JDS LABS

Custom O2
Soldering Instructions

Preparations

The following components should be omitted based on required customization:

- J1 (Power jack)
- J2 (3.5mm input jack)
- J3 (3.5mm headphone jack)

When installing a 1/4" headphone jack, also note that special assembly is required for:

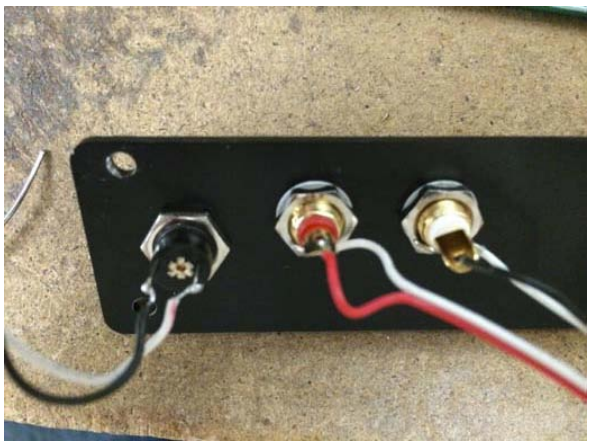
- R10, R11
- C8, C9

Front Power Jack

Install power jack at J1.

Rear Power Jack

1) Omit J1. Install an "isolated" power jack onto required rear plate. Connect black wire to longer lead, and white wire to shorter lead. Solder to J1 pins as shown:



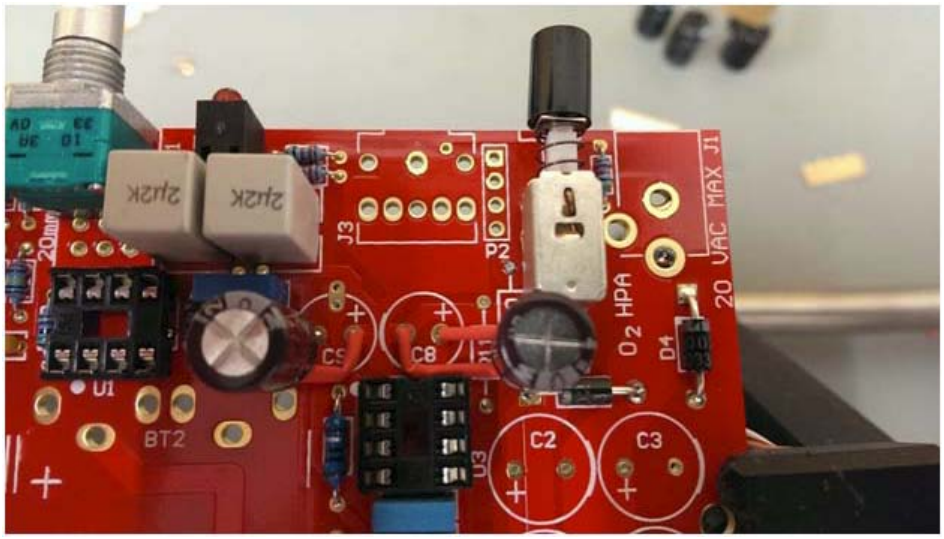
2) Apply hot glue to connectors as shown. Let glue dry before installing into case.

Standard Headphone Jack

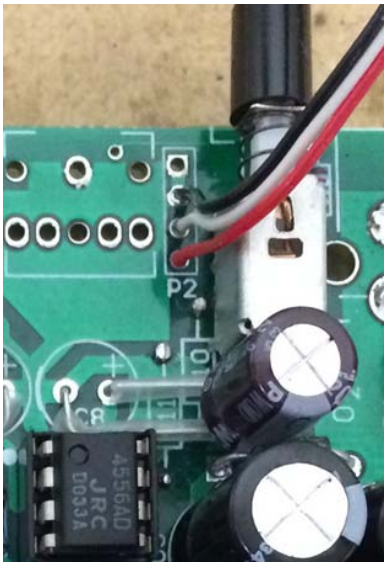
Install audio jack at J3.

1/4in (6.35mm) Headphone Jack

1. Begin by installing resistors **R10** and **R11** on the bottom surface of the PCB.
2. Bend leads of capacitors C8 and C9 and cover with heat shrink as shown in *Figure 1*.
3. Install **C8 and C9**, then complete remaining assembly of O2+ODAC.
   Remember to omit J3.



4. Connect about 3" of wire from Neutrik 1/4in headphone jack to P2. Wire as shown below (L = White, Red = Right, Black = Ground):



Attach headphone jack to front plate after completing all other assembly. Black nut is secured by a compression fit. With jack & nut installed on front plate, use table surface to apply pressure to nut. After nut snaps in place, gently rotate 1/4 turn clockwise.

Standard 3.5mm Input

Install audio jack at J2.

Rear RCA Input

1. Omit J2.
2. Mount RCA jacks with paper washers on required rear plate.
3. Connect wires from RCA jacks to empty J2 pins as shown (ignore ODAC...):

Selecting and Calculating Gain

Objective2 is a unique two-stage headphone amplifier. Its input stage performs all voltage gain, followed by attenuation through the volume potentiometer, then current buffering in the output stage. This approach achieves an exceptional noise floor and requires that you take extra care in selecting appropriate gain levels based on your audio player(s). Please see jdslabs.com/faq for more information.

Use the following equation to calculate proper resistors value in Ω: R = 1500/(Gain - 1)

Objective2's lower gain position is set by resistors R_{17} and R_{21}.
Objective2's higher gain position is set by R_{19} and R_{23}.

The following chart lists nearest available resistor values for common gain selections.

Gain	Maximum Input Level	Nearest 1% Resistor Value
6.5x	1.08 VRMS (+2.9 dBu)	274 Ω
4.5x	1.56 VRMS (+6.1 dBu)	432 Ω
3.5x	2.00 VRMS (+8.2 dBu)	604 Ω
3.3x	2.12 VRMS (+8.7 dBu)	634 Ω
2.5x	2.80 VRMS (+11.2 dBu)	1 kΩ
1.0x	7.00 VRMS (+19.1 dBu)	NONE (omit)