

## Whadda WSG102

# WSG102 Soldering Kit Instruction Manual

Model: WSG102 | Brand: Whadda

## 1. INTRODUCTION

The Whadda WSG102 Soldering Kit allows you to build a unique logic game called "1-2-3". This game challenges your strategic thinking against a machine, with its logic hardwired using only diodes, transistors, and LEDs, without the need for a microcontroller. It's designed to be an educational and engaging project for electronics enthusiasts and makers.

The objective of the "1-2-3" game is simple: players take turns moving a peg along a path of holes. On each turn, a player can move the peg 1, 2, or 3 spaces. The player who successfully moves the peg to the final hole wins the game.

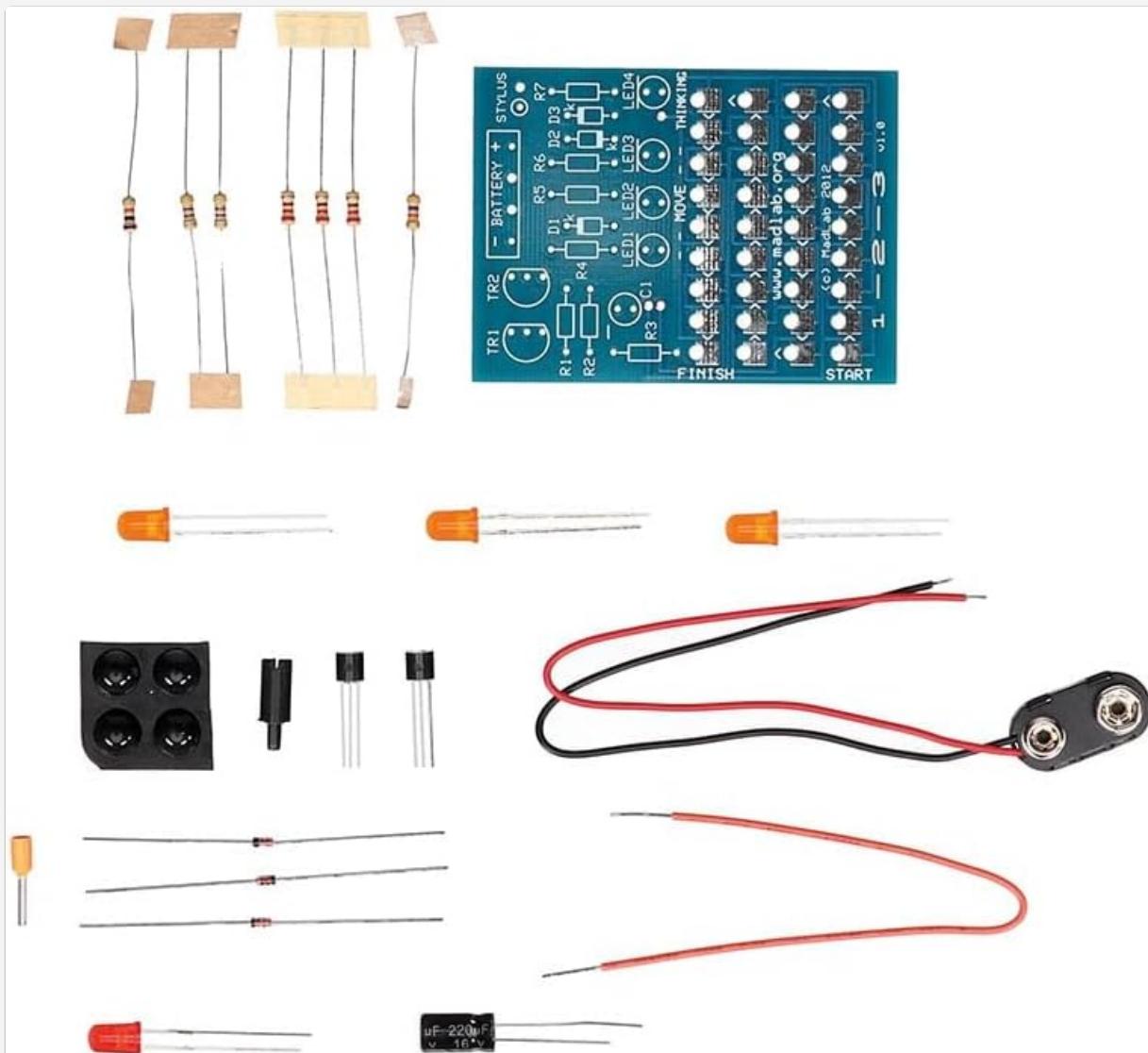
## 2. SAFETY INFORMATION

Working with soldering equipment involves heat and electrical components. Please read and adhere to the following safety guidelines:

- **Ventilation:** Always work in a well-ventilated area to avoid inhaling solder fumes.
- **Eye Protection:** Wear safety glasses to protect your eyes from splashes of hot solder or flying debris.
- **Hot Surfaces:** Soldering irons become extremely hot. Avoid touching the tip or recently soldered components. Use a soldering iron stand.
- **Fire Hazard:** Keep flammable materials away from your soldering area.
- **Electrical Safety:** Ensure your soldering iron is in good condition and properly grounded. Do not work with live circuits.
- **Lead-Free Solder:** If using lead-free solder, note that it requires higher temperatures.
- **Adult Supervision:** This kit is recommended for users with basic soldering experience. Younger users should have adult supervision.
- **Component Handling:** Some electronic components can be sensitive to static electricity. Handle them by their bodies, not their leads.

### 3. PACKAGE CONTENTS

Before beginning assembly, verify that all components are present in your kit. The WSG102 kit includes all necessary electronic components and the printed circuit board (PCB) to construct the "1-2-3" logic game. A 9V battery is required for operation and is **not included** in the package.



**Figure 3.1:** Overview of all electronic components included in the WSG102 kit, ready for assembly. This includes various resistors, diodes, LEDs, transistors, the main circuit board, connecting wires, and a battery clip.

Typical components include:

- Printed Circuit Board (PCB)
- Resistors (various values)
- Diodes
- LEDs (Light Emitting Diodes)
- Transistors
- Capacitors
- Battery Clip (for 9V battery)
- Connecting Wires

- Stylus (for game interaction)
- Small hardware (screws, nuts if applicable)

Refer to the included component list or schematic for exact quantities and values.

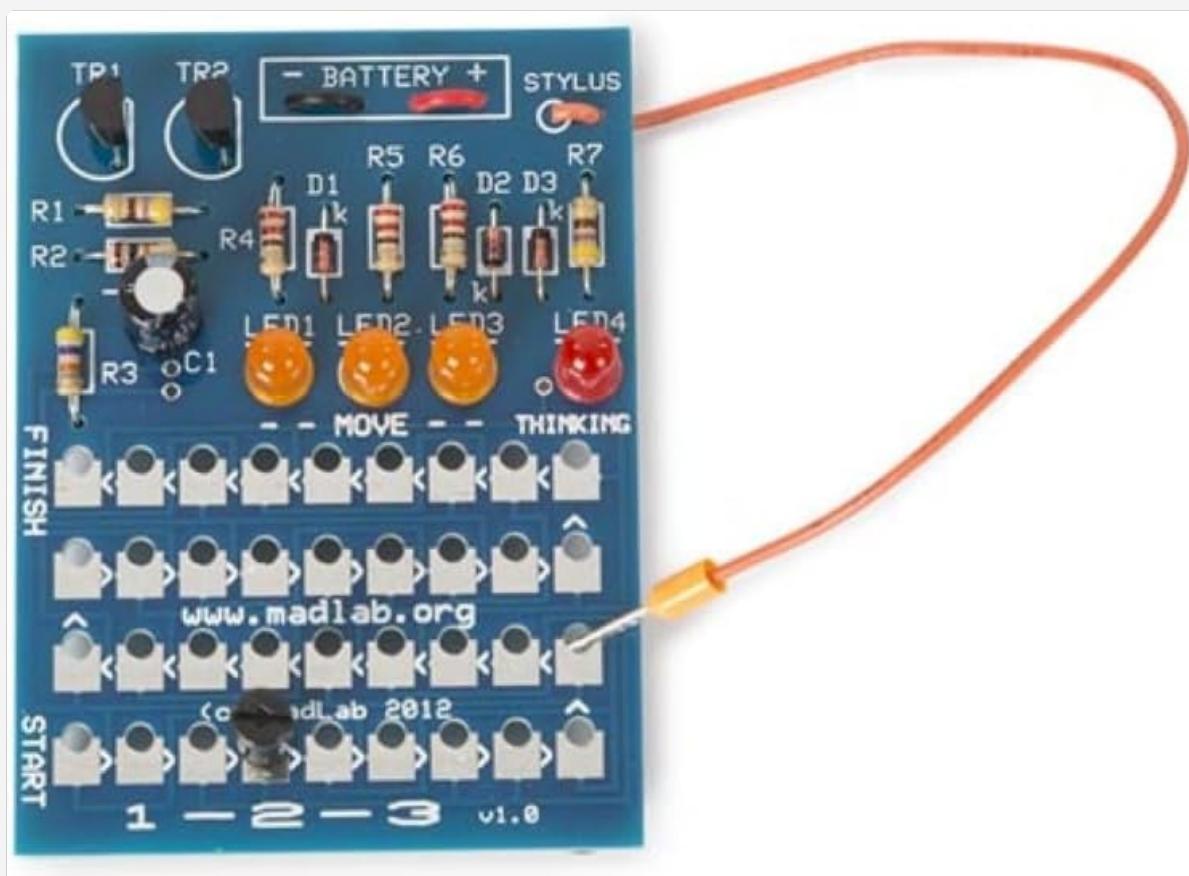
## 4. SETUP AND ASSEMBLY INSTRUCTIONS

Follow these steps carefully to assemble your WSG102 Soldering Kit. It is recommended to solder components from lowest profile to highest profile.

1. **Prepare Your Workspace:** Ensure your soldering area is clean, well-lit, and well-ventilated. Have your soldering iron, solder, desoldering braid/pump, and safety glasses ready.
2. **Identify Components:** Sort and identify all resistors, diodes, transistors, and LEDs. Match them to their corresponding labels on the PCB. Resistors are identified by color bands, diodes and LEDs have polarity (anode/cathode), and transistors have specific pinouts.
3. **Solder Resistors:** Insert resistors into their designated spots (e.g., R1, R2, R3, etc.) on the PCB. Bend the leads slightly to hold them in place, then solder and trim excess leads.
4. **Solder Diodes and Transistors:** Carefully insert diodes (D1, D2, D3) and transistors, paying close attention to their polarity and orientation as marked on the PCB. Solder and trim leads.
5. **Solder LEDs:** Insert the LEDs (LED1, LED2, LED3, LED4) into their positions. LEDs are polarized; the longer lead is typically the anode (+), and the shorter lead/flat edge on the casing indicates the cathode (-). Match this to the PCB markings. Solder and trim leads.
6. **Solder Capacitors:** Insert capacitors (C1) into their designated spots. Electrolytic capacitors are polarized; ensure the negative stripe aligns with the negative marking on the PCB. Solder and trim leads.
7. **Attach Battery Clip:** Solder the red wire of the 9V battery clip to the positive (+) terminal and the black wire to the negative (-) terminal on the PCB, as indicated.
8. **Connect Stylus:** Solder the stylus wire to the designated "STYLUS" pad on the PCB.
9. **Inspect Solder Joints:** After all components are soldered, carefully inspect each joint for cold solder joints (dull, lumpy appearance) or solder bridges (solder connecting two adjacent pads). Re-solder or clean as necessary.
10. **Insert Battery:** Once assembly is complete and inspected, connect a 9V battery to the battery clip.



**Figure 4.1:** Example of soldering technique during the assembly of an electronic kit. Ensure proper technique for reliable connections.



**Figure 4.2:** The completed WSG102 "1-2-3" logic game board, showing all soldered components and the connected stylus.

## 5. OPERATING INSTRUCTIONS (PLAYING THE "1-2-3" GAME)

The "1-2-3" game is a two-player logic game, where one player is you and the other is the machine (the circuit itself). The objective is to be the player who moves the peg (represented by the stylus) to the final hole.



Figure 5.1: Visual representation of the "1-2-3" game concept, where players move 1, 2, or 3 steps.

### Game Setup:

- Ensure a 9V battery is connected.
- The game starts with the stylus placed in the "START" hole.

### Gameplay:

1. **Player's Turn:** You begin the game. Using the stylus, touch the metal ring of the hole you wish to move the peg to. You can move 1, 2, or 3 spaces forward from the current peg position.
2. **Machine's Turn:** After your move, the circuit (machine) will "think" and then indicate its move by lighting up LEDs and guiding you to the next hole it chooses.
3. **Alternating Turns:** Continue alternating turns, moving the stylus to the indicated hole.
4. **Winning:** The player who successfully moves the stylus to the "FINISH" hole wins the game.

The game's logic is designed to be challenging. Observe the machine's moves to understand its strategy.

## 6. MAINTENANCE

To ensure the longevity and proper functioning of your WSG102 Soldering Kit, follow these maintenance tips:

- **Cleaning:** Keep the circuit board clean and free of dust and debris. Use a soft, dry brush or compressed air. Avoid using liquids directly on the circuit.
- **Battery:** Remove the 9V battery if the kit will not be used for an extended period to prevent battery leakage and corrosion.
- **Storage:** Store the assembled kit in a dry, cool place, away from direct sunlight and extreme temperatures.
- **Stylus:** Ensure the stylus tip remains clean and conductive for proper interaction with the game board.
- **Solder Joints:** Periodically inspect solder joints for any signs of cracking or corrosion. Re-solder if necessary.

## 7. TROUBLESHOOTING

If you encounter issues with your WSG102 Soldering Kit, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Kit does not power on / No LEDs light up.	<ul style="list-style-type: none"><li>• Battery not connected or dead.</li><li>• Battery clip wires reversed.</li><li>• Poor solder joint on power input.</li><li>• Component inserted incorrectly (e.g., LED, diode, transistor polarity).</li></ul>	<ul style="list-style-type: none"><li>• Check battery connection and replace battery.</li><li>• Verify battery clip polarity.</li><li>• Inspect and re-solder power connections.</li><li>• Carefully check polarity and orientation of all polarized components.</li></ul>
Game logic is incorrect / Machine doesn't respond.	<ul style="list-style-type: none"><li>• Incorrect component values (e.g., wrong resistor).</li><li>• Solder bridge shorting traces.</li><li>• Cold solder joint on a critical component.</li><li>• Damaged component.</li></ul>	<ul style="list-style-type: none"><li>• Double-check all component values against the schematic.</li><li>• Inspect PCB for solder bridges and remove them.</li><li>• Re-solder any suspicious joints.</li><li>• If a component is suspected to be faulty, replace it.</li></ul>
Stylus does not register input.	<ul style="list-style-type: none"><li>• Stylus wire not properly connected.</li><li>• Stylus tip is dirty or corroded.</li><li>• Poor contact with the hole's metal ring.</li></ul>	<ul style="list-style-type: none"><li>• Check and re-solder stylus wire connection.</li><li>• Clean stylus tip.</li><li>• Ensure firm contact when touching the holes.</li></ul>

If these steps do not resolve the issue, please contact Whadda customer support for further assistance.

## 8. SPECIFICATIONS

- **Model:** WSG102
- **Manufacturer:** Velleman (Whadda)
- **Product Dimensions (Assembled):** Approximately 70 x 50 x 16 mm / 2.8 x 1.9 x 0.6 inches
- **Item Weight:** Approximately 2.46 ounces (kit components)
- **Power Source:** 1 x 9V battery (not included)
- **Battery Cell Type:** Alkaline recommended
- **Usage:** Amateur, Educational
- **Included Components:** All electronic components for assembly (battery excluded)

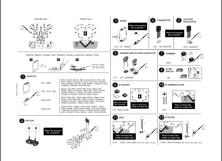
## 9. WARRANTY AND SUPPORT

For technical support, replacement parts, or warranty inquiries regarding your Whadda WSG102 Soldering Kit, please contact the manufacturer, Velleman, or your point of purchase. Keep your proof of purchase for any warranty claims.

While this kit is designed for educational purposes and DIY assembly, Velleman strives to provide quality components. Any issues arising from manufacturing defects should be reported promptly.

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### Related Documents - WSG102

	<p><a href="#"><u>Whadda WSL213 Blinking Heart DIY Electronics Kit Assembly Guide</u></a></p> <p>Step-by-step guide for assembling the Whadda WSL213 Blinking Heart DIY electronics kit, detailing component identification, placement, and soldering.</p>
	<p><a href="#"><u>Whadda WSEDU01 Solderless Educational Starter Kit Assembly Manual</u></a></p> <p>Explore electronics with the Whadda WSEDU01 Solderless Educational Starter Kit. This assembly manual guides users through 11 exciting projects, teaching fundamental electronic concepts with hands-on experiments.</p>
	<p><a href="#"><u>Whadda WPI474 Logic Level Shifter Module - Manual &amp; Specifications</u></a></p> <p>User manual and technical specifications for the Whadda WPI474 Logic Level Shifter Module. Learn about its features, wiring, and usage for communicating between microcontrollers with different logic voltages.</p>

	<p><a href="#"><b>Whadda WSAH194 Digitally Controlled FM Radio Soldering Kit Instructions</b></a></p> <p>Step-by-step assembly instructions for the Whadda WSAH194 digitally controlled FM radio soldering kit, detailing components and soldering procedures.</p>
	<p><a href="#"><b>Whadda WPM447 Mini Peristaltic Pump 6V User Manual</b></a></p> <p>User manual for the Whadda WPM447 mini peristaltic pump (6V). This document details product specifications, safety instructions, general guidelines, and step-by-step procedures for replacing the silicon tube. It also provides context on Arduino compatibility.</p>
	<p><a href="#"><b>Whadda WPM464 4-Channel Solid State Relay Module - Manual &amp; Specifications</b></a></p> <p>Comprehensive guide to the Whadda WPM464 4-channel Solid State Relay module, covering its introduction, safety instructions, specifications, wiring details, and an example Arduino program. Learn how to safely switch AC loads up to 240V AC / 2A.</p>