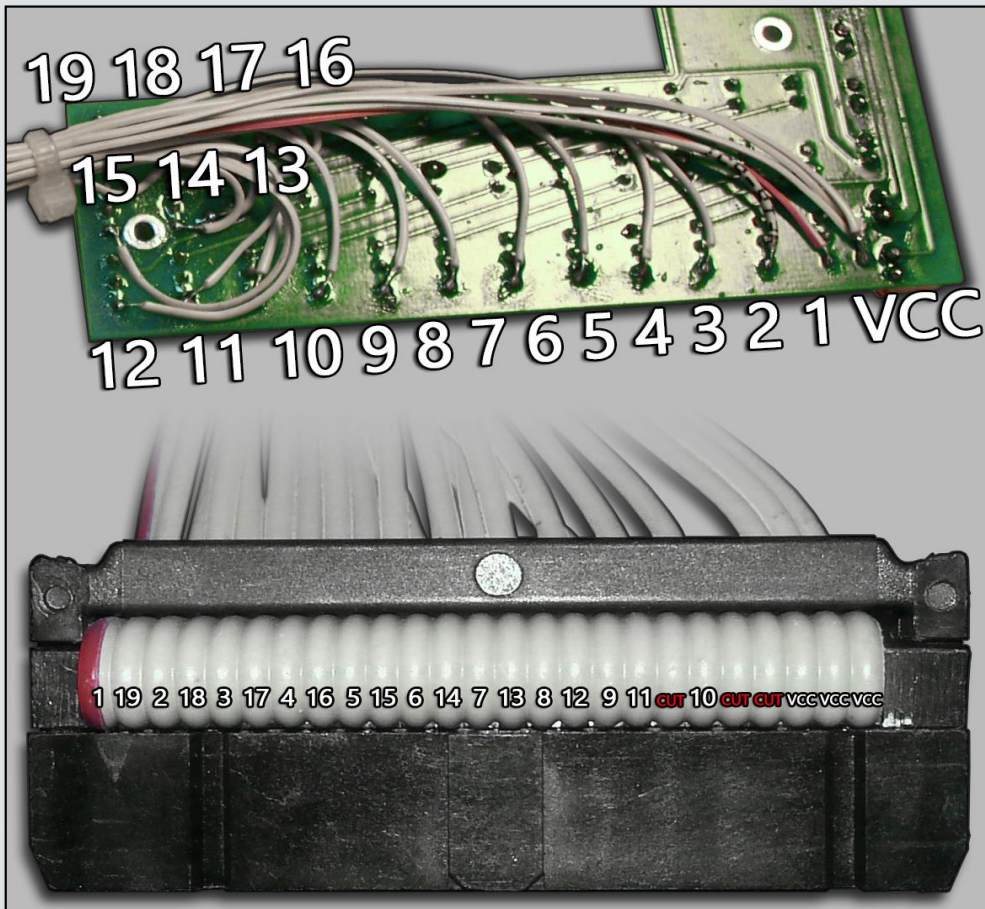| Name	Designation	Quantity	Unit Price	Total Price
INPUT-INC Driver PCB	--	1	$20.00	$20.00
2-Pin Screw Terminal Block (5mm Spacing)	S1 & S2	1	$3.99	$3.99
IDC26 Low Profile Shrouded Male Header	CONNECTOR1	1	$1.78	$1.78
Kingbright WP7113MBD Blue Diffused LED	PWR LED	1	$1.22	$1.22
Keystone Electronics LED Spacer 8311 (5mm x 3mm)	PWR LED	1	$0.18	$0.18
NJM7820FA 20V Voltage Regulator	20v REG	1	$0.75	$0.75
1N4148 Signal Diode	D1	21	$0.051	$1.07
1N5402G Recovery Rectifier	D2	1	$0.50	$0.50
PN2222ATA NPN Transistor	Q1-Q19, T2 & T3	21	$0.166	$3.49
2N3906TA PNP Transistor	T1	1	$0.20	$0.20
0.1uF 50V Ceramic Capacitor	C5	1	$0.18	$0.18
0.33uF 50V Ceramic Capacitor	C6	1	$0.18	$0.18
4.7uF 35V Electrolytic Capacitor (5mm x 11mm)	C1 & C2	2	$0.23	$0.46
22uF 50V Electrolytic Capacitor (5mm x 11mm)	C3 & C4	2	$0.33	$0.66
Bourns 2kΩ 3386P-1-202LF Potentiometer	R1	1	$1.54	$1.54
Bourns 10kΩ 3386P-1-103LF Potentiometer	R2	1	$1.53	$1.53
2.2kΩ ¼W 5% Carbon Film Resistor (Red Red Red)	R3	1	$0.10	$0.10
4.7kΩ ¼W 5% Carbon Film Resistor (Yellow Violet Red)	R4-R13, R35-R45	21	$0.054	$1.13
10kΩ ¼W 5% Carbon Film Resistor (Brown Black Orange)	R24	1	$0.10	$0.10
180Ω 1W 5% Metal Oxide Resistor (Brown Gray Brown)	R16, R32, R34	3	$0.13	$0.39
360Ω 1W 5% Metal Oxide Resistor (Orange Blue Brown)	R15, R18, R20, R30, R33	5	$0.13	$0.65
560Ω 1W 5% Metal Oxide Resistor (Green Blue Brown)	R17, R19, R22, R29, R31	5	$0.13	$0.65
750Ω 1W 5% Metal Oxide Resistor (Violet Green Brown)	R21, R23, R25-R28	6	$0.13	$0.78
1kΩ 1W 5% Metal Oxide Resistor (Brown Black Red)	R14	1	$0.13	$0.13
			Subtotal	**$41.66**
			Grand Total	**$90.90**

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Notes

- Be aware that two of the **orange** LEDs are placed in reverse orientation. Refer to the outlines on the board.

- Cut cable as close as possible to DB25 connector housing; discard DB25 section. Be aware that the IDC header is 26-pin, yet the cable has 25 wires. Carefully separate the wires by hand, pulling them away from each other. Refer to the picture on page 3 for the wiring diagram. Note that the wires alternate. The three "CUT" wires are to be cut as close to the IDC header as possible. Start your soldering with the three "VCC" wires, working downward. Keep a small amount of slack near the solder joints. Check each wire for continuity as you work. Finally, dress with cable ties.

- All resistors used are 5% tolerance, having a **gold** band.

- Be mindful of polarity when dealing with electrolytic capacitors. Ceramic capacitors, however, have no polarity.

- The potentiometers can be substituted for any of your liking, so long as the specifications match.

- Requires a 24VDC power source. Maximum current draw with all LEDs lit is 0.5A (500mA). Typical operation is around 0.25A (250mA).

- For proper adjustment, start with both potentiometers in the center position. The potentiometers affect each other, thus adjustment will require going back-and-forth between the two several times to achieve the correct effect.

- The "SIG" pot adjusts sensitivity to the audio signal. The "GAIN ADJ" pot determines how many rows of LEDs light up at peak volume.

- When there is silence, <u>no</u> LEDs should be lit. At the loudest audio peak, the last "inside" **red** LED (#19) should light for a <u>very</u> brief amount of time.

- We are unable to provide a circuit diagram at this time, however if you are able/want to, we would greatly appreciate it! Moreover, if our design is able to be improved upon or tweaked -- especially using the same PCBs -- please let us know!

- INPUT-INC and any current/former members assume no liability if your robot goes on a rampage and/or burns down your house.

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19 18 17 16

15 14 13

12 11 10 9 8 7 6 5 4 3 2 1 VCC

0.33uF C6   0.1uF C5

1 19 2 18 3 17 4 16 5 15 6 14 7 13 8 12 9 11 CUT 10 CUT CUT VCC VCC VCC
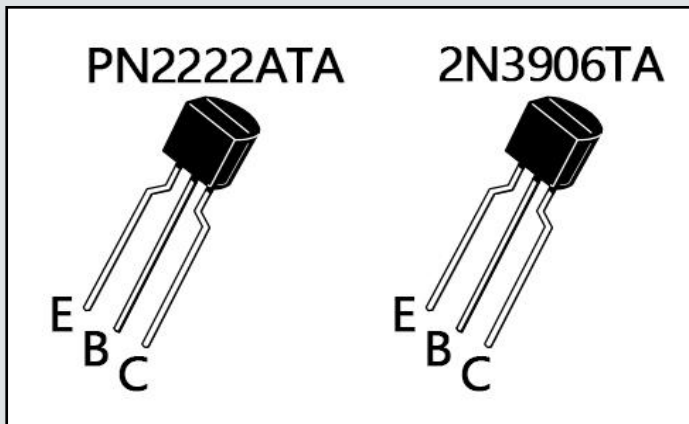
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Pictures

Lip-Lights PCB.
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Terry, Martin, Simon, Kenney.