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› MakerFocus FM Radio Receiver Kit MK0142M Instruction Manual

MakerFocus MK0142M

MakerFocus FM Radio Receiver Kit MK0142M Instruction Manual

Model: MK0142M | Brand: MakerFocus

INTRODUCTION

This instruction manual provides detailed guidance for assembling and operating your MakerFocus FM Radio Receiver Kit (Model MK0142M). Designed for beginners, students, and adults, this DIY soldering project offers an engaging way to learn about electronics and radio technology. Please read all instructions carefully before beginning assembly.

PACKAGE CONTENTS

Before starting, verify that all components listed below are present in your kit. Refer to the image for visual confirmation.

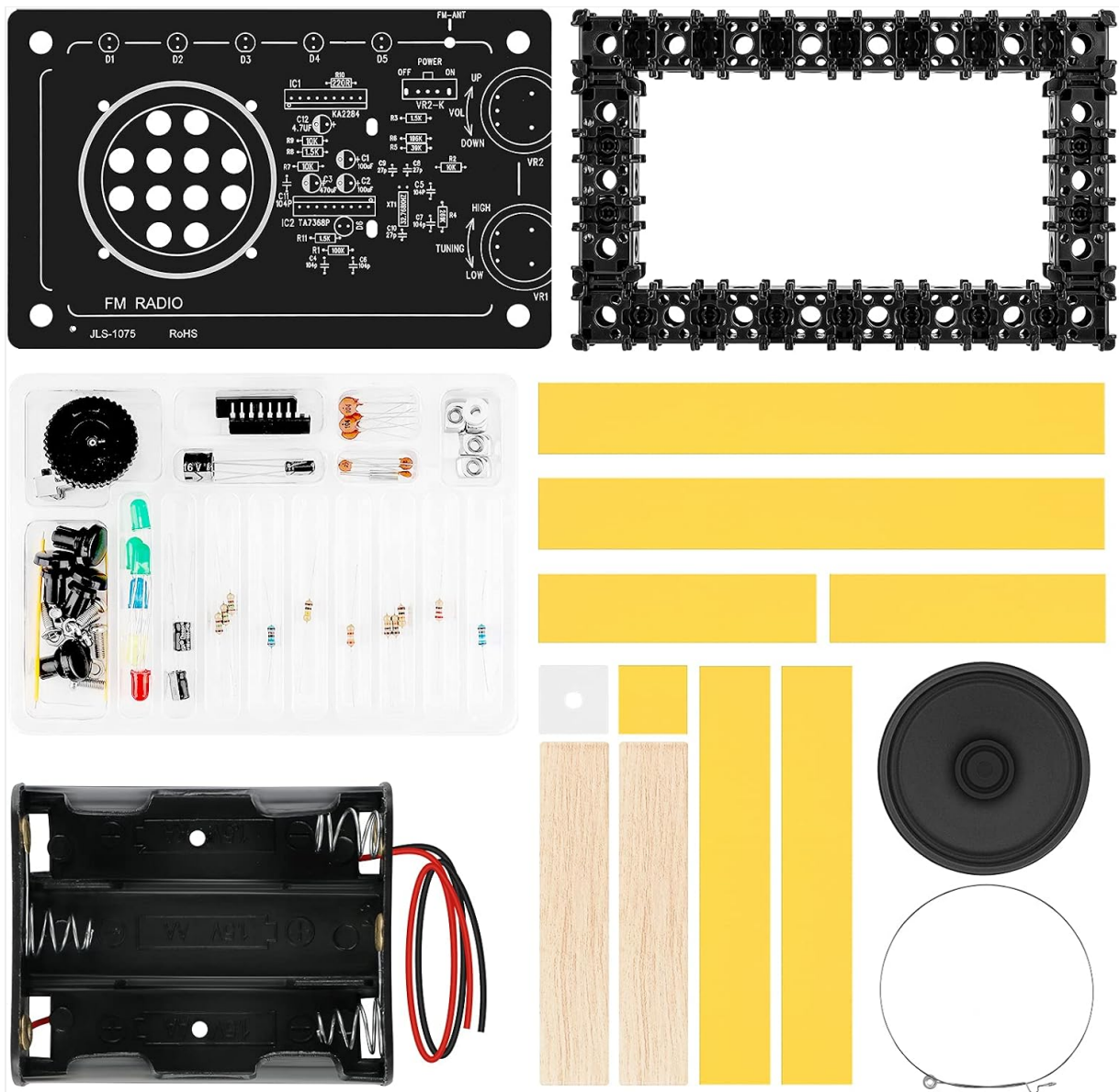


Image: All components of the MakerFocus FM Radio Receiver Kit laid out, including the circuit board, speaker, battery holder, various resistors, capacitors, LEDs, IC chips, and other small parts.

- FM Radio Circuit Board (JLS-1075)
- Speaker (8 Ohm 0.5W)
- Battery Holder (for 3x AA batteries, batteries not included)
- Various Resistors (R1-R11, R10 is 220R, others 1.5K, 10K, 15K)
- Various Capacitors (C1-C12, 4.7uF, 100uF, 27pF, 104pF)
- LEDs (D1-D5, various colors)
- IC Chips (IC1 KA2284, IC2 TA7388P, IC3 SI4825-A10)
- Crystal Oscillator (XT1 32.768KHz)
- ON/OFF Switch
- Volume Control Potentiometer (VR2-K)
- Tuning Potentiometer (VR1)
- Antenna Wire
- Screws and Nuts
- Plastic Tubes for insulation

TOOLS REQUIRED

The following tools are recommended for successful assembly:

- Soldering Iron
- Solder Wire
- Diagonal Cutter Pliers
- Long Nose Pliers
- Screwdriver (Phillips head)
- Multimeter (for checking components and connections)
- AAA Size Batteries (3 pieces, not included)

ASSEMBLY INSTRUCTIONS

Follow these steps carefully to assemble your FM Radio Receiver Kit. Pay close attention to component polarity and placement as indicated on the circuit board and in the video guide.

Your browser does not support the video tag.

Video: Detailed soldering guide for the DIY radio kit, demonstrating component placement and soldering techniques.

Step 1: Prepare the Circuit Board and Components

Before welding, carefully observe the position and value of each part on the circuit board. Ensure you have identified all components correctly.

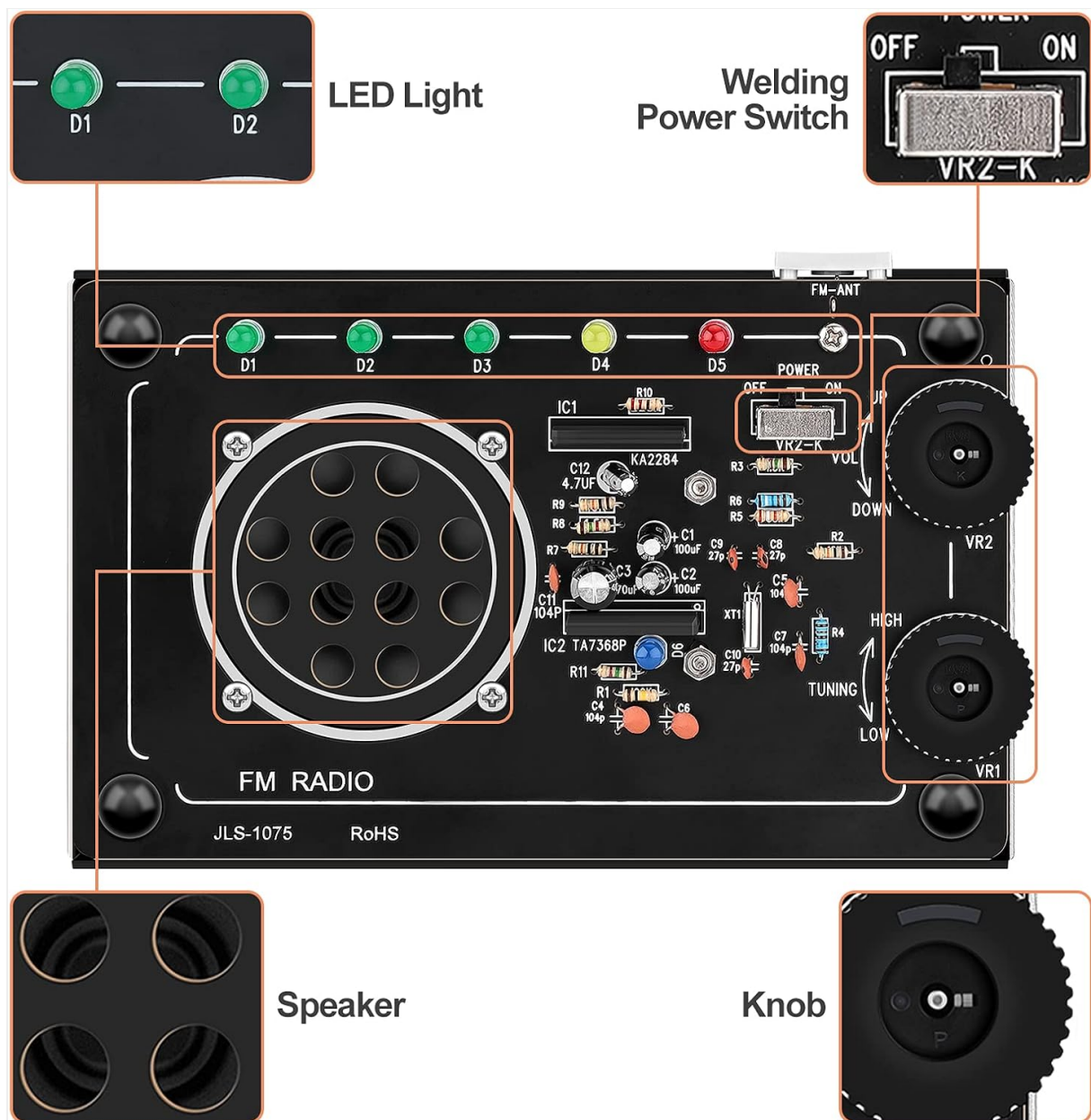


Image: The circuit board with component outlines and labels, showing where each part should be placed.

Step 2: Solder Resistors

Begin by soldering all resistors (R1 to R11) to their designated positions on the circuit board. Match the resistor values to the labels on the board. Ensure good solder joints and trim excess leads.

Step 3: Solder Capacitors

Next, solder all capacitors (C1 to C12) to their respective locations. Pay attention to the polarity of electrolytic capacitors (usually marked with a stripe for the negative lead) if present, though most small capacitors in this kit are non-polarized. Ensure secure connections.

Step 4: Solder LEDs

Solder the LEDs (D1 to D5) to their positions. It is crucial to pay attention to the LED color, position, and direction (polarity). The longer lead is typically positive (+), and the shorter lead is negative (-). The circuit board usually indicates polarity.

Step 5: Solder Crystal Oscillator and ON/OFF Switch

Solder the crystal oscillator (XT1) and the ON/OFF switch to the board. The crystal oscillator typically does not have polarity. Ensure the switch is correctly oriented for its function.

Step 6: Solder IC Chips

Solder the IC chips (IC1 KA2284 and IC2 TA7388P). Pay close attention to the IC chip's position and direction. There is usually a notch or dot on the chip that aligns with a corresponding mark on the circuit board to indicate pin 1. Solder each pin carefully to avoid bridging connections.

Step 7: Solder Variable Resistors (Potentiometers)

Solder the two variable resistors (VR1 for tuning and VR2-K for volume) to their designated spots. These will later be fitted with knobs.

Step 8: Attach Antenna

Fix the antenna wire to the circuit board at the FM-ANT point. Ensure a good electrical connection for optimal reception.

Step 9: Solder Speaker

Weld the speaker to the circuit board. Connect the speaker wires to the designated speaker terminals on the board. Then, use the provided metal plates and screws to securely fix the speaker to the circuit board.



Image: The back of the radio showing the speaker and the battery compartment, indicating how the speaker is mounted.

Step 10: Connect Battery Box

Isolate the battery box from the circuit board using the plastic tube provided to prevent short circuits. Then, weld the battery box wires to the appropriate power input points on the circuit board. Secure the battery box to the circuit board using screws.



Image: The assembled radio with the battery holder attached, showing the wiring connections.

OPERATING INSTRUCTIONS

Once assembly is complete, follow these steps to operate your FM Radio Receiver Kit:

1. **Insert Batteries:** Insert 3 AA size batteries into the battery holder. Ensure correct polarity.
2. **Power On:** Turn on the power switch (labeled "POWER ON/OFF") located on the circuit board. The LEDs should light up, indicating power is on.
3. **Adjust Volume:** Use the VR1 knob (volume button) to adjust the sound level. Turn the knob to decrease or increase the volume.
4. **Tune Frequency:** Use the VR2 knob (channel button) to trace the radio frequency. Slowly turn the knob until you find a clear FM station. The LEDs may indicate signal strength or tuning status.
5. **Antenna Adjustment:** Extend and adjust the antenna for optimal reception.



Image: The assembled radio with three AA batteries, demonstrating the power source.

TROUBLESHOOTING

If your FM Radio Receiver Kit is not functioning as expected, consider the following troubleshooting steps:

- **No Power:**

- Check if batteries are inserted correctly with proper polarity.
- Ensure the ON/OFF switch is in the "ON" position.
- Verify battery charge.
- Inspect power connections from the battery box to the circuit board for secure soldering.

- **No Sound:**

- Check volume knob (VR1) is turned up.
- Inspect speaker wiring and soldering connections.
- Ensure the speaker is correctly connected to the circuit board.

- **Poor Reception/Static:**

- Adjust the antenna position and extension.

- Slowly adjust the tuning knob (VR2) to find a clear station.
- Ensure the antenna wire is securely soldered to the FM-ANT point.
- Check for strong local FM signals.
- **LEDs Not Lighting Up:**
 - Verify LED polarity during soldering.
 - Check solder joints for all LEDs.
 - Ensure power is supplied to the board.
- **General Issues:**
 - Carefully inspect all solder joints for cold joints, bridges, or incomplete connections.
 - Use a multimeter to check continuity and component values if you suspect a faulty part.
 - Ensure all IC chips are inserted in the correct orientation.

SPECIFICATIONS

Model Number	MK0142M
Brand	MakerFocus
Product Dimensions	6.29 x 3.93 x 0.82 inches (16.0 x 10.0 x 2.1 cm)
Item Weight	9.1 ounces (258 grams)
Power Source	Battery Powered (3x AA batteries, not included)
Tuner Technology	FM
Radio Bands Supported	1-Band
Compatible Devices	Earphone (via audio output, if applicable - not explicitly mentioned in kit details but common for radios)

WARRANTY AND SUPPORT

This MakerFocus product is designed for educational and hobby purposes. Due to the DIY nature of the kit, specific warranties may vary. For technical support or inquiries regarding missing/defective components, please contact MakerFocus customer service through your purchase platform. Always refer to the product listing for the most up-to-date warranty information.