Senzooe 707638028399

Senzooe AD9959 Four-Channel DDS Signal Generator Module User Manual

Model: 707638028399

1. Introduction

This user manual provides comprehensive instructions for the Senzooe AD9959 Four-Channel Direct Digital Synthesizer (DDS) Signal Generator Module. The AD9959 module is designed to generate high-frequency, high-resolution, and phase-coherent sinusoidal waveforms across four independent channels. It features AT command control via a serial port, enabling flexible configuration and operation for various applications requiring precise signal generation. Please read this manual thoroughly before operating the device.

2. Product Overview

The AD9959 module integrates a high-performance DDS core with four independent output channels. Each channel can be individually programmed for frequency, phase, and amplitude. Communication with the module is established via a serial port using AT commands, simplifying integration into control systems.

2.1 Key Features

- Four independent DDS output channels.
- High-resolution frequency, phase, and amplitude control.
- Serial port communication for AT command control.
- Compact design for easy integration.

2.2 Module Components

The module features various connectors and components for power, communication, and signal output.

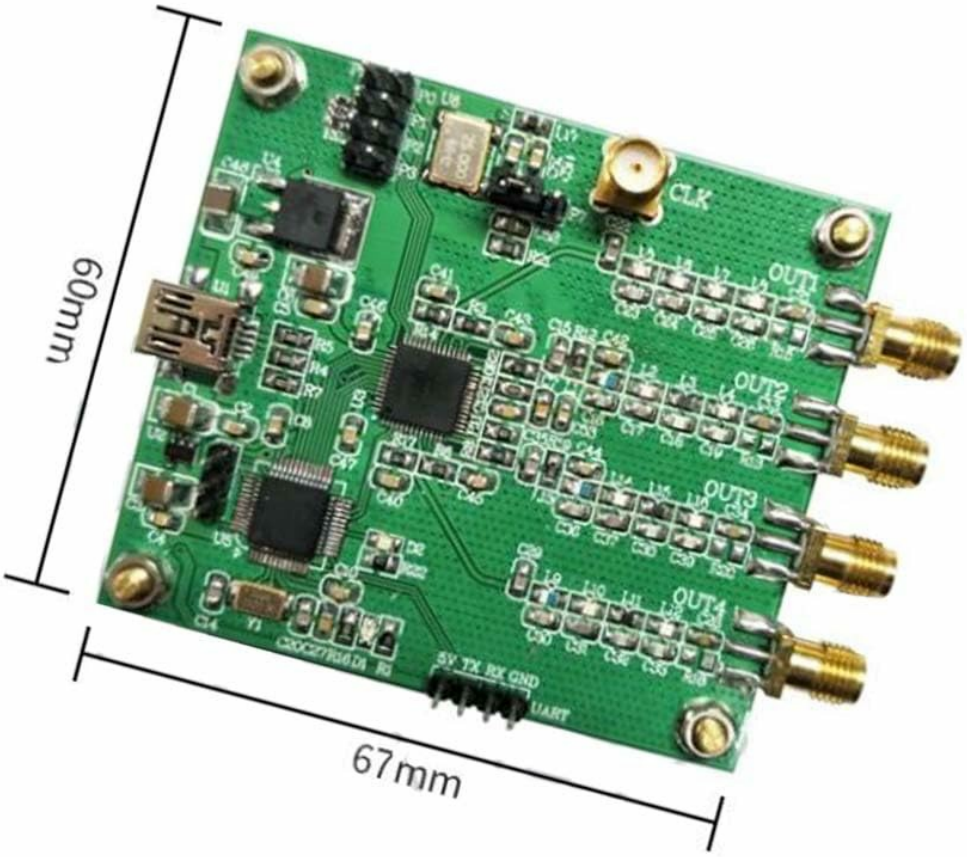

Figure 1: Top view of the AD9959 DDS module. This image displays the module's top side, highlighting the four SMA output connectors labeled OUT1 to OUT4, a USB port for power or data, a CLK input, and UART pins (5V, TX, RX, GND). The module's dimensions are approximately 60mm by 67mm.

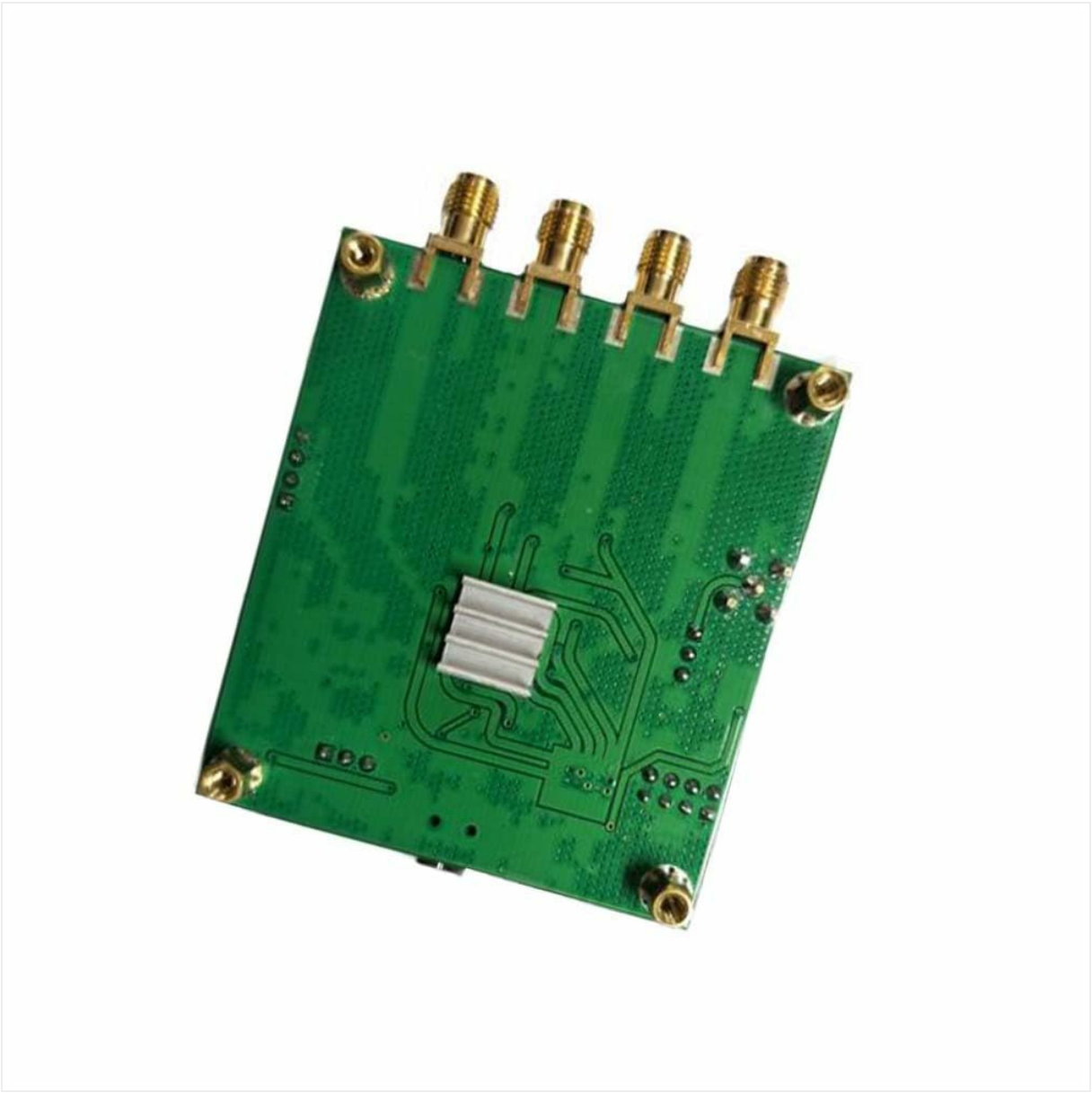

Figure 2: Bottom view of the AD9959 DDS module. This image shows the underside of the module, featuring a heatsink for thermal management and the intricate circuit traces.

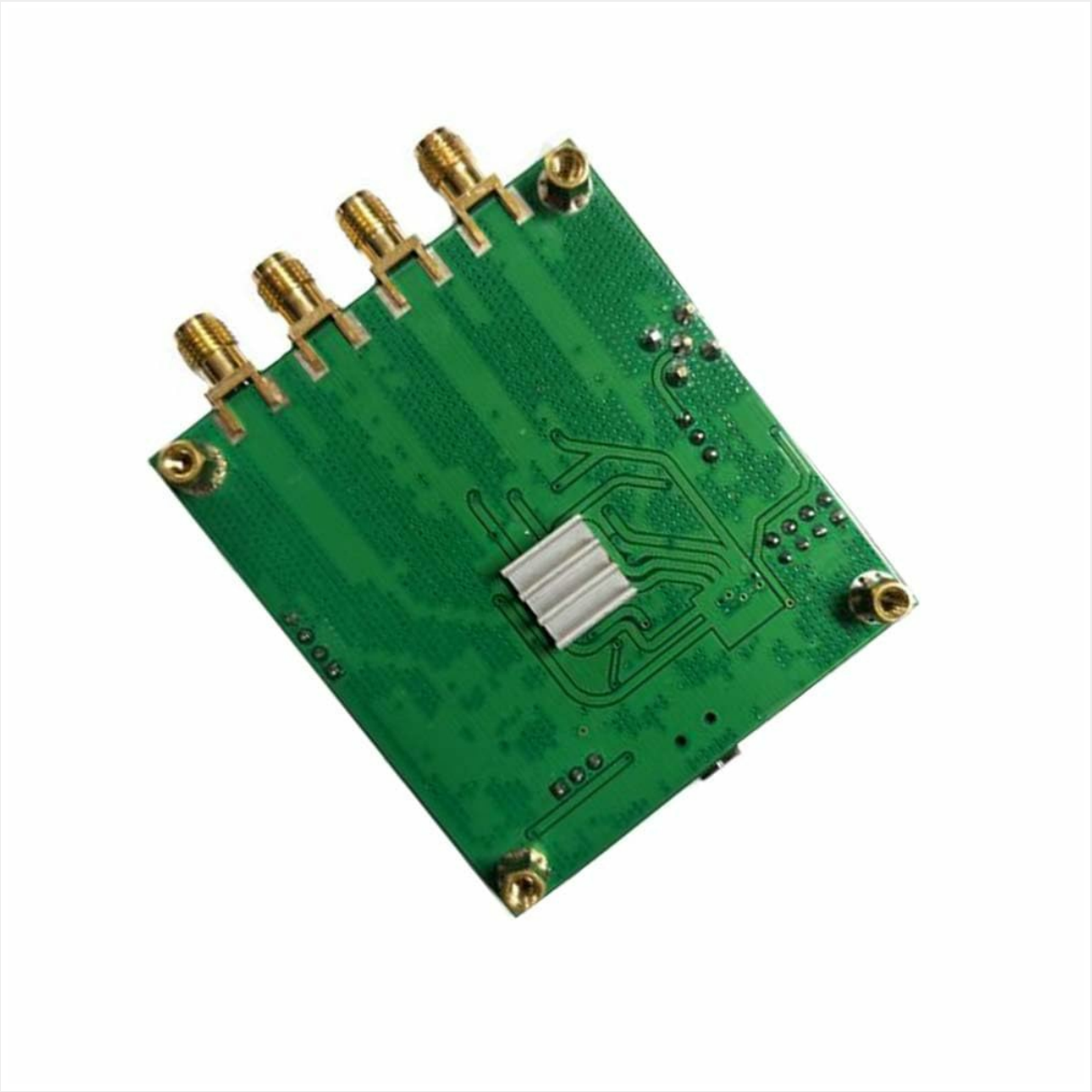

Figure 3: Angled bottom view of the AD9959 DDS module. This perspective provides a clearer view of the heatsink and the arrangement of the SMA connectors from the bottom.

3. Setup

Follow these steps to set up your AD9959 module:

1. **Power Connection:** Connect a stable 5V DC power supply to the module. This can typically be done via the USB port or dedicated 5V pin on the UART header. Ensure correct polarity to prevent damage.
2. **Serial Communication:** Connect the module's UART pins (TX, RX, GND) to a serial communication interface (e.g., a USB-to-TTL serial converter connected to a computer). Ensure the baud rate and other serial parameters are correctly configured on your host device to match the module's default settings (refer to specific protocol documentation for default baud rate).
3. **Clock Input:** If an external reference clock is required, connect it to the CLK input connector. The module may also have an internal clock oscillator.
4. **Signal Output:** Connect your measurement equipment (e.g., oscilloscope, spectrum analyzer) or target circuit to the desired SMA output connectors (OUT1, OUT2, OUT3, OUT4).

4. Operating Instructions

The AD9959 module is controlled using AT commands sent via the serial port. A terminal program (e.g., PuTTY, Tera Term) can be used to send these commands from a computer.

4.1 Basic AT Commands (Example Syntax)

Note: The exact AT command set and parameters should be referenced from the specific protocol document provided by the manufacturer for the AD9959 module. The following are illustrative examples.

- **Set Frequency:** To set the frequency for a specific channel (e.g., Channel 1 to 10 MHz):
  `AT+FREQ=1,10000000`
  (Where '1' is the channel number and '10000000' is the frequency in Hz)
- **Set Phase:** To set the phase for a specific channel (e.g., Channel 2 to 90 degrees):
  `AT+PHASE=2,90`
  (Where '2' is the channel number and '90' is the phase in degrees)
- **Set Amplitude:** To set the amplitude for a specific channel (e.g., Channel 3 to a certain level):
  `AT+AMP=3,LEVEL_VALUE`
  (Where '3' is the channel number and 'LEVEL_VALUE' is an amplitude setting, often a digital value or percentage)
- **Read Status:** To query the current status or settings of the module:
  `AT+STATUS?`

4.2 Command Response

Upon receiving a command, the module typically responds with an acknowledgment (e.g., `OK`) or an error message (e.g., `ERROR`) followed by a specific error code. Successful commands may also return the queried value.

5. Specifications

Technical specifications for the Senzooe AD9959 module:

Feature	Specification
Model Number	707638028399
Manufacturer	Senzooe
Channels	Four (4) independent DDS channels
Control Interface	Serial Port (UART) with AT Commands
Power Supply	5V DC (via USB or UART header)
Output Connectors	SMA (OUT1, OUT2, OUT3, OUT4)
Dimensions (approx.)	67mm x 60mm
Country of Origin	China

6. Maintenance

The AD9959 module is designed for reliable operation with minimal maintenance.

- **Cleaning:** Keep the module clean and free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquids or abrasive cleaners.

- **Storage:** Store the module in a dry, cool environment, away from direct sunlight and extreme temperatures.
- **Handling:** Handle the module with care to avoid physical damage to components or connectors. Avoid static discharge by using appropriate ESD precautions.

7. Troubleshooting

If you encounter issues with the AD9959 module, refer to the following common problems and solutions:

- **No Power Indication:**
  - Ensure the 5V power supply is correctly connected and providing stable power.
  - Check the USB cable or power supply connections for any damage.
- **No Serial Communication:**
  - Verify that the UART TX, RX, and GND pins are correctly connected to your serial converter.
  - Confirm that the baud rate and other serial port settings (e.g., data bits, stop bits, parity) in your terminal program match the module's requirements.
  - Ensure the correct COM port is selected in your terminal software.
- **No Signal Output:**
  - Check that the module is powered on and communicating correctly via serial.
  - Verify that the AT commands for setting frequency, phase, and amplitude are sent correctly and acknowledged by the module.
  - Ensure your measurement equipment (e.g., oscilloscope) is properly connected to the SMA output and configured to the correct input impedance and frequency range.
  - Confirm that the output channel you are expecting a signal from is enabled and configured.
- **Incorrect Signal Output:**
  - Double-check the parameters in your AT commands (frequency, phase, amplitude values).
  - Ensure the external reference clock (if used) is stable and within the specified range.

8. Warranty and Support

Warranty Information: Specific warranty terms and conditions for the Senzooe AD9959 module are typically provided by the seller or manufacturer at the point of purchase. Please refer to your purchase documentation for details regarding warranty coverage and duration.
Spare Parts: Information regarding the availability of spare parts for this product is currently unavailable.
Technical Support: For technical assistance or further inquiries, please contact your vendor or the manufacturer directly. Provide your model number (707638028399) and a detailed description of your issue for efficient support.