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DONGKER GY20971-1

DONGKER DIY Bluetooth Speaker Kit User Manual

Model: GY20971-1 | Brand: DONGKER

1. Introduction

This manual provides comprehensive instructions for assembling, operating, and maintaining your DONGKER DIY Bluetooth Speaker Kit (Model: GY20971-1). This kit is designed for electronics enthusiasts and beginners alike, offering a hands-on experience in building a functional Bluetooth speaker with transparent acrylic casing and dynamic music rhythm lights.
The kit features a powerful speaker for clear sound, stable and fast Bluetooth connectivity, and advanced audio technology for enhanced sound quality. Its transparent design and rhythm lights make it a visually appealing and engaging project.

2. Safety Information

Warning:

- This kit involves soldering. Always use appropriate safety gear, including safety glasses, and ensure good ventilation.
- Exercise caution when handling hot soldering irons and molten solder.
- Ensure the power supply is disconnected before performing any assembly or maintenance.
- Keep components and tools out of reach of children.
- Do not modify the circuit beyond the intended design.

3. Package Contents

Before beginning assembly, please verify that all components listed below are present in your kit. Refer to the component listing image for visual identification.



Figure 3.1: Overview of all kit components.

Component Listing				
No.	Component Name	PCB Marker	Parameter	Quantity
1	Ceramic Capacitor	C1,C9,C10,C11	0.1uF(104)	4
2	Electrolytic Capacitor	C2,C7	1uF	2
3	Electrolytic Capacitor	C3,C6	10uF	2
4	Electrolytic Capacitor	C4,C5	470uF	2
5	5mm Red LED	D5		1
6	5mm Green LED	D4		1
7	5mm Blue LED	D1-D3		3
8	6*6*5mm Button	K1,K2,K3		3
9	3.5mm Earphone Socket	P1	3F07_BK	1
10	2Pin Connector	P2,P3	HDR-1X2	2
11	Bluetooth Module	P4	MH-M18	1
12	Metal Film Resistor	R1,R7	12K	2
13	Metal Film Resistor	R3	330ohm	1
14	Metal Film Resistor	R4,R5	10K	2
15	Metal Film Resistor	R6	33K	1
16	Potentiometer	RP1	50K	1
17	Potentiometer	RP2	10K	1
18	Self-locking Switch Cap			1
19	Button Cap			3
20	Self-locking Switch	S1		1
21	SMD HT6872 Chip	U1		1
22	KA2284 LED Controller	U2		1
23	4ohm 3W Speaker			1
24	USB Wire			1
25	Audio Wire			1
26	PCB Board			1
27	Acrylic Shell			6
28	M2*8 Screw			8
29	M3*5+6 Copper Pillar			4
30	M3*6 Screw			4
31	M2 Nut			8
32	M3 Nut			8
33	M3*10 Screw			4

Figure 3.2: Detailed component listing table.

The kit includes:

- 1x PCB Board
- 1x 4 Ohm 3W Speaker
- 1x Bluetooth Module (MH-M18)
- Various Resistors (12K, 330ohm, 10K, 50K)
- Various Capacitors (0.1uF, 1uF, 10uF, 470uF)
- LEDs (Red, Green, Blue)
- 3.5mm Earphone Socket
- 2Pin Connectors
- Potentiometers
- Self-locking Switch & Button Cap
- SMD HT6872 Chip, KA2284 LED Controller

- USB Wire
- Audio Wire
- 6x Acrylic Shell Panels
- Various Screws and Copper Pillars (M2*8, M3*5+6, M3*6, M3*10)
- M3 Nuts

4. Specifications

Parameter	Value
Working Voltage	DC 5V
Working Temperature	-25℃ to 85℃ (-13°F to 185°F)
Working Humidity	5% to 95% RH
PCB Board Size	65 x 49 mm (2.56 x 1.93 inches)
Shell Size (Assembled)	70 x 70 x 80 mm (2.76 x 2.76 x 3.15 inches)
Speaker Power	4 Ohm 3W
Connectivity Technology	Bluetooth, Auxiliary
Audio Output Mode	Stereo
Compatible Devices	Laptop, Smartphone, Tablet

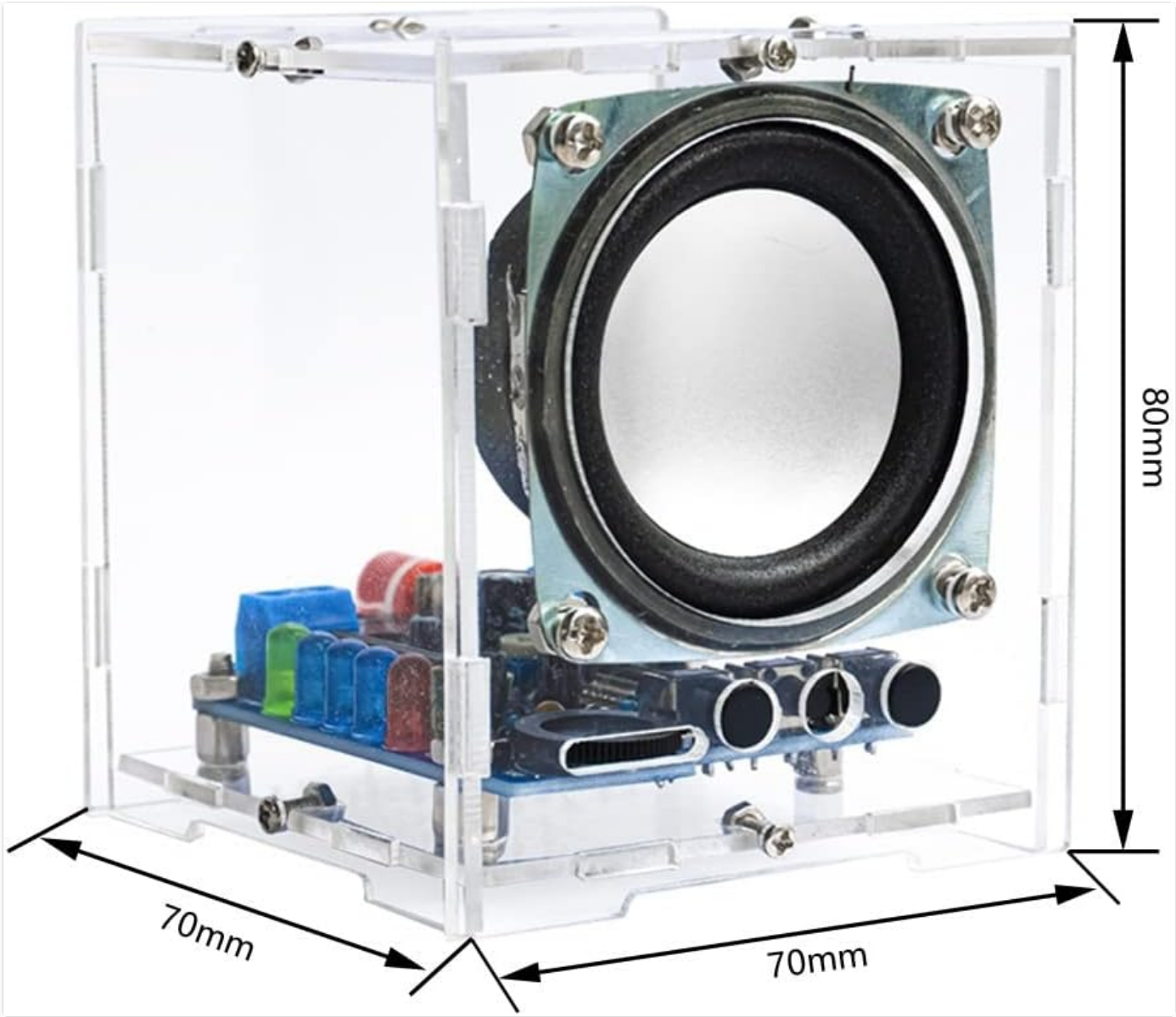


Figure 4.1: Assembled product dimensions.

5. Assembly Instructions

This section guides you through the step-by-step assembly of your DIY Bluetooth Speaker Kit. Basic soldering skills are required.

5.1. Electronic Component Soldering

Begin by soldering all electronic components onto the PCB board. Pay close attention to component polarity (for electrolytic capacitors, LEDs, and ICs) and correct placement as indicated on the PCB silkscreen.

1. **Resistors:** Solder all metal film resistors (12K, 330ohm, 10K, 50K) into their designated spots (R1, R3, R4, R5, R6, R7). Resistors are not polarized.
2. **Ceramic Capacitors:** Solder the ceramic capacitors (C1, C9, C10, C11) into place. These are not polarized.
3. **Electrolytic Capacitors:** Solder the electrolytic capacitors (C2, C7, C3, C6, C4, C5). Ensure correct polarity: the longer lead is positive (+), and the shorter lead (or the side with a stripe) is negative (-). Match with the markings on the PCB.
4. **LEDs:** Solder the 5mm Red, Green, and Blue LEDs (D5, D4, D1-D3). LEDs are polarized; the longer lead is positive (+), and the shorter lead is negative (-).
5. **Diodes:** Solder any diodes, ensuring the stripe on the diode matches the stripe on the PCB.

6. **IC Sockets/Chips:** Solder the SMD HT6872 Chip (U1) and KA2284 LED Controller (U2). Pay extreme attention to the orientation mark (dot or notch) on the chip and the corresponding mark on the PCB.
7. **Potentiometers:** Solder the potentiometers (RP1, RP2).
8. **Connectors:** Solder the 3.5mm Earphone Socket (P1) and 2Pin Connectors (P2, P3).
9. **Self-locking Switch:** Solder the self-locking switch (S1).
10. **Bluetooth Module:** Solder the Bluetooth Module (P4, MH-M18) onto its designated header pins.



Figure 5.1: Electronic components soldered onto the PCB and speaker connection.

5.2. Speaker and Wiring Connection

1. Connect the 4 Ohm 3W speaker to the designated speaker output terminals on the PCB using the provided audio wire. Ensure correct polarity if indicated on the speaker or PCB.
2. Connect the USB power wire to the power input terminals on the PCB.

5.3. Acrylic Case Assembly

Assemble the transparent acrylic case around the soldered PCB and speaker. The case consists of six panels. Carefully remove any protective film from the acrylic panels before assembly.

1. Identify the base panel and the panel for the speaker.
2. Mount the PCB onto the base panel using the M3*5+6 copper pillars and M3 nuts/screws.
3. Mount the speaker onto its designated panel using M2*8 screws and M2 nuts.
4. Carefully align and secure the side panels, top panel, and front/back panels using the remaining screws and nuts. Ensure all cutouts for ports (USB, audio jack) and controls (potentiometers, switch) align correctly.



Figure 5.2: Fully assembled speaker kit.



Figure 5.3: Assembled speaker kit, side view.



Figure 5.4: Close-up of the main circuit board and speaker connection.

6. Operation

6.1. Powering On

Connect the provided USB cable to the speaker kit's USB input port and plug the other end into a 5V DC power source (e.g., a USB wall adapter, computer USB port, or power bank). The power indicator light on the PCB should illuminate.

6.2. Bluetooth Connection

1. Once powered on, the speaker kit will automatically enter Bluetooth pairing mode. The Bluetooth indicator light (usually blue) will blink.
2. On your smartphone, tablet, or computer, navigate to the Bluetooth settings.
3. Search for available devices. The speaker kit should appear as "MH-M18" or a similar name.
4. Select the speaker kit to pair. Once successfully connected, the Bluetooth indicator light will stop blinking and remain solid. A confirmation tone may also be heard.

6.3. Playing Music

After successful Bluetooth pairing, you can play audio from your connected device. The music rhythm lights will synchronize with the audio playback, providing a visual display.

- **Volume Control:** Use the potentiometer knob on the speaker kit to adjust the master volume. You can also control volume from your connected device.
- **Auxiliary Input:** For devices without Bluetooth, connect them to the 3.5mm audio jack using an auxiliary cable. The speaker will automatically switch to auxiliary input when a cable is detected.

7. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the acrylic case. Avoid abrasive cleaners or solvents that may scratch or damage the acrylic.
- **Storage:** Store the speaker in a cool, dry place away from direct sunlight and extreme temperatures.

- **Handling:** Handle the assembled speaker with care to avoid dropping or impacting it, which could damage the electronic components or acrylic case.

8. Troubleshooting

Problem	Possible Cause	Solution
Speaker does not power on.	No power supply; faulty USB cable; incorrect soldering of power components.	Ensure USB cable is properly connected to a 5V power source. Check USB cable for damage. Inspect power input soldering points on PCB.
Cannot connect via Bluetooth.	Speaker not in pairing mode; device Bluetooth off; interference; incorrect soldering of Bluetooth module.	Ensure speaker is powered on and Bluetooth indicator is blinking. Turn Bluetooth on/off on your device. Move closer to the speaker. Re-check Bluetooth module soldering.
No sound or distorted sound.	Volume too low; speaker not connected; incorrect speaker wiring; faulty speaker; incorrect soldering of audio components.	Increase volume on both speaker and connected device. Check speaker wire connections to PCB. Inspect speaker for damage. Verify soldering of audio output components.
Music rhythm lights not working.	Incorrect LED polarity; faulty LEDs; incorrect soldering of LED controller.	Check LED polarity during soldering. Inspect soldering of KA2284 LED controller and associated components.

9. Warranty and Support

For any issues or inquiries regarding your DONGKER DIY Bluetooth Speaker Kit, please contact the seller or manufacturer through the platform where you purchased the product. Please note that as a DIY kit, successful operation depends on correct assembly and soldering. Damage caused by improper assembly or modification may not be covered under warranty.

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