Saved from manuals.plus.
Open the live page for links to other documents and user manuals.

DONGKER MDS-60

DONGKER MDS-60 DIY Metal Detector Kit Instruction Manual

Model: MDS-60

1. Introduction

The DONGKER MDS-60 is a high-performance DIY metal detector kit designed for security applications and educational electronic soldering practice. This kit provides an accessible way to assemble a functional metal detector module. It is characterized by its high reliability, good stability, and compact size, making it suitable for various projects and learning experiences.



Image 1.1: Assembled DONGKER MDS-60 DIY Metal Detector Kit, showing the green PCB with a circular coil and various electronic components.

2. Specifications

The DONGKER MDS-60 Metal Detector Kit features the following technical specifications:

Parameter	Value
Operating Voltage	DC 3-5V
Operating Current	Less than or equal to 40mA
Standby Current	5mA
Detection Distance	Up to 60mm
Alarm Mode	Sound / Light (LED)

Parameter	Value
Assembly Difficulty	Easy
PCB Size	86mm x 61mm
Item Weight (Kit)	Approximately 3.52 ounces (100g)

Description:

This is a DIY metal detector kit parts. You need solder it by yourself.

Parameters:

Parameters	Value
Name	Metal detector
Operating voltage	DC 3-5V
Operating current	Less than or equal to 40mA
Standby current	Less than or equal to 5mA
Detection depth	Less than or equal to 60mm
Detection and alarm mode	Sound and Light
Difficulty of welding machine	Easy
Circuit board size	86*61mm
Packing weight	16g/kit

Component list

NO.	Name	Parameter	QTY
R3	RES	470R	1
R2	RES	2K	1
R1	RES	200K	1
VR1	ADJ-RES	100R	1
C2.C3	CAP	222P	2
C1.C4	CAP	104P	2
C5	E-CAP	100UF	1
LED1	LED	5mm Red	1
Q2.Q3	Triode	S9012	2
Q1	Triode	S9018	1
SW1	Power SW	6P 6*5	1
SP1	Buzzer	9*12	1
J1	Power-Socket	KF301-2	1
——	PCB	MDS-60	1
Choose	Battery box	AA1.5V*3	1

Install tools:

P.S. YOU NEED PREPARE THE TOOLS TO INSTALL THE KIT PARTS

Electric soldering iron	Multimeter	Solder wire
Soldering iron holder	Diagonal cutting pliers	Screwdriver
Tweezers	Sharp-nose pliers	Solder sucker
Sponge	Screwdriver kit	

Image 2.1: Detailed table showing the parameters and component list for the MDS-60 kit, essential for assembly and understanding the module's capabilities.

3. Package Contents

The DONGKER MDS-60 DIY Metal Detector Kit includes all necessary electronic components for assembly. Please verify that all parts listed below are present before beginning assembly.

No.	Name	Parameter	Quantity
R3	Resistor	470R	1
R2	Resistor	2K	1
R1	Resistor	200K	1
VR1	Adjustable Resistor	100R	1
C2, C3	Ceramic Capacitor	222P	2
C1, C4	Ceramic Capacitor	104P	2
C5	Electrolytic Capacitor	100UF	1
LED1	LED	5mm Red	1
Q2, Q3	Transistor (Triode)	S9012	2
Q1	Transistor (Triode)	S9018	1
SW1	Power Switch	6P 6*5	1
SP1	Buzzer	9*12	1
J1	Power Socket	KF301-2	1
—	PCB	MDS-60	1
Optional	Battery Box	AA1.5V*3	1



Image 3.1: All individual components of the MDS-60 DIY Metal Detector Kit laid out, including the PCB, resistors, capacitors, transistors, LED, buzzer, switch, and power socket.

4. Assembly Instructions

This kit requires soldering. Basic soldering skills are recommended. Please follow the component list and PCB markings carefully.

4.1 Required Tools (Not Included)

- Electric Soldering Iron
- Soldering Iron Holder
- Solder Wire
- Solder Sucker (for desoldering)
- Tweezers
- Diagonal Cutting Pliers
- Sharp-nose Pliers
- Screwdriver (various sizes)
- Multimeter (for testing)
- Sponge (for cleaning soldering iron tip)

4.2 Assembly Steps

1. **Identify Components:** Carefully identify each component using the provided component list (Image 2.1) and the markings on the PCB (Image 4.1). Pay attention to resistor values, capacitor polarities (for electrolytic capacitor C5), and transistor types (S9012, S9018).
2. **Solder Resistors:** Start by soldering the resistors (R1, R2, R3, VR1) into their designated positions on the PCB. Resistors are not polarized.
3. **Solder Capacitors:** Solder the ceramic capacitors (C1, C2, C3, C4). These are not polarized. For the electrolytic capacitor (C5), ensure correct polarity; the longer lead is typically positive (+), and the shorter lead or marked side is negative (-). Match this with the PCB markings.
4. **Solder Transistors:** Solder the transistors (Q1, Q2, Q3). Ensure their flat side or pin configuration matches the outline on the PCB.
5. **Solder LED:** Solder the LED (LED1). LEDs are polarized; the longer lead is positive (+), and the shorter lead is negative (-). Match with PCB markings.
6. **Solder Buzzer:** Solder the buzzer (SP1). Some buzzers are polarized; check for markings on the buzzer and PCB.
7. **Solder Power Switch and Socket:** Solder the power switch (SW1) and the power socket (J1) into their respective positions.
8. **Inspect Solder Joints:** After soldering all components, carefully inspect all solder joints for cold joints, bridges, or poor connections. Ensure all components are securely attached and correctly oriented.



Image 4.1: Top view of the MDS-60 Printed Circuit Board (PCB), showing component placement outlines and labels for assembly reference.

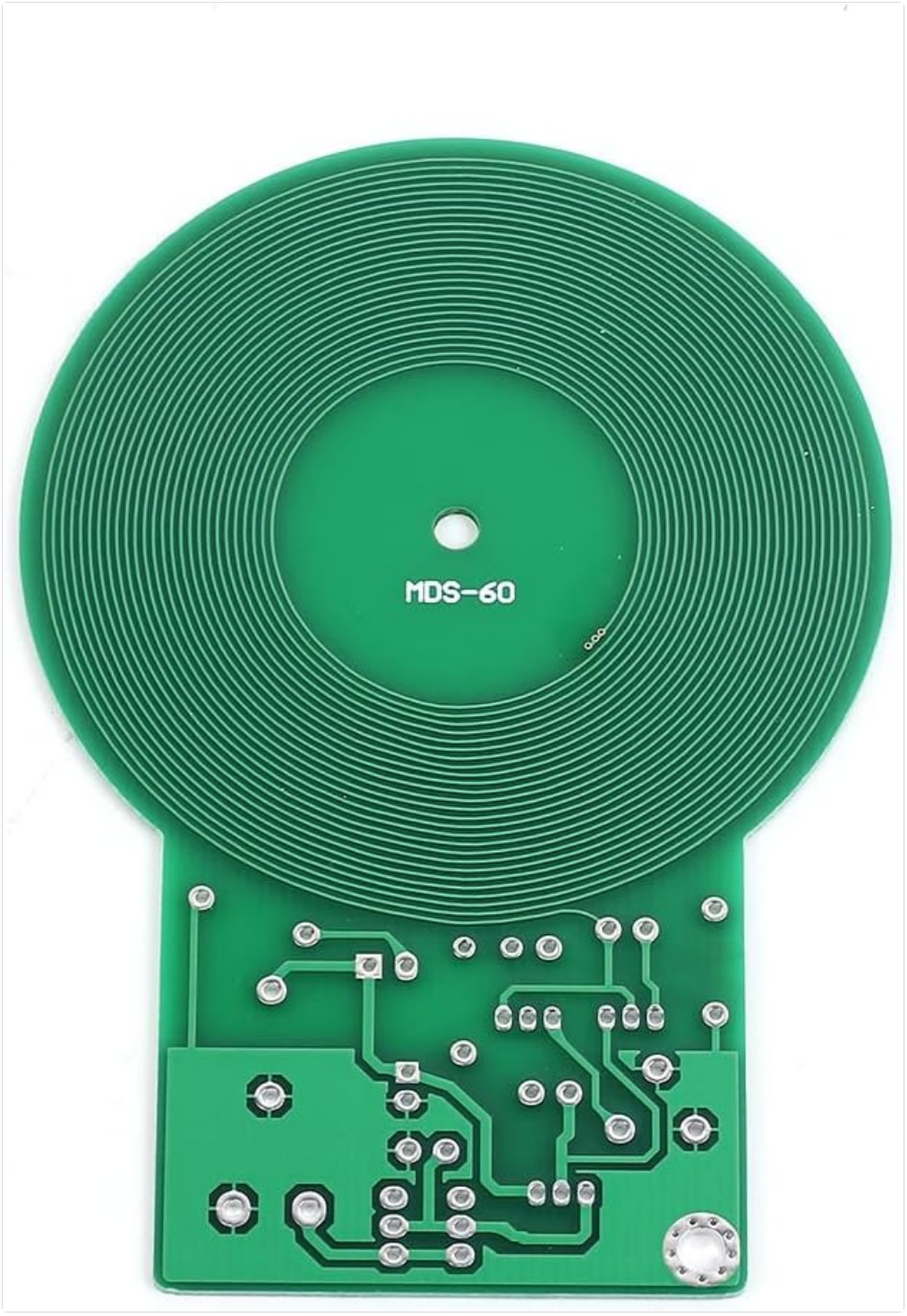


Image 4.2: Bottom view of the MDS-60 PCB, illustrating the solder pads and traces for component connections.

5. Setup and Wiring

Once the kit is fully assembled, connect a DC power source to the module.

5.1 Power Connection

- The module requires a DC power input between 3V and 5V.
- Connect the positive (+) terminal of your power supply to the `+DC3-5V` terminal on the module's power socket (J1).
- Connect the negative (-) terminal (ground) of your power supply to the `-` terminal on the module's power socket (J1).
- An optional battery box for 3x AA 1.5V batteries (total 4.5V) can be used as a portable power source.



Image 5.1: Close-up view of the assembled MDS-60 module, highlighting the power input terminals (+DC3-5V-) and the power switch (SW1).

6. Operation

After successful assembly and power connection, the metal detector is ready for operation.

6.1 Power On

Toggle the power switch (SW1) to the 'ON' position. The LED (LED1) may illuminate briefly, and the buzzer (SP1) might emit a short sound as the circuit stabilizes.

6.2 Sensitivity Adjustment

The module features an adjustable resistor (VR1) which can be used to fine-tune the detection sensitivity. Use a small screwdriver to carefully turn VR1. Adjusting this potentiometer will change the detection range and the threshold at which the alarm activates.

6.3 Metal Detection

Move the circular coil part of the module near metallic objects. When a metal object is detected within the 60mm range, the LED (LED1) will light up, and the buzzer (SP1) will emit an audible alarm.

7. Applications

The DONGKER MDS-60 DIY Metal Detector Kit can be utilized in various educational and practical scenarios:

- Game entertainment projects
- Basic security checks
- Searching for small metal products
- Car detection systems
- Traffic statistics applications
- Elevator floor control systems
- Production equipment position detection
- Development and design of production equipment
- Electronic product design projects
- Development of play equipment
- Metal proximity switch applications
- Basic metal detection in human body (e.g., for educational purposes)

8. Troubleshooting

If the metal detector does not function as expected, consider the following:

- **No Power/No Indication:**
  - Check power supply connections and ensure the voltage is within DC 3-5V.
  - Verify the power switch (SW1) is in the 'ON' position.
  - Inspect all solder joints for continuity and proper connection using a multimeter.
  - Ensure the LED (LED1) is correctly oriented and not damaged.
- **No Detection/Constant Alarm:**
  - Adjust the sensitivity potentiometer (VR1) to calibrate the detection threshold.
  - Ensure all components, especially transistors and capacitors, are correctly oriented and not damaged.
  - Check for any short circuits or open circuits on the PCB.
- **Weak Detection:**
  - Increase the sensitivity by adjusting VR1.
  - Ensure the power supply is stable and providing adequate current.

9. Maintenance

To ensure the longevity and proper functioning of your DONGKER MDS-60 module:

- Keep the module clean and free from dust and debris.
- Avoid exposing the module to moisture or extreme temperatures.
- Handle the PCB and components with care to prevent physical damage.

- Store in a dry, cool environment when not in use.

10. Support

For further assistance or inquiries regarding the DONGKER MDS-60 DIY Metal Detector Kit, please refer to the seller or manufacturer's official support channels.

© 2023 DONGKER. All rights reserved.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

Open the live page

https://manuals.plus/asin/B0C4YK7YD3

More documents and user manuals: **https://manuals.plus/**