

JYETech 13801K

JYETech DSO 138 DIY KIT (13801K)

Instruction Manual

1. INTRODUCTION

The JYETech DSO 138 DIY KIT (13801K) is designed as a training oscilloscope kit, providing essential oscilloscope functions in an easy-to-assemble format. Its primary goal is simplicity in structure and ease of assembly and operation, making it an ideal project for learning about electronics and oscilloscopes. The kit primarily utilizes through-hole components, with the main Cortex-M3 ARM processor (STM32F103C8) pre-soldered for convenience. It features a 2.4-inch TFT LCD for clear waveform display.

This manual provides guidance on the assembly, operation, and maintenance of your DSO 138 kit. For detailed step-by-step assembly instructions and schematics, please refer to the documentation provided with your kit or available from the manufacturer's official resources.

2. SETUP AND ASSEMBLY

The DSO 138 is a Do-It-Yourself (DIY) kit, requiring assembly. This process typically involves soldering various electronic components onto the printed circuit board (PCB). While the main microcontroller unit (MCU) is pre-soldered and pre-programmed, other components such as resistors, capacitors, switches, and connectors will need to be installed by the user.

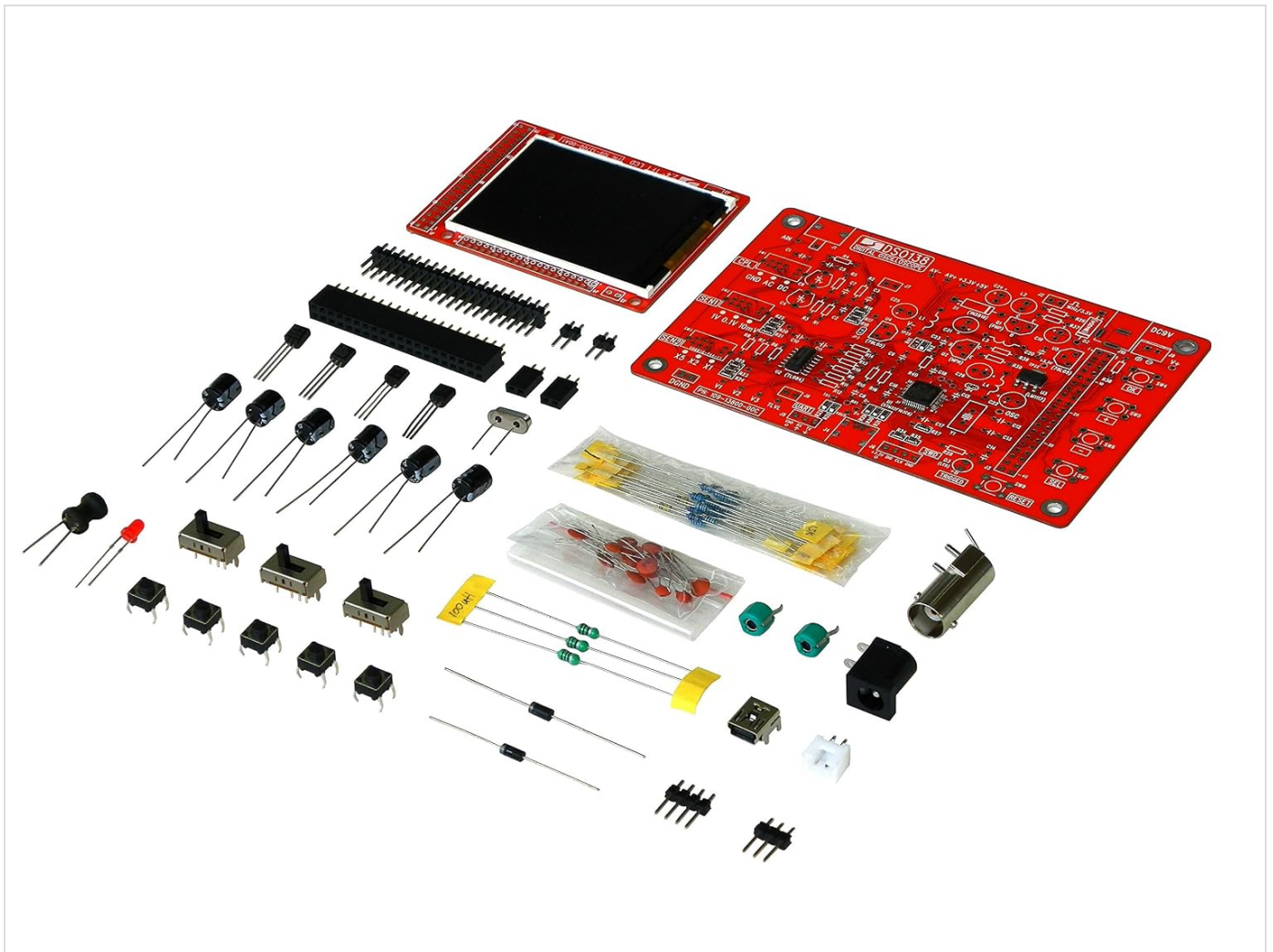


Figure 2.1: All components included in the DSO 138 DIY KIT (13801K) laid out before assembly. This includes the main PCB, 2.4-inch TFT LCD, various resistors, capacitors, diodes, switches, connectors, and other electronic parts.

Key Assembly Considerations:

- **Component Identification:** Carefully identify each component before soldering. Resistors, in particular, may require a multimeter for accurate identification due to color code variations or small markings.
- **Soldering Equipment:** A low-wattage soldering iron with a fine tip is recommended for most components. A higher wattage iron may be useful for larger components like the BNC connector or power jack.
- **Order of Assembly:** Follow the manufacturer's recommended assembly order, typically starting with smaller components and progressing to larger ones.
- **Solder Joints:** Ensure clean, strong solder joints to prevent connectivity issues. Avoid solder bridges between closely spaced pads.

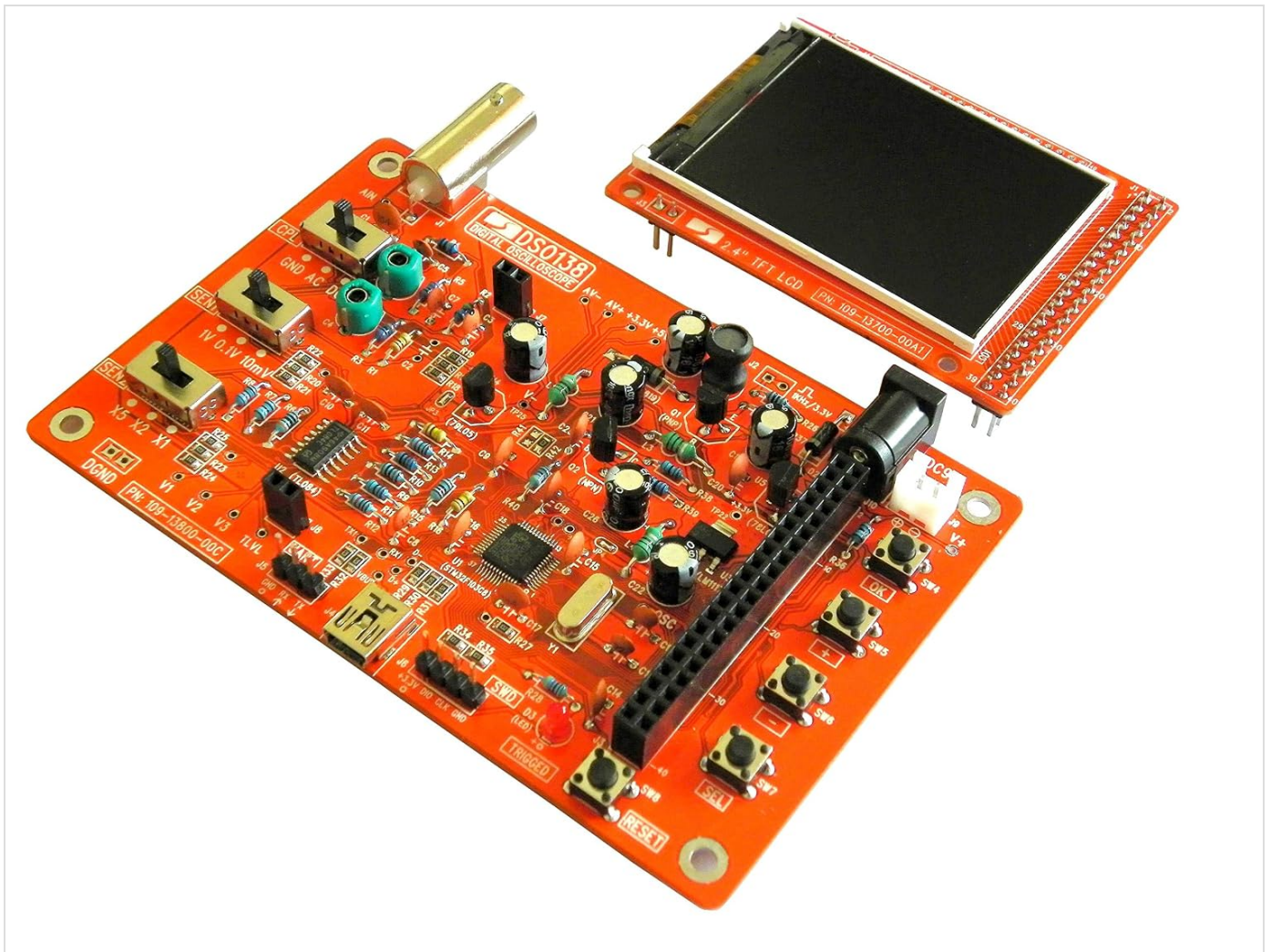


Figure 2.2: The main printed circuit board (PCB) of the DSO 138 with most components soldered, prior to the installation of the 2.4-inch TFT LCD screen. This view highlights the various through-hole components and the pre-soldered surface-mount MCU.

Once all components are soldered, the 2.4-inch TFT LCD module is connected to the main board. Ensure proper alignment and secure connection of the display module to its header pins.

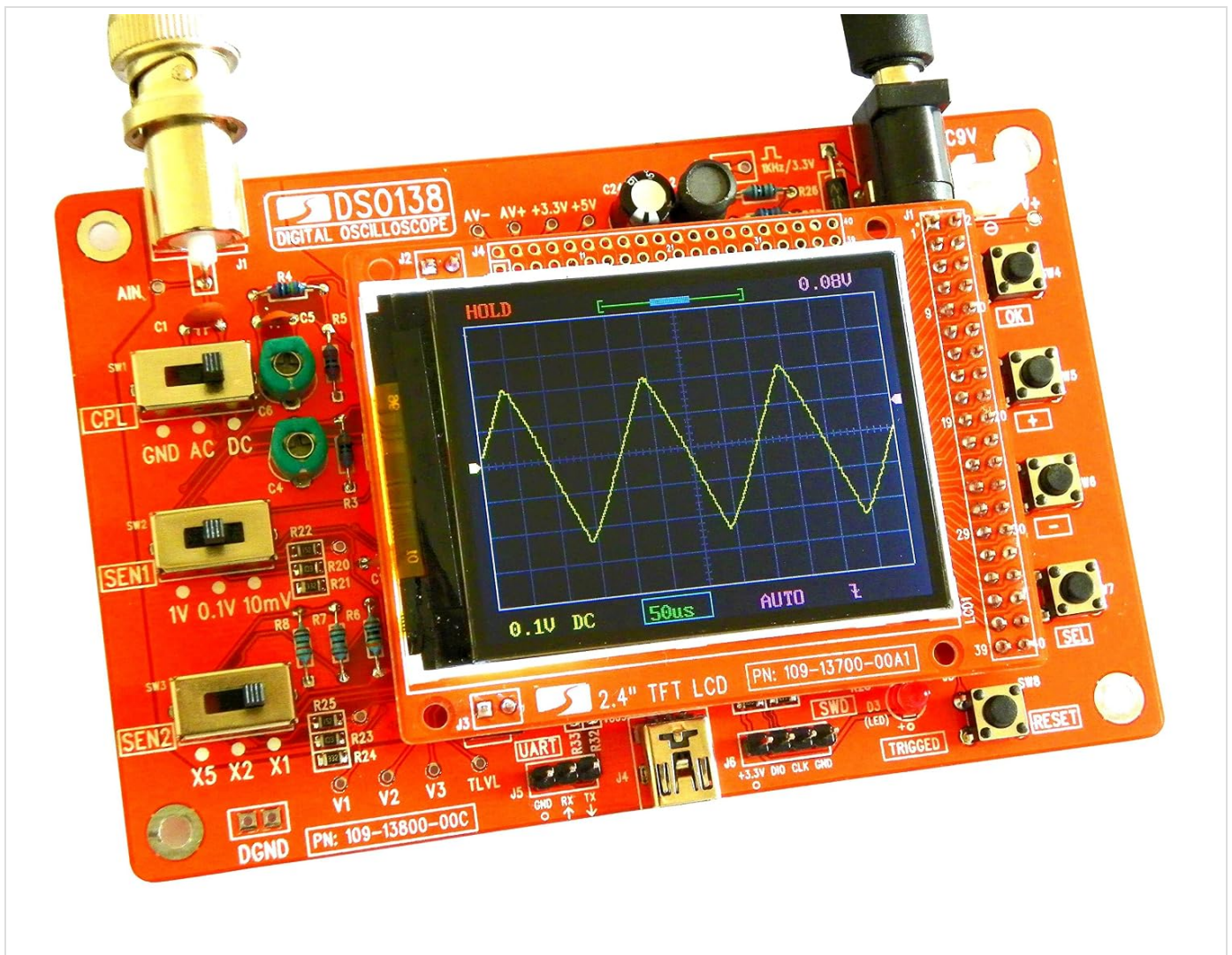


Figure 2.3: The fully assembled DSO 138 Digital Oscilloscope, showing the 2.4-inch TFT LCD screen displaying a waveform. This image demonstrates the compact and functional design of the completed kit.

3. OPERATING INSTRUCTIONS

The DSO 138 oscilloscope provides fundamental functions for waveform observation and measurement. After successful assembly, connect a 9V DC power supply to the power jack. The device will power on and display the main interface.

3.1. Basic Controls

- **Input Coupling (CPL):** Switch between AC, DC, and GND coupling modes.
 - **AC:** Blocks DC component, showing only the AC signal.
 - **DC:** Shows both AC and DC components of the signal.
 - **GND:** Disconnects the input, displaying the ground reference. Useful for setting the zero level.
- **Sensitivity (SEN1, SEN2):** Adjusts the vertical scale (Volts/Division). The DSO 138 offers sensitivity from 10mV/Div to 5V/Div.
- **Timebase:** Adjusts the horizontal scale (Time/Division) from 10us/Div to 500s/Div.
- **Trigger Controls (OK, +, -, SET):** Used to adjust trigger level, mode, and position to stabilize waveforms.
 - **OK:** Confirms selections or enters menus.
 - **+, -:** Adjusts values or navigates options.
 - **SET:** Enters settings or mode selection.
- **HOLD Function:** Freezes the current waveform on the screen for detailed observation.

- **Save/Recall Waveform:** Allows saving the displayed waveform to non-volatile memory and recalling it later.

3.2. Built-in Test Signal

The DSO 138 includes a built-in 1KHz/3.3V test signal. This signal can be used to verify the oscilloscope's functionality and for calibration purposes. Connect the probe to the designated test signal output pin on the board to display this reference waveform.

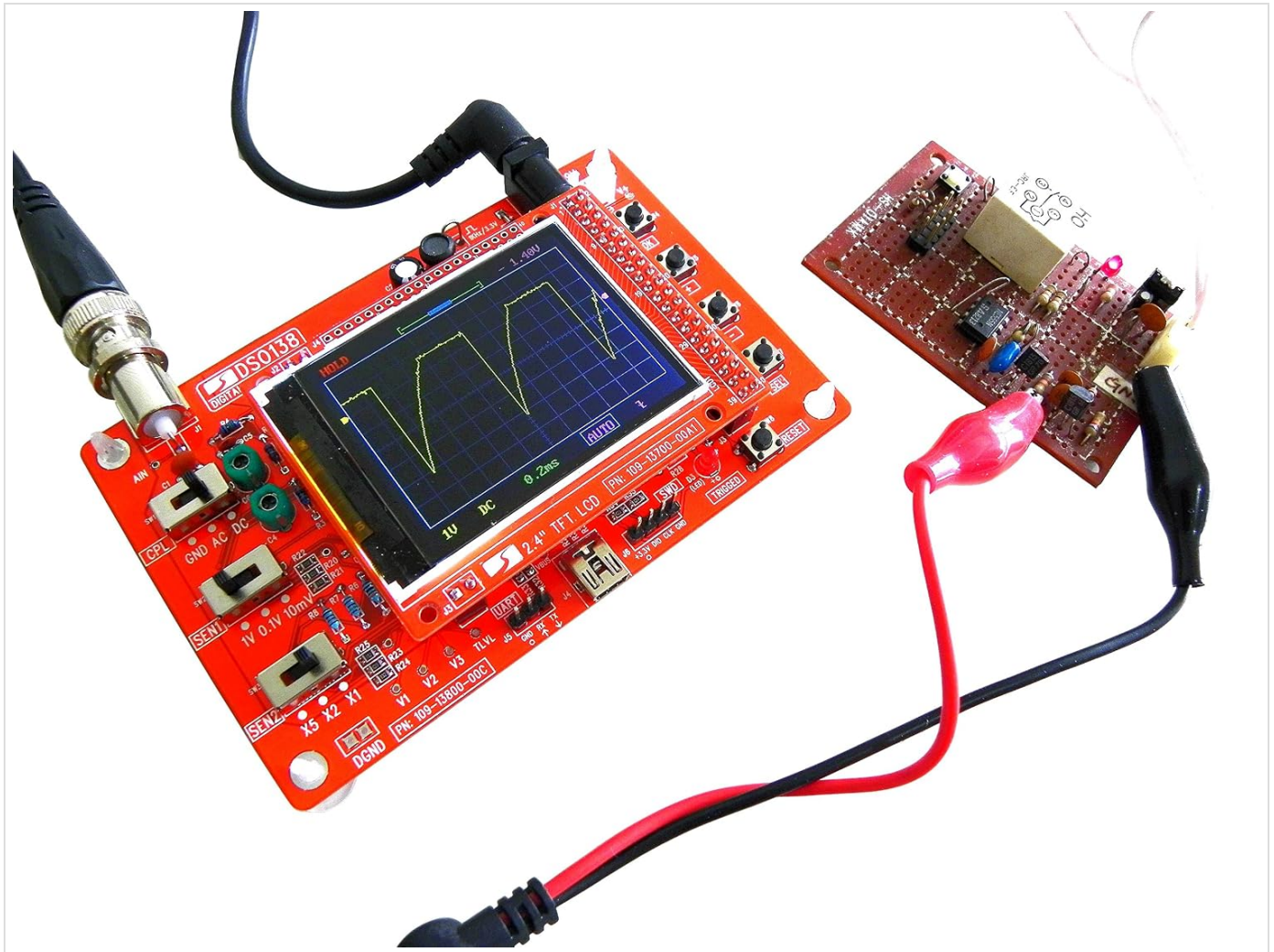


Figure 3.1: The DSO 138 Digital Oscilloscope actively measuring a signal from an external circuit. This demonstrates the device's practical application in electronic testing and analysis.

4. MAINTENANCE

Proper maintenance ensures the longevity and reliable operation of your DSO 138 kit.

- **Cleaning:** Keep the device clean and free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquid cleaners directly on the PCB or display.
- **Storage:** Store the oscilloscope in a dry, cool environment, away from direct sunlight and extreme temperatures. If not in use for extended periods, disconnect the power supply.
- **Firmware Updates:** As the DSO 138 is partially open-sourced, firmware updates or custom modifications may be available from the manufacturer or community. Refer to the official JYETech website or forums for information on updating the firmware. Exercise caution and follow instructions precisely when performing firmware updates.
- **Physical Protection:** Consider enclosing the assembled kit in a protective case to prevent accidental damage to components or the PCB.

5. TROUBLESHOOTING

If you encounter issues with your DSO 138 kit, consider the following troubleshooting steps:

- **No Power/Blank Screen:**
 - Verify the power supply connection and ensure it provides the correct voltage (9V DC).
 - Check for any short circuits or incorrect component placements on the PCB, especially around the power input and voltage regulators.
 - Inspect all solder joints for cold joints or bridges.
- **Distorted or No Waveform Display:**
 - Ensure the input probe is correctly connected to the signal source and the oscilloscope's BNC input.
 - Check the input coupling (AC/DC/GND) and adjust the sensitivity (Volts/Div) and timebase (Time/Div) settings.
 - Verify the trigger settings. Incorrect trigger levels can lead to unstable or absent waveforms.
 - Test with the built-in 1KHz/3.3V test signal to confirm basic functionality.
 - Inspect components related to the analog input path for proper soldering and orientation.
- **Incorrect Readings:**
 - Perform calibration if available in the device's menu.
 - Ensure the probe compensation is correctly set if using a compensated probe.
- **Component Issues:** Some components, particularly resistors, can be difficult to identify. Double-check all component values against the assembly guide using a multimeter.

For more in-depth troubleshooting and community support, refer to the official JYETech forums or the detailed troubleshooting guide that may be included with your kit.

6. SPECIFICATIONS

Feature	Specification
Analog Bandwidth	0 - 200KHz
Maximum Sampling Rate	1Msps (Mega samples per second)
Sensitivity	10mV/Div - 5V/Div
Sensitivity Error	<5%
Vertical Resolution	12-bit
Timebase Range	10us/Div - 500s/Div
Record Length	1024 points
Test Signal	Built-in 1KHz/3.3V
Display	2.4-inch TFT LCD (320 x 240 dot matrix, 262K colors)
Processor	Cortex-M3 ARM (STM32F103C8)
Dimensions	Approximately 4 x 3 x 1 inches (assembled)

7. WARRANTY AND SUPPORT

7.1. Warranty Information

Specific warranty terms for the JYETech DSO 138 DIY KIT (13801K) are provided by the manufacturer, JYETech. Please refer to the warranty documentation included with your product or visit the official JYETech website for detailed information regarding warranty coverage, duration, and claims procedures. As a DIY kit, warranty terms may differ from fully assembled products.

7.2. Technical Support

For technical assistance, assembly questions, or operational queries, please utilize the following resources:

- **Manufacturer's Website:** Visit the official JYETech website for product documentation, FAQs, and potential firmware updates.
- **Online Forums:** JYETech often maintains online forums where users can share experiences, ask questions, and receive support from the community and sometimes directly from the manufacturer.
- **Source Code:** As the kit is partially open-sourced, source codes are available, which can be a valuable resource for advanced users or for developing custom features.

When seeking support, be prepared to provide details about your specific kit version (13801K) and a clear description of the issue you are experiencing.

© 2024 JYETech. All rights reserved. This manual is for informational purposes only.

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

