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› GeekLJT DIY Electronic Voice Clock Kit 4-Digit Digital, Cute Alarm Clock DIY Kits User Manual

GeekLJT t4sz-3ag-v3

GeekLJT DIY Electronic Voice Clock Kit User Manual

Model: t4sz-3ag-v3

INTRODUCTION

This manual provides comprehensive instructions for assembling, operating, and maintaining your GeekLJT DIY Electronic Voice Clock Kit. This kit is designed for enthusiasts, students, and beginners interested in electronics and soldering. Upon completion, you will have a functional 4-digit digital clock capable of displaying time, date, and temperature, along with alarm and light control features.



Figure 1: Assembled GeekLJT DIY Electronic Voice Clock Kit. The clock features a clear acrylic casing and a green 4-digit LED display showing "10.30". Components such as resistors and sensors are visible at the top of the circuit board within the casing.

Safety Precautions

Please read and understand all safety instructions before beginning assembly. Failure to follow these instructions may result in injury or damage to the kit.

- Always work in a well-ventilated area when soldering.
- Use appropriate personal protective equipment, including safety glasses, to protect your eyes from solder splatter.
- Ensure your soldering iron is properly grounded and never touch the hot tip.
- Keep all components and tools out of reach of children.
- Verify component polarity before soldering, especially for LEDs and integrated circuits.
- Disconnect power before making any adjustments or repairs to the assembled clock.

Kit Components

Before starting assembly, verify that all components listed below are present in your kit. If any parts are missing or damaged, please contact customer support.

Component	Description	Quantity
Main PCB	Printed Circuit Board for the clock's main circuitry.	1
4-Digit LED Display	Green LED module for time/date/temperature display.	1
Microcontroller (e.g., STC15F204EA)	The brain of the clock, pre-programmed.	1
DS1302 Real-Time Clock (RTC) Module	Keeps track of time and date.	1
DS18B20 Temperature Sensor	Measures ambient temperature.	1
Light Dependent Resistor (LDR)	For automatic brightness adjustment.	1
Buttons	For setting time, alarms, and modes.	3-4 (varies by kit)
Resistors, Capacitors, Diodes	Various electronic components.	Assorted
Buzzer	For alarm sounds.	1
Acrylic Casing Parts	Clear protective housing.	Assorted
Screws and Nuts	For assembling the casing.	Assorted
USB Power Cable	For powering the clock.	1

Setup and Assembly

This section guides you through the step-by-step assembly process. It is recommended to follow the instructions carefully and solder components in the specified order.

Tools Required:

- Soldering Iron (30-60W recommended)

- Solder (rosin core, 0.8-1.0mm diameter)
- Solder Wick or Solder Pump (for desoldering errors)
- Wire Cutters/Flush Cutters
- Needle-Nose Pliers
- Small Screwdriver Set (Phillips and Flathead)
- Multimeter (optional, for testing connections)

Assembly Steps:

1. **Prepare the PCB:** Inspect the Printed Circuit Board (PCB) for any manufacturing defects.
2. **Solder Resistors and Diodes:** Identify the resistors by their color bands and diodes by their polarity (band indicates cathode). Insert them into their designated spots on the PCB and solder them. Trim excess leads.
3. **Solder Capacitors:** Pay attention to the polarity of electrolytic capacitors (long lead is positive, stripe indicates negative). Solder them in place.
4. **Solder Transistors and IC Sockets:** If your kit includes IC sockets, solder them first. This allows for easy replacement of integrated circuits if needed. Ensure correct orientation.
5. **Solder Buttons and Buzzer:** Solder the push buttons and the buzzer onto the PCB.
6. **Solder Sensors (LDR, DS18B20):** Carefully solder the Light Dependent Resistor (LDR) and the DS18B20 temperature sensor. The LDR is typically non-polarized, but the DS18B20 has specific pinouts.
7. **Solder the DS1302 RTC Module:** Solder the Real-Time Clock module. Ensure correct orientation.
8. **Solder the 4-Digit LED Display:** This is a critical component. Align the pins correctly with the PCB pads and solder all connections securely.
9. **Insert Microcontroller:** If using an IC socket, carefully insert the microcontroller chip into its socket, ensuring the notch on the chip aligns with the notch on the socket/PCB.
10. **Test the Circuit:** Before assembling the casing, connect the USB power cable to the PCB and a 5V USB power source. Verify that the LED display lights up and shows some initial characters. If not, troubleshoot your solder joints.
11. **Assemble the Acrylic Casing:** Remove the protective film from all acrylic parts. Assemble the casing around the soldered PCB using the provided screws and nuts. Ensure the display and buttons align with the casing openings.
12. **Final Inspection:** Double-check all connections and the physical integrity of the assembled clock.

OPERATING INSTRUCTIONS

Once assembled, your GeekLJT DIY Electronic Voice Clock Kit is ready for operation. This section details how to set the time, date, alarm, and navigate through its various functions.

Powering On:

Connect the provided USB power cable to the clock's power input and plug the other end into a 5V USB power adapter (not included) or a computer USB port. The display should light up.

Button Functions:

The clock typically has 3-4 buttons, often labeled as SET, UP, DOWN, and sometimes MODE or OK. The exact function may vary slightly, but generally:

- **SET Button:** Enters setting mode, confirms selections, or switches between setting parameters (e.g., hour, minute, year).

- **UP Button:** Increases the value of the currently selected parameter.
- **DOWN Button:** Decreases the value of the currently selected parameter.
- **MODE/OK Button (if present):** Switches display modes (time, date, temperature) or confirms settings.

Setting Time and Date:

1. Press and hold the **SET** button for a few seconds until the display flashes, indicating entry into setting mode.
2. Use the **UP** and **DOWN** buttons to adjust the hour. Press **SET** to confirm and move to minutes.
3. Adjust minutes using **UP/DOWN**, then press **SET**.
4. Continue this process for year, month, and day.
5. Once all parameters are set, press **SET** again to exit setting mode.

Setting Alarm:

1. Press the **SET** button repeatedly until the alarm setting mode is displayed (often indicated by "AL" or a bell icon).
2. Use **UP/DOWN** to set the alarm hour, then press **SET**.
3. Adjust alarm minutes, then press **SET**.
4. Some kits allow selecting alarm music or enabling/disabling the alarm. Use **UP/DOWN** and **SET** to configure these options.
5. Exit alarm setting mode by pressing **SET** or waiting for a timeout.

Display Modes:

Press the **MODE** button (or a short press of the **SET** button if no MODE button is present) to cycle through display modes:

- Time (HH:MM)
- Date (YYYY-MM-DD)
- Temperature (°C or °F)

Light Control:

The clock features an automatic light control function using the LDR. The display brightness will adjust based on ambient light conditions. Some kits may offer manual brightness adjustment via button combinations; refer to specific kit documentation if available.

MAINTENANCE

The GeekLJT DIY Electronic Voice Clock Kit requires minimal maintenance to ensure long-term operation.

- **Cleaning:** Use a soft, dry cloth to wipe the acrylic casing. Avoid abrasive cleaners or solvents that could scratch or damage the plastic.
- **Power Supply:** Always use a stable 5V USB power supply. Unstable power can affect clock accuracy or damage components.
- **Component Check:** Periodically inspect solder joints for any signs of cracking or corrosion. Re-solder if necessary.
- **Battery (if applicable):** Some RTC modules may have a small coin cell battery for timekeeping during power outages. If your kit includes one and the time resets after power loss, the battery may need replacement.

TROUBLESHOOTING

If you encounter issues with your assembled clock, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Display does not light up.	No power, faulty USB cable, incorrect power connection, short circuit, incorrectly soldered LED display.	Check USB power source and cable. Verify power input soldering. Inspect PCB for solder bridges or cold joints. Ensure LED display is soldered correctly and oriented properly.
Incorrect time/date display or time drifts.	RTC module not soldered correctly, faulty RTC module, no backup battery (if applicable).	Re-check RTC module soldering. Ensure the crystal oscillator for the RTC is correctly installed. If time resets on power loss, check/install backup battery.
Buttons do not respond.	Buttons soldered incorrectly, faulty buttons, short circuit on button pins.	Inspect button soldering for cold joints or bridges. Test button functionality with a multimeter if possible.
Temperature reading is incorrect or missing.	DS18B20 sensor soldered incorrectly or faulty.	Verify DS18B20 sensor orientation and soldering.
Alarm does not sound.	Buzzer soldered incorrectly, alarm not enabled, faulty buzzer.	Check buzzer soldering and polarity. Ensure alarm is set and enabled in the clock's settings.

If you are unable to resolve the issue after consulting this section, please contact GeekLJT customer support for further assistance.

SPECIFICATIONS

- **Product Model:** t4sz-3ag-v3
- **Display Type:** 4-Digit LED (Green)
- **Functions:** Time display, Date display, Temperature display, Alarm clock (with four music options), Light control (automatic brightness adjustment), Memory function.
- **Power Supply:** 5V DC via USB (USB cable included, power adapter not included)
- **Dimensions (Assembled):** Approximately 17.02 x 10.16 x 3.3 cm (6.7 x 4.0 x 1.3 inches)
- **Weight (Assembled):** Approximately 227 g (8 oz)
- **Color:** Green (LED display), Clear (Acrylic casing)
- **Batteries Included:** No (for main operation)

WARRANTY AND SUPPORT

GeekLJT is committed to customer satisfaction and product quality. While this is a DIY kit, we provide support for assembly and functionality issues.

For any problems, missing parts, or technical assistance, please contact GeekLJT customer support through the platform where you purchased the kit. Please provide your order number and a detailed description of the issue.

As this is a DIY soldering kit, successful assembly depends on the user's soldering skills. We recommend reviewing basic soldering tutorials if you are new to electronics assembly.

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