# QRPBuilder Earbud Adapter for High Impedance Applications



DIFFICULTY LEVEL

EASY            SMT
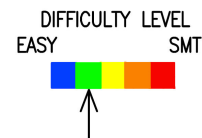
The pcb allows you to build an adapter that uses low cost, commonly found, stereo earbuds (Walkman style) in place of the hard to find high impedance earphones used in crystal or vintage radios. The very low current drain of the circuit gives many hours of use. The circuit is very much like the ARRL HZX Headphone Adapter with the added convenience of the coin battery and a volume control. There is easy connection to your device with two wing nuts for flying leads.

You either bought the complete kit (less battery) and all parts are supplied, or the partial kit containing the bare pcb and transformer with the builder sourcing the easily obtained parts. We recommend Mouser and Tayda Electronics for any components you may not already have.
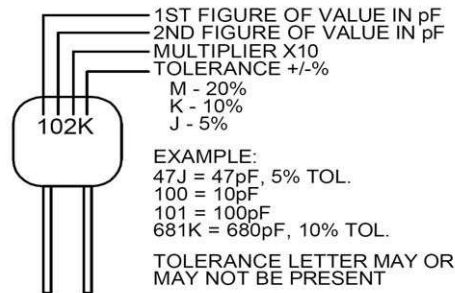
## Parts List

1 – Earbud Adapter pcb
1 – T1, 1300:8 audio transformer
1 – U1, TLC251 IC 8pin dip, Mouser # 595-TLC251CP
1 – C1, .047uF mono capacitor, marked 473, Tayda # A-1475
1 – C2, .47uF mono capacitor, marked 474, Tayda # A-5555
3 – C3,4,5, 1uF electrolytic capacitor, Tayda #, A-957
1 – R1, 47K, 1/4W resistor, (yel-vio-org-gold), Tayda # A-2066
1 – R2, 100K, 1/4W resistor, (brn-blk-yel-gold), Tayda # A-2071
3 – R3,4,5, 1Meg ohm 1/4W resistor, (brn-blk-grn-gold), Tayda # 2151
1 – VR1, 1K ohm, 6mm pot, marked 102, Tayda # A-2509
1 – S1, SPDT switch, Tayda # A-659
1 - J2, 3.5mm pcb stereo jack Tayda # A-069
1 – 8pin IC socket, Tayda # A-001
1 – CR2032 battery holder, Tayda # A-869
2 – Hardware, 6-32 x 5/8"L pan head screw
4 – Hardware, 6-32 nut
2 – Hardware, 6-32 wing nut
2 – Hardware, #6 lock washer
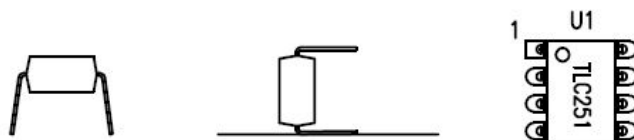4 – Adhesive rubber foot

## Assembly:

Use good general pcb assembly techniques. Start with the smallest components first. All components mount on the front side of the board. Follow the polarity on the three electrolytic capacitors, (long leads are positive). Carefully check for any solder bridges or cold solder joints. Clip all component leads flush on the back side.
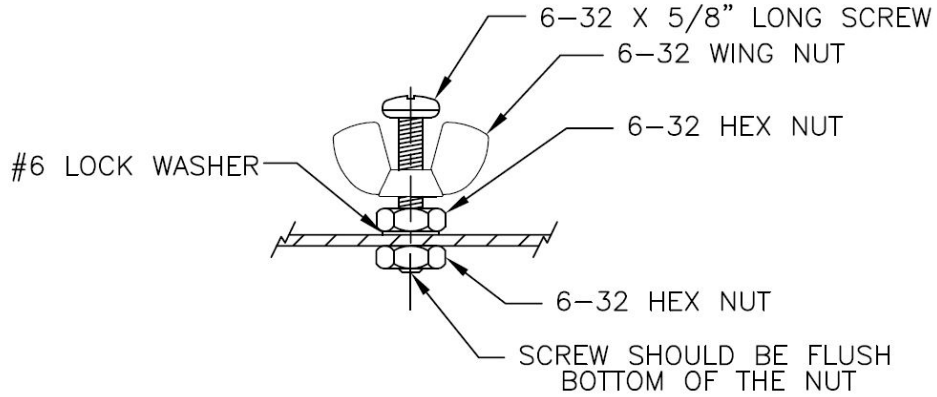
Note: When reading the mono capacitor values, do not confuse the manufacturing codes with the component value. If it looks strange, it may be a manufacturing code, look on the other side of the component. Also the tolerance letter may be omitted.

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                        1ST FIGURE OF VALUE IN pF
                        2ND FIGURE OF VALUE IN pF
                        MULTIPLIER X10
                        TOLERANCE +/-%
                          M - 20%
                          K - 10%
                          J - 5%
          102K
                        EXAMPLE:
                        47J = 47pF, 5% TOL.
                        100 = 10pF
                        101 = 100pF
                        681K = 680pF, 10% TOL.

                        TOLERANCE LETTER MAY OR
                        MAY NOT BE PRESENT
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[   ]   C1, .047uF mono capacitor, marked 473

[   ]   C2, .47uF mono capacitor, marked 474

[   ]   R1, 47K, 1/4W resistor, (yel-vio-org-gold)

[   ]   R2, 100K, 1/4W resistor, (brn-blk-yel-gold)

[   ]   R3,4,5, 1Meg ohm resistor, (brn-blk-grn-gold)

[   ]   8 pin IC socket, *match the silkscreen outline*

[   ]   J2, 3.5mm pcb stereo jack

[   ]   S1, SPDT switch

[   ]   CR2032 battery holder

[   ]   VR1, 1K, 6mm trim pot, marked 102

[   ]   C3,4,5, 1uF electrolytic capacitor, *long lead is positive*

[   ]   Install T1. Observe the "L" and "H" marked on the transformer and match "L" and "H" on the pcb.

[   ]   Install the four rubber feet on the backside where indicated by silkscreen.

[   ]   Carefully install  U1 without bending any leads underneath the chip.  *Note the position of Pin 1*. The top of the chip has a small indentation at pin 1. The IC pins come flared so that they can be retained by auto insertion tools. Gently rock it on a flat surface so the pins are parallel and it will insert into the socket more easily.

[  ]    If you install the hardware in the sequence below, you can't lose the wing nut.
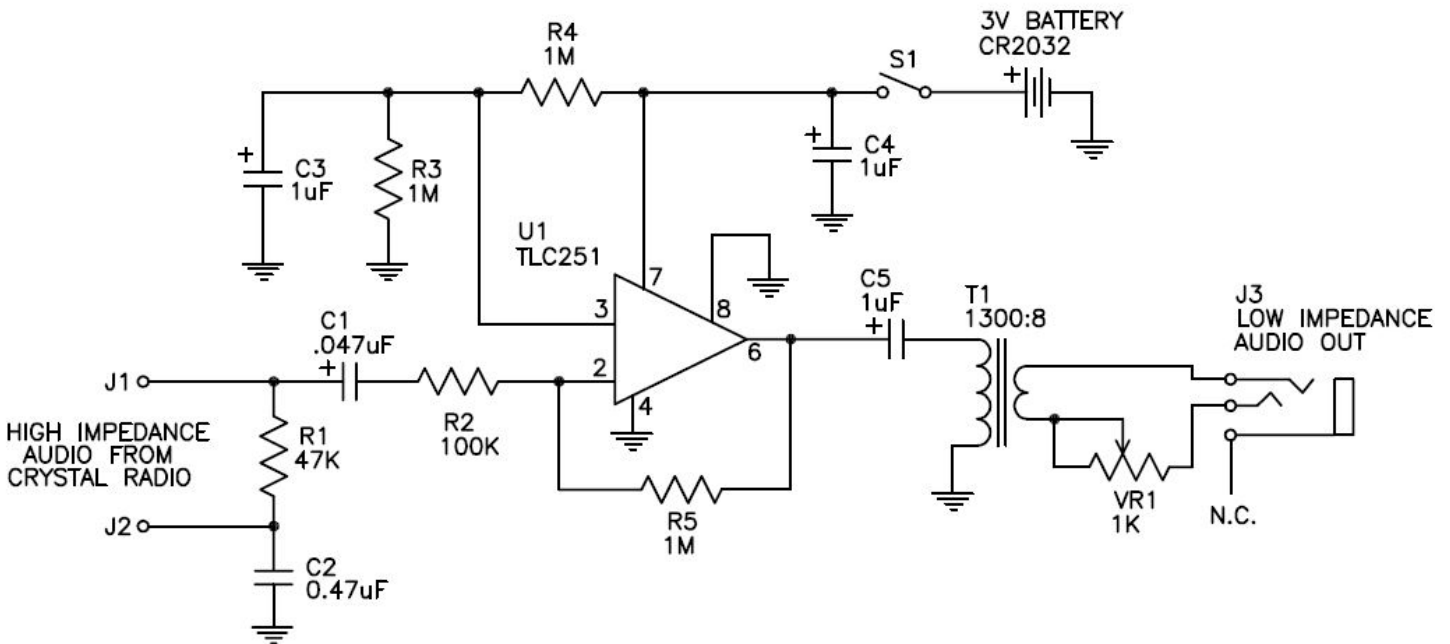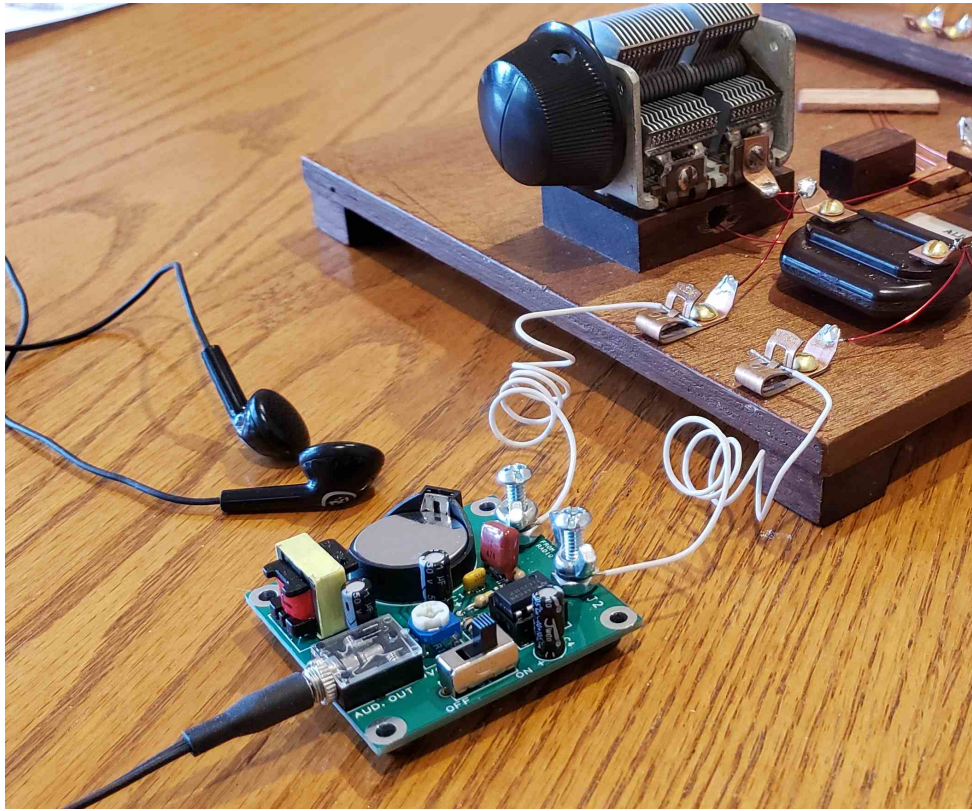


6-32 X 5/8" LONG SCREW
6-32 WING NUT
6-32 HEX NUT
#6 LOCK WASHER
6-32 HEX NUT
SCREW SHOULD BE FLUSH BOTTOM OF THE NUT

[  ]    Install the CR2032 battery with the "+" facing up.

[  ]    Connect wires from your vintage radio to the wing nut terminals, plug in the earbuds, turn on, and adjust the volume to suit. Use earbuds for best performance.

Note: For those builders that want a more traditional look, use Fahnestock clips in place of the #6 hardware.

## Schematic:



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**Notes:**

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