Introduction

This kit is a tunable and volume-controlled radio receiver with a frequency range of approximately 65 MHz to 140 Mhz. It can pick up transmissions from nearby FM radio stations, Air Traffic Control Towers, and similar transmitting sources.

The circuit consists of a wire antenna, a front end with a hand-coiled 0.12uH inductor for high Q, a trimmer capacitor for frequency tuning, and an op amp and potentiometer for signal amplification and volume control. The radio is powered with a 9-volt battery. An earbud-style headphone is included.

Instructions and Tips

You’ll need a soldering iron, solder, wire cutter, protective eyewear, and some other basic tools. Detailed assembly instructions, schematic, and videos (coming soon) can be found online: www.arrl.org/radiokit. Begin assembly by soldering smaller parts first, and by working from the middle of the board to the outside. The leads for the battery clip and antenna can be soldered last.

WARNING: Please wear safety goggles. This kit requires soldering and clipping leads.
# Parts List

Inventory all the parts in your kit before installing.

<table>
<thead>
<tr>
<th>Qty</th>
<th>Value/Part #</th>
<th>Description</th>
<th>Ref Des</th>
<th>Identification*</th>
<th>Inv</th>
<th>Inst</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 kΩ</td>
<td>Potentiometer</td>
<td>R1</td>
<td>3-pin blu resistor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10 MΩ</td>
<td>Resistor, 1/2 W</td>
<td>R2, R3</td>
<td>Brn-blk-blu-gold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100 kΩ</td>
<td>Resistor, 1/2 W</td>
<td>R4</td>
<td>Brn-blk-yel-gold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.3 kΩ</td>
<td>Resistor, 1/2 W</td>
<td>R5, R6</td>
<td>Org-org-red-gold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100 Ω</td>
<td>Resistor, 1/2 W</td>
<td>R7</td>
<td>Brn-blk-brn-gold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10uF</td>
<td>Elect. Capacitor</td>
<td>C1</td>
<td>Bk w/ wht line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1uF</td>
<td>Elect. Capacitor</td>
<td>C2, C3</td>
<td>Gold w/ blk line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10nF</td>
<td>Capacitor, mono</td>
<td>C4</td>
<td>Yel, marked 103 bigger than C8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100uF</td>
<td>Elect. Capacitor</td>
<td>C5</td>
<td>Red w/ wht line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.5pF</td>
<td>Capacitor, mono</td>
<td>C6</td>
<td>Blue marked 1R5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6.5-30pF</td>
<td>Trimmer Capacitor</td>
<td>C7</td>
<td>2-pin green Cap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1N5711</td>
<td>Diode</td>
<td>D1</td>
<td>Blue w/ blk line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>330pF</td>
<td>Capacitor, mono</td>
<td>C8</td>
<td>Yel, marked 331 smaller than C4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.12uH</td>
<td>Inductor Coil</td>
<td>L1</td>
<td>Large bronze enamel coil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>K12C15N</td>
<td>ON-OFF Switch</td>
<td>S1</td>
<td>3-pin blk switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>LM358</td>
<td>8 pin Op-Amp</td>
<td>U1</td>
<td>8-pin; notch or engraved circle marks pin 1 for correct direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>CEP-2242</td>
<td>Earphone Jack</td>
<td>SPKR1</td>
<td>3-pin earphone jack</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>TL-5902</td>
<td>Snap Battery Clip</td>
<td>BAT1</td>
<td>9 V battery clip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Antenna</td>
<td>18 Gauge Wire</td>
<td>AN1</td>
<td>10&quot; 18-gauge green wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PCB</td>
<td>Printed Circuit Board</td>
<td>N/A</td>
<td>circuit board</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* actual parts may have some variation in color or marking

## Board Layout

⭐ Indicates when the orientation of the component is vital.

![Board Layout Image](image_url)

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