Velleman MK136

Velleman Super Stereo Ear MiniKit MK136 Instruction Manual

Model: MK136 | Brand: Velleman

1. Introduction

The Velleman Super Stereo Ear MiniKit MK136 is an entry-level electronic project designed for enthusiasts new to circuit design, hobby electronics, and sound technology. This DIY kit allows you to build a stereo audio amplifier capable of amplifying sound up to 50 times louder. It features two on-board microphones for stereo input and a standard 3.5mm headphone jack for output. The kit also includes an on/off switch and a potentiometer for volume adjustment. This manual provides detailed instructions for assembly, operation, maintenance, and troubleshooting to ensure a successful build and enjoyable experience.

2. Safety Information

Warning: This kit requires soldering. Always exercise caution when working with a soldering iron.

- Wear appropriate eye protection during soldering.
- Ensure adequate ventilation to avoid inhaling solder fumes.
- Use a heat-resistant surface and keep flammable materials away from the soldering area.
- Allow the soldering iron to cool completely before storing.
- Handle electronic components carefully to avoid damage from static electricity.
- Do not short-circuit batteries. Insert batteries with correct polarity.
- Keep small components out of reach of children.

3. Package Contents

Before beginning assembly, verify that all components listed below are present in your kit.

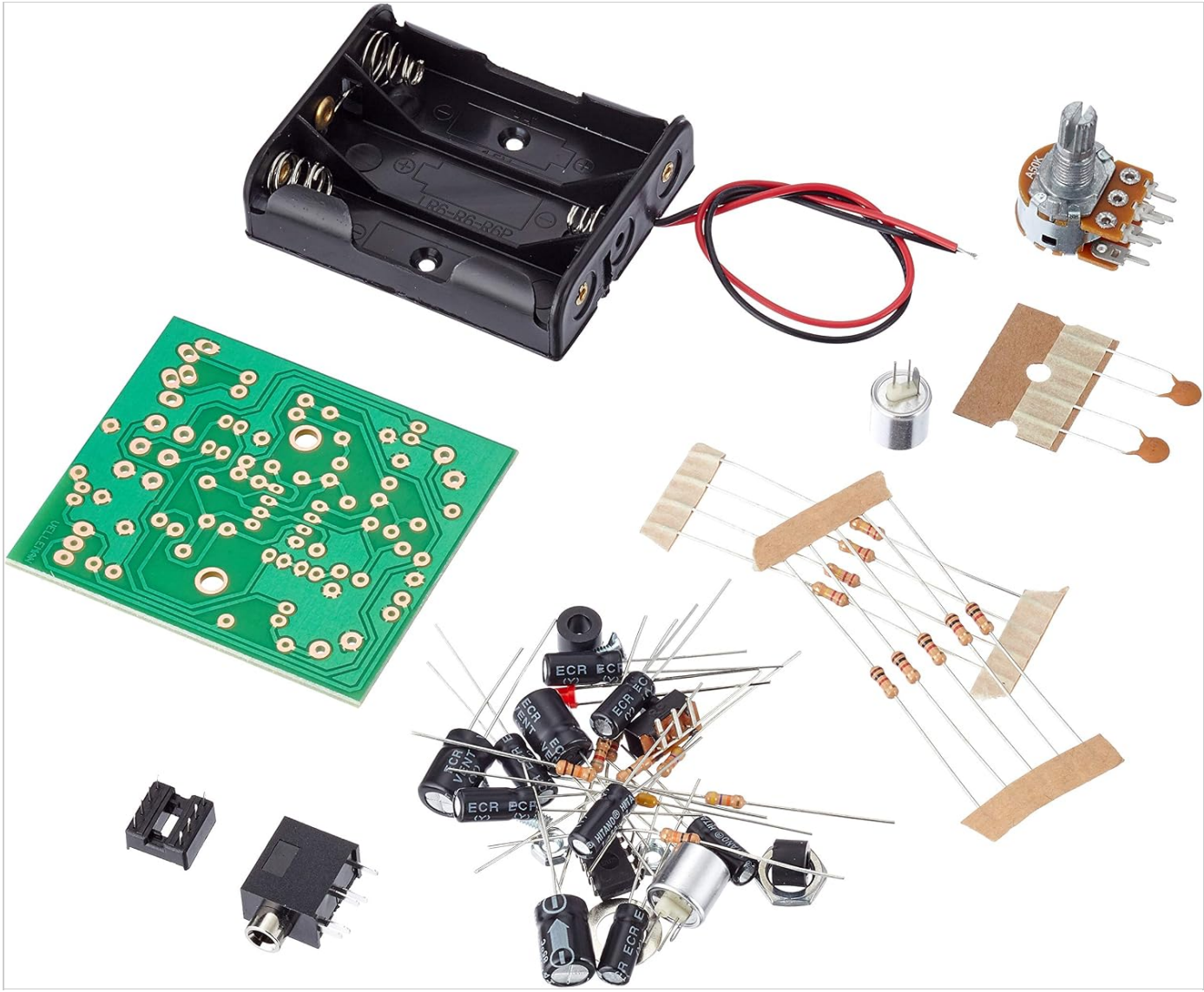

Image: All components of the Velleman Super Stereo Ear MiniKit MK136 laid out, including the PCB, battery holder, potentiometer, microphones, resistors, capacitors, IC, switch, and headphone jack.

- Printed Circuit Board (PCB)
- Battery Holder (for 3x AA batteries)
- Potentiometer (for volume control)
- 2x Microphones
- Resistors (various values)
- Capacitors (electrolytic and ceramic)
- Integrated Circuit (IC)
- On/Off Switch
- 3.5mm Headphone Jack
- Other small electronic components (diodes, transistors, etc.)

Note: 3x 1.5V AA batteries are **not included** and must be purchased separately.

4. Assembly Instructions (Soldering Required)

This section guides you through the assembly process. A basic understanding of soldering is recommended.

4.1 Required Tools

- Soldering Iron (fine tip recommended)
- Solder (thin gauge, rosin core)
- Wire Cutters / Flush Cutters
- Small Pliers / Tweezers
- Safety Glasses
- Desoldering Braid or Pump (optional, for corrections)

4.2 General Soldering Tips

- Heat the pad and the component lead simultaneously.
- Apply a small amount of solder to the heated joint.
- Remove the solder, then the iron, ensuring a shiny, cone-shaped joint.
- Avoid excessive heat to prevent damage to components or PCB traces.
- Trim excess leads after soldering.

4.3 Component Placement and Soldering Steps

Follow the markings on the Printed Circuit Board (PCB) for correct component placement. The PCB is labeled with component designators (e.g., R1, C1, IC1) and outlines.

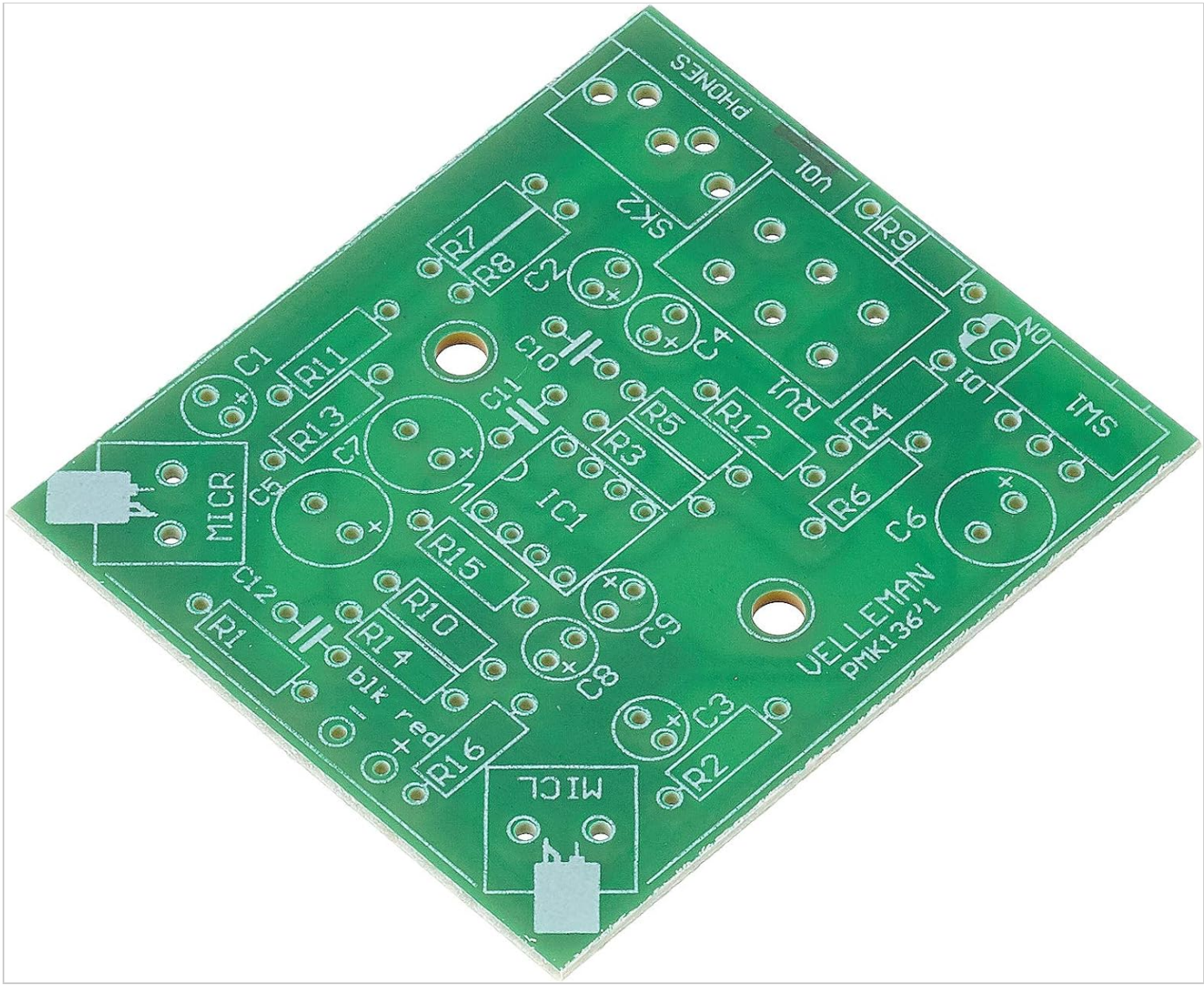

Image: The bare Printed Circuit Board (PCB) for the Velleman Super Stereo Ear MiniKit MK136, showing component outlines and labels.

1. **Resistors:** Identify resistors by their color bands. Insert them into their designated positions (R1, R2, etc.) on the PCB. Resistors are non-polarized, so orientation does not matter. Bend the leads to secure them, then solder and

trim.

2. **Diodes:** If present, ensure the band on the diode matches the band on the PCB silkscreen. Solder and trim.
3. **Capacitors (Ceramic):** These are typically small, non-polarized, and can be inserted in any orientation. Solder and trim.
4. **Capacitors (Electrolytic):** These are polarized. The longer lead is positive (+), and the shorter lead is negative (-). The negative side is usually marked with a stripe on the capacitor body. Match the negative stripe to the corresponding marking on the PCB. Solder and trim.
5. **Transistors:** Match the flat side of the transistor to the flat side indicated on the PCB silkscreen. Solder and trim.
6. **Integrated Circuit (IC) Socket (if applicable):** If your kit includes an IC socket, solder it first, ensuring the notch on the socket aligns with the notch on the PCB silkscreen. Then, carefully insert the IC into the socket, aligning the notch on the IC with the socket's notch.
7. **Microphones:** Solder the two microphones to their designated pads (MICR, MICL). Pay attention to any polarity markings if present, though often they are non-polarized for simple audio input.
8. **On/Off Switch:** Insert the switch into its position and solder all pins securely.
9. **Potentiometer:** Insert the potentiometer (volume control) into its designated holes. Solder all pins.
10. **3.5mm Headphone Jack:** Insert the headphone jack and solder all connection points.
11. **Battery Holder:** Connect the red wire from the battery holder to the positive (+) terminal on the PCB and the black wire to the negative (-) terminal. Ensure these connections are secure and correctly polarized.

After soldering all components, carefully inspect all solder joints for bridges (solder connecting two pads that shouldn't be connected) or cold joints (dull, lumpy solder joints that indicate a poor connection). Correct any issues before proceeding.

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Video: An official video demonstrating the Velleman Super Stereo Ear MiniKit. This video provides a visual overview of the kit and its functionality, which can be helpful during assembly and understanding its operation.

5. Operating Instructions

1. **Insert Batteries:** Open the battery compartment on the battery holder and insert 3x 1.5V AA batteries, ensuring correct polarity (+/-).
2. **Connect Headphones:** Plug a standard 3.5mm stereo headphone into the headphone jack on the assembled unit.
3. **Power On:** Turn the on/off switch to the "ON" position.
4. **Adjust Volume:** Rotate the potentiometer knob to adjust the desired listening volume. Start with a low volume and gradually increase it to a comfortable level.
5. **Position Microphones:** The two on-board microphones capture ambient sound. Position the unit to best pick up the sounds you wish to amplify.
6. **Power Off:** When not in use, turn the on/off switch to the "OFF" position to conserve battery life.

6. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the unit. Do not use liquid cleaners or solvents.
- **Battery Replacement:** Replace all three AA batteries when the sound becomes weak or distorted, or if the unit fails to power on. Always replace all batteries at once with new ones of the same type.
- **Storage:** Store the unit in a dry, cool place. If storing for extended periods, remove the batteries to prevent leakage.
- **Handling:** Handle the assembled unit with care to avoid damaging soldered connections or components.

7. Troubleshooting

Problem	Possible Cause	Solution
No sound / Unit does not power on	• Batteries are dead or incorrectly inserted. • On/Off switch is in the "OFF" position. • Poor solder joint for power connections or critical components. • IC inserted incorrectly or damaged.	• Replace batteries with new ones, ensuring correct polarity. • Flip the On/Off switch to "ON". • Inspect all solder joints, especially power lines and IC pins. Reflow any cold joints or bridges. • Verify IC orientation and ensure it is fully seated in its socket (if applicable).
Distorted or weak sound	• Low battery power. • Poor solder joint on audio path components (capacitors, resistors, IC). • Faulty headphones. • Incorrectly installed polarized components (e.g., electrolytic capacitors).	• Replace batteries. • Check solder joints for all components in the audio signal path. • Test with a different pair of headphones. • Verify polarity of all electrolytic capacitors.
Excessive noise or hum	• Poor grounding connections. • Interference from other electronic devices. • Loose connections.	• Inspect all ground connections on the PCB. • Move the unit away from other electronics. • Ensure all components are firmly seated and soldered.

8. Specifications

- **Model:** MK136
- **Power Supply:** 3 x 1.5V AA Batteries (not included)
- **Amplification:** Up to 50 times louder
- **Inputs:** 2 x On-board Microphones (stereo)
- **Output:** 3.5mm Headphone Jack
- **Controls:** On/Off Switch, Volume Potentiometer
- **Dimensions:** Approximately 2.4" x 2.1" x 1.7" (6.1 cm x 5.3 cm x 4.3 cm)
- **Weight:** 0.05 Kilograms (excluding batteries)
- **Connectivity Technology:** Wired
- **Enclosure Material:** Plastic (for battery holder)

9. Warranty and Support

As a DIY soldering kit, the Velleman Super Stereo Ear MiniKit MK136 typically does not come with a traditional warranty covering assembly errors. However, Velleman provides support for their products.

- For technical assistance or inquiries regarding missing/defective components, please contact Velleman customer support directly.
- Refer to the official Velleman website for additional resources, FAQs, or contact information:www.velleman.eu