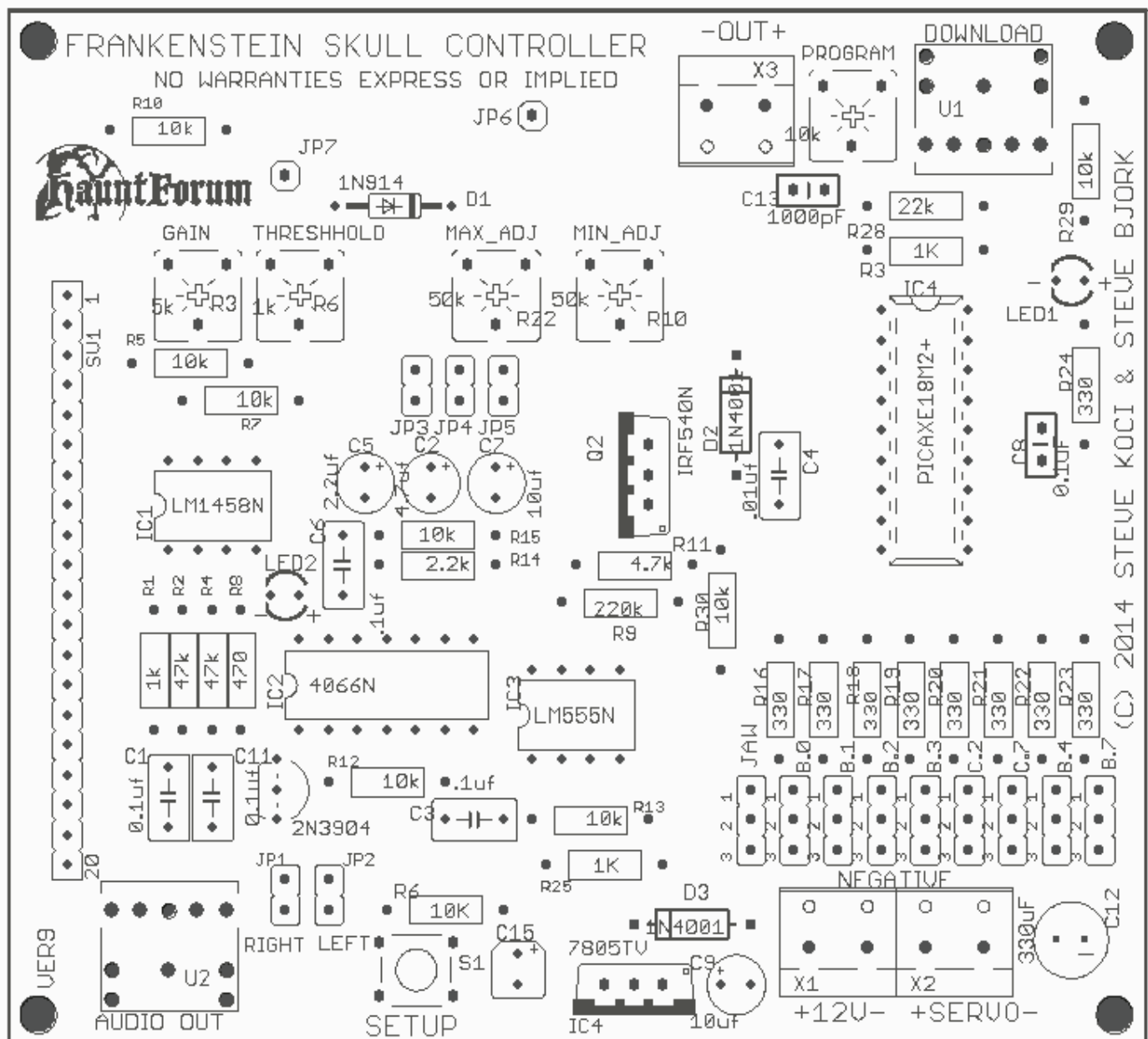


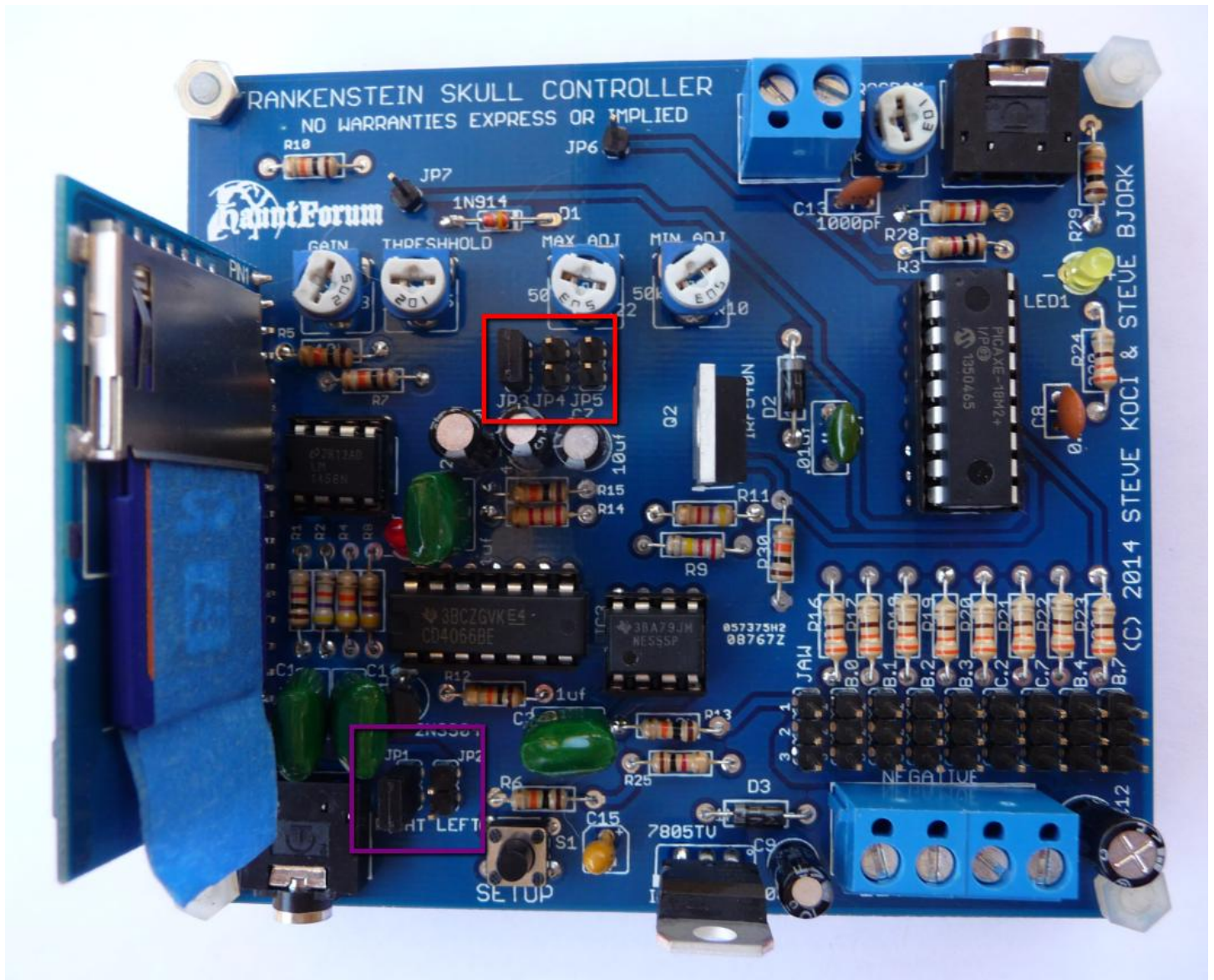
| Part  | Location                                     | Qty | Part # | Link                 |
|---|--|-----|--------|----------------------|
| 220K OHM 1/4W 5% Carbon Film Resistor               | R9   | 10  | A-2110 | <a href="#">Link</a> |
| 100nF 0.1uF 100V 5% Mylar Film Capacitor            | C1,C3,C6,C11 (4 large green ones)            | 4   | A-4110 | <a href="#">Link</a> |
| 1K OHM 1/4W 5% Carbon Film Resistor                 | R1,R3,R25                                    | 10  | A-2123 | <a href="#">Link</a> |
| 47K OHM 1/4W 5% Carbon Film Resistor                | R2,R4  | 10  | A-2066 | <a href="#">Link</a> |
| 5K OHM Trimpot Variable Resistor 6mm                | R3 (Says 205 on it)                          | 1   | A-2513 | <a href="#">Link</a> |
| 1K OHM Trimpot Variable Resistor 6mm                | R6 (Says 201 on it)                          | 1   | A-2509 | <a href="#">Link</a> |
| 10K OHM 1/4W 5% Carbon Film Resistor                | R5-R7,R10,R12,R13,R15,R29,R30                | 10  | A-2115 | <a href="#">Link</a> |
| 1N914 Small Signal Diode 200mA 100V                 | D1 (Small single orange one)                 | 1   | A-615  | <a href="#">Link</a> |
| LM1458N LM1458 1458 IC DUAL OPERATIONAL AMP         | IC1  | 1   | A-286  | <a href="#">Link</a> |
| 10uF 25V105C Radial Electrolytic Capacitor 5x11mm   | C7, C9                                       | 2   | A-4534 | <a href="#">Link</a> |
| 2.2K OHM 1/4W 5% Carbon Film Resistor               | R14  | 10  | A-2087 | <a href="#">Link</a> |
| CD4066 4066 IC CMOS QUAD BILATERAL SWITCH           | IC2  | 1   | A-555  | <a href="#">Link</a> |
| 470 OHM 1/4W 5% Carbon Film Resistor                | R8   | 10  | A-2049 | <a href="#">Link</a> |
| 4.7K OHM 1/4W 5% Carbon Film Resistor               | R11  | 10  | A-2027 | <a href="#">Link</a> |
| 50K OHM Trimpot Variable Resistor 6mm               | R10,R22 (Says E05 on it)                     | 2   | A-2500 | <a href="#">Link</a> |
| 10nF 0.01uF 100V 5% Mylar Film Capacitors           | C4 (Small single green one)                  | 1   | A-4106 | <a href="#">Link</a> |
| NE555 IC 555 Timer DIP-8                            | IC3  | 1   | A-249  | <a href="#">Link</a> |
| 2.2uF 50V 105C Radial Electrolytic Capacitor 5x11mm | C5   | 1   | A-4532 | <a href="#">Link</a> |
| 4.7uF 16V 105C Radial Electrolytic Capacitor 5x11mm | C2   | 1   | A-4529 | <a href="#">Link</a> |
| 2N3904 NPN General Purpose Transistor               | 2N3904                                       | 1   | A-111  | <a href="#">Link</a> |
| LED 3mm Red   | LED2   | 1   | A-261  | <a href="#">Link</a> |
| 40 Pin 2.54 mm Single Row Pin Header Strip          | JP1- JP7,JAW,B.0,B1,B.3,B4,B7,<br>C.2,C7,OUT | 1   | A-197  | <a href="#">Link</a> |
| 330uf Capacitor                                     | C12  | 1   | A-4553 | <a href="#">Link</a> |
| DG300 Screw Terminal Block 2 Positions 5mm          | X1, X2,X3                                    | 3   | A-666  | <a href="#">Link</a> |
| 14 pin DIP IC Socket Adaptor Solder Type            | IC2  | 1   | A-004  | <a href="#">Link</a> |
| 8 pin DIP IC Socket Adaptor Solder Type             | IC1,IC3                                      | 2   | A-001  | <a href="#">Link</a> |
| 3.5mm Stereo Enclosed Socket                        | U1, U2                                       | 2   | A-853  | <a href="#">Link</a> |
| 330 OHM 1/4W 5% Carbon Film Resistor                | R16-R24                                      | 10  | A-2067 | <a href="#">Link</a> |
| 20 Pin Female Header Strip                          | SV1  | 1   | A-1310 | <a href="#">Link</a> |
| 22K OHM 1/4W 5% Carbon Film Resistor                | R28  | 10  | A-2111 | <a href="#">Link</a> |
| 0.1uF Capacitor                                     | C8 (Says 104 on it)                          | 10  | A-553  | <a href="#">Link</a> |
| Jumper  | JP3, JP4, JP5, 5V Jumper                     | 4   | A-1324 | <a href="#">Link</a> |
| 10K OHM Trimpot Variable Resistor 6mm               | PROGRAM (Says E01 on it)                     | 1   | A-2514 | <a href="#">Link</a> |
| 18 pin DIP IC Socket Adaptor Solder Type            | IC4  | 1   | A-002  | <a href="#">Link</a> |
| 1N4001 Diode  | D2,D3 (Black ones)                           | 2   | A-162  | <a href="#">Link</a> |
| 7805 Voltage Regulator                              | IC4 at Bottom of Board                       | 1   | A-179  | <a href="#">Link</a> |
| 0.1uF Tantalum Cap                                  | C15 (Single small yellow one)                | 1   | A-1606 | <a href="#">Link</a> |
| Push Button   | S1   | 1   | A-5129 | <a href="#">Link</a> |
| 1000pF Cap  | C13 (Says 102 on it)                         | 1   | A-543  | <a href="#">Link</a> |

|                       |      |   |       |                      |
|-----------------------|------|---|-------|----------------------|
| LED 3mm Yellow        | LED1 | 1 | A-263 | <a href="#">Link</a> |
| IRF540N               | Q2   | 1 | A-089 | <a href="#">Link</a> |
| Picaxe Download Cable |      | 1 |       | <a href="#">Link</a> |
| 18M2 Picaxe Chip      | IC4  | 1 |       | <a href="#">Link</a> |
| Tenda Audio Board     | SU1  | 1 |       | <a href="#">Link</a> |
| SD Card               |      | 1 |       |                      |
| 5V Power Supply       | X2   | 1 |       | <a href="#">Link</a> |
| 12V Power Supply      | X1   |   |       | <a href="#">Link</a> |
| Computer Speakers     |      | 1 |       |                      |
|                       |      |   |       |                      |

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You need to add a jumper to select the capacitor which determines how smooth the jaw operates shown in red and put a jumper on the left side jumper for the audio track selection shown in purple (record your tone tracks on the right track).



Note that the capacitor at C15 is polarity specific. The positive side is to the middle of the board and marked with a +.

The link to the free program editor for the Picaxe chip is <http://www.picaxe.com/Software/PICAXE/PICAXE-Editor-6/>

The link to the free audio program Audacity is <http://audacity.sourceforge.net/> Make sure to also download the Lame MP3 Encoder at [http://manual.audacityteam.org/o/man/faq\\_installation\\_and\\_plug\\_ins.html#lame](http://manual.audacityteam.org/o/man/faq_installation_and_plug_ins.html#lame)

Tyler's wiki post for the talking jaw portion of the controller can be found at [Simple Sound to Servo](#)

Here's the portion regarding the adjustments for the jaw servo –

## Setup for Jaw Servo

- 1 Turn on the power and remove all audio source. This can be done by removing the L/R select shunts
- 2 Turn the threshold adjustment clockwise until the circuit trips(the LED will light and the servo will move to the open position)
- 3 Adjust the MAX adjust to your desired full open position.
- 4 Slowly turn the threshold adjustment counter-clockwise until the circuit resets(LED will turn off and servo will move to the closed position)
- 5 Adjust the Min adjustment to your desired full closed position.
- 6 Add your audio source and adjust the gain as needed to make the circuit trip and reset with the audio

Header pin connections –

Jaw = jaw servo  
B.0 = rotate servo  
B.1 = nod servo  
B.2 = tilt servo  
B.3  
C.2  
C.7= PIR  
B.4  
B.7 = eyes

Header pin 1 = signal

2 = power

3 = negative

If your jaw servo is backwards, you may want to reverse it instead of putting weird bends in the linkage wire. Here's the link to the hack -

<http://www.instructables.com/id/How-to-create-simple-animatronics-using-the-MAKE-c/step6/Servo-reversing/>

When entering programming mode, press the setup button and then power up board. Keep holding the button down until you hear the audio welcoming you.

Scott, aka Graveyard Workshop, has done a 4 part video on assembling a Tri-Axial skull that might be useful - <http://www.youtube.com/watch?v=A-8lpS5hTF0>

If you have any questions regarding the setup and programming of the Picaxe, there are 3 very useful manuals that can be found here - <http://www.picaxe.com/Getting-Started/PICAXE-Manuals/>

In order to download your program, attach the download cable from your computer into the jack at U1. Make sure you're using the newest version of the Picaxe programming software, V6.0.6.2 Beta. Also, in order to program the chip, the board needs to be powered up.

If you have any trouble getting the program to download, be sure to check out page 23 of manual 1 that will walk you through the process of setting up the download cable.

When setting up your audio track, the right track is used to trigger the jaw servo and the left channel goes to your speakers. You can use the free program, Audacity, to set up your audio.

When setting up your SD card, format it in FAT32. The audio tracks need to be in MP3 format. It is very important that you load the files to the SD card properly as the card goes by the order in which they are loaded. First format your SD card in FAT32. Then copy over the folder "02" which contains all the audio prompts. Then load your trigger audio tracks and name them 001.mp3, 002mp3, etc.

If you're interested in more information regarding the Picaxe chip and how to alter the programming I've included, here's a link to a great how to series written by SteveO from the Garage of Evil –

Part 1 - <http://www.garageofevilnetwork.com/profiles/blogs/howto-roll-your-own>

Part 2 - <http://www.garageofevilnetwork.com/profiles/blogs/roll-your-own-picaxe-based>

Part 3 - <http://www.garageofevilnetwork.com/profiles/blogs/installment-3-of-getting>

Part 4 - <http://www.garageofevilnetwork.com/profiles/blogs/installment-4-of-the-picaxe>

#### Legal Disclaimer:

By making any device or using any information from this informational guide, the user assumes full responsibility and liability for any product's use. Steve Koci or Steve Bjork are not responsible, nor liable for any damage or injury caused by designs, instructions, products, tools, or mechanisms. This includes, but is not limited to: injury, bodily harm, property damage, and/or death. The user of these products should use extreme caution when building as well as displaying these

controllers. The controllers presented here have not been tested for any safety standards or regulations.

Here's the link to download the program if you didn't get a Picaxe chip with the program already installed and the audio files you need to install on the SD card –

<http://haunthackers.com/frankenstein/download.shtml>

If you're using a push button or step mat for the trigger, choose the positive trigger option and wire your trigger following the diagram below.

